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Final report

Options under International Law to Increase Resource Efficiency

by:

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Abstract

Based on a stocktake of existing governance, we present options to improve international governance of resource efficiency (RE) in the short, medium and long term. The study provides a legal and political science perspective to anchoring RE more strongly at the international level. We assess how public international law and other international governance mechanisms could be used more effectively to increase RE and reduce resource consumption along the value chain. The scope includes abiotic resources such as metals, sand, gravel, potassium salts, quartz sand, and fossil raw materials.

Our stocktake of existing international governance provides a mixed picture: RE is on the international agenda, but it is hardly addressed by clear guidance or binding standards. Political initiatives and non-binding mechanisms mostly use recommendations and high-level political statements with strategic priorities. Non-state governance approaches include mainly reporting and other information and management tools regarding products and production processes.

The second part develops policy options and recommendations to strengthen international governance of resource efficiency. While the existing non-binding processes and mechanisms such as in the G20 could be strengthened, binding options could show a new level of commitment and also better contribute to more certainty and a level playing field. Mid- to long-term, the existing political support for RE might be increased and translated into a potential treaty framework. The annex includes an outline for a framework treaty text on resource efficiency.

Kurzbeschreibung

Auf Grundlage einer Bestandsaufnahme der bestehenden internationalen Governance von Ressourceneffizienz (RE) stellen wir Optionen zu ihrer Verbesserung auf kurze, mittlere und lange Sicht vor. Die Studie bietet eine rechts- und politikwissenschaftliche Perspektive zur stärkeren Verankerung von RE auf internationaler Ebene. Wir bewerten, wie das Völkerrecht und andere internationale Governance-Mechanismen wirksamer genutzt werden könnten, um RE zu erhöhen und den Ressourcenverbrauch entlang der Wertschöpfungskette zu reduzieren. Der Anwendungsbereich umfasst abiotische Ressourcen wie Metalle, Sand, Kies, Kaliumsalze, Quarzsand und fossile Rohstoffe.

Unsere Bestandsaufnahme der bestehenden internationalen Governance ergibt ein gemischtes Bild: RE steht auf der internationalen Agenda, aber es gibt kaum klare Leitlinien oder verbindliche Standards. Politische Initiativen und rechtlich nicht verbindliche Mechanismen nutzen meist Empfehlungen und hochrangige politische Erklärungen zu strategischen Prioritäten. Nicht-staatliche Governance-Ansätze umfassen hauptsächlich die Berichterstattung und andere Informations- und Managementinstrumente in Bezug auf Produkte und Produktionsprozesse.

Der zweite Teil entwickelt politische Optionen und Empfehlungen zur Stärkung der internationalen Governance der Ressourceneffizienz. Während die bestehenden rechtlich nicht verbindlichen Prozesse und Mechanismen z.B. im Rahmen der G20 gestärkt werden könnten, könnten verbindliche Optionen ein neues Maß an Verbindlichkeit zeigen und auch besser zu mehr Sicherheit und gleichen Wettbewerbsbedingungen beitragen. Mittel- bis langfristig könnte die bestehende politische Unterstützung für RE verstärkt und letztlich eventuell in einen vertraglichen Rahmen übertragen werden. Der Anhang enthält eine Skizze für einen Rahmenvertragstext zur Ressourceneffizienz.

Table of Contents

List of Figures

List of Tables

List of Abbreviations

10YFP	10-Year Framework of Programmes on Sustainable Consumption and Production Patterns
ACLCA	American Center for Life Cycle Assessment
ASEAN	Association of Southeast Asian Nations
ASGM	Artisanal and small-scale gold mining
BAN	Basel Action Network
BAT	Best Available Techniques
BEP	Best Environmental Practices
BIGD	UNEP's Business & Industry Global Dialogue
BMWi	German Ministry of Economic AffaiRS (Bundesministerium für Wirtschaft und Energie)
CAO	IFC's Compliance Advisor/ Ombudsman
CBD	1992 Biodiversity Convention
CBDR	Common but differentiated responsibility
CCOP	Coordinating Committee for Geoscience Programmes in East and Southeast Asia
CESG	Commission on ESG Environmental, Social & Governance Issues
CFC	Common Fund for Commodities
CG	Compliance Group
CMA	Conference of the Parties to the Paris Agreement
CO2	Carbon dioxide
COP	Conference of the Parties
DDT	Dichlorodiphenyltrichloroethane
DMA	Disclosure on Management Approach
DPL	Development Policy Lending
DSD	Division for Sustainable Development
DTIE	UNEP's Division of Technology, Industry and Economics
DVFA	Deutsche Vereinigung für Finanzanalyse und Asset Management GmbH (German Association for Financial Analysis and Asset Management)
EC	European Commission
ECOSOC	UN Economic and Social Council
EEZ	Exclusive Economic Zone
EFFAS	European Federation of Financial Analysts Societies
EHSG	World Bank Group's "Environmental, Health and Safety Guidelines
EIA	Environmental Impact Assessment
EITI	Extractive Industries Transparency Initiative

EMAS	EU Eco-Management and Audit Scheme
EMSA	Environmental Management Network
EPR	Extended Producer Responsibility
ESF	World Bank's Environmental and Social Framework
ESG	Environmental, Social and Governance
ESS	World Bank's Environmental and Social Standards
EU	European Union
FORAM	World Forum on Raw Materials
FPIC	Free, Prior and Informed Consent
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GEC	Green Economy Coalition
GEF	Global Environmental Facility
GEI	UNEP Green Economy Initiative
GEN	Global Eco-Labelling Network
GENICES	Peer review process for Global Ecolabelling Network (GEN) member organisations
GHG	Greenhouse Gas
GI-REC	Global Initiative for Resource Efficient Cities
GIIP	Good International Industry Practice
GPWM	Global Partnership on Waste Management
GRI	Global Reporting Initiative
GRS	Global Recycled Standard
GSSB	Global Sustainability Standards Board
HFCs	Hydrofluorocarbons
HLPF	High-Level Political Forum
IAD	Internal Audit Vice Presidency
ICAO	International Civil Aviation Organization
ICC	International Chamber of Commerce
ICJ	International Court of Justice
ICLEI	Local Governments for Sustainability
ICSU	International Council for Science
ICT	Information and Communication Technology
IEG	World Bank Group's Independent Evaluation Group
IFC	International Financial Cooperation
IFSUD	Implementation Facility for Sustainable Urban Development

ILC	International Law Commission
ILCP	International Life Cycle Panel
ILO	International Labour Organisation
IMO	International Maritime Organization
IOs	International Organisations
IPCC	International Panel on Climate Change
IPF	Investment Project Financing
IPSRM	International Panel for Sustainable Resource Management
IRENA	International Renewable Energy Agency
IRMO	International Raw Materials Observatory
IRP	Interational Resource Panel
ISA	International Seabed Authority
ISCGN	International Corporate Governance Network
ISO	International Organization for Standardization
ITA	International Tin Agreement
ITC	International Tin Council
ITLOS	International Tribunal on the Law of Sea
IWG	International Working Group of Certification Bodies
KEITI	Korean Environmental Industry and Technology Institute
KPIs	Key Performance Indicators
LCA	Life Cycle Assessment
LGBTQ	Lesbian, Gay, Bisexual, Transgender and Queer people
LRTAP	The Convention on Long-range Transboundary Air Pollution and its Protocol on Persistent Organic Pollutants
MARPOL	International Convention for the Prevention of Pollution from Ships
MDGs	Millennium Development Goals
MEAs	Multilateral Environmental Agreements
MGoS	Major Groups and other Stakeholders
MOP	Meeting of Contracting Parties
MSR	Marine scientific research
NCPC	National Cleaner Production Centre
NDCs	Nationally-Determined Contributions
NGOs	Non-governmental organisations
ODS	Ozone-Depleting Substances
OECD	Organisation for Economic Co-operation and Development
PAGE	Partnership for Action on Green Economy

PCIJ	Permanent Court of International Justice
PCSD	Policy Coherence for Sustainable Development
PEF	Product Environmental Footprint
POPs	Persistent Organic Pollutants
PR4	Program-for-Results
PSNR	Principle of Permanent Sovereignty over Natural Resources
QIP	Quito Implementation Platform
RE	Ressource Efficiency
RECP	Resource Efficient and Cleaner Production
RECPnet	Global Network for Resource Efficient and Cleaner Production
SASF	Sustainability Assessment Framework
SBCI	Sustainable Buildings and Climate Initiative
SDGs	Sustainable Development Goals
SETAC	Life Cycle Assessment Interest Group
SPP	Sustainable Public Procurement Programme
SRU	German Advisory Council on the Environment (Sachverständigenrat für Umweltfragen)
SSE	Sustainable Stock Exchanges Initiative
STI-Forum	Forum on Science, Technology and Innovation for the SDGs
SUSHI	UNEP's Sustainable Social Housing Initiative
TEEB	Economics of Ecosystem Services and Biodiversity
UBA	Umweltbundesamt (German Federal Environmental Agency)
UK	United Kingdom of Great Britain and Northern Ireland
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNCLOS	UN Convention on the Law of the Sea
UNCRD	United Nations Centre for Regional Development
UNCTAD	United Nations Conference on Trade and Development
UNDESA	UN Department of Economic and Social Affairs
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	1992 Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
UNWTO	World Tourism Organisation
US/ USA	United States of America
WBCSD	World Business Council for Sustainable Development

WBGU	German Advisory Counsil on Global Change (Wissenschaftliche Beirat der Bundesregierung Globale Umweltveränderungen)
WRF	World Resources Forum
WTO	World Trade Organisation
WWF	World Wide Fund for Nature
ZEW	Centre for European Economic Research
ZWIA	The Zero Waste International Alliance

Summary

This report explores whether and how existing international environmental law and governance address resource efficiency (RE), and options for anchoring RE at the international level, including elements of a potential treaty.

For the purpose of this study we loosely define resource efficiency as the relation of a certain use or result to the deployment of the natural resources necessary to achieve this use or result. We focus on abiotic resources and include the whole value chain except environmental and social standards at the extraction stage.

We first take stock of and assess existing instruments in existing international law and governance. A broad understanding of international governance includes binding as well as non-binding instruments, processes and steering mechanisms that are relevant for RE at the international level. Resource efficiency is now on the international agenda, for example at the Rio+20 Conference 2012, the Sustainable Development Goals, the G7 and the G20, which launched a Resource Efficiency Dialogue. While taking this into account, we focus on the international legal framework. The analysis includes selected treaties, customary law and principles of international law based on a presumptive screening of their potential relevance for resource efficiency or reduction of resource consumption. The scope of this study does not include the Basel Convention. We also do not include the WTO and bilateral investment agreements. Other elements of the international legal framework are not legally binding in the strict sense, but as so-called "soft law" nonetheless influence or provide guidance to states' conduct.

We then develop options for improving governance, beginning with an assessment of governance proposals in academic literature, followed by our suggested specific policy options and recommendations.

Stocktake and assessment of the current international governance of resource efficiency

International law is created differently from national or EU law and has different enforcement mechanisms. It is traditionally based on sovereignty of states, as reflected in the principle of permanent sovereignty over natural resources. The rise of environmental concerns since the early 1970s has been reflected in new environmental treaties and greening of existing treaties, as well as in customary obligations and general concepts that influence political discourse and governance framework. They balance and limit sovereignty, based on the interests of other states or matters considered to be in the common interest of all states.

Customary law and principles

In addition to treaties, customary law is a source of international law binding upon states. In order to establish a norm of customary law, there has to be evidence that there is sufficient state practice adhering to that rule, *and* that states accept it as legally binding. In many cases states, stakeholders or academics may argue that a norm is already customary law, while others may argue that the existing state practice is not sufficient or that there is no conclusive evidence that states, even if they adhere to it in practice, accept to be *legally bound.* There are also concepts and norms that are labelled or invoked as "principles", but neither terminology nor international practice in this regard are uniform or agreed.

The main customary rules and principles with potential relevance for RE include:

- Permanent sovereignty over natural resources
- Equitable utilisation of shared natural resources
- Common heritage of mankind
- Common concern of humankind
- Prevention of transboundary environmental harm

- Sustainable Development
- Inter-generational equity
- Polluter pays principle
- Precautionary principle
- Common but differentiated responsibility
- State responsibility

Some principles, such as sustainable development, serve as a counterweight to the sovereign right to exploit natural resources and as an argument that there is a limit to this right. But they do not on their own provide concrete normative content or political opportunities specifically for resource efficiency. However, they could be used to strengthen strategies and arguments involving other principles.

The legal obligations to prevent transboundary environmental harm, to carry out an environmental impact assessment and to be legally responsible for breaches of such obligations are conceptually based on notions of environmental harm and attribution that pose significant difficulties for addressing resource efficiency.

Some principles such as equitable utilisation of shared natural resources contain, at least generally, the notion that states have to use resources in a way that enables other states to use that resource as well. However, state practice on transboundary mineral deposits shows that the principle is exclusively concerned with the allocation of the resources or the profits. It hardly addresses the conservation aspect over time. This also applies to the concept of common heritage of mankind, which goes further as it places the exploitation of certain resources under common management.

The principle of common concern of humankind differs from other principles relating to natural resources in that it does not focus on allocation, but expresses the common interest of all states in environmental protection with regard to that concern. This approach could provide political opportunities, for instance if states regarded the conservation of resources over time as a common concern irrespective of a certain area.

Applying the polluter pays principle or the precautionary principle, as they currently stand, to resource efficiency also poses difficulties, besides their unsettled legal status in international law. Using the polluter pays principle to address inefficiency, either directly or by analogy, would mean that inefficiency would be treated as contributing to environmental harm, that an inefficient user would be treated like a "polluter", and that the environmental costs caused by the inefficiency would be internalised. The underpinnings of the precautionary principle aim at addressing scientific uncertainty about environmental impacts, which is of little relevance to resource efficiency unless it were to be interpreted as also including a conservation element.

Generally, customary law and proposed principles and concepts do not provide much established normative guidance with regard to resource efficiency. An apparent impediment for anchoring resource efficiency is that it is difficult to define the environmental impact of inefficiency and include it in the existing concepts. For instance, when would resource use be so inefficient as to amount to environmental harm or to a *legally* unacceptable depletion of resources for future use? Such legal and conceptual uncertainties have to be taken into account.

Treaties

Treaties apply only to those States that are Party to them. Treaty regimes with permanent institutions frequently adopt decisions which are usually not binding in the strict legal sense but are in practice treated and complied with by the parties as the agreed rules for implementing the treaty.

The treaties with potential relevance for RE included in our assessment are:

- London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter

- UN Convention on the Law of the Sea (UNCLOS)
- Minamata Convention on Mercury
- Montreal Protocol on Substances that Deplete the Ozone Layer
- Stockholm Convention on Persistent Organic Pollutants
- Paris Agreement on climate change
- Agreement Establishing the Common Fund for Commodities
- International Study Groups on Lead and Zinc, Nickel, and Copper
- Sixth International Tin Agreement
- Bilateral Resource Agreements between the Federal Republic of Germany and Kazakhstan, the Mongolia, and Peru.

These treaties differ widely in subject matter and regulatory technique. Specifically with regard to resource efficiency, they differ e.g. with regard to which part of the value chain they address, whether they address specific resources, and how they affect resource efficiency.

For instance, the deep seabed regime under UNCLOS directly regulates all mineral resources in a specific geographical area at the very beginning of the value chain. Its objective is to distribute the opportunities for revenue and there are no incentives for using the resource more efficiently after extraction. There is also little indication that it intends to limit the amounts extracted in order to preserve supplies over time. However, the strict and detailed extraction management, including environmental rules, could provide an incentive to use these resources more efficiently.

The London Protocol affects all resources by regulating the very end of the value chain, i.e. by creating economic incentives to generate less waste and to recycle more. The main regulatory technique is prohibiting certain (cheap) ways of disposing waste.

The Minamata Convention on Mercury directly regulates one specific resource - mercury- along the whole value chain. Its objective is not to use mercury more efficiently, but to stop producing and using it altogether. But it provides a toolbox of different regulatory techniques for using less mercury, both during the phase-out and for the ban.

Germany's three bilateral resource treaties explicitly address resource efficiency, albeit the actual obligations are few and remain abstract. It is the host country that is to improve resource efficiency, not the country seeking access to more resources. The clear normative focus of the agreements is to facilitate access to resources, while resource efficiency has minimal weight in comparison.

The Montreal Protocol and the Stockholm Convention regulate specific substances which are not abiotic resources. They provide an incentive for resource efficiency only if substituting the regulated substance does not use the same amount of resources. The regulatory techniques are interesting because they include trade restrictions that also apply to non-parties. They are also designed to respond to new challenges flexibly and comparatively fast.

The Paris Agreement addresses activities related to climate change, notably greenhouse gas emissions and to some extent sinks, towards the objective of a collective global temperature limit. It does not regulate specific activities, substances or resources, but it potentially affects all resources that contribute to climate change. According to the current state of scientific knowledge, the goals of the Paris Agreement can only be achieved if the use of fossil fuels is drastically reduced in the medium term and phased out or completely balanced by about 2050. However, the Paris Agreement contains mainly procedural obligations which leave parties much discretion to define which individual measures they want to take towards the collective goals. The potential substitution effects of the transition to a low-carbon economy are difficult to fully assess at this stage.

The International Metal Study Groups specifically address four abiotic resources worldwide: lead, zinc, nickel and copper. Their regulatory approach is to influence decision-makers by providing information

on supply and demand and other market developments. They mention resource efficiency, but it is not clear to what extent this actually promotes or enables resource efficiency.

The mandate of the Common Fund for Commodities includes all abiotic resources that qualify as tradable commodities. Its regulatory technique today is mainly financing commodity development projects. These include projects that promote resource efficiency. The CFC currently appears to move away from addressing abiotic resources.

The International Tin Agreement can provide relevant insights although it has been terminated after the International Tin Council went insolvent. It exclusively addressed tin and had a high impact on resource efficiency because its mandate was to maintain price stability through market interventions such as buying and selling tin in the market and obligatory floor and ceiling prices. It also used financial tools, notably borrowing, in order to finance its activities. One lesson learned is that if such instruments are to be used at all, they should be clearly mandated and controlled so as to avoid the financial risks that eventually led to the Tin Agreement's demise.

None of the treaties assessed address resource efficiency explicitly, with the exception of Germany's bilateral resource treaties with Kazakhstan, Mongolia and Peru. It is interesting that these agreements aim at improving resource efficiency in the host country rather than addressing Germany as the country seeking improved access. The few other instances in which efficiency is mentioned refer to e.g. efficient extraction, but not efficiency in the sense of a sparing use of the resource.

The treaties have effects on different aspects of resource efficiency: One aspect is whether the intention of resource efficiency is to use the resource as long as possible rather than not at all. From this perspective, a ban on using the resource would be resource conserving but not resource efficient in a narrow sense, because the resource may not be used at all. The phasing out and ban of mercury under the Minamata Convention provides an example, as well as the (not explicit but necessary) phasing out of fossil fuels under the Paris Agreement. An eventual normative or factual ban can provide a strong incentive to use the resources more efficiently until the ban applies, but this effect is not inevitable.

A different aspect is whether the objective is to increase efficiency for a particular resource or for a particular activity, i.e. reducing its overall resource footprint. Again, the Minamata Convention is an example of addressing one particular resource. In contrast, the deep seabed regime seeks to avoid wasteful extraction for all (mineral) resources.

Perhaps with the exception of direct market intervention in the Tin Agreement model, there is no particular regulatory approach that would appear to be irrelevant or that should be disregarded from the outset with regard to addressing resource efficiency. Existing approaches address the beginning as well as the end of the value chain, a particular resource or all resources in an area, some use specific measures such as trade restrictions or licensing regimes while others set an objective and follow a procedural approach. Some of the treaties such as the Minamata Convention and the Paris Agreement are relatively new and their impact remains to be seen. The diversity of approaches means that political opportunities for addressing resource efficiency have to be assessed in the context of the particular agreement rather than in abstract.

Although the treaty obligations potentially have more impact on resource efficiency, by and large they show a picture similar to customary law and emerging principles: International environmental law mainly addresses activities with direct physical impacts on the environment. With the exception perhaps of waste, it barely touches upon environmental consequences caused by inefficient use of resources. Where it does, the existing rules are mainly designed to ensure that resources are available or generate revenue.

International political processes and legally non-binding mechanisms

A number of international political processes and legally non-binding mechanisms ("instruments") promoting resource efficiency have emerged in the past years. Agenda-setting for RE has significantly advanced.

In terms of their steering mechanisms, the instruments are most often high-level political statements with strategic priorities and guidance – i.e. non-binding recommendations and joint frameworks of action. In some cases, these are combined with a small capacity building component or "means of implementation" for developing countries (e.g. UNEP GEI and GI REC, the New Urban Agenda). Also, various instruments are linked with knowledge dissemination through the exchange of best practice between countries, learning forums, or pilot projects. The International Resource Panel provides a basis for creating new scientific knowledge (such as assessments of policy options with regard to their effects on resource efficiency)[1] and feeding it into the policy debate. It is a valuable mechanism for fostering a common understanding of issues related to RE, their drivers and potential solutions. A relatively new governance mechanism is "governing through goals"[2], as embodied by the SDGs. This approach leaves leeway to countries to operationalise the attainment of (quantified) goals and monitors goal attainment, although it is typically not combined with sanctions if goals are missed. An interesting governance mechanism is the World Bank's and IFC's sustainability standards for country borrowers and private sector clients, which are binding to the extent that they become part of lending and support conditions, though capacity building (of all parties), monitoring and enforcement still provide challenges.

In most cases, the instruments address all UN member states, with an implicit focus on developing countries and emerging economies, as OECD countries have progressed somewhat further in the direction of resource efficiency policies. The SGDs are an exception, since they explicitly also address developed countries to speed up their efforts. Also, the OECD, G7/8 and G20 have committed to further promoting resource efficiency.

Most of the instruments address the complete value chain, i.e. they do not specify any particular segments of the value chain (or any particular sectors) in which resource efficiency should be enhanced, though a few are focused on extraction, others on waste and the 3Rs. The intermediate segments of the value chain are rarely addressed explicitly.

We can distinguish at least three different pathways of effects: some instruments directly fund resource efficiency projects (e.g., UNEP GEI); others fund resource-consuming projects but require some attention to resource efficiency (World Bank/ IFC safeguards); most instruments affect resource efficiency more indirectly by defining resource efficiency goals (SDGs, 10YFP, UNEP GEI, OECD Green Growth Strategy etc.) or by stimulating (and partly funding the development of) specific resource efficiency policies (Kobe 3R Action Plan).

Assessing the instruments' effectiveness is difficult in terms of showing that they caused governments to re-direct, adapt or change their policies. There are only few in-depth evaluations and reviews on the (partly still new) instruments, with the exception of, inter alia, the UNEP Green Economy Initiative and the G8 Kobe 3R Action Plan. Due to obvious methodological difficulties, none of the existing evaluations traces causation from international initiatives to country-level changes in resource consumption. This analysis was also beyond the scope of this study. On a more generic level, it seems that while there are plenty of policies, forums and platforms, some of these have a short life span and little follow-up. The World Bank Groups' lending conditionalities are relatively strong instruments because they are binding on borrowers and clients. However, they affect only developing countries and actors, which also raises the issue of double standards. Also, it is unclear to what extent

[1] See, for instance, IRP (2017b).

[2] Kanie et al. (2017).

specifically those conditionalities that are relevant for resource efficiency actually have an impact on project design and implementation. Using proxies for effectiveness such as the instruments' specificity in terms of commitment, their political weight and institutional design and substructures, most instruments are relatively unspecific, have only moderate political clout, often feature insignificant international budgets and no systematic review mechanisms. This holds for those instruments that are part of UN Programmes (UNEP GEI & GI REC) and for strategy documents of multilateral groupings (OECD, G20, G8/7). UN initiatives adopted or endorsed by the General Assembly (SDGs, the New Urban Agenda, 10YFP) tend to have a broader basis of legitimacy, but have review mechanisms with varying degrees of stringency. The SDGs presently seem to be the instrument with the best prerequisites to induce change in political practices.

However, the available analyses are sobering: despite past political efforts and economic innovation that promote resource efficiency, rebound effects and generic economic growth overall outweigh the efficiency gains. This indicates that a new chapter should be discussed: that of the absolute reductions in resource consumption (resource sufficiency). Here, the agenda setting process has barely started at the international level.

Non-state governance approaches

The relevance of non-state government approaches for resource efficiency differs considerably. While some will only have indirect effects, others impact resource use directly. Reporting standards like the GRI or the KPIs for ESG might have indirect effects by making resource use by companies transparent. The same can be said for LCAs at product level. Other standards use targets to generate a direct impact. E.g. EMAS' requirement to set specific targets on resource consumption will support companies in reducing the use of resources when applying the management system. Another initiative which pro-vides specific targets regarding resource efficiency is the Zero Waste International Alliance. Type I eco-labels as well as the GRS have direct impact by certifying certain aspects of resource efficiency for spe-cific products.

Regarding the institutional setting, most of the initiatives are based on multi-stakeholder networks and include actors from business, civil society or other institutions like standard setting agencies. The degree of influence among the groups, however, differs considerably, businesses being the most influ-ential stakeholder in many cases. In some cases state actors also play a relevant role in supporting the creation as well as the diffusion of the respective initiative.

The addressees of most of the analysed initiatives are companies. The instruments either refer to cor-porate processes/ management or to companies' products and services. The ZWIA is an exception be-cause it also addresses municipalities and the civil society.

In terms of steering mechanism, all initiatives apply information tools. Additionally, capacity building or cooperative instruments are used by some. Nearly all of the initiatives have review processes for their standards in place. In the case of the GRI or the German eco-label "Blauer Engel", these are highly formalized and standardised mechanisms with clearly defined time frames and specific institutions assigned with the implementation of the review. In most other cases, review proesses are more informal.

The degree of diffusion differs strongly between the standards and initiatives. While some initiatives, such as the GRI, have managed to become globally applied standards that set a benchmark even though they are voluntary in nature, others (like the GRS or GeSI) are limited in their geographical or sectoral application and therefore impact.

Overarching assessment

The stocktake provides a **mixed picture**: Recent non-binding approaches show that resource efficiency has been included on the international political agenda. The SDGs and the G20 are different process but both high-level and with political weight and legitimacy. Although in the past, both

processes had in some cases problems with sustaining political momentum and achieving concrete results, they are at relatively early stages with regard to resource efficiency and could still provide potential political opportunities.

Yet there are virtually no binding standards for resource efficiency. International law and emerging principles and concepts for the most part do not address resource efficiency directly in terms of resources used per unit of output. There are a few general references to efficiency in bilateral resource treaties and the seabed regime, but so far they have been more focused on facilitating extraction and allocating the resources.

One reason might be that so far states found it easier to agree on environmental obligations with regard to traditional environmental impacts. There are also **conceptual difficulties** in applying the existing norms and concepts to the environmental impacts caused by inefficiency. The environmental impacts of inefficiency are caused less directly than "usual" environmental impacts and difficult to ascertain. Another aspect could be that resource efficiency brings environmental concerns to process and product standards and competitiveness, an issue which is addressed by international trade rules. The WTO system, which we did not specifically address, has rules on process and product standards, although these do not require resource efficiency but instead determine to what extent states may be *permitted* to set such standards. States might be reluctant to consider binding rules in this area in order to avoid problems with trade rules. A further impediment could be that resource efficiency standards, unless they remain fairly abstract, would entail technical requirements that are highly specific to individual production processes and would therefore be difficult to negotiate as well as to keep up to date.

Only indirectly, binding international law provides some incentives to improve resource efficiency. The most relevant links in binding instruments are resource conservation aspects and treaties concerning waste. Both resource conservation and recovery are inherent parts of the circular economy of wastes. Regulatory approaches that involved direct market interventions, such as the tin agreement, have been abandoned. Indirect links in customary international law and emerging or proposed overarching principles are difficult to assess because their legal status, normative content, or both are often unclear or abstract.

As for **political processes and non-binding mechanisms**, recommendations are most frequent type, often in the form of high-level political statements with strategic priorities and guidance, and often accompanied by joint frameworks of action. In addition, there are several relevant programs by international organizations, the International Resource Panel as a science-policy interface, and project lending standards by the World Bank Group that address resource efficiency. Many of the instruments are relatively unspecific, have only moderate political output and feature insignificant institutional embedding and international budgets. The SDGs are an exception, as they specify resource efficiency goals and abstract targets, combined with a political monitoring mechanism. At least at present, they also have political weight and momentum. The newly established G20's dialogue could also generate political buy-in.

Non-state governance approaches include mainly reporting and other information and management tools regarding products and production processes. Their steering impact is mainly based on informal market incentives. Product certification schemes can involve criteria that are directly linked to resource efficiency like longevity or repairability.

From an **institutional perspective**, some institutions have the potential to address resource efficiency directly or indirectly. The regular meeting of the Conference of the Parties of several multilateral environmental agreements may include resource efficiency in their agenda, and the International Seabed Authority provides for a strict extraction management of mineral resources in the deep seabed that may provide incentives to use resources more efficiently. The World Bank's Environmental and Social Standards and the IFC's performance standards include resource efficiency

in a general manner and subject to a number of caveats such as technical and financial feasibility. These standards are a special case as they are made binding between the financing institution and the recipients.

While at first sight international non-binding and non-governmental approaches are more specific than binding ones, they are mostly reporting and management tools with varying degrees of specificity regarding resource use. Even in this area, few non-state standards specifically address resource efficiency in the sense of actually quantifying a permitted amount of material per output.

There is no clear link or discernible deliberate division of labour between binding and non-binding or other approaches. So far neither non-binding political initiatives nor other non-state and approaches relating to resource efficiency appear to have spurred the development of binding obligations. However, this does not exclude from the outset using existing non-binding approaches to either build political will in this regard, show feasibility or serve as a model.

Policy options for strengthening resource efficiency in international governance

International law

Based on the assessment of existing international law with regard to resource efficiency, we suggest several options for anchoring RE more firmly in legally binding commitments at the international level.

- **A treaty on resource efficiency?** At this stage we do not recommend pursuing a new standalone treaty on RE, even if it was merely a general framework treaty. The political effort that would be required at this stage to create support for international legal obligations on regarding RE appears substantial. Although resource efficiency is a widely accepted objective, including in the SGDs, it is a significant step from being politically supportive and to becoming party to a binding instrument.

  Mid-to long-term: One option is to work towards building the political conditions for anchoring RE in international law. The discussion in the context of international fora such as the G7 Alliance for Resource Efficiency, G20 Dialogue on Resource Efficiency, the OECD etc. could gradually be brought to consider mutual benefits of an international RE treaty, for instance in the form of a general framework treaty. Besides a stand-alone treaty, there is also the option of a new instrument under an existing treaty (e.g. a “Protocol”).

  Potentially Long-term: While binding rules are not an end in itself, the idea of a general, not too prescriptive treaty could focus existing international political initiatives. A binding treaty ideally means a high level of long-term commitment both at the international as well as at the national level. With regard to political feasbility, it should be noted that a treaty can address different issues differently, more or less prescriptively and precisely, and it can leave flexibility for parties in order to facilitate buy-in and implementation over time. Since RE encompasses a broad range resources and diverse approaches, it could be useful to consider starting with a framework structure that envisages subsequent amendments for particular resources or issues, e.g. in annexes or protocols. Even if the legal obligations as such were initially more of a framework nature, a treaty could anchor RE on the agenda and establish a permanent forum to progressively address it. It could include mandates for further work and permanent institutions such as the usual Conference of Parties (COP) which adopts decisions to specify and guide parties' implementation. In order to be prepared in the long run, we provide an outline of potential of treaty provisions as food for thought in Annex 2.

Leverage for RE: A treaty would address states (and the EU) who would have to implement its obligations in their respective national jurisdictions. Depending on the treaty's specific content, it would be overarching and cross-cutting, with genral obligations that could be elaborated over time in annexes for specific sectors, resources etc.

- **A treaty on plastic as a test case.** Instead of a treaty on resource efficiency, a new treaty on a more narrowly defined issue such as plastic could serve as a test case and model for eventually addressing RE more generally.

  For instance, a treaty on plastic waste could build on the political attention to this issue and address gaps in the existing international governance. It could allow for taking a broader perspective than waste and address the complete life cycle of plastics and issues such as extended producer responsibility, which are important issues for resource efficiency in general. This could be an opportunity to try out international governance on a specific issue for which there already is broad existing political support. However, at this stage it is not clear whether this political attention could be translated into a willingness to commit to binding obligations.

- **Interpret the polluter pays principle** and existing customary law in terms of resource efficiency. Long-term, Germany could work towards establishing and interpreting existing customary law in a way that includes aspects of RE. For instance, it could develop and support an expanded legal interpretation of the fairly established polluter pays principle by which inefficient resource use would qualify as "polluting" and actors using resources inefficiently would be regarded as "polluters" who should bear the costs caused by the inefficiency. It could also be considered whether the rationale behind concepts such as "safe operating space" and "planetary boundaries" can feed into further developing other existing legal principles and rules at the international level.

  Leverage for RE: Cross-cutting general obligation on states.

- **Paris Agreement: Address resource efficiency**. Mid-term/long-term: Germany could address and promote RE as a topic through the Paris Agreement. The on-going negotiations under the climate offer a range of options for doing so, e.g. from one-off events to regular agenda items, and from a platform for exchanging information to anchoring normative text in COP decisions. In terms of specific issues, options include, inter alia, including RE in NDCs or in reporting formats.

  Leverage for RE: Potentially all relating to climate change, depending on Germany's preferences and opportunities pursued in the climate regime.

Political processes, organisations and non-binding mechanisms

We identify the following options:

- **G20 dialogue**: Keep resource efficiency on the agenda and develop further into recommendations and action. This might require medium political effort and the shift could be sensitive for some members.

  Short-term, medium term: Actively follow-up on the G20 Dialogue on RE and ensure that it is continued and that RE stays on the G20 agenda.

  Short-term, medium term: Explore to what extent the existing work under the G7 Alliance for Resource Efficiency can feed into and be coordinated with the G20.

  Medium term: Move the G20 Dialogue on RE towards more concrete work and outcomes e.g. by setting goals, definitions, or actions.

Leverage for RE: Defining political targets, strengthening research and improving the knowledge base, promoting resource efficiency in production and consumption

- **G7: Continue G7 Alliance** for Resource Efficiency and coordinate with G20 dialogue.

  Mid-term: Germany should review progress on the Bologna Roadmap through the G7 and direct it towards more specific plans and actions regarding RE.

  Mid-term: Germany should pursue opportunities for co-ordinating the G20 dialogue with the G7 Alliance for Resource Efficiency.

  Leverage for RE: Defining political targets, strengthening research and improving the knowledge base, promoting resource efficiency in production and consumption, improving policy coherence.

- **IRP follow-up**: Define and feed in mandate for further work.

  Short and medium term: Germany should support and increase the IRP's legitimacy as a scientific supporting body. But we do not recommend changing the IRP's institutional setup or mandate.

  Leverage for RE: Depending on the specific mandate: Strengthening research and improve the knowledge base, promoting resource efficiency in production and consumption; promoting advice on resource efficiency for companies, the use of environmental management schemes, the integration of resource efficiency in standardization.

- **IRP** to explore potential of international-level policies for resource efficiency, including global taxation.

  The IRP could be mandated (e.g., by the G20 or the OECD) with a study on potential future international-level policies for resource efficiency, including the potential design and impacts of a global system to tax resources. This could be a first step towards future economic instruments that provide incentives for more RE of resources.

  Leverage for RE: improving knowledge base; economic instruments/incentives.

- **Reporting requirements for companies** regarding resource efficiency. There are opportunities to promote RE reporting requirements for companies at the national level e. g. regarding the implementation of the EU directive on non-financial reporting which could be done by introducing resource efficiency into the German "Sustainability Code". Also research on appropriate (sector specific) indicators could be commissioned.

  Leverage for RE: promote resource efficiency in production.

- **Promoting environmental management systems:** While the idea to make the implementation of environmental management systems legally mandatory on an international level might not be relevant yet, different ideas to promote EMAS on the national and EU level like linking it to public procurement or making it mandatory for public institutions could be pursued.

  Leverage for RE: promoting resource efficiency in production (promoting the use of environmental management schemes)

- **UNEP**: Strenghtening National Cleaner Production Centres and the global network for Resource Efficient and Cleaner Production (RECPnet). The German government could, firstly, provide support for the UNIDO and UNEP programmes on National Cleaner Production Centres and Resource Efficient and Cleaner Production (RECP). Secondly, it could promote expanding the financial basis of the programmes (including the number of donors, e.g. at least all G7 countries). Among others, Germany could provide an own financial contribution. The overall objective of the

initiative is that NCPCs can be established in further countries and that existing NCPCs can branch out to the regional levels.

Leverage for RE: Promoting advice on resource efficiency for companies as well as fostering the development and diffusing of resource- and energy-efficient production and treatment processes.

- **UNEP & UN Habitat "Zero Waste Cities" Award** (or: programme/fund). The German government may consider, as part of its Habitat III follow-up activities, the launch of a "zero waste cities" award.

  Leverage for RE: The initiative would contribute to "strengthening resource efficiency as a criterion for the retail sector and consumers", "optimising the collection and recycling of bulk wastes" and possibly "integrating resource efficiency in public procurement" (at the municipal level).

- **World Bank and IFC:** Strengthen the anchoring of resource efficiency within the Bank The German government, with the support of the G7 or G20, should advocate the strengthening of resource efficiency as a topic within the different branches of the World Bank. This includes promoting (in the medium-term) a systematic review of the implementation and effectiveness of the World Bank's safeguard policies and the IFC's performance standards with regard to resource efficiency, a broadening of the scope of application of the Safeguards from project financing to programmatic loans and increased funding for circular economy business models under the IFC.

  Leverage for RE: This would address the development and diffusion of resource- and energy-efficient production and treatment processes; promotion of the use of environmental management schemes; and innovation though mainstreaming resource efficiency in product design.

- **OECD: Implementation review of the 2008 OECD Council Recommendation** on Resource Productivity. The German government could request the pending evaluation of progress with work related to the OECD's Council Recommendation on Resource Productivity.

  Leverage for RE: The recommendation addresses the lever "improving the knowledge base".

- **Creation of an International Resource Agency**. Germany could consider supporting the creation of an International Resource Agency in the long term. Launching a new agency would require significant political efforts.

  Leverage for RE: Depending on its mandate, establishing an International Resource Agency could address the lever of "strengthening research and improving the science basis; transfer of knowledge".

- **Define mid-level goals** on resource efficiency (e.g., in OECD, G20 and potential Framework Convention on Resource Efficiency). The German government could stimulate an international debate (in various fora) on the definition of mid-level goals and indicators on resource efficiency. These goals and indicators would be sector and raw material specific and could build a bridge to economy-wide goals and indicators on general resource efficiency.

  Leverage for RE: This option would provide a 'meta' lever for RE. The goals can stimulate action promoting resource efficiency in production and consumption as well as fostering a circular economy. Defining goals can also raise public awareness.

- **Voluntary Country and Company Guiding Principles** on Strengthening Resource Efficiency: Voluntary guidelines could be an alternative to a binding treaty on RE. Such guidelines could address both states and the private sector and be the basis for further legal developments.

Leverage for RE: Potentially all levers addressed in the "ProgRess" study.

- **"2% Initiative for Resource Efficiency"** (e.g., UNEA, incl. GEF funding). The German government could promote an international initiative where countries would commit themselves voluntarily to increasing economy-wide resource efficiency by a certain percentage.

  Leverage for RE: The (cross-cutting) lever addressed is "goal / target setting", which can stimulate different types of concrete RE-promoting action.

- **Resolution on Extended Producer Responsibility and Eco-design** (e.g., as UNEA Resolution). The German government could organise an international coalition (e.g., in the context of the G20) to initiate the process for an international (e.g., UNEA) resolution on Extended Producer Responsibility and Eco-design. Such a resolution should motivate industrialised countries to update and make more ambitious their EPR schemes and support South-South learning in order to expand (and in some cases establish) EPR schemes in the Global South.

  Leverage for RE: The Resolution would address the lever "strengthening producer responsibility" in order to promote a circular economy.

- **Creation of an international (public-private) recycling fund**. The German government could consider the creation of an international recycling fund. It would provide economic incentives (e.g. pre-defined premium payments on pre-defined volumes of soundly recycled waste) in order to stimulate environmentally sound recycling in developing countries.

  Leverage for RE: The levers addressed are "strengthening recycling" as well as "Optimising the collection and recycling of bulk wastes", with a focus on developing countries.

- **Country-driven resource-efficient procurement initiative** (e.g., OECD initiative). The German government could initiate a country-driven sustainable procurement initiative in which governments commit to increasing the share of publicly sourced products and services sourced that are resource efficient.

  Leverage for RE: The initiative addresses the lever "integrating resource efficiency in public procurement".

- **G7 "Golden carrot" initiative to internationally promote ecological product design.** The German government could promote the creation of a 'Golden Carrot' initiative to internationally stimulate ecological product design in selected product groups. It would be necessary to examine whether a Golden Carrot Programme on resource efficiency was eligible under international (WTO) state aid rules.

  Leverage for RE: The initiative addresses the lever "Innovation though mainstreaming resource efficiency in product design".

Non-state and other governance approaches:

- **Global Multistakeholder Forum on Resource Efficiency**: The German government could promote the launch of a Global Multistakeholder Forum on Resource Efficiency. In the Forum, different industries and stakeholders would collaborate (in material-specific sub-forums) to develop environmentally and socially sustainable processes to close material flows (secondary material supply chains). The Forum could be linked to industry and civil society actors involved in the G20 process and its Resource Efficiency Dialogue.

Leverage for RE: Providing sustainable raw materials, resource efficiency in production, resource efficiency in consumption, circular economy.

Zusammenfassung

Diese Studie untersucht, ob und wie das bestehende Umweltvölkerrecht und internationale Governance Ressourceneffizienz (RE) behandeln, und sie zeigt Optionen auf für die Verankerung von RE auf internationaler Ebene, einschließlich der Elemente eines möglichen Abkommens.

Für diese Studie definieren wir Ressourceneffizienz lose als das Verhältnis einer bestimmten Nutzung oder eines bestimmten Ergebnisses zum Einsatz der natürlichen Ressourcen, die zum Erreichen dieser Nutzung oder dieses Ergebnisses erforderlich sind. Wir konzentrieren uns auf abiotische Ressourcen und beziehen die gesamte Wertschöpfungskette mit Ausnahme von Umwelt- und Sozialstandards bei der Gewinnung mit ein.

Wir nehmen zunächst eine Bestandsaufnahme und Bewertung der bestehenden Instrumente des geltenden Völkerrechts und der bestehenden Governance vor. Unser breites Verständnis von internationaler Governance umfasst sowohl verbindliche als auch nicht verbindliche Instrumente, Prozesse und Steuerungsmechanismen, die für RE auf internationaler Ebene relevant sind. Ressourceneffizienz steht mittlerweile auf der internationalen Agenda, z.B. bei der Rio+20-Konferenz 2012, den Zielen für nachhaltige Entwicklung, der G7 und der G20, die einen Dialog über Ressourceneffizienz ins Leben gerufen haben. Unter Berücksichtigung dessen konzentrieren wir uns auf den internationalen rechtlichen Rahmen. Die Analyse umfasst ausgewählte völkerrechtliche Verträge, Gewohnheitsrecht und völkerrechtliche Grundsätze auf der Grundlage einer Prüfung ihrer potenziellen Relevanz für Ressourceneffizienz oder die Verringerung des Ressourcenverbrauchs. Nicht berücksichtigt werden die WTO und bilaterale Investitionsabkommen. Andere Elemente des völkerrechtlichen Rahmens sind zwar nicht rechtsverbindlich im engeren Sinne, beeinflussen jedoch als so genanntes "soft law" das Verhalten der Staaten oder geben ihnen Orientierungshilfen.

Wir entwickeln dann Optionen zur Verbesserung der Governance, beginnend mit einer Bewertung von Vorschlägen zur Governance in der wissenschaftlichen Literatur, gefolgt von unseren Vorschlägen für spezifische politische Optionen und Empfehlungen.

Bestandsaufnahme und Bewertung der bestehenden internationalen Governance von Ressourceneffizienz

Das internationale Recht kommt anders zustande als das nationale oder EU Recht und hat andere Durchsetzungsmechanismen. Es basiert traditionell auf der Souveränität der Staaten, was sich auch im Grundsatz der dauerhaften Souveränität über natürliche Ressourcen widerspiegelt. Die Zunahme von Umweltbelangen seit den frühen 1970er Jahren spiegelt sich in neuen Umweltabkommen und der Ökologisierung bestehender Abkommen wider, aber auch in gewohnheitsrechtlichen Verpflichtungen und allgemeinen Konzepten, die den politischen Diskurs und die Rahmenbedingungen der Governance beeinflussen. Diese Entwicklungen bilden ein Gegengewicht zur Souveränität und schränken sie ein, auf Grundlage der Interessen anderer Staaten oder Angelegenheiten, die als im gemeinsamen Interesse aller Staaten liegend betrachtet werden.

Gewohnheitsrecht und Prinzipien

Neben den völkerrechtlichen Verträgen ist das Gewohnheitsrecht eine Quelle des für die Staaten verbindlichen Völkerrechts. Um eine Gewohnheitsrechtsnorm zu schaffen, muss nachgewiesen werden, dass es eine ausreichende staatliche Praxis gibt, die sich an diese Regel hält, *und* dass die Staaten sie als rechtsverbindlich akzeptieren. In vielen Fällen mögen Staaten, Interessenvertreter oder die Wissenschaft argumentieren, dass eine Norm bereits Gewohnheitsrecht ist, während andere argumentieren, dass die bestehende staatliche Praxis nicht ausreicht oder dass es keine schlüssigen Beweise dafür gibt, dass Staaten, selbst wenn sie sich in der Praxis daran halten, darüber hinaus auch akzeptieren, *rechtlich gebunden* zu sein. Es gibt auch Konzepte und Normen, die als Grundsätze oder

"Prinzipien" bezeichnet oder angeführt werden, aber weder die Terminologie noch die internationale Praxis sind in dieser Hinsicht einheitlich oder vereinbart.

Zu den wichtigsten gebräuchlichen Regeln und Prinzipien mit potentieller Relevanz für RE gehören

- Dauerhafte Souveränität über natürliche Ressourcen
- Angemessene Nutzung gemeinsamer natürlicher Ressourcen
- Gemeinsames Erbe der Menschheit
- Gemeinsames Interesse der Menschheit
- Vermeidung grenzüberschreitender Umweltschäden
- Nachhaltige Entwicklung
- Inter-generationelle Gerechtigkeit
- Verursacherprinzip
- Vorsorgeprinzip
- Gemeinsame, aber differenzierte Verantwortlichkeit
- Staatenverantwortlichkeit.

Einige Prinzipien, wie die nachhaltige Entwicklung, dienen als Gegengewicht zum souveränen Recht, natürliche Ressourcen auszubeuten, und als Argument dafür, dass es eine Grenze für dieses Recht gibt. Sie allein bieten jedoch keine konkreten normativen Inhalte oder politischen Möglichkeiten speziell für Ressourceneffizienz. Sie könnten jedoch zur Stärkung von Strategien und Argumenten genutzt werden, die auch andere Grundsätze einbeziehen.

Es gibt rechtliche Verpflichtungen, grenzüberschreitende Umweltschäden zu verhindern, eine Umweltverträglichkeitsprüfung durchzuführen und für Verstöße gegen diese Verpflichtungen rechtlich verantwortlich zu sein. Diese Pflichten basieren jedoch konzeptionell auf Begriffen wie Umweltschäden und Zurechnung, die nicht leicht auf Ressourceneffizienz anwendbar sind.

Einige Prinzipien, wie z.B. die angemessene Nutzung gemeinsam genutzter natürlicher Ressourcen, enthalten zumindest im Allgemeinen die Vorstellung, dass Staaten Ressourcen nur in einer Weise nutzen dürfen, die es anderen Staaten ermöglicht, diese Ressourcen ebenfalls zu nutzen. Die staatliche Praxis im Fall grenzüberschreitender Rohstoffvorkommen zeigt jedoch, dass sich in diesem Bereich das Prinzip ausschließlich auf die Zuteilung der Ressourcen oder die Gewinne bezieht. Es betrifft kaum den Aspekt der langfristigen Ressourcenerhaltung. Dies gilt auch für das Konzept des gemeinsamen Erbes der Menschheit, das weiter geht, da es die Ausbeutung bestimmter Ressourcen unter eine gemeinsame Verwaltung stellt.

Das Prinzip des gemeinsamen Interesses der Menschheit unterscheidet sich von anderen Prinzipien, die sich auf die natürlichen Ressourcen beziehen, insofern, als es nicht auf die Zuteilung abzielt, sondern das gemeinsame Interesse aller Staaten am Umweltschutz zum Ausdruck bringt. Dieser Ansatz könnte politische Möglichkeiten bieten, zum Beispiel wenn Staaten die langfristige Erhaltung der Ressourcen unabhängig von einem bestimmten Gebiet als ein gemeinsames Interesse betrachten.

Die Anwendung des Verursacherprinzips oder des Vorsorgeprinzips in ihrer jetzigen Form auf die Ressourceneffizienz wirft neben ihrem ungeklärten völkerrechtlichen Status ebenfalls Schwierigkeiten auf: Wenn man das Verursacherprinzip auf Ineffizienz anwendete, entweder direkt oder durch Analogie, würde man letztlich Ineffizienz als Beitrag zu einer Umweltschädigung ansehen, einen ineffizienten Nutzer daher wie einen "Verursacher" behandeln und die durch die Ineffizienz verursachten Umweltkosten internalisieren. Die Grundlagen des Vorsorgeprinzips zielen darauf ab, mit wissenschaftlicher Unsicherheit bezüglich Umweltauswirkungen umzugehen. Dies ist aber für Ressourceneffizienz kaum von Bedeutung - es sei denn, man versteht RE so, dass dazu auch ein Element der Ressourcenerhaltung gehört.

Im Allgemeinen bieten das Gewohnheitsrecht und die vorgeschlagenen Prinzipien und Konzepte wenig allgemein anerkannte normative Orientierung in Bezug auf Ressourceneffizienz. Ein Hindernis

für die stärkere Verankerung von Ressourceneffizienz besteht darin, dass es schwierig ist, die Umweltauswirkungen von Ineffizienz zu definieren und RE in die bestehenden Normen und Konzepte einzubeziehen. Wann wäre z.B. eine Ressourcennutzung so ineffizient, dass sie zu einer Schädigung der Umwelt oder zu einer Ausschöpfung der Ressourcen führen würde, die mit Blick auf eine künftige Nutzung *rechtlich* nicht akzeptabel wäre? Solche rechtlichen und konzeptionellen Unsicherheiten müssen berücksichtigt werden.

Völkerrechtliche Verträge

Verträge gelten nur für die Staaten, die ihnen beigetreten sind. Darüber hinaus gibt es in Vertragsregimen mit ständigen Institutionen häufig Entscheidungen, die in der Regel nicht im engeren rechtlichen Sinne bindend sind, aber in der Praxis von den Vertragsparteien als die vereinbarten Regeln für die Umsetzung des Vertrags behandelt und eingehalten werden.

Unsere Bewertung umfasste folgende Verträge mit potenzieller Relevanz für RE:

- Basler Übereinkommen über die Kontrolle der grenzüberschreitenden Verbringung gefährlicher Abfälle und ihrer Entsorgung
- Londoner Protokoll zum Übereinkommen über die Verhütung der Meeresverschmutzung durch das Einbringen von Abfällen und anderen Stoffen
- UN-Seerechtskonvention (UNCLOS)
- Minamata-Konvention über Quecksilber
- Montrealer Protokoll über Stoffe, die zu einem Abbau der Ozonschicht führen
- Stockholmer Konvention über persistente organische Schadstoffe
- Pariser Abkommen zum Klimawandel
- Abkommen zur Einrichtung des Gemeinsamen Fonds für Rohstoffe
- Internationale Studiengruppen zu Blei und Zink, Nickel und Kupfer
- Sechstes Internationales Zinnabkommen
- Bilaterale Ressourcenabkommen zwischen der Bundesrepublik Deutschland und Kasachstan, der Mongolei und Peru.

Diese Verträge unterscheiden sich erheblich in Gegenstand und Regelungstechnik. Insbesondere in Bezug auf Ressourceneffizienz unterscheiden sie sich z.B. darin, welchen Teil der Wertschöpfungskette sie betreffen, ob sie bestimmte Ressourcen betreffen und wie sie sich auf Ressourceneffizienz auswirken.

Beispielsweise regelt das Tiefseebodenregime im Rahmen des UNCLOS alle mineralischen Ressourcen in einem bestimmten geographischen Gebiet direkt am Anfang der Wertschöpfungskette. Sein Ziel ist es, die Einnahmemöglichkeiten zu verteilen, und es gibt keine Anreize für eine effizientere Nutzung der Ressource nach dem Abbau. Es gibt auch kaum Anzeichen dafür, dass das Regime darauf abzielt, die geförderten Mengen zu begrenzen, um die Vorräte auf Dauer zu erhalten. Das strenge und detaillierte Management der Förderung, einschließlich der Umweltvorschriften, könnte jedoch einen Anreiz für eine effizientere Nutzung dieser Ressourcen bieten.

Das Basler Übereinkommen und das Londoner Protokoll wirken sich auf alle Ressourcen aus, indem sie das Ende der Wertschöpfungskette regulieren, d.h. indem sie wirtschaftliche Anreize sowie Verpflichtungen schaffen, weniger Abfall zu erzeugen und mehr zu recyceln. Die wichtigste Regelungstechnik ist in beiden Fällen das Verbot bestimmter (billiger) Entsorgungswege, kombiniert mit allgemeinen Verpflichtungen und einem verfahrenstechnischen Ansatz im Basler Übereinkommen. Die Frage, ob das Basler Übereinkommen die Wiederaufarbeitung behindert, wird zeigen, ob es in der Lage ist, auf veränderte Umstände zu reagieren.

Das Minamata Übereinkommen über Quecksilber regelt unmittelbar eine spezifische Ressource - Quecksilber - entlang der gesamten Wertschöpfungskette. Sein Ziel ist es nicht, Quecksilber effizienter zu nutzen, sondern die Produktion und Verwendung von Quecksilber ganz einzustellen. Es bietet

jedoch ein Instrumentarium verschiedener Regelungstechniken für die Verwendung von weniger Quecksilber während der Ausstiegsphase und für das Verbot.

Die drei bilateralen Ressourcenabkommen Deutschlands befassen sich ausdrücklich mit der Ressourceneffizienz, auch wenn es nur wenige und abstrakte Verpflichtungen gibt. Es ist das Herkunftsland, das die Ressourceneffizienz verbessern soll, nicht das Land, das den Zugang zu mehr Ressourcen anstrebt. Der klare normative Schwerpunkt der Abkommen liegt auf der Erleichterung des Zugangs zu Ressourcen, während die Ressourceneffizienz im Vergleich dazu ein minimales Gewicht hat.

Das Montrealer Protokoll und die Stockholmer Konvention regeln spezifische Substanzen, die keine abiotischen Ressourcen sind. Sie bieten nur dann einen Anreiz zur Ressourceneffizienz, wenn die Substitution des regulierten Stoffes nicht die gleiche Menge an Ressourcen verbraucht. Die Regelungstechniken sind interessant, weil sie ähnlich wie das Basler Übereinkommen Handelsbeschränkungen enthalten, die auch Nichtvertragsstaaten betreffen. Sie sind außerdem darauf ausgelegt, flexibel und vergleichsweise schnell auf neue Herausforderungen zu reagieren.

Das Pariser Abkommen regelt Aktivitäten im Zusammenhang mit dem Klimawandel, insbesondere mit Treibhausgasemissionen und in gewissem Umfang auch mit Senken, mit dem Ziel einer kollektiven globalen Temperaturbegrenzung. Es regelt keine spezifischen Aktivitäten, Substanzen oder Ressourcen, aber es betrifft potenziell alle Ressourcen, die zum Klimawandel beitragen. Nach dem derzeitigen wissenschaftlichen Stand können die Ziele des Pariser Abkommens nur erreicht werden, wenn die Nutzung fossiler Brennstoffe mittelfristig drastisch reduziert und bis etwa 2050 schrittweise eingestellt oder vollständig ausgeglichen wird. Das Pariser Abkommen enthält jedoch vor allem Verfahrenspflichten, die den Parteien einen großen Ermessensspielraum lassen, welche individuellen Maßnahmen sie zur Erreichung der kollektiven Ziele ergreifen wollen. Die potenziellen Substitutionseffekte des Übergangs zu einer kohlenstoffarmen Wirtschaft sind zum jetzigen Zeitpunkt nur schwer abschätzbar.

Die Internationalen Metallstudiengruppen befassen sich speziell mit vier abiotischen Ressourcen weltweit: Blei, Zink, Nickel und Kupfer. Ihr Regelungsansatz besteht darin, Entscheidungsträger durch die Bereitstellung von Informationen über Angebot und Nachfrage und andere Marktentwicklungen zu beeinflussen. Sie erwähnen Ressourceneffizienz, aber es ist nicht klar, inwieweit dies die Ressourceneffizienz tatsächlich fördert oder ermöglicht.

Das Mandat des Common Fund for Commodities umfasst alle abiotischen Ressourcen, die als handelbare Rohstoffe gelten. Seine Regelungstechnik besteht heute hauptsächlich in der Finanzierung von Projekten zur Entwicklung von Rohstoffen. Dazu gehören auch Projekte, die Ressourceneffizienz fördern. Der CFC nimmt derzeit anscheinend Abstand von abiotischen Ressourcen.

Das Internationale Zinnabkommen kann noch eine Lehre sein, auch wenn es nach der Insolvenz des Internationalen Zinnrates beendet wurde. Es befasste sich ausschließlich mit Zinn und hatte einen hohen Einfluss auf die Ressourceneffizienz, da sein Mandat darin bestand, die Preisstabilität durch Marktinterventionen wie den Kauf und Verkauf von Zinn auf dem Markt und obligatorische Unter- und Höchstpreise zu gewährleisten. Der Internationale Zinnrat bediente sich auch finanzieller Instrumente, insbesondere der Kreditaufnahme, um seine Aktivitäten zu finanzieren. Eine Lehre ist, dass solche Instrumente, wenn sie überhaupt zum Einsatz kommen sollen, eindeutig mandatiert und kontrolliert werden sollten, um die finanziellen Risiken zu vermeiden, die schließlich zum Scheitern des Zinnabkommens führten.

Keiner der bewerteten Verträge geht explizit auf Ressourceneffizienz ein, mit Ausnahme der bilateralen Ressourcenverträge Deutschlands mit Kasachstan, der Mongolei und Peru. Interessant ist, dass diese Abkommen darauf abzielen, die Ressourceneffizienz im Herkunftsland zu verbessern, anstatt Deutschland als das Land anzusprechen, das seinen Zugang zu Ressourcen verbessern möchte.

Die wenigen anderen Fälle, in denen Effizienz erwähnt wird, beziehen sich z.B. auf die effiziente Gewinnung, nicht aber auf Effizienz im Sinne eines sparsamen Umgangs mit der Ressource.

Davon abgesehen haben die Verträge Auswirkungen auf verschiedene Aspekte der Ressourceneffizienz: Eine Frage ist, ob Ressourceneffizienz darauf abzielt, die Ressource so lange wie möglich zu nutzen - anstatt gar nicht. Aus dieser Perspektive wäre ein Verbot der Ressourcennutzung zwar ressourcenschonend, aber nicht ressourceneffizient im engeren Sinne, da die Ressource möglicherweise überhaupt nicht genutzt wird. Das Auslaufen und Verbot von Quecksilber im Rahmen des Minamata-Übereinkommens ist ein Beispiel dafür, ebenso wie der (nicht explizite, aber notwendige) Ausstieg aus fossilen Brennstoffen im Rahmen des Pariser Abkommens. Ein mögliches normatives oder faktisches Verbot kann einen starken Anreiz bieten, die Ressourcen bis zum Inkrafttreten des Verbots effizienter zu nutzen, aber dieser Effekt ist nicht zwingend.

Ein anderer Aspekt ist die Frage, ob das Ziel darin besteht, Effizienz für eine bestimmte Ressource oder für eine bestimmte Tätigkeit zu verbessern, d.h. ihren gesamten Ressourcen-Fußabdruck zu verringern. Auch hier ist das Minamata-Übereinkommen ein Beispiel für die Behandlung einer bestimmten Ressource. Im Gegensatz dazu zielt die Tiefseebodenregelung darauf ab, einen verschwenderischen Abbau für (mineralischen) Ressourcen zu vermeiden, und das Basler Übereinkommen enthält eine nicht näher spezifizierte allgemeine Verpflichtung zur Minimierung jeglicher Art von Abfall.

Vielleicht mit Ausnahme der direkten Marktintervention im Zinnabkommensmodell gibt es keinen bestimmten Regelungsansatz, der für Ressourceneffizienz als irrelevant erscheint oder von vornherein außer Acht gelassen werden sollte. Die bestehenden Ansätze betreffen je nachdem sowohl den Anfang als auch das Ende der Wertschöpfungskette, eine bestimmte Ressource oder alle Ressourcen in einem Gebiet, einige verwenden spezifische Maßnahmen wie Handelsbeschränkungen oder Lizenzsysteme, während andere ein Ziel vorgeben und einem verfahrenstechnischen Ansatz folgen. Einige der Verträge wie das Minamata-Übereinkommen und das Pariser Abkommen sind relativ neu, und ihre Auswirkungen bleiben abzuwarten. Die Vielfalt der Ansätze bedeutet, dass politische Optionen zur Stärkung der Ressourceneffizienz nicht abstrakt, sondern im Zusammenhang des jeweiligen Abkommens zu bewerten sind.

Obwohl die Vertragsverpflichtungen potenziell mehr Auswirkungen auf die Ressourceneffizienz haben, zeigen sie im Großen und Ganzen ein Bild, das dem Gewohnheitsrecht und den sich noch herausbildenden Grundsätzen ähnelt: Das Umweltvölkerrecht befasst sich hauptsächlich mit Tätigkeiten mit direkten physischen Auswirkungen auf die Umwelt. Vielleicht mit Ausnahme von Abfall berührt es kaum Umweltfolgen, die durch ineffiziente Ressourcennutzung verursacht werden. Wo dies doch der Fall ist, sind die bestehenden Regeln hauptsächlich darauf ausgerichtet, die Verfügbarkeit von Ressourcen sicherzustellen oder Einnahmen zu erzielen.

Internationale politische Prozesse und rechtlich unverbindliche Mechanismen

In den letzten Jahren sind eine Reihe internationaler politischer Prozesse und rechtlich nicht bindender Mechanismen ("Instrumente") zur Förderung von Ressourceneffizienz entstanden. Das Agenda-Setting für RE ist deutlich vorangekommen.

Die Steuerungsmechanismen dieser Instrumente sind meist hochrangige politische Erklärungen mit strategischen Prioritäten und Leitlinien - d.h. unverbindliche Empfehlungen und gemeinsame Handlungsrahmen. In einigen Fällen werden diese mit einer kleinen Komponente zum Aufbau von Kapazitäten oder "Umsetzungsmitteln" für Entwicklungsländer kombiniert. Verschiedene Instrumente enthalten auch Elemente der Wissensverbreitung durch den Austausch bewährter Praktiken zwischen Ländern, Lernforen oder Pilotprojekte. Das Internationale Ressourcen-Panel bietet eine Grundlage für neue wissenschaftlicher Erkenntnisse, z.B. Bewertungen von Politikoptionen im Hinblick auf ihre Auswirkungen auf die Ressourceneffizienz, und deren Einbringung in die politische Diskussion. Es ist ein wertvoller Mechanismus, um ein gemeinsames Verständnis von Fragen zu RE, ihren

Hintergründen und möglichen Lösungen zu fördern. Ein relativ neuer Governance-Mechanismus ist "Governance durch Ziele", wie es von den SDGs verkörpert wird. Dieser Ansatz lässt den Ländern Spielraum, die Erreichung (quantifizierter) Ziele zu operationalisieren und die Zielerreichung zu überwachen, wobei dies in der Regel nicht mit Sanktionen kombiniert wird, wenn Ziele verfehlt werden. Ein interessanter Governance-Mechanismus sind die Nachhaltigkeitsstandards der Weltbank und der IFC für staatliche Kreditnehmer und Kunden aus dem Privatsektor. Diese Standards sind in dem Maße verbindlich, wie sie Teil der Kredit- und Unterstützungsbedingungen werden, auch wenn der Aufbau von Kapazitäten (aller Parteien), die Überwachung und die Durchsetzung nach wie vor Herausforderungen darstellen.

In den meisten Fällen richten sich die Instrumente an alle UN-Mitgliedsstaaten, wobei der Schwerpunkt implizit auf Entwicklungs- und Schwellenländern liegt, da die OECD-Länder etwas weiter in Richtung einer Politik der Ressourceneffizienz vorangeschritten sind. Eine Ausnahme bilden die SGDs, da sie sich explizit auch an Industrieländer richten, um deren Anstrengungen zu beschleunigen. Auch die OECD, die G7/8 und die G20 haben sich verpflichtet, die Ressourceneffizienz weiter zu fördern.

Die meisten der Instrumente beziehen sich auf die gesamte Wertschöpfungskette, d.h. sie spezifizieren keine bestimmten Segmente der Wertschöpfungskette (oder bestimmte Sektoren), in denen Ressourceneffizienz verbessert werden soll. Einige wenige Instrumente konzentrieren sich allerdings auf die Gewinnung, andere auf Abfall und die 3R. Die intermediären Segmente der Wertschöpfungskette werden selten explizit angesprochen.

Es lassen sich mindestens drei verschiedene Wirkungspfade unterscheiden: Einige Instrumente finanzieren direkt Projekte zur Steigerung der Ressourceneffizienz; andere finanzieren ressourcenverbrauchende Projekte, verlangen dabei jedoch eine gewisse Berücksichtigung von Ressourceneffizienz; die meisten Instrumente beeinflussen die Ressourceneffizienz indirekter durch die Definition von Ressourceneffizienzzielen (SDGs, 10YFP, UNEP GEI, OECD Green Growth Strategy usw.) oder durch die Anregung (und teilweise Finanzierung der Entwicklung) spezifischer Strategien zur Steigerung der Ressourceneffizienz (Kobe 3R-Aktionsplan).

Die Bewertung der Wirksamkeit der Instrumente ist schwierig, wenn es darum geht, nachzuweisen, dass sie die Regierungen dazu veranlasst haben, ihre Politik neu auszurichten, anzupassen oder zu ändern. Es gibt nur wenige eingehende Evaluierungen und Überprüfungen der (teilweise noch neuen) Instrumente, mit Ausnahme u.a. der UNEP Green Economy Initiative und des 3R-Aktionsplans der G8 von Kobe. Aufgrund offensichtlicher methodischer Schwierigkeiten lässt sich in keiner der vorliegenden Evaluationen nachweisen, dass internationale Initiativen den Ressourcenverbrauch auf Länderebene verändern. Auch die vorliegende Studie kann diese Analyse nicht leisten. Auf einer allgemeineren Ebene hat es allerdings den Anschein, dass es zwar eine Vielzahl von Politiken, Foren und Plattformen gibt, einige von ihnen jedoch nur eine kurze Lebensdauer und wenig Folgemaßnahmen haben. Die Kreditkonditionalitäten der Weltbankgruppe sind relativ starke Instrumente, da sie für Kreditnehmer und Kunden verbindlich sind. Sie betreffen jedoch nur Entwicklungsländer und entsprechende Akteure, was auch die Frage der Doppelmoral aufwirft. Auch ist unklar, inwieweit sich gerade die für Ressourceneffizienz relevanten Konditionalitäten tatsächlich auf die Projektkonzeption und -durchführung auswirken. Bei der Verwendung von Wirkungsindikatoren wie der Spezifität der Instrumente in Bezug auf ihr Engagement, ihr politisches Gewicht und ihre institutionelle Ausgestaltung und Substrukturen sind die meisten Instrumente relativ unspezifisch, haben nur eine mäßige politische Schlagkraft, verfügen oft über unbedeutende internationale Budgets und keine systematischen Überprüfungsmechanismen. Dies gilt für jene Instrumente, die Teil von UN-Programmen sind und für Strategiedokumente multilateraler Gruppierungen (OECD, G20, G8/7). UN-Initiativen, die von der Generalversammlung angenommen oder gebilligt wurden, haben tendenziell eine breitere Legitimationsbasis, aber ihre Überprüfungsmechanismen sind unterschiedlich streng. Die SDGs scheinen gegenwärtig das

Instrument mit den besten Voraussetzungen zu sein, um Veränderungen in der politischen Praxis herbeizuführen.

Die vorliegenden Analysen sind jedoch ernüchternd: Trotz politischer Bemühungen und wirtschaftlicher Innovationen der Vergangenheit, die Ressourceneffizienz fördern, überwiegen Rebound-Effekte und generisches Wirtschaftswachstum insgesamt die Effizienzgewinne. Dies deutet darauf hin, dass ein neues Kapitel diskutiert werden sollte: das der absoluten Reduktionen des Ressourcenverbrauchs (Ressourcensuffizienz). Hier hat der Agenda-Setting-Prozess auf internationaler Ebene noch kaum begonnen.

Nichtstaatliche Ansätze

Die Relevanz nichtstaatlicher Regierungsansätze für Ressourceneffizienz ist sehr unterschiedlich. Während einige nur indirekte Auswirkungen haben, wirken sich andere direkt auf die Ressourcennutzung aus. Berichtsstandards wie die GRI oder die KPIs für Environmental, Social and Governance könnten indirekte Auswirkungen haben, indem sie die Ressourcennutzung von Unternehmen transparent machen. Das Gleiche lässt sich für Lice-cycle assessments auf Produktebene sagen. Andere Standards verwenden Ziele, um eine direkte Wirkung zu erzielen. So wird z.B. die Anforderung unter EMAS, spezifische Ziele für den Ressourcenverbrauch festzulegen, Unternehmen dabei unterstützen, den Ressourcenverbrauch bei der Anwendung des Managementsystems zu reduzieren. Eine weitere Initiative, die spezifische Ziele hinsichtlich der Ressourceneffizienz vorsieht, ist die Zero Waste International Alliance. Sowohl Umweltzeichen vom Typ I als auch die GRS haben direkte Auswirkungen, indem sie bestimmte Aspekte der Ressourceneffizienz für bestimmte Produkte zertifizieren.

Was den institutionellen Rahmen anbelangt, so basieren die meisten Initiativen auf einem Multi-Stakeholder-Netzwerk und schließen Akteure aus der Wirtschaft, der Zivilgesellschaft oder anderen Institutionen wie Normsetzungsagenturen ein. Der Grad des Einflusses der Gruppen ist jedoch sehr unterschiedlich, wobei die Unternehmen in vielen Fällen der einflussreichste Stakeholder sind. In einigen Fällen spielen auch staatliche Akteure eine relevante Rolle bei der Unterstützung der Gründung sowie der Verbreitung der jeweiligen Initiative.

Die Adressaten der meisten analysierten Initiativen sind Unternehmen. Die Instrumente beziehen sich entweder auf ihre Prozesse und -management oder auf ihre Produkte und Dienstleistungen. Eine Ausnahme bildet das ZWIA, da es sich auch an Kommunen und die Zivilgesellschaft richtet.

Als Steuerungsmechanismus wenden alle Initiativen Informationsinstrumente an. Zusätzlich werden von einigen auch Instrumente des Capacity Building oder der Kooperation eingesetzt. Nahezu alle Initiativen haben Überprüfungsprozesse für ihre Standards eingerichtet. Im Falle der GRI oder des deutschen Umweltzeichens "Blauer Engel" handelt es sich dabei um stark formalisierte und standardisierte Mechanismen mit klar definierten Zeitrahmen und spezifischen Institutionen, die mit der Durchführung der Überprüfung beauftragt sind. In den meisten anderen Fällen sind die Überprüfungsprozesse eher informell.

Der Grad der Diffusion unterscheidet sich stark zwischen den Standards und Initiativen. Einigen Initiativen, wie der GRI, ist es gelungen, sich zu weltweit angewandten Standards zu entwickeln, die einen Maßstab setzen, auch wenn sie freiwilligen Charakter haben. Andere, wie die GRS oder GeSI, sind in ihrer geografischen oder sektoralen Anwendung und damit in ihren Auswirkungen begrenzt.

Übergreifende Bewertung

Die Bestandsaufnahme ergibt ein **gemischtes Bild**: Die jüngsten nicht rechtsverbindlichen Ansätze zeigen, dass Ressourceneffizienz auf die internationale politische Agenda gesetzt wurde. Die SDGs und die G20 sind unterschiedliche Prozesse, aber sowohl auf hoher Ebene als auch mit politischem Gewicht und Legitimität. Obwohl beide Prozesse in der Vergangenheit in einigen Fällen Probleme damit hatten, die politische Dynamik aufrechtzuerhalten und konkrete Ergebnisse zu erzielen, befinden sie sich im

Hinblick auf die Ressourceneffizienz in einem relativ frühen Stadium und könnten noch politisches Potenzial haben.

Dennoch gibt es praktisch keine verbindlichen Standards für Ressourceneffizienz. Das Völkerrecht und die sich herausbildenden Prinzipien und Konzepte befassen sich in den meisten Fällen nicht direkt mit Ressourceneffizienz in Bezug auf die pro Produktionseinheit eingesetzten Ressourcen. Es gibt einige allgemeine Hinweise auf Effizienz in bilateralen Ressourcenverträgen und im Meeresbodenregime, aber bisher konzentrierten sich diese darauf, die Gewinnung zu erleichtern und die Ressourcen zuzuteilen.

Ein Grund dafür könnte sein, dass es den Staaten bisher leichter fiel, sich auf Umweltverpflichtungen zu einigen, die traditionelle Umweltauswirkungen betreffen. Es gibt auch **konzeptionelle Schwierigkeiten**, bestehende Normen und Konzepte auf Umweltauswirkungen anzuwenden, die durch Ineffizienz verursacht werden. Der Zusammenhang zwischen Ressourcenineffizienz und Umweltauswirkungen ist weniger direkt als bei "normalen" Umweltauswirkungen und schwierig zu bestimmen. Ein weiterer Aspekt könnte sein, dass Ressourceneffizienz Umweltbelange in die Prozess- und Produktnormen und die Wettbewerbsfähigkeit einfließen lässt - ein Thema, das im internationalen Handelsrecht behandelt wird. Das WTO-System, auf das wir nicht speziell eingehen, hat Regeln für Prozess- und Produktstandards, die aber keine Ressourceneffizienz erfordern, sondern stattdessen festlegen, in welchem Umfang Staaten solche Standards setzen dürfen. Die Staaten könnten zurückhaltend sein, verbindliche Regeln in diesem Bereich in Betracht zu ziehen, um Probleme mit diesen Handelsregeln zu vermeiden. Ein weiteres Hindernis könnte darin bestehen, dass Ressourceneffizienzstandards, sofern sie nicht recht abstrakt bleiben, technische Anforderungen mit sich bringen würden, die sehr spezifisch für einzelne Produktionsprozesse sind und daher schwierig zu verhandeln und auf dem neuesten Stand zu halten wären.

Verbindliches internationales Recht setzt nur indirekt gewisse Anreize zur Verbesserung der Ressourceneffizienz. Die wichtigsten Anknüpfungspunkte in verbindlichen Instrumenten sind Aspekte des Ressourcenschutzes und Verträge über Abfälle. Sowohl die Ressourcenerhaltung als auch die Wiedergewinnung sind inhärente Bestandteile der Kreislaufwirtschaft von Abfällen. Regelungsansätze, die direkte Marktinterventionen vorsahen, wie etwa das Zinnabkommen, wurden aufgegeben. Indirekte Verknüpfungen des Völkergewohnheitsrechts zu Ressourceneffizienz und neu entstehende oder vorgeschlagene übergreifende Grundsätze sind schwer zu beurteilen, weil ihr rechtlicher Status, ihr normativer Inhalt oder beides oft unklar oder abstrakt ist.

In **politischen Prozessen und unverbindlichen Mechanismen** sind Empfehlungen der häufigste Ansatz, oft in Form von politischen Erklärungen auf hoher Ebene mit strategischen Prioritäten und Leitlinien, die oft von gemeinsamen Aktionsrahmen begleitet werden. Darüber hinaus gibt es mehrere einschlägige Programme internationaler Organisationen, das International Resource Panel als Schnittstelle zwischen Wissenschaft und Politik, und Kreditvergabestandards der Weltbankgruppe, die Ressourceneffizienz beinhalten. Viele der Instrumente sind relativ unspezifisch, haben nur einen mäßigen politischen Output sowie unbedeutende institutionelle Einbettung und internationale Budgets. Eine Ausnahme sind die SDGs, da sie Ressourceneffizienzziele und abstrakte Ziele in Verbindung mit einem politischen Überwachungsmechanismus festlegen. Zumindest derzeit haben sie auch politisches Gewicht und Dynamik. Der G20-Dialog könnte auch politisches Buy-in generieren.

Nicht-staatliche Governance-Ansätze umfassen hauptsächlich die Berichterstattung und andere Informations- und Managementinstrumente in Bezug auf Produkte und Produktionsprozesse. Ihre Lenkungswirkung beruht hauptsächlich auf informellen Marktanreizen. Produktzertifizierungssysteme können Kriterien beinhalten, die direkt mit der Ressourceneffizienz verbunden sind, wie Langlebigkeit oder Reparierbarkeit.

Aus **institutioneller Sicht** haben einige Institutionen das Potenzial, Ressourceneffizienz direkt oder indirekt zu behandeln. Die regelmäßige Tagung der Konferenz der Vertragsparteien mehrerer

multilateraler Umweltabkommen könnte Ressourceneffizienz auf ihre Tagesordnung setzen. Die Internationale Meeresbodenbehörde sieht ein striktes Abbau-Management von mineralischen Ressourcen im Tiefseeboden vor, das Anreize für eine effizientere Ressourcennutzung bieten kann. Die Umwelt- und Sozialstandards der Weltbank und die Leistungsstandards der IFC beinhalten Ressourceneffizienz in allgemeiner Form, mit einer Reihe von Vorbehalten wie technische und finanzielle Machbarkeit. Diese Standards stellen einen Sonderfall dar, da sie zwischen der finanzierenden Institution und den Empfängern verbindlich gemacht werden.

Obwohl auf den ersten Blick internationale, nicht bindende und nichtstaatliche Ansätze spezifischer sind als verbindliche, handelt es sich dabei meist um Berichterstattungs- und Managementinstrumente mit unterschiedlichem Grad an Spezifizität hinsichtlich der Ressourcennutzung. Selbst in diesem Bereich befassen sich nur wenige nichtstaatliche Standards speziell mit Ressourceneffizienz im Sinne einer tatsächlichen Quantifizierung einer zulässigen Materialmenge pro Output.

Es gibt keine klare Verbindung oder erkennbare bewusste Arbeitsteilung zwischen verbindlichen und nicht verbindlichen oder anderen Ansätzen. Anscheinend haben bisher weder unverbindliche politische Initiativen noch andere nichtstaatliche und nichtstaatliche Ansätze zur Ressourceneffizienz die Entwicklung verbindlicher Verpflichtungen vorangetrieben. Dies schließt jedoch nicht von vornherein aus, bestehende unverbindliche Ansätze zu nutzen, um entweder politischen Willen in dieser Hinsicht aufzubauen, Machbarkeit zu zeigen oder als Modell zu dienen.

Politikoptionen zur Stärkung der Ressourceneffizienz in internationaler Governance

Völkerrecht

Ausgehend von der Bewertung des bestehenden Völkerrechts schlagen wir mehrere Optionen vor, um Ressourceneffizienz stärker in rechtsverbindlichen Verpflichtungen auf internationaler Ebene zu verankern.

- Ein **Abkommen zur Ressourceneffizienz**? Zum jetzigen Zeitpunkt empfehlen wir nicht, einen eigenständigen völkerrechtlichen Vertrag zu RE anzustreben, auch wenn es sich lediglich um einen allgemeinen Rahmenvertrag handelt. Der politische Aufwand, der zum gegenwärtigen Zeitpunkt erforderlich wäre, um Unterstützung für völkerrechtliche Verpflichtungen in Bezug auf RE zu schaffen, erscheint beträchtlich. Obwohl Ressourceneffizienz ein weithin akzeptiertes Ziel ist, auch in den SGDs, ist es ein bedeutender Schritt von politischer Unterstützung zu einem rechtsverbindlichen Instrument.

  Mittel- bis langfristig: Eine Möglichkeit besteht darin, auf die Schaffung der politischen Voraussetzungen für die völkerrechtliche Verankerung von RE hinzuarbeiten. Die Diskussion im Rahmen internationaler Foren wie der G7-Allianz für Ressourceneffizienz, des G20-Dialogs über Ressourceneffizienz, der OECD usw. könnte nach und nach dazu gebracht werden, den gegenseitigen Nutzen eines internationalen RE-Vertrags, z.B. in Form eines allgemeinen Rahmenvertrags, zu prüfen. Neben einem eigenständigen Vertrag gibt es auch die Option eines neuen Instruments im Rahmen eines bestehenden Vertrags (z.B. ein "Protokoll").

  Möglicherweise langfristig: Unter Berücksichtigung, dass verbindliche Regeln kein Selbstzweck sind, könnte die Idee eines allgemeinen, nicht überreglementierenden Vertrags bestehende internationale politische Initiativen bündeln. Ein verbindliches Abkommen bedeutet idealerweise ein hohes Maß an langfristigem Engagement sowohl auf internationaler als auch auf nationaler Ebene. Im Hinblick auf die politische Durchführbarkeit ist anzumerken, dass ein Abkommen unterschiedliche Fragen auch unterschiedlich behandeln kann, etwa mehr oder weniger präskriptiv und präzise, und den Parteien einen gewissen Spielraum lassen kann, um politischen

Rückhalt und Umsetzung im Laufe der Zeit zu fördern. Da RE ein breites Spektrum an Ressourcen und unterschiedlichen Ansätzen umfasst, könnte es sinnvoll sein, für den Anfang eine Rahmenstruktur zu erwägen, die spätere Änderungen für bestimmte Ressourcen oder Themen vorsieht, z.B. in Anhängen oder Protokollen. Selbst wenn die rechtlichen Verpflichtungen als solche zunächst eher Rahmencharakter hätten, könnte ein Abkommen RE als Sachgebiet verankern und ein ständiges Forum schaffen, das sich schrittweise mit ihm befasst. Das Abkommen könnte Mandate für die weitere Arbeit und ständige Institutionen wie die übliche Vertragsstaatenkonferenz (COP) festlegen, die regelmäßig Beschlüsse zur Anleitung der Umsetzung durch die Vertragsparteien fasst. Um langfristig vorbereitet zu sein, stellen wir in Anhang 2 als Denkanstoß einen Umriss von möglichen Vertragsbestimmungen vor.

Einfluss auf RE: Ein Vertrag würde sich an Staaten (und die EU) wenden, die ihre Verpflichtungen in ihrer jeweiligen nationalen Gerichtsbarkeit umsetzen müssten. Je nach dem spezifischen Inhalt des Vertrags würde er übergreifend sein, mit allgemeinen Verpflichtungen, die im Laufe der Zeit in Anhängen für bestimmte Sektoren, Ressourcen usw. ausgearbeitet werden könnten.

- **Ein Abkommen zu Plastik als Testfall**. Anstelle eines Vertrags über Ressourceneffizienz könnte ein neuer Vertrag über ein enger gefasstes Thema wie Plastik als Testfall und Modell für eine eventuelle Verankerung von RE dienen.

  Beispielsweise könnte ein Vertrag über Kunststoffabfälle auf der politischen Aufmerksamkeit für dieses Thema aufbauen und Lücken in der bestehenden internationalen Governance schließen. Er könnte es ermöglichen, eine breitere Perspektive als Abfall und das Basler Übereinkommen einzunehmen und den gesamten Lebenszyklus von Plastik und Themen wie erweiterte Herstellerverantwortung aufzugreifen, die für Ressourceneffizienz allgemein wichtig sind. Es könnte eine Gelegenheit sein, internationale Governance zu einem spezifischen Thema zu erproben, für das es bereits eine breite politische Unterstützung gibt. Zum gegenwärtigen Zeitpunkt ist jedoch nicht klar, ob diese politische Aufmerksamkeit in die Bereitschaft überführt werden könnte, verbindliche Pflichten einzugehen.

- Das **Verursacherprinzip und das bestehende Gewohnheitsrecht im Sinne der Ressourceneffizienz interpretieren**. Langfristig könnte Deutschland darauf hinwirken, Gewohnheitsrecht zu schaffen oder so zu interpretieren, dass es Aspekte der Ressourceneffizienz erfasst. Beispielsweise könnte Deutschland eine erweiterte rechtliche Auslegung des weitgehend etablierten Verursacherprinzips entwickeln und unterstützen, nach der ineffiziente Ressourcennutzung als "umweltverschmutzend" qualifiziert würde und Akteure, die Ressourcen ineffizient nutzen, als "Verursacher" betrachtet würden, welche die durch die Ineffizienz verursachten Kosten tragen sollten. Es könnte auch erwogen werden, ob die Logik hinter Konzepten wie "safe operating space" und "planetarische Grenzen" in die Weiterentwicklung anderer bestehender Rechtsprinzipien und -regeln auf internationaler Ebene einfließen kann.

  Einfluss auf RE: Übergreifende allgemeine Verpflichtung der Staaten.

- **Pariser Abkommen zum Klimawandel**: Mittel- bis langfristig Ressourceneffizienz einbeziehen. Deutschland könnte unter dem Pariser Abkommen RE als Thema ansprechen und fördern. Die laufenden Klimaverhandlungen bieten dafür eine Reihe von Optionen, z.B. von einmaligen Veranstaltungen bis hin zu regelmäßigen Tagesordnungspunkten, und von einer Plattform für den Informationsaustausch bis hin zur Verankerung normativer Texte in den Beschlüssen der COP. In Bezug auf spezifische Fragen umfassen die Optionen unter anderem die Einbeziehung von RE in NDCs oder in Berichtsformaten.

  Einfluss auf RE: Potenziell alle mit dem Klimawandel zusammenhängenden Themen, abhängig von den Prioritäten und Möglichkeiten, die Deutschland im Klimaregime verfolgt.

Politikprozesse, Organisationen und nichtverbindliche Mechanismen

Wir identifizieren die folgenden Optionen:

- **G20-Dialog**: Ressourceneffizienz auf der Tagesordnung behalten und zu Empfehlungen und Maßnahmen weiterentwickeln. Dies könnte mittlere politische Anstrengungen erfordern, und es könnte für einige Mitglieder schwierig sein, diese Entwicklung mitzutragen.

  Kurzfristig, mittelfristig: G20-Dialog über RE aktiv weiter verfolgen und sicherstellen, dass er fortgesetzt wird und dass RE auf der G20-Agenda bleibt.

  Kurzfristig, mittelfristig: Prüfen, inwieweit die bestehende Arbeit im Rahmen der G7-Allianz für Ressourceneffizienz in die G20 einfließen und mit ihr koordiniert werden kann.

  Mittelfristig: Den G20-Dialog über RE auf konkretere Arbeiten und Ergebnisse ausrichten, z.B. durch die Festlegung von Zielen, Definitionen oder Maßnahmen.

  Einfluss auf RE: Festlegung politischer Ziele, Stärkung der Forschung und Verbesserung des Wissensstands, Förderung der Ressourceneffizienz in Produktion und Konsum.

- **G7**: Fortsetzung der G7-Allianz für Ressourceneffizienz und Abstimmung mit dem G20-Dialog.

  Mittelfristig: Deutschland sollte die Fortschritte bei der Bologna-Roadmap im Rahmen der G7 überprüfen und sie auf konkretere Pläne und Maßnahmen in Bezug auf RE ausrichten.

  Mittelfristig: Deutschland sollte Möglichkeiten zur Koordinierung des G20-Dialogs mit der G7-Allianz für Ressourceneffizienz verfolgen.

  Einfluss auf RE: Definition politischer Ziele, Stärkung der Forschung und Verbesserung des Wissensstands, Förderung der Ressourceneffizienz in Produktion und Konsum, Verbesserung der Politikkohärenz.

- **Follow-up IRP**: Definition und Einbringen eines Mandats für die weitere Arbeit.

  Kurz- und mittelfristig: Deutschland sollte die Legitimität der IRP als wissenschaftliches Unterstützungsgremium unterstützen und erhöhen. Wir empfehlen allerdings nicht, die institutionelle Struktur oder das Mandat des IRP zu ändern.

  Einfluss auf RE: Je nach spezifischem Mandat: Stärkung der Forschung und Verbesserung des Wissensstands, Förderung der Ressourceneffizienz in Produktion und Konsum; Förderung der Beratung zur Ressourceneffizienz für Unternehmen, Einsatz von Umweltmanagementsystemen, Integration der Ressourceneffizienz in die Normung.

- **IRP** soll das Potential der Politik auf internationaler Ebene für Ressourceneffizienz, einschließlich globaler Besteuerung, untersuchen.

  Die IRP könnte (z.B. von der G20 oder der OECD) mit einer Studie über mögliche künftige Strategien für Ressourceneffizienz auf internationaler Ebene beauftragt werden, einschließlich der möglichen Gestaltung und Auswirkungen eines globalen Systems zur Besteuerung von Ressourcen. Dies könnte ein erster Schritt hin zu künftigen ökonomischen Instrumenten sein, die Anreize für mehr RE von Ressourcen schaffen.

  Einfluss auf RE: Verbesserung der Wissensbasis; wirtschaftliche Instrumente/Anreize.

- **Berichtspflichten für Unternehmen** hinsichtlich der Ressourceneffizienz. Es gibt Möglichkeiten, RE-Berichtspflichten für Unternehmen auf nationaler Ebene zu fördern, z. B. im Hinblick auf die Umsetzung der EU-Richtlinie zur nichtfinanziellen Berichterstattung, was durch die Einführung

von Ressourceneffizienz in den deutschen "Nachhaltigkeitskodex" geschehen könnte. Auch könnten Forschungsarbeiten zu geeigneten (sektorspezifischen) Indikatoren in Auftrag gegeben werden.

Einfluss auf RE: Förderung der Ressourceneffizienz in der Produktion.

- **Förderung von Umweltmanagementsystemen**: Während der Ansatz, die Einführung von Umweltmanagementsystemen auf internationaler Ebene gesetzlich verbindlich vorzuschreiben, noch nicht relevant sein mag, könnten verschiedene Ansätze zur Förderung von EMAS auf nationaler und EU-Ebene verfolgt werden, z.B. die Verknüpfung mit dem öffentlichen Beschaffungswesen oder die obligatorische Einführung von EMAS für öffentliche Einrichtungen.

  Einfluss auf RE: Förderung der Ressourceneffizienz in der Produktion (Förderung des Einsatzes von Umweltmanagementsystemen)

- **UNEP**: Stärkung der National Cleaner Production Centres und des globalen Netzwerks für ressourceneffiziente und sauberere Produktion (RECPnet). Die Bundesregierung könnte zum einen die Programme von UNIDO und UNEP zu National Cleaner Production Centres und dem globalen Netzwerk für ressourceneffiziente und saubere Produktion unterstützen. Zweitens könnte sie sich für die Erweiterung der finanziellen Grundlagen der Programme einsetzen (einschließlich der Anzahl der Geber, z.B. mindestens alle G7-Länder). Unter anderem könnte Deutschland einen eigenen finanziellen Beitrag leisten. Übergeordnetes Ziel der Initiative ist es, dass NCPCs in weiteren Ländern eingerichtet werden können und dass bestehende NCPCs sich auf die regionalen Ebenen ausdehnen können.

  Einfluss auf RE: Beratung zur Ressourceneffizienz für Unternehmen fördern sowie die Entwicklung und Verbreitung ressourcen- und energieeffizienter Produktions- und Behandlungsverfahren unterstützen.

- **UNEP & UN Habitat** "Zero Waste Cities"-Preis (oder: Programm/Fonds). Die Bundesregierung könnte erwägen, im Rahmen ihrer Habitat-III-Nachfolgeaktivitäten die Einführung eines Preises für "Zero Waste Cities" vorzuschlagen.

  Einfluss auf RE: Die Initiative würde dazu beitragen, "die Ressourceneffizienz als Kriterium für den Einzelhandel und die Verbraucher zu stärken", "die Sammlung und das Recycling von Sperrmüll zu optimieren" und möglicherweise "die Ressourceneffizienz in das öffentliche Beschaffungswesen zu integrieren" (auf kommunaler Ebene).

- **Weltbank und IFC**: Stärkere Verankerung der Ressourceneffizienz in der Weltbank. Die Bundesregierung sollte sich mit Unterstützung der G7 bzw. G20 für die Stärkung der Ressourceneffizienz als Thema in den verschiedenen Abteilungen der Weltbank einsetzen. Dazu gehört (mittelfristig) die Förderung einer systematischen Überprüfung der Umsetzung und Wirksamkeit der Safeguards-Politik der Weltbank und der Leistungsstandards der IFC im Hinblick auf Ressourceneffizienz, die Ausweitung des Anwendungsbereichs der Safeguards von der Projektfinanzierung auf programmatische Kredite und die verstärkte Finanzierung von Geschäftsmodellen der Kreislaufwirtschaft im Rahmen der IFC.

  Einfluss auf RE: Entwicklung und Verbreitung ressourcen- und energieeffizienter Produktions- und Behandlungsprozesse; Förderung des Einsatzes von Umweltmanagementsystemen und der Innovation durch Einbeziehung der Ressourceneffizienz in das Produktdesign.

- **OECD: Überprüfung der Umsetzung der OECD-Ratsempfehlung** zur Ressourcenproduktivität von 2008. Die deutsche Regierung könnte die ausstehende Bewertung des Fortschritts der

Arbeiten im Zusammenhang mit der OECD-Ratsempfehlung zur Ressourcenproduktivität einfordern.

Einfluss auf RE: Die Empfehlung befasst sich mit dem Hebel "Verbesserung der Wissensbasis".

- **Gründung einer Internationalen Ressourcenagentur**. Deutschland könnte erwägen, die Gründung einer Internationalen Ressourcenagentur langfristig zu unterstützen. Die Gründung einer neuen Agentur würde allerdings erhebliche politische Anstrengungen erfordern.

  Einfluss auf RE: Je nach ihrem Mandat könnte die Gründung einer Internationalen Ressourcenagentur das Thema "Stärkung der Forschung und Verbesserung der wissenschaftlichen Basis; Wissenstransfer" stärken.

- **Definition von Zielen** auf mittlerer Ebene zur Ressourceneffizienz (z.B. im Rahmen der OECD, der G20 und einer möglichen Rahmenkonvention zur Ressourceneffizienz). Die Bundesregierung könnte eine internationale Debatte (in verschiedenen Foren) über die Definition von Zwischenzielen und Indikatoren zur Ressourceneffizienz anregen. Diese Ziele und Indikatoren wären sektor- und rohstoffspezifisch und könnten eine Brücke zu gesamtwirtschaftlichen Zielen und Indikatoren zur allgemeinen Ressourceneffizienz schlagen.

  Einfluss auf RE: Diese Option wäre ein "Meta"-Hebel für RE. Die Ziele können Maßnahmen zur Förderung der Ressourceneffizienz in Produktion und Konsum sowie zur Förderung einer Kreislaufwirtschaft anregen. Die Definition von Zielen kann auch das öffentliche Bewusstsein stärken.

- **Freiwillige Leitprinzipien** für Länder und Unternehmen zur Stärkung der Ressourceneffizienz: Freiwillige Leitlinien könnten eine Alternative zu einem verbindlichen Abkommen zu RE sein. Solche Richtlinien könnten sich sowohl an Staaten als auch an den privaten Sektor richten und die Grundlage für weitere rechtliche Entwicklungen bilden.

  Einfluss auf RE: potenziell alle in ProgRess angesprochenen Hebel.

- **"2% Initiative für Ressourceneffizienz"** (z.B. UNEA, inkl. GEF-Finanzierung). Die Bundesregierung könnte eine internationale Initiative fördern, in der sich die Länder freiwillig verpflichten, die gesamtwirtschaftliche Ressourceneffizienz um einen bestimmten Prozentsatz zu erhöhen.

  Einfluss auf RE: Der übergreifende Ansatzpunkt ist "Ziel-/Zielsetzung", die verschiedene Arten konkreter RE-fördernder Maßnahmen anregen kann.

- **Resolution zur erweiterten Herstellerverantwortung und zum Ökodesign** (z.B. als UNEA-Resolution). Die Bundesregierung könnte eine internationale Koalition (z.B. im Rahmen der G20) zusammenbringen, um den Prozess für eine internationale (z.B. UNEA-) Resolution zur erweiterten Herstellerverantwortung und zum Ökodesign einzuleiten. Eine solche Resolution könnte die Industrieländer motivieren, ihre EPR-Systeme zu aktualisieren und ehrgeiziger zu gestalten, und das Süd-Süd-Lernen unterstützen, um EPR-Systeme im globalen Süden zu erweitern und in einigen Fällen zu etablieren.

  Einfluss auf RE: Die Resolution würde den Ansatzpunkt "Stärkung der Herstellerverantwortung" ansprechen, um eine Kreislaufwirtschaft zu fördern.

- **Schaffung eines internationalen (öffentlich-privaten) Recycling-Fonds**. Die deutsche Regierung könnte die Schaffung eines internationalen Recycling-Fonds in Erwägung ziehen. Er würde wirtschaftliche Anreize bieten (z.B. vordefinierte Prämienzahlungen für vordefinierte

Mengen von solide recycleten Abfällen), um umweltgerechtes Recycling in Entwicklungsländern zu fördern.

Einfluss auf RE: Der Ansatzpunkt wäre "Stärkung des Recyclings" sowie "Optimierung der Sammlung und Verwertung von Sperrmüll", wobei der Schwerpunkt auf den Entwicklungsländern liegt.

- **Ländergestützte ressourceneffiziente Beschaffungsinitiative** (z.B. OECD-Initiative). Die Bundesregierung könnte eine ländergestützte Initiative für nachhaltige Beschaffung initiieren, in der sich die Regierungen dazu verpflichten, den Anteil ressourceneffizienter Produkte und Dienstleistungen in der öffentlichen Beschaffung zu erhöhen.

  Einfluss auf RE: Diese Option betrifft den Ansatzpunkt "Integration von Ressourceneffizienz in die öffentliche Beschaffung".

- **G7-Initiative** "Goldener Anreiz" zur internationalen Förderung des ökologischen Produktdesigns. Die Bundesregierung könnte die Schaffung eines "Goldenen Anreizes"-Initiative zur internationalen Förderung der ökologischen Produktgestaltung in ausgewählten Produktgruppen fördern. Dabei wäre zu prüfen, ob ein "Goldener Anreiz"-Programm zur Ressourceneffizienz nach den internationalen (WTO-)Regeln für staatliche Beihilfen förderfähig wäre.

  Einfluss auf RE: Der Ansatzpunkt wäre "Innovation durch Einbeziehung der Ressourceneffizienz in das Produktdesign".

Nichtstaatliche und andere Governanceansätze

- **Globales Multistakeholder-Forum** zur Ressourceneffizienz: Die Bundesregierung könnte die Einrichtung eines Globalen Multistakeholder-Forums zur Ressourceneffizienz fördern. In dem Forum würden verschiedene Industrien und Stakeholder (in materialspezifischen Unterforen) zusammenarbeiten, um ökologisch und sozial nachhaltige Prozesse zur Schließung von Stoffströmen (Sekundärstoff-Lieferketten) zu entwickeln. Das Forum könnte mit Akteuren der Industrie und der Zivilgesellschaft verbunden werden, die in den G20-Prozess und seinen Dialog über Ressourceneffizienz eingebunden sind.

  Einfluss auf RE: Bereitstellung nachhaltiger Rohstoffe, Ressourceneffizienz in der Produktion, Ressourceneffizienz im Konsum, Kreislaufwirtschaft.

1 Introduction

1.1 Background

Resource protection and resource efficiency are an ecological, economic and social necessity. Many resources are limited and under pressure from the rising world population, production methods, consumer behaviour and the high per capita resource consumption. Using more and more resources will exceed the limits of the earth's ecological carrying capacity in the foreseeable future. This development requires appropriate and effective measures. At the same time, a consistent resource efficiency policy and reduction of resource consumption can reduce the socio-economic and ecological impacts of the extraction and utilization of raw materials, as well as the generation of waste. Resource efficiency is now on the international agenda, for example at the Rio + 20 Conference 2012 and the G8 and G7 group of states. Moreover, the G20 group of states decided at their meeting in Hamburg (Germany) in July 2017 to launch a G20 Resource Efficiency Dialogue in order to "exchange good practices and national experiences to improve the efficiency and sustainability of natural resource use across the entire life cycle, and to promote sustainable consumption and production patterns".[3] The 2015 sustainable development goals (SDGs) of the United Nations also aim at progressively improving, through 2030, global resource efficiency and at decoupling economic growth from environmental degradation and resource consumption. However, at present there are no salient international treaties or institutions that channel and focus the political debate, particularly with regard to abiotic raw materials. In its current `Resource Efficiency Programme III´, the German Federal Government commits to the goal of anchoring resource efficiency more strongly in international treaties, processes and institutions, and to examine options for action. In the long term, the Federal Government intends to pave the way for an international treaty on protecting abiotic natural resources and increasing resource efficiency.[4]

1.2 Objectives

The research project's objective is to provide a legal and political science perspective to the Federal Government's stated intention to anchor the protection of resources more strongly at the international level. It analyses how public international law and other international governance mechanisms could be used more effectively to increase resource efficiency and reduce resource consumption along the value chain.

The study looks at abiotic raw materials (metals respectively ores, other mineral raw materials, fossil raw materials) and their utilisation, processing or other use. The study aims at elaborating policy options and recommendations to the Federal Government on how international resource efficiency governance and international law could be shaped towards increased resource efficiency and less resource consumption.

Resource efficiency may be defined as the relation of a certain use/result to the deployment of the natural resources necessary to achieve this use/result.[5] Ultimately, it can be an important step towards the wider objective of consuming less resources. The study therefore addresses resource efficiency as one strategy for the relative or absolute reduction of resource consumption.[6]

[3] G20 Leader´s Declaration, Shaping an interconnected world, Hamburg, 7/8 July 2017, at 12 and annex thereto, available at https://www.g20.org/gipfeldokumente/G20-leaders-declaration.pdf. URLs provided within this document were last accessed on 31 March 2019.

[4] Bundesregierung (2020), at 43.

[5] G20 Leader´s Declaration, Shaping an interconnected world, Hamburg, 7/8 July 2017, at 12.

[6] See UBA (2012), Glossar zum Ressourcenschutz, at 23; BMUB (2016), at 150.

The scope of this study focuses on abiotic resources, i.e. resources that do not originate from living beings (biotic resources) except if transformed into fossil resources. This comprises in particular metals, sand, gravel, potassium salts, quartz sand, and fossil raw materials.[7]

1.3 Approach and Methodology

1.3.1 General approach and methodology

The study has three main parts:

- Stocktake and assessment of existing international law and of non-legal and certain non-governmental instruments and processes related to resource efficiency of abiotic raw materials
- Assessment of governance proposals in academic literature
- Specific policy options and recommendations.

For the stocktake and assessment of existing international treaty law, we apply the following approach and set of assessment criteria to each instrument:

- Summary
  - Results of the analysis in a nutshell, with a focus on the relevance of the treaty for resource efficiency
- Overview
  - Form and legal status
  - Objectives
  - Territorial scope
  - Resources covered
    - Are abiotic resources covered?
  - Steps of the value chain covered
  - Type of steering mechanisms
    - Regulatory, planning, information tools etc.
- Content
  - Relevant obligations for parties
    - Description and analysis of the main obligations of the treaty in general
    - Do these obligations address or otherwise have effects on resource efficiency?
- Institutions, review and decision-making
  - Institutions
  - Evaluation and review
  - Reporting
  - Compliance procedures, remedies and dispute settlement procedures
  - Stakeholder and public involvement
- Assessment
  - Coherence with other international treaties and policies
    - Relationship to other treaties addressing similar issues etc.
  - Political weight of the instruments
    - Number of parties, absence of major players etc.
  - Effectiveness
    - How does the treaty work in practice? Is it enforced?
    - How effective are the provisions relevant for resource efficiency?
  - Political opportunities and good practice examples
    - Are there political windows of opportunity to address resource efficiency (e.g. in current COP discussions)?

[7] See UBA (2012), Glossar zum Ressourcenschutz, at 27.

- Are there elements in the treaty which can be considered "good practice" in the sense that they might be relevant for the development of policy options and recommendations (mainly because of their effects on resource efficiency, but also if there are particularly innovative in general)

For ease of reference, references to "states" in this study also include the EU unless otherwise stated.[8]

In addition to the summary, a table at the beginning of each treaty gives an overview over the main results:

Table #: ### Convention (in force since ###)

Key aspects	Summary
Form and legal status	
Objectives	
Parties	
Territorial scope	
Resources covered	
Stage of the value chain	
Steering mechanism	
Political weight	
Relevance for RE	

Source: Ecologic Institute

The criteria covered by the table correspond to the criteria in the text, except for the parties which are mentioned separately from the form and legal status, and the criterion relevance for resource efficiency (RE), which highlights the issue of whether the treaty in question is relevant for resource efficiency or resource conservation. In addition to text description, both aspects of the criterion "relevance" are assessed by the following qualitative scale:

+++	high
++	medium
+	low
0	no relevance

It has to be noted that "relevance for RE" does not only address whether a particular treaty furthers resource efficiency or resource conservation in some way. It also covers whether a particular treaty impedes resource efficiency or resource conservation.

This approach and set of criteria is also used for the stocktaking and assessment of non-legal and certain non-governmental instruments and processes related to resource efficiency of abiotic raw materials, albeit with modifications where necessary.

[8] Following the entry into force of the Treaty of Lisbon, cf. Articles 1, 3(2) and 47 Treaty of European Union (TEU), 216 Treaty on the Functioning of the Union (TFEU). According to Article 1 TEU, the EU replaced and succeeded the European Community (EC), which had entered into treaties prior to the Treaty of Lisbon.

For the stocktaking and assessment of principles of international law we use a simplified approach containing the following criteria:

- Development and content
- Status
- Applicability to abiotic resources and resource efficiency
- Assessment
- Summary

1.3.2 Selection of instruments for the stocktake

Based on the project's scope and available resources, the project pre-selected a number of treaties, principles, concepts and non-binding instruments for analysis. The treaties and principles of international law to be analysed were chosen based on a presumptive screening of their potential relevance for resource efficiency or reduction of resource consumption. They also represent different governance approaches: For example, the UNCLOS´provisions on the deep seabed are considered to be "the most developed international governance regime or regulatory framework for mineral resources activities".[9]The London Protocol addresses waste by prohibiting dumping at sea. Some instruments directly address relevant resources, e.g. the Common Fund for Commodities, the Tin Agreement, the International Study Groups and bilateral resource agreements. The Minamata Convention regulates one particular resource, including a specific provision on artisanal and small-scale mining. Some treaties address cross-cutting issues but have a potentially high indirect impact on resource efficiency/consumption reduction. This is notably the case for the Paris Agreement on Climate Change, since its objective to keep the increase in global temperature well below 2°C will arguably require a large-scale reduction of fossil fuel consumption. Treaties such as the Stockholm Convention and the Montreal Protocol regulate substances and productions processes which could indirectly impact resource efficiency. The Montreal Protocol is interesting also because it created an influential model for environmental treaties and directly addressed production processes. Some treaties were not selected because they were considered more relevant for a parallel research project for the Federal Environment Agency on the international governance of the extraction of raw materials.[10] This is notably the case for the WTO and bilateral investment agreements.

In addition to binding instruments and obligations, a set of non-legal and non-governmental instruments and processes aimed at enhancing the resource efficiency of abiotic raw materials were screened and assessed against the following criteria:

- Steering mechanism: The selection of instruments and processes should cover approaches using different steering mechanisms. Among others, the selected approaches should include the setting of goals or standards (i.e., go beyond the international exchange of best practice or provision of learning fora);
- Content: There should be an explicit focus on instruments addressing the efficiency of (abiotic) resources, ideally covering different segments of society and the economy – e.g., resource efficiency in the public sector (procurement, construction etc.), in cities, in different industries, in different segments of the value chain and related to different (abiotic) resources;
- Implementation and potential impact: The selected instruments should ideally be implemented sufficiently long to be able to find data on their effectiveness; they should

[9] Dalupan (2004), at 10.

[10] Bodle (2020) et al., International Governance for Environmentally Sound Supply of Raw Materials – Policy Options and Recommendations, UBA Text 31/2020.

have some dynamic and political weight (respecitvely, weigh in the business community) and a potential for sustainability impact.

Based on the brief assessment, 13 non-legal and nine non-governmental policies and processes were selected in coordination with the Federal Environment Agency.

1.3.3 Developing options

The section on developing options for improving governance begins with an assessment of governance proposals in academic literature, followed by our suggested specific policy options and recommendations. We developed a standardised approach focussing on few overarching criteria:

For the existing proposals:

- Description of the proposal
- Assessment (including considerations such as the level of detail of the proposal, the potential effectiveness and political feasibility, the time frame, level of political effort and costs needed for the realisation etc.)
- Levers for resource efficiency, based on the German Environment Ministry's Resource Efficiency Programme - ProgRess II.[11]

For our own suggested options and recommendations:

- Presentation of the recommendations in a box
- Description of the recommendation (including considerations such as the added value and potential impacts of the recommendation, the time frame and level of political effort needed for the realisation of the recommendation, its political feasibility etc.)
- Levers for resource efficiency according to ProgRess II.

[11] See the list of levers for resource efficiency in Section 4.1 Annex 1.

2 Stocktake and analysis of barriers

This section takes stock of selected instruments of existing international law as well as of non-binding and certain non-governmental instruments and processes related to resource efficiency of abiotic raw materials. It provides the analytical basis for the recommendations in Section 3.2.

The stocktake is based on a broad understanding of international governance which includes binding as well as non-binding steering mechanisms. This includes primarily the three traditional sources of international law according to article 38 of the the ICJ statute: treaties, customary law and general principles. of law. In addition, other elements of the international legal framework are not legally binding but nonetheless influence or provide guidance to the conduct of states. We include non-binding political steering mechanisms as well as global mechanisms that do not originate from state authority but have been been picked up by public regulation or have similar steering effects. We analyse and assess whether and how these mechanisms contribute to increasing resource efficiency and decreasing resource consumption at the international level, and where there could room and political opportunites for improvement. This includes the whole value chain, except environmental and social standards at the extraction stage, which are addressed in a parallel research project.

2.1 The existing legal framework: Treaty law and customary law relevant to resource efficiency

The first part of the stocktake includes binding international law. Based on the traditional sources listed in Article 38 of the Statue of the International Court of Justice, this includes treaties, customary law, and general principles of law.

The analysis also includes aspects that are specific to international law. International law is created differently from national law and has different enforcement mechanisms. Rules are agreed between peers and treaties apply only to those States that are Party to them. In contrast, customary law usually applies to all states regardless of whether they are a Party to, and bound by, a particular treaty.[12] In addition, there is a range of non-binding mechanisms that may in practice have stronger political force than binding rules and sometimes be more strictly complied with. For instance, treaty regimes with permanent institutions frequently adopt decisions which are usually not binding in the strict legal sense but are in practice treated and complied with by the parties as the agreed rules for implementating the treaty. Assessing this field of such therefore also includes political aspects and practical experience.

2.1.1 Customary law and general principles of law

2.1.1.1 Relevance in general and use of terms

In addition to treaties, customary law is s source of international law binding upon states. It derives from “evidence of a general practice accepted as law" (Art. 38 ICJ Statute). In order to establish a norm of customary law, it has to be shown that there is sufficient state practice adhering to that rule, and that states accept it as legally binding. The third main source of international law according to the ICJ statute are “general principles of law recognised by civilized nations”, which generally speaking means norms that are so widely accepted in the world’s national legal systems that they also bind states in international law. An assessment of these sources involves several problems that have to be taken into account:

[12] Except for so-called “persistent objectors”.

First, there is no single or authorative list of customary law - perhaps with the exception of ICJ judgments. Second, what constitutes sufficient state practice and how acceptance as law becomes manifest is itself subject to debate. Third, it can take a long period of time, sometimes years or decades, for a concept or proposed norm to evolve into customary law. Fourth, a norm may be enshrined in treaties whilst at the same time evolve into or exist as customary law. In some cases, decisions by the ICJ have ruled that certain norms are customary law. But in many cases the legal status of many proposed rules or concepts is not clear and subject to debate. States, stakeholders or academics may argue that a norm is already customary law, while others may argue that the existing state practice is not sufficient or that there is no conclusive evidence that states, even if they adhere to it in practice, accept to be *legally bound*.

Another important issue relates to terminology and the *content* of norms, in particular those of customary law. Some concepts and norms are labeled or invoked as "principles", e.g. the "precautionary principle". First, this terminology is easy to confuse with, but different from, the "general principles of law recognised by civilized nations", i.e. the third main source of international law. Second, in legal theory, some describe the concept of "principles" as a category of norms which is distinct from "rules". According to this abstract distinction, a "rule" is either complied with or not, whereas a "principle" can be complied with to different degrees.[13] Others use three categories: concepts , principles and rules, in orer to denote different degrees of abstraction.[14] However, neither terminology nor international practice in this regard are uniform or agreed.[15] International documents and statements do not usually make it clear whether they attach a distinct legal meaning to the term "principle". Treaty provisions that are labeled as "principles" show that the term is relevant in practice but provide no indication as to whether their legal nature is supposed to be different from other provisions.[16] The ICJ has used the term "*principle* of prevention" to describe "a customary *rule*", and states have referred to the prohibition of the use of force, which clearly qualifies as a binary "rule", as a "principle".[17] This shows that international legal practice does not necessarily follow the terminology or categorical distinction proposed in legal theory. In addition, there is no universal legal understanding of what a "principle" is across different legal orders.[18] Third, the group of identifiable international environmental law principles is legally ambiguous and inconsistent.[19]

For the purpose of this study, we use the terms "principle" and "concept" for ease of reference and without prejudice to the legal status, content, or consequence of the concept in question. We distinguish two aspects regardless of their denomination: (1) The concept's legal status: Is it customary law according to the established criteria set out above? This question applies regardless of whether a concept is labeled a "principle". The status of several concepts that are discussed in international environmental law is unclear or disputed. Some may already have the legal status of binding customary law, others might be emerging customary rules or mere proposals. (2) What is the actual or proposed legal content and consequence of the concept? Is it clear what states are supposed

[13] Czarnecki (2008) at 116 fn. 490. On the theoretical underpinning of the legal concept of "principles" see Rickels et al (2011) at 102.

[14] Dupuy and Viñuales (2015) at 52.

[15] See Scotford (2017) at 76-84. For instance, the titles of two established textbooks on international law are "*Principles* of international law" and "Principles of international environmental law" although they of course they also address rules in the traditional sense; cf. Crawford (2012), Sands and Peel (2012).

[16] E.g. Art. 3 UNFCCC; Art. 3 Protocol on Environmental Protection to the Antarctic Treaty.

[17] *Pulp Mills on the River Uruguay* (Argentina v. Uruguay), Merits, Judgement, I.C.J. Reports 2010, 83, para. 101; *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua),* ICJ judgment of 12.12.2015, para 4, available at http://www.icj-cij.org/en/decisions. Emphasis added.

[18] Scotford (2017) at 59.

[19] Scortford (2017) at 76.

to do, or how to apply the concept in terms or precisions and prescripitveness?[20] Some concepts may be fairly general and leave ample discretion to states as to the required conduct.

Based on a pre-selection similar to the treaties, a number of potentially relevant concepts were included in this section even if there is no consensus about they are customary law or whether their precise content and proposed or intended legal effect is clear. Customary rules and general concepts remain relevant to understanding the underpinnings and the limitations of the international law on natural resources.[21] But it is important to not read a desired legal status or meaning into a concept when there is insufficient state practice to support it.

2.1.1.2 Permanent sovereignty over natural resources

Development and Content

The principle of permanent sovereignty over natural resources developed after 1945, mainly as response of newly independent developing states to the problem of foreign ownership of their mineral resources.[22] It is expressed and elaborated in several resolutions of the UN General Assembly[23], notably resolution 1803[24], the Declaration on the Establishment of a New International Economic Order[25] and the Charter of Economic Rights and Duties of States[26]. According to the last resolution, "Every state has and shall freely exercise full permanent sovereignty including possession, use and disposal, over all its natural resources" (Art. 2). It determines that sovereignty over territory includes the exclusive right to decide whether and how to access and exploit its natural resources. Other states, e.g. such with no resources of their own, have no right to access them. The principle of permanent sovereignty over natural resources is to be distinguished from other norms which may restrict this sovereignty, such as the principle of common heritage of mankind and the principle of common concern of humankind.[27]

The principle of permanent sovereignty over natural resources has influenced international negotiations[28] and has been referred to in international environmental agreements and other instruments, for example in the Preamble of the Basel Convention[29] or in the Biodiversity Convention[30], and in Principle 21 of the Stockholm Declaration[31] and Principle 2 of the Rio Declaration.[32] However, the principle has been not only confirmed but also qualified by these treaties and other rules of customary international law concerning conservation of natural resources and environmental protection. Resolution 1803 already states that the right "must be exercised in the interest of their national development and the well-being of the people of the state concerned".

[20] Cf. Bodle and Oberthür (2017) at 91.

[21] Dupuy and Viñuales (2015) at 86; Birnie et al (2009) at 190.

[22] Birnie et al (2009) at 191; Dupuy and Viñuales (2015) at 6-7.

[23] See the list in Ruzza (2011), at 86.

[24] "Permanent Sovereignty over Natural Resources", 14 December 1962, UN Doc. A/RES/1803/XVII.

[25] "Declaration on the Establishment of a New International Economic Order", 1 May 1974, UN Doc. A/RES/3201/S-VI.

[26] "Charter of Economic Rights and Duties of States", 12 December 1974, UN Doc. A/RES/3281/XXIX.

[27] Schrijver (1997) at 228; Tuerk (2010), at 157–175; Hey (2016), at 63.

[28] Morgera (2006), at 96.

[29] Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 22 March 1989, in force 5 May 1992, 28 *International Legal Materials* (1989), 649.

[30] Art. 15 (1) of the Convention on Biological Diversity (CBD), 5 June 1992, in force 29 December 1993, *United Nations, Treaty Series*, vol. 1760, 79.

[31] "Declaration of the United Nations Conference on the Human Environment", Stockholm, 16 June 1972, UN Doc. A/CONF 48/14/Rev.1, at 2 ff.

[32] "Rio Declaration on Environment and Development", Rio de Janeiro, 13 June 1992, UN Doc. A/CONF. 151/26. Rev. 1.

Subsequent treaty and customary rules show that state sovereignty over its resources is not absolute and must be exercised responsibly, i.e. within the limits of e.g. environmental or investment law.[33] Still, the principle of permanent sovereignty over natural resources remains "the cornerstone of the rights and duties of states over natural resources within their own territory".[34] It does not address resources outside areas of national jurisdiction.

Status

The principle of permanent sovereignty over natural resources has been recognised by the International Court of Justice in the *Armed Activities in Congo case* as a principle of customary international law.[35]

Applicability to abiotic resources and resource efficiency

The principle is applicable to all natural resources, i.e. living and non-renewable resources such as minerals.[36] Thus, it also covers abiotic resources. Resource efficiency is not directly addressed, but could become relevant indirectly (see below under assessment).

Assessment

The principle of permanent sovereignty over natural resources originated over the issue of "who" has the right to access natural resources. Its function is to preclude claims by other states, including those without the resource in question, for access to that resource. The sovereign right also includes the right *not to* exploit resources. With regard to "how" states may exploit, the principle includes use and disposal. It could therefore *prima facie* be a barrier to resource efficiency, as it does not seem to require efficiency or preclude a state from using its own resources inefficiently. This appears to be in line with the right of peoples to freely dispose of their natural resources for their own ends, as enshrined in the two main global human rights instruments.[37]

Yet the principle is not absolute. Its exercise was qualified as early as in its first formulation. In addition, the right has to be exercised in accordance with other international obligations. For instance, international economic law can address ownership and export of that resource and therefore influence international supply, which is one of the incentives for efficiency. Other requirements could be posed by international environmental law. Although some aspects of it, for instance those related to sustainability, could direct states towards using resources more efficiently, but so far none has emerged as a clear requirement for efficiency.

Summary

The principle of permanent sovereignty over natural resources is the starting point for the rights and duties of states over natural resources within their own territory. It covers abiotic resources, but does not directly address resource efficiency. Its wording appears to be a barrier to resource efficiency,

[33] See the analysis of particular instruments, infra; Birnie et al (2009) at 192; see also Sands (2003) at 237.

[34] Birnie et al (2009) at 192. See also Sanden et al (2012) at 35.

[35] ICJ, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Uganda)*, Judgement, ICJ Rep. 2005, at 168, para. 244.. However, the court held that the principle did not apply to the specific situation in which an occupying power loots, plunders and exploits natural resources in the occupied territory, *ibid*. According to Armstrong (2015) at 131, "the normative justification for that doctrine is far from clear". See also Dupuy and Viñuales (2015) at 7 with further references to international arbitral awards.

[36] Birnie et al (2009) at 191.

[37] Art. 1(2) of the International Covenant on Civil and Political Rights (ICCPR), 12 December 1966, in force since 23 March 1976, UNTS, vol. 999,at 171, and the International Covenant on Economic, Social and Cultural Rights (ICESCR), 16 December 1966, in force since 3 January 1976, UNTS, vol. 993, at 3.

because it can be read as including the right to use one's own resources inefficiently. It also means that other states have no right to access the resources in the first place, unless such access is granted e.g. by international economic law. However, a state´s sovereignty over its resources is not absolute and subject to other obligations, which include established environmental norms and would also include obligations to use resources efficiently should such an obligation exist or emerge.

2.1.1.3 Equitable utilisation of shared natural resources

There are several concepts addressing international interest in the protection of areas that are not exclusively under the national jurisdiction of one state. For instance, the term "common goods" may be used as an overarching general term for such concepts. However, there is no single concept of common goods that is commonly accepted as a separate legal term or concept.[38] In practice, a variety of terms are used. In this and the subsequent sections, four concepts will be briefly described, namely the principles of "equitable utilisation of shared resources", "common areas", "common heritage of mankind", and "common concern of humankind".

Development and content

The principle of shared natural resources applies to resources which do neither fall within the exclusive control of one state nor belong to areas beyond national jurisdiction. This intermediate category stands for "a limited form of community interest, usually involving a small group of states in geographical contiguity, which exercise shared rights over the resources in question".[39] International watercourses are the oldest and by far the most important examples of shared natural resources.[40] Other important examples include migratory species and mineral deposits (for the latter see below).[41]

Beyond its application to specific areas, there have been attempts to generalise the principle of equitable utilisation of shared natural resources. Based on earlier UN General Assembly resolutions on the subject[42], the Governing Council of UNEP adopted in 1978 "Draft Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States".[43] According to Principle 1 (Duty to Co-operate)

> "it is necessary for States to cooperate in the field of the environment concerning the conservation and harmonious utilization of natural resources shared by two or more States. Accordingly, it is necessary that consistent with the concept of equitable utilization of shared natural resources, States cooperate with a view to controlling, preventing, reducing or eliminating adverse environmental effects which may result from the utilization of such resources. Such co-operation is to take place on an equal footing and taking into account the sovereignty, rights, and interests of the states concerned."

The subsequent principles are variations and developments of the principle of equitable utilisation of shared natural resources, albeit with a focus on environmental aspects.[44]

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[38] See Durner (2001), at 18 and at 17 footnote 2, for the variety of terms used in practice.

[39] Birnie et al (2009) at 192.

[40] Durner (2001) at 75.

[41] See Durner (2001) at 75 et seq.; Birnie et al (2009) at 192, with further examples.

[42] See UN Doc. A/RES/3129/XXVIII and especially Art. 3 of the "Charter of Economic Rights and Duties of States", 12 December 1974, UN Doc. A/RES/3281/XXIX: "In the exploitation of natural resources shared by two or more countries, each state must cooperate on the basis of a system of information and prior consultations in order to achieve optimum use of such resources without causing damage to the legitimate interests of others."

[43] ILM 17 (1978), 1091.

[44] Durner (2001) at 114-115.

According to Durner[45], the principle of equitable utilisation of shared natural resources has also been incorporated in a general way into the 1994 Convention against Desertification.[46] According to Art. 11 UNCCD, subregional action programmes "shall establish [...] mechanisms for the management of shared natural resources", and priority areas for such programmes shall focus on "joint programmes for the sustainable management of transboundary natural resources through bilateral and multilateral mechanisms".

As shown by these examples, the principle of equitable utilisation of shared natural resources aims at ensuring a balance of interests between the parties concerned.[47] As with other general norms and principles, the content that can be regarded as widely accepted is rather vague. First, it limits the principle of permanent sovereignty over natural resources because other states also have the right to equitably use the shared resource.[48] Second, it is basically procedural, the most important component being the obligation to cooperate.[49] More specific procedural duties can only be discerned for certain areas, notably for international watercourses[50], but not be deduced generally.[51] Together, the material right of all states that share the resource, and the procedural component arguably limit any one state's right to simply insist on its own position.[52] In practice, the principle has often been made operative through bilateral treaties.[53]

Status

As recognised by the International Court of Justice in the Gabcikovo-Nagymaros Project case[54], equitable utilisation is recognised as the main customary law rule governing the use and allocation of international water resources.[55] Beyond this area, however, it is unclear to what extent the principle reflects customary law. According to a large part of the literature, the UNEP principles represent customary international law.[56] However, although they can be said to reflect in many ways contemporary international law and the practice of a significant number of states, the principles have been controversial from the beginning and should not be considered as settled law supported by all states.[57] Thus, the principle of equitable utilisation of shared natural resources reflects customary law only for some areas covered by state practice, notably international watercourses, but also liquid and gaseous minerals (see below).[58]

[45] Durner (2001) at 112.

[46] Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 14 October 1994, entered into force on 26 December 1996 (UNCCD), United Nations Treaty Series, vol. 1954, at 3.

[47] Birnie et al (2009) at 194; Durner (2001) at 120.

[48] See Durner (2001) at 117-118 with further references.

[49] Durner (2001) at 120.

[50] According to the arbitration award in the *Lac Lanoux* arbitration, they include the duties of prior information, appropriate consideration of the interests of the other side(s), and of negotiations in good faith, see Durner (2001) at 130-131 with further references. For the challenges of implementing the principle to transboundary watercourses see Rieu-Clarke and Spray (2013), at 14 et seq.

[51] Durner (2001), at 130-131.

[52] Durner (2001) at 121 with further references.

[53] Durner (2001) at 122, 134.

[54] See ICJ, *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia), ICJ Reports (1997), at 56 para. 85:"right to an equitable and reasonable share of the natural resources of the Danube", para. 140.

[55] Birnie et al (2009) at 202; Hey (2016), at 61 et seq.

[56] See e.g. the references in Durner (2001) at 135.

[57] Birnie et al (2009) 193; see also Durner (2001) at 136.

[58] Durner (2001) at 136.

Applicability to abiotic resources and resource efficiency

The most notable omission from the UNEP Principles and UN resolutions on the subject is that they do not define what resources should be treated as shared; according to the UNEP Executive Director, at least river systems, enclosed and semi-enclosed seas, air sheds, mountain chains, forests, conservation areas, and migratory species should be included.[59] While abiotic resources are not mentioned in this enumeration, there is an extensive state practice on cooperation in the exploitation of transboundary mineral deposits.[60] This is especially the case with oil and gas deposits, while solid minerals can often be exploited without transboundary cooperation along the respective frontiers.[61] A common feature of of treaties on transboundary cooperation is cooperation through common institutions and the sharing of permitted flow rates or profits.[62] According to parts of the literature, this state practice on shared mineral deposits establishes a duty to enter in negotiations in good faith on possibilities of transboundary cooperation.[63] Other parts of the literature are reluctant to recognise such a duty as customary law.[64] In the *North Sea Continental Shelf case*, the ICJ declared such agreements to be "particularly appropriate when it is a question of preserving the unity of the deposit"[65], albeit without recognising an obligation to enter into corresponding negotiations.[66]

While the principle of equitable utilisation of shared natural resources is thus probably applicable to transboundary mineral resources, it is not linked to resource efficiency or resource conservation. According to one view in academic literature, the principle results in a duty of optimal utilisation of the shared resources or a maximisation of yields.[67] While there does not seem to be sufficient basis for this particular view, it nevertheless shows that the principle of equitable utilisation of shared natural resources is focused on making use of the resource and sharing the profits resulting from its exploitation, instead of restricting exploitation in order to use it efficiently or to conserve it.

Assessment

The principle of equitable utilisation of shared natural resources does not explicitly or directly address resource efficiency. While it may reflect customary law applicable to transboundary mineral deposits, it is exclusively concerned with the division of the resources or the profits resulting from exploitation between the parties concerned. An obligation to share the resources or their profits can therefore impede (absolute) resource efficiency because it presumes that exploitation is in the interest of all states concerned. On the other hand, having to share the resource or the profits may lead to increased (relative) efficiency on the part of each state.

Summary

The principle of equitable utilisation of shared natural resources applies to resources which do neither fall within the exclusive control of one state nor belong to areas beyond national jurisdiction. In limiting the principle of permanent sovereignty over natural resources, it aims at ensuring a balance of interests between the parties concerned. While the contours of the principles are still rather vague, it is settled that it is basically procedural, the most important component being the obligation to cooperate. Beyond its relevance for international watercourses, it is unclear to what extent the

[59] See Birnie et al (2009) 193 with references. See also Durner (2001) at 115.
[60] See Durner (2001) at 93 et seq.
[61] Durner (2001) at 93.
[62] Durner (2001) at 93-95 with examples.
[63] See the references in Durner (2001) at 95-96.
[64] See the references in Durner (2001) at 95-96.
[65] ICJ Reports 1969, at 52, para. 99.
[66] Durner (2001) at 95-96.
[67] See Durner (2001) at 119 with references.

principle reflects customary law. State practice on transboundary mineral deposits shows that the principle is exclusively concerned with the division of the resources or the profits resulting from exploitation between the parties concerned. This division may further resource efficiency in order to mximise the individual share, but the common interest in exploitation runs counter to the general conservation aspect over time.

2.1.1.4 Common areas (common property, res communis)

Development and Content

The concepts of "common areas",[68] "common property"[69] and "res communis"[70] are used synonymously. They refer to areas beyond national jurisdiction such as the high seas, outer space, and possibly Antarctica.[71] The concept was first used in international law to determine the status of the high seas.[72] Its two basic components are free access to a common resource and impossibility of appropriation.[73] They are codified for example by Art. 87 and 89 of the UN Convention on the Law of the Sea (UNCLOS)[74], according to which "[t]he high seas are open to all states, whether coastal or land-locked." [...] "No state may validly purport any part of the high seas to its sovereignty." Comparable to the principle of permanent sovereignty over national resources, free access to a common resource includes a priori the right to abuse of the common areas, for example by using it for waste dumping or by excessive fishing, especially by dominant states.[75] However, the free access component has been restricted more and more by international law, especially treaty law. [76] In particular, it has to be exercised with reasonable regards to the interests of other states[77], and correlates with duties to ensure the protection of the environment[78], as codified by UNCLOS, the Treaty on Outer Space or other agreements such as the London Protocol on waste dumping.[79] The latter duty of environmental protection, an extension of the no-harm principle to common areas, has also been expressed by Art. 21 of the Stockholm Declaration[80] and, above all, recognised by the International Court of Justice as reflecting customary international law.[81] Concerning its implementation, there is a tendency in theory

[68] Used by Dupuy and Viñuales (2015) at 82.

[69] Used by Birnie et al (2009) at 194.

[70] Used by Shaw (2008) at 492 and mentioned by Dupuy and Viñuales (2015) at 82.

[71] Birnie et al (2009) at 194-195; Dupuy and Viñuales (2015) at 82-83. The applicability of the principle of common areas (or instead the principle of common heritage of mankind) to Antarctica is controversial because the Antarctic Treaty explicitly leaves the sovereign claims by some states unresolved, see Durner (2001) at 151-157 and 179.

[72] See Dupuy and Viñuales (2015) at 82; Durner (2001) at 140-141.

[73] Dupuy and Viñuales (2015) at 82.

[74] United Nations Convention on the Law of the Sea, 10 December 1982, in force since 16 November 1994, UN Doc. I-31363.

[75] See Durner (2001) at 163; Dupuy and Viñuales (2015) at 82.

[76] See Durner (2001) at 162-163; Dupuy and Viñuales (2015) at 82-83.

[77] See Art. 87 para. 2 UNCLOS and Durner (2001) at 163-164.

[78] Dupuy and Viñuales (2015) at 82-83; Durner (2001) at 165-166.

[79] Art. 192 UNCLOS, Art. IX of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, 27 January 1967 (Outer Space Treaty), in force 10 October 1967, *United Nations Treaty Series*, vol. 610, at 205; Art. 4-6 of the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972, 7 November 1996, 36 *International Legal Materials* (1997), at 7.

[80] "Declaration of the United Nations Conference on the Human Environment", Stockholm, 16 June 1972, UN Doc. A/CONF 48/14/Rev.1, at 2 et seq. See Kiss and Shelton (2007) at 125.

[81] ICJ, Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, ICJ Reports 1996, at 241-242 para. 29:"The existence of the general obligation of States to ensure that activities within their jurisdiction and control respect the environment of other States or of areas beyond national control is now part of the corpus of international law relating to the environment." See also ICJ, *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia), ICJ Reports (1997), 162 et seq., para. 53.

and practice to allow every state to enforce it.[82] Finally, free access to common areas has to some extent been restricted to non-military purposes.[83]

Status

Besides its codification in treaty law, the legal concept of common areas is recognised as customary law for certain areas, including the more recent restricting elements of a duty of protection and a limited de-militarisation.[84] As such, it remains relevant as conceptual framework for the interpretation of existing and further establishment of treaty law, and as a minimum standard for the states that are not parties to the relevant treaties.[85] However, the concept of common areas, as most customary rules, is rather vague and general and thus only of limited practical use.[86]

Applicability to abiotic resources and resource efficiency

The concept of common areas extends to most of the living resources of the areas beyond national jurisdiction, such as fish, although extension of the limits of coastal states´ exclusive jurisdiction over fisheries has led to the transfer of much of the world´s fishing resources to national jurisdiction.[87] However, with the exception of the mineral resources of the deep sea-bed subject to the principle of common heritage of mankind (see below), it also applies to the abiotic resources of the outer space and possibly also to the mineral resources of Antarctica.[88]

Resource efficiency is not directly addressed, but could become relevant indirectly (see below).

Assessment

The concept of common areas does not explicitly or directly address resource efficiency. As a starting point, it excludes claims of sovereignty, which enable free exploitation of resources and thus rather impedes resource efficiency. However, in those areas that are legally regarded as "common", the original starting point has been restricted particularly by duties of environmental protection and resource conservation. In addition, obligations regarding sharing of resources may apply. However, there is little evidence that such restrictions are *intrinsic* to the concept of common areas as such. For instance, according to Art. 117 UNCLOS, "States have the duty to take … such measures for their respective nationals as may be necessary for the conservation of the living resources of the high seas." In the Icelandic Fisheries Cases the International Court of Justice found that the state concerned had obligations of equitable exploitation and conservation of the fishery resources, and a duty to negotiate in order to reach a solution taking account of those obligations.[89] However, specific instruments on resource conservation are restricted to the living resources of the sea and linked to the well-known problem of overfishing.[90] Moreover, the concept of conservation, in addition of being general, "remains closely related to supplying human needs, albeit on a sustainable basis", which makes it difficult to implement.[91]

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[82] Durner (2001) at 171 et seq. with further references.

[83] See e.g. Art. 88 and 141 UNCLOS and Durner (2001) at 176-178.

[84] See the references cited above and Durner (2001) at 179-180.

[85] Durner (2001) at 180.

[86] See Durner (2001) at 180; generally Birnie et al (2009) at 196-197.

[87] Birnie et al (2009) 195-196.

[88] However, according to the treaty regime established by Art. 7 of the 1991 Protocol to the Antarctic Treaty on the Protection of the Environment, "any activity relating to mineral resources, other than scientific research, shall be prohibited."

[89] Cf. ICJ, *Fisheries Jurisdiction Case (Federal Republic of Germany v. Iceland), Merits*, Judgement, ICJ Rep. 1974, 175, para. 64-69.

[90] See Sanden et al. (2012) at 38 and para. 64 of the ICJ judgement cited before.

[91] Birnie et al (2009) at 196.

Summary

The legal concept of common areas refers to areas beyond national jurisdiction such as the high seas, the outer space, and possibly Antarctica. The legal concept of of common areas is recognised as customary law but it is difficult to determine the particular *customary* legal rights and obligations because the status of the areas in question is also determined by treaties. Its two basic components are free access to the common resources and that the area and its resources are not subject to appropriation by any state. This includes the abiotic resources of outer space and possibly also the mineral resources of Antarctica. However, the right to free access has to be exercised with reasonable regards to the interests of other states, and correlates with (separate) duties to ensure the protection of the environment. It does not explicitly or directly address resource efficiency. As a starting point, it aims at exploiting resources and thus impedes the conservation aspect of resource efficiency over time. Similar to the equitable utilisation of shared resources, the interest of other states could to some extent restrict inefficient use, for instance if one state were to use up a resource completely. More specific duties and obligations in this regard are not intrinsic to this concept but could arise from other sources. However, existing specific instruments on resource conservation are restricted to living resources.

2.1.1.5 Common heritage of mankind

The concept of common heritage of mankind was introduced in the context of early discussions on the exploitation of the resources of the deep sea-bed beyond national jurisdiction.[92] Art. 136 and 137 UNCLOS state that the seabed and ocean floor and the subsoil thereof beyond the limits of national jurisdiction, as well as its resources, to be "common heritage of mankind", vested in mankind as a whole, on whose behalf an International Sea-bed Authority shall act. The concept of common heritage of mankind builds on the status of common areas, notably the duty of protection of the area subject to the common heritage regime[93] and the prohibition of use for military purposes (exclusive use for peaceful purposes), but also the right of exploration.[94] It also develops the concept of common areas further[95] by placing the exploitation of the resources under common management and even an international authority.[96] In addition, the joint management is intended for the benefit of all states and peoples[97], including those who do not have the technical and financial means to exploit the resources.[98] This benefit implies an equitable sharing of the rewards resulting from exploitation activities[99], but does not forbid mining activities by states.[100] The joint benefit aspects are also incorporated in the 1979 Moon Treaty[101], whose practical effect and legal weight is very limited because the states most active in the exploitation of outer space have not ratified it and the

[92] In 1967, Malta proposed the concept to the UN General Assembly as a basis for exploiting the resources of the deep sea-bed, see Birnie et al (2009) at 197; see also Macdonald (1995), Noyes (2012), all with references.

[93] See Art. 145 compared to Art. 192 UNCLOS.

[94] See Durner (2001) at 225-229, especially 228-229.

[95] Durner (2001) at 139-140, 228-229.

[96] Birnie et al (2009) at 198 with reference to the competence of the International Seabed Authority according to Art. 145 UNCLOS.

[97] See Art. 140 UNCLOS: "Activities in the Area shall […] be carries out for the benefit of mankind as a whole […], and taking into particular consideration the interests and needs of developing States and peoples who have not attained full independence or other self-governing status recognized by the United Nations […]".

[98] Dupuy and Viñuales (2015) at 84; Birnie et al (2009) at 197-198.

[99] Durner (2001) at 219.

[100] See Art. 137 para. 3 UNCLOS and Durner (2001) at 222-224.

[101] Cf. Article 11 of the Moon Treaty Agreement Governing the Activities of States on the Moon and other Celestial Bodies, 5 December 1979 (Moon Treaty), in force 11 July 1984, 1363 UNTS 3.

international regime it envisages has not benn established.[102] Other conventions like the World Heritage Convention use terms as "world heritage of mankind" in their preamble but do not include joint management provisions.[103] According to Birnie et al. they "are better viewed, like the term 'common concern', as expression of the common interest of all states in certain forms of ecological protection, and not as attempts to internationalise ownership of resources".[104] States have been increasingly reluctant to use the principle of common heritage of mankind and have preferred to refer to the principle of common concern of humankind instead, for instance regarding climate change in the 2015 Paris Agreement on Climate Change.[105]

Finally, it has been suggested that common heritage of mankind also includes an obligation to preserve the area concerned for future generations.[106] In this case, it would overlap with the principle of intergenerational equity. However, as of yet no attempt has been made in practice to implement this element.[107]

Status

As the conceptual basis for UNCLOS including the 1994 Implementing Agreement[108] and the Moon Treaty, the common heritage of mankind is an established legal concept of international law.[109] Concerning the deep sea-bed, it may additionally reflect customary law. However, this is controversial. According to one view, it is "still of doubtful legal status".[110] According to another view, the controversies related to Part XI of UNCLOS which prevented UNCLOS´ entry into force for over a decade, including the organisation of the International Seabed Authority, do not question the *opinio iuris* of states on the basic elements of the common heritage concept.[111] There is no evidence regarding state practice or opinio iuris that the legal status of common heritage of mankind applies to other areas.

Applicability to abiotic resources and resource efficiency

While the principle of common heritage of mankind applies to the deep sea-bed and to a limited extent to the moon[112], it relates only to non-living, i.e. abiotic resources.[113] It has thus been described as "a specialized regime applied to certain mineral resources".[114]

Resource efficiency is not directly addressed, but could become relevant indirectly (see below under assessment).

[102] Dupuy and Viñuales (2015) at 84.

[103] Convention Concerning the Protection of the World Cultural and Natural Heritage, 16 November 1972 (World Heritage Convention) entered into force 17 December 1975 United Nations Treaty Series, vol. 1037, at 151. See also Durner (2001) at 203-213.

[104] Birnie et al (2009) at 198. See also Durner (2001) at 203-205 and 230.

[105] Dupuy and Viñuales (2015) at 85.

[106] See MacDonald (1995) at 155; Sanden et al. (2012) at 38.

[107] MacDonald (1995) at 155.

[108] Agreement on the Implementation of Part XI of the 1982 Law of the Sea Convention, New York, 28 July 1994, UN Doc. I-31364.

[109] Durner (2001) at 230-231.

[110] Birnie et al (2009) at 198.

[111] See Durner (2001) at 231-233 with further references.

[112] The Moon treaty has 17 parties which do not include the main space nations.

[113] See Art. 133 UCLOS defining resources in the Area as mineral resources.

[114] Birnie et al (2009) at 195.

Assessment

The principle of common heritage of mankind is a legal status principle applying to a certain area and does not explicitly or directly address resource efficiency. As a starting point, its main element is the common management of the area concerned,[115] and it is directed at exploiting the area's resources[116] and sharing the benefits, which impedes resource efficiency. However, similar to the principle of common areas and the equitable utilisation of shared resources, free exploitation is restricted at least to some extent by the interest of other states, which could to some extent restrict inefficient use, for instance if one state were to use up a resource completely. More specific duties and obligations in this regard are not intrinsic to this concept, but they are part of the provisions common the common heritage regimes of the deep seabed and the moon and woul in any event arise from by the general duty of environmental protection for the relevant areas.[117] Accordingly, there may be a link, at least to some extent, between this duty and resource conservation, subject to the reflections made above in the context of the principle of common areas. However, so far there are but few indications that that common management has a conservation component. In academic literature it has been observed that the central weakness of the common heritage concept is that "it is motivated in large parts by state´s desire for access to resources rather than by genuine community interest in their protection".[118] In the case of the deep seabed, common heritage resources are subject to regulation by an international authority, which might lead to requirements concerning resource efficiency or conservation.

Summary

The principle of common heritage of mankind places the exploitation of certain resources under common management, intended for the benefit of all states and peoples. It applies to the deep sea-bed and the moon and relates only to abiotic resources. The principle of common heritage of mankind does not explicitly or directly address resource efficiency. As a starting point, the common management aims at exploiting resources and sharing the benefits, which impedes resource efficiency. So far there are but few indications that that the concept of common heritage *on its own*, i.e. without additional explicit provisions, includes further duties and obligations relating to the environment or resource efficiency. However, there may be a link, at least to some extent, between the general duty to protect the environment and resource conservation. Taken together, management for the benefit for all and environmental protection could become the basis for a conservation component that fosters efficiency. In addition, the responsibility of an international authority for the common management might lead to requirements concerning resource efficiency or conservation. Concerning the deep sea-bed, the status as common heritage may reflect customary law.

2.1.1.6 Common concern of humankind

Development and Content

The concept of common concern of humankind emerged in the 1990s.[119] In contrast to the principles analysed before (permanent sovereignty on natural resources, equitable utilisation of shared natural resources, common areas, and common heritage of mankind), it does not regulate the distribution of

[115] Matz-Lück (2010) calls the concept of common heritage of mankind a "management tool".

[116] With regard to criticism of a potential eco-imperialism see Scholtz (2008).

[117] See Beyerlin and Maraun (2011), at 141.

[118] Brunnée (2006) at 563.

[119] See Dupuy and Viñuales (2015) at 85 and Durner (2001) at 239 with examples of earlier ideas at 234 et seq.

resources, but aims at environmental protection.[120] Basically, the principle of common concern of humankind expresses the common interest of all states in certain forms of ecological protection.[121] In contrast to older concepts such as the 1972 Stockholm Declaration that distinguished between responsibilities for areas within and beyond national jurisdiction, the concept of common concern, in the context of the Rio Declaration, designates those issues which involve global responsibilities.[122] It "removes the topic from states´ exclusive domestic jurisdictions and makes it a legitimate matter for international regulations".[123] Therefore, "the right and duty of the international community to act in matters of common concern still must be balanced with respect for sovereignty".[124] The main examples of this principle are the 1992 Convention on Climate Change (UNFCCC)[125], which has recently been supplemented by the 2015 Paris Agreement, and the 1992 Biodiversity Convention (CBD).[126] The preamble to the UNFCCC and the Paris Agreement "acknowledge" that climate change is a common concern of humankind. The preamble of the CBD includes the following elements related to the principle:

> "*Affirming* that the conservation of biological diversity is a common concern of humankind,
>
> *Reaffirming* that States have sovereign rights over their own biological resources,
>
> *Reaffirming* also that States are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner, […]".

However, the exact meaning and the implications of the principle are unclear and debated.[127] According to the most widespread view in literature, the responsibilities related to resources of common concern, especially duties to protect such resources within the boundaries of national jurisdiction, have erga omnes effect, i.e. are directed towards the international community as a whole, and can be enforced by any other state.[128] This is in line with the development of international law since the Rio Declaration that international environmental law is no longer a system merely governing transboundary relations among neighbouring states, but increasingly a system addressing global problems via international and national measures alike.[129] However, the implications of this view are not yet settled.[130] According to Shaw, the concept of common concern of mankind is weaker and more ambiguous than the concept common heritage of mankind.[131]

Status

Concerning climate change and biological diversity, the principle of common concern of humankind may reflect customary law, which would however be relevant mainly for those states that are not

[120] See Durner (2001) at 234; Hey (2016), at 62 et seq.

[121] Birnie et al (2009) at 198.

[122] Birnie et al (2009) at 128.

[123] Kiss and Shelton (2007), at 14.

[124] Kiss and Shelton (2007), at 14.

[125] Preamble to the CBD and UNFCCC; see also the preamble to the 2015 Paris Agreement (Acknowledging that climate change is a common concern of humankind") cf. also paragraph 1 of UNGA resolution 43/53 of 6 December 1988: "Recognizes that climate change is a common concern of mankind, since climate is an essential condition which sustains life on earth."

[126] Preamble of the Convention on Biological Diversity (CBD), 5 June 1992, in force 29 December 1993, *United Nations, Treaty Series*, vol. 1760, 79.

[127] See Durner (2001) at 253 et seq., mentioning eight different views in the literature, and Birnie et al (2009) at 129.

[128] See Durner (2001) at 241, 254, and 260 et seq. referring to the fundamental publication by Kirgis (1990), at 525 et seq. See also Birnie et al (2009) at 130 ("may have an *erga omnes* character"); Kiss and Shelton (2007) at 15: "may be viewed as obligations *erga omnes*." An obligations erga omnes see the Barcelona traction case of the ICJ, ICJ Reports 1970, at 4, 32.

[129] See Birnie et al (2009) at 129; Dupuy and Viñuales (2015) at 86.

[130] See Durner (2001) at 263 et seq.; Birnie et al (2009) at 129; Beyerlin and Marauhn (2011), at 286 et seq.

[131] Shaw (2008) at 534.

party to the climate regime or the CBD.[132] Beyond these fields, no relevant state practice has evolved yet.

Applicability to abiotic resources and resource efficiency

As mentioned before, the principle of common concern of humankind is applicable to climate change and biological diversity. While the latter addresses living resources, the former relates to anthropogenic GHG emissions and is thus relevant to the use of abiotic fossil resources such as coal, oil and gas. Moreover, although not explicitly mentioned in the Montreal Protocol, the principle of common concern may also apply to the ozone layer and the corresponding duties of the Protocol[133], which does however not have a direct impact on the use of abiotic resources.[134] Further initiatives to extend the principle to the environment as a whole[135] are not backed by a corresponding practice.[136] Generally, the mere existence of an objective interest of all states is not sufficient. [137]

Thus, the principle of common concern is only indirectly applicable to abiotic resources in the context of climate change. As it is specifically mentioned by the treaty provisions of the 2015 Paris Agreement (see above), we refer to the subsequent analysis of the Paris Agreement for links to resource efficiency.

Assessment

The principle of common concern of humankind is another principle of international law that restricts the principle of permanent sovereignty over national resources, in this case within the confines of global responsibility.[138] However, so far it has been applied only to climate change and biodiversity and appears relevant only in relation to the former. However, the principle is particularly suitable for more general application and may become an important tool for tackling global environmental problems.[139] Such a development would, however, require a deeper scientific understanding of the principle and consensus on its scope of application and its implications.[140]

Summary

The principle of common concern of humankind is a more recent concept that differs from other principles relating to natural resources in that it does not regulate the distribution of resources, but expresses the common interest of all states in certain forms of ecological protection. Its main examples are the 1992 Convention on Climate Change (UNFCCC) as specified by the 2015 Paris Agreement, and the Convention on 1992 Biodiversity Convention (CBD). The exact meaning and legal implications of the principle are not settled. According to the most widespread view, the responsibilities related to resources of common concern have *erga omnes* effect, i.e. are directed towards the international community as a whole, and can be enforced by any other state. The principle restricts the principle of permanent sovereignty over national resources within the confines of global responsibility. At this stage it appears relevant for resource efficiency only in the context of climate change. But it might

[132] Durner (2001) at 235.

[133] See Durner (2001) at 274; Birnie et al (2009) at 128.

[134] For more details see the analysis of the Montreal Protocol above.

[135] See notably the proposal by the International Union for the Conservation of Nature (IUCN) of an International Covenant on Environment and Development, referred to by Durner (2001) at 250-252 with further references.

[136] Durner (2001) at 274-275.

[137] Durner (2001) at 274-275.

[138] See Birnie et al (2009) at 130.

[139] Durner (2001) at 275.

[140] Ibid.

provide political opportunities more generally e.g. if states regarded the conservation of resources over time as a common concern.

2.1.1.7 Prevention of transboundary environmental harm

Development and Content

As stated by the ICJ in 2015, a state has the obligation "to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State".[141]

The obligation has originally evolved from the Trail Smelter case (1938)[142], concerning air pollution, and the Corfu Channel Case (1949)[143] and has since developed into customary law. The ICJ has confirmed the existence of this general rule in the advisory opinion on the *Legality of the Threat or Use of Nuclear Weapons*[144], the *Gabcikovo-Nagymaros* case[145] and the *Pulp Mills* case[146] and the *Costa Rica–Nicaragua* cases.[147] The obligation is also expressed in international documents such as the Stockholm Declaration and the Rio Declaration, and reflected in international treaties, such as UNCLOS or CBD.[148] It has been called "the primary or cardinal rule of customary international environmental law", giving rise to many other rules of international environmental law.[149]

While the general rule is now well established, there are small but important differences in how it was formulated over time. The differences have legal implications for which areas are protected and for which activities or omissions a state may be responsible. In that sense the precise scope and content of the obligation is not entirely clear:

The wording of principle 2 of the 1992 Rio Declaration principle 2 juxtaposed the obligation to prevent transboundary harm with the right to exploit national natural resources: "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, *and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction*".[150] The obligation thus limits or counterbalances the sovereignty and the freedom to exploit natural resources. The wording "responsibility to ensure" indicates an obligation of result and is much stronger than the ICJ's wording

[141] *Certain Activities carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua) and Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)*, Judgment of 16 December 2015, *I.C.J. Reports* 2015, 665, para 104.

[142] *Trail Smelter Arbitration* (US v. Canada), 3 Rep. International Arbitration Awards 1905 (1941) at 1963.

[143] *Corfu Channel* (*United Kingdom v. Albania*), Merits, Judgement, *I.C.J. Reports* 1949, 22.

[144] *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, *I.C.J. Reports* 1996, 226, para. 29.

[145] *Gabcikovo-Nagymaros Project* (*Hungary v. Slovakia*), *I.C.J. Reports* 1997, 112, para. 141.

[146] *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Merits, Judgement, *I.C.J. Reports* 2010,83, para. 10. The Court concluded in that case that "it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource " (see para. 204). The Pulp Mill case was also referred to by ITLOS in Responsibilities and Obligations of States Sponsoring Persons and Entities With Respect to Activities in the Area, Advisory Opinion (1 February 2011), ITLOS No. 17, para. 110, 117-120.

[147] *Certain Activities carried out by Nicaragua in the Border Area* (*Costa Rica v. Nicaragua*) *and Construction of a Road in Costa Rica along the San Juan River* (*Nicaragua v. Costa Rica*), Judgment of 16 December 2015*, I.C.J. Reports* 2015, 665, para 104.

[148] *Stockholm Declaration* Principle 21, *Rio Declaration* Principle 2, *UNCLOS* Article 194, *CBD* Article 3, amongst others.

[149] McIntyre (2006) at 170.

[150] United Nations Conference on Environment and Development, Rio Declaration on Environment and Development, June 14, 1992, 31 *I.L.M.* 874; (emphasis added).

in 2015. Another difference to the ICJ wording is that the Rio Declaration not only includes damage to other states, but also to areas beyond national jurisdiction.

The International Law Commission (ILC) also addressed this obligation, but its Draft Articles on Transboundary Harm from Hazardous Activities of 2001[151] give it a slightly wider scope: They apply when (1) the activity in question was not prohibited by international law; (2) it was carried out under the jurisdiction of the state of origin; (3) it involves a risk of causing significant transboundary harm; and (4) the harm has been caused by the physical consequences of the activity.[152] According to the Draft Articles, the obligation is "to take all appropriate measures to prevent significant transboundary harm *or at any event to minimize the risk thereof*".[153] The ILC thus combines measures to prevent significant transboundary harm with measures to at least minimize the risk thereof. Similar to recent ICJ judgments, the ILC defines "transboundary harm" as harm "caused in the territory of or in other places under the jurisdiction or control of a State",[154] thus excluding harm to areas beyond national control. The ILC also requires "significant" harm.[155]

As to the precise content of the obligation, ICJ and ITLOS have clarified that the duty to prevent is an obligation of due diligence and therefore an obligation of conduct rather than of result.[156] While are uncertainties regarding what due diligence would require, the concept of due diligence is well established and leaves flexibility for each specific case. The ILC Draft Articles and case law provide some examples: due diligence could require states to employ the best available techniques, regulate the activity in question, conduct an environmental impact assessment[157], or to cooperate, if there is a risk of transboundary harm.[158] The obligation not to cause transboundary harm is not intended for balancing interests of concerned states (i.e. in equitable sharing resources) – the threshold of significant harm underlines an absolute obligation.[159]

Status

The obligation not to cause transboundary environmental harm has been recognised by the ICJ as customary international law.[160]

[151] Intenational Law Commission (2001), Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with Commentaries, *Yearbook of the International Law Commission* Vol. II, Part Two, 148. Birnie et al. (2009) at 140 regard them as an authoritative codification of existing customary obligations, but this would have to be seen in light of the subsequent ICJ judgments.

[152] *ILC Draft Articles Prevention*, Article 1, commentaries.

[153] *ILC Draft Articles Prevention*, Article 3 (emphasis added).

[154] *ILC Draft Articles Prevention*, Article 2 (c).

[155] "A State is thus obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State." (*Pulp Mills*, I.C.J. Reports 2010 (I), pp. 55-56, para. 101.). Note however that the Rio Declaration and some earlier ICJ judgements do not mention the term "significant".

[156] *Pulp Mills*, para. 101; *Activities in the Area*, , para. 110, 117-120.

[157] *ILC Draft Articles Prevention*, Art. 3 comm. 5.

[158] *Pulp Mills*, para. 121, 177 and 204. See also McIntyre (2006) at 171; Birnie et al. (2009) at 148 ff.

[159] Beyerlin and Marauhn (2011) at 42.

[160] *Pulp Mills*, para. 101. It should be noted that the ICJ is obviously not concerned about theoretical distinctions between "principles" and rules", as it states: "The Court points out that the *principle* of prevention, as a customary rule,..." (emphasis added).

Applicability to abiotic resources and resource efficiency

The obligation is applicable to all activities that have a risk of causing significant transboundary harm.[161] It thus also covers activities using abiotic resources. Resource efficiency is not directly addressed, but could become relevant indirectly (see below under assessment).

Assessment

The duty to prevent transboundary environmental harm generally limits the freedom of states, but it does not explicitly or directly cover resource efficiency. However, it could oblige a state to use less of a resource or to use the resource more efficiently, if the excessive use of the resource resulted in significant harm to another state. In this sense the obligation limits the sovereign right of states to exploit their resources.[162] It is not certain whether and to what extent the obligation would also apply in a similar way to resources beyond national jurisdiction or resources with a legal status as a "common" good (see above).

Scenarios where inefficient use of the resource causes environmental transboundary damage might be conceivable in cases of excessive use of a particular resource. However, there is not much practice or case law, particularly in this respect. A breach would require causation, i.e. that the particular use of the resource by the particular state caused significant environmental transboundary harm. In addition, a breach would also require that the state did not exercise due diligence. Which diligence is "due" in a specific case would be difficult to ascertain in advance, even more so in cases where the harm was not caused by a specific activity but rather by inefficent or excessive use of a resource over time. It should also be noted that other obligations under international may apply specificially to the activity in question. They might define or indicate which diligence is required of states, or they might even apply as *lex specialis* and prevail over the obligation to prevent transboundary harm. For instance, if the resource in question is a shared resource, due diligence might have to take into account whether an excessive use of it by one state restricts the other states' right to equitably use that resource. In the case of the climate regime, the absence of specific obligations regarding by how much each indidivdual state has to reduce its greenhouse gas emissions, or by which particular measures, could stand in the way of potential arguments that e.g. an inefficient use of fossil fuels was a failure to exercise due diligence. On other hand, what would be considered a reasonable standard of due diligence may change with time.[163] This openness could therefore provide political opportunities for establishing standards with regard to resource efficiency.

Summary

The obligation to prevent significant transboundary environmental harm is the core principle of international environmental law, and serves as a counterpart to the principle of permanent sovereignty over natural resources. It covers abiotic resources, but does not directly address resource efficiency. Indirectly, the principle could oblige a state to use less of a resource or to use the resource more efficiently, if the excessive use of the resource implied a risk of significant harm to another state. It is not certain whether and to what extent the obligation would also apply in a similar way to resources beyond national jurisdiction or resources with a legal status as a "common" good. The

[161] The ICJ stated in the *Nicaragua cases* (para 104): "Although the Court's statement in the Pulp Mills case refers to industrial activities, the underlying principle applies generally to proposed activities which may have a significant adverse impact in a transboundary context. Thus, to fulfil its obligation to exercise due diligence in preventing significant transboundary environmental harm, a State must, before embarking on an activity having the potential adversely to affect the environment of another State, ascertain if there is a risk of significant transboundary harm, which would trigger the requirement to carry out an environmental impact assessment."

[162] Hey (2016) at 59.

[163] *ILC Draft Articles Prevention*, Art. 3 comm. 11.

principle is important because it is the starting point for a number of other obligations under international environmental law. The openness of the due diligence standard could provide political opportunities with regard to resource efficiency.

2.1.1.8 Sustainable Development

Development and Content

The concept of "sustainable development", in its most commonly used definition, describes "development that meets the needs of the present without compromising the ability of future generations to meet their own needs".[164] Although concepts such as the sustainable use of resources, or preservation for the benefit of future generations, date further back, the term "sustainable development" gained international recognition through the 1987 Brundtland Commission's report "Our Common Future".

The concept's influence on international law became evident in the 1992 Rio Conference and the multilateral environmental agreements adopted at that summit, most prominently the CBD[165] and the UNFCCC[166]. Since then, in has been firmly established in political discourse, and is included in a large number of international agreements. Most do so in the preamble[167], as part of the objective[168], or citing sustainable development as a principle[169]. A large number of non-binding international instruments also refer to the concept, including the 1992 Rio Declaration, Copenhagen Declaration on Social Development, Johannesburg Declaration on Sustainable Development, or the 2005 World Summit Outcome.

Today, sustainable development has been said to be the "overarching framework for improving quality of life throughout the world"[170]. It is important, however, to distinguish the concept as a *political* programme from a potential *legal* principle, as well as the question of legal *status* from normative *content*. With regard to content, there are at least three "interdependent and mutually reinforcing pillars" of sustainable development: economic development, social development, and environmental protection.[171] Combined with the notion of "sustainability", four elements are commonly cited as part of the concept of sustainable development, each of them being potentially relevant for promoting resource efficiency:[172]

1. Inter-generational equity: see the section in this report on "inter-generational equity".
2. Exploitation of natural resources in a sustainable way: This element has found most prominent application in the area of marine living resources, but is also reflected in many other multilateral environmental agreements and increasingly also international economic law.[173] Nevertheless, the legal nature of this specific notion is not clear, and even where treaties cite the concept, they often do not impose concrete obligations to implement the concept. While there is some evidence that the concept of sustainable use of natural resources in common areas has acquired the status of customary law, it

[164] World Commission on Environment and Development (1987): *Our Common Future*. Oxford: Oxford University Press, at 43.
[165] Convention on Biological Diversity, Rio de Janeiro, 5 June 1992, 1769 *UNTS* 79.
[166] 1992 United Nations Framework Convention on Climate Change, New York, 9 May 1992, 1771 *UNTS* 107.
[167] WTO, NAFTA.
[168] CBD Article 1; UNFCCC Article 2.
[169] UNFCCC Article 3(4).
[170] Barstow et al. (2007), at 614.
[171] Bodle et al (2012), at 121.
[172] See Sands (2003) at 253; Dupuy and Viñuales at 80; Barstow et al (2007) at 619.
[173] Sands (2003) at 259.

cannot be assumed that the same holds for natural resources wholly under national sovereignty.[174]

3. Intra-generational equity: In broad terms, this element captures the idea that the benefits of development and responsibilities should be fairly distributed within one generation. There is no commonly agreed definition of "intra-generational equity" or how it should be translated into action but scholars often make the link to the principle of common but differentiated responsibility (see separate Section), the eradication of poverty as a priority, "the right to development"[175], or the equitable use of shared natural resources.[176]
4. Integration of environmental, social and economic considerations: This is probably the most commonly accepted element of sustainable development. It reflects the understanding that environmental protection is an integral part of the development process. It is reflected in many MEAs and has also been endorsed by the ICJ in the Gabcikovo-Nagymaros judgment.[177]

There is considerable disagreement on what these individual elements imply[178], and how they could be translated into concrete obligations. As one scholar noticed, "one could ask whether the concept [of sustainable development] is so vague as to be meaningless"[179]. Depending on interpretation, the elements might even contradict each other. ICJ Judge Weeramantry thus considered sustainable development to be a "principle of reconciliation"[180], namely between the law of environment and the law of development.

Status

Despite of, or perhaps because of, it ubiquitous prominence in environmental and development discourse and processes, the legal status of the principle of sustainable development is still under debate. Some see it merely as a global policy goal or concept with no normative character; others describe sustainable development as soft law.[181] At the other end of the spectrum is what ICJ Judge Weeramantry stated in separate opinion: "I consider [sustainable development] to be more than a mere concept, but as a principle with normative value [...]".[182] According to this view, sustainable development is a principle of customary international law.[183] Sustainable development has also been described as a "metaprinciple", a rule for judicial reasoning, namely to take a holistic approach to dispute resolution, rather than a norm of conduct.[184]

The ICJ first referred to sustainable development in the Gacikovo-Nagymaros Case but was cautious not to explicitly positioning itself with respect to its legal character. The ICJ noted that "new norms and standards have been developed [...]" and that there was a "need to reconcile economic development

[174] Birnie et al. (2009) at 200.

[175] See e.g. Birnie et al. (2009) at 118.

[176] See e.g. Sands (2003) at 262 f.

[177] Birnie et al. (2009) at 117.

[178] Barstow et al. (2007) at 620.

[179] Barstow et al. (2007) at 621

[180] *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia), separate opinion of Vice-President, Judge Weeramantry, *I.C.J. Reports* (1997), at 90.

[181] Barstow et al. (2007) at 624.

[182] *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia), separate opinion of Vice-President, Judge Weeramantry, *I.C.J. Reports* (1997), at 85.

[183] See also Sands (2003), at 254, arguing that "There can be little doubt that the concept of sustainable development has entered into the corpus of international customary law, requiring different streams of international law to be treated in an integrated manner"

[184] Lowe (1992), at 31 ff.

with protection of the environment is aptly expressed in the concept of sustainable development".[185] This seems to endorse the integration aspect of sustainable development (the fourth element listed above). While the ICJ did recommend to use the concept, the ICJ did not state that sustainable development was a principle or rule of customary international law.

Applicability to abiotic resources and resource efficiency

The concept of sustainable development is applicable to all resources. The element of sustainable use might suggest that at least non-renewable resources should not be exploited at all, simply because their extraction is not sustainable. Other elements of the concept of sustainable development highlight the right to development, which might include the extraction of resources. Sustainable development therefore does not *per se* require states to preserve resources, but to balance environmental and development interests, and to consider the needs of future generations when exploiting the resources. On this basis am argument could be made that if states decide to exploit resources, one aspect of sustainable development implies making efficient use of them in order to conserve them for present and future use. However, the concept does not establish clear normative guidance to deduce from it clear obligations on resource efficiency. It may serve as an a general counterweight to the sovereign right to exploit natural resources and as an argument that there is a limit to this right, even though the limit remains abstract and is not specified in concrete terms.

Assessment

The concept of sustainable development provides ground to argue that states may exploit their resources but need to use them efficiently. However, it does not provide clear normative guidance in this respect. First, it is contested whether sustainable development is already part of customary international law. Second, the precise content of the concept is subject to debate. While there seems to be agreement that the concept aims to balance environmental concerns against development, the concept does not provide guidance on which of these objectives should prevail.

Whether and to what extent the concept of sustainable development has a specific normative legal content is still under debate. There is no consensus, for example, as to whether the concept would prohibit certain activities. However, it is of high political relevance.[186]

Summary

While "sustainable development" has been cited in nearly every international document concerning environment or development in the last decades, there is no agreement, in particular in state practice, whether it qualifies as a principle of customary international law or as to its specific legal content. In theory, the concept appears to be highly relevant to the efficient use of abiotic resources because it asks states to consider environmental protection when pursuing development policies. But the concept and its individual elements remain so vague that it does not provide specific normative guidance to states. Its main relevance for resource efficiency is to serve as a counterweight to the sovereign right to exploit natural resources and as an argument that there is a limit to this right, although the limit remains abstract and is not specified in concrete terms.

[185] *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia), Judgment, 25 September 1997, *I.C.J. Reports* (1997), at 140. See also *Case Concerning Pulp Mills on the River Uruguay* (Argentina v. Uruguay), Judgment, 20 April 2010, *I.C.J. Reports* (2010), at 76.

[186]

2.1.1.9 Inter-generational equity

Development and Content

The principle of inter-generational equity is based on the idea that the environment has to be protected for the benefit of future generations. According to *Dupuy* and *Viñuales*, the principle of inter-generational equity "aims to distribute the quality and availability of natural resources and the necessary efforts for their conservation between the present and future generations".[187]

The concept is referred to in substance in early international environmental and wildlife treaties, for example in the 1946 International Whaling Convention which recognizes "the interests of the nations of the world in safeguarding whale stocks for future generations"[188], and in the 1972 World Heritage Convention.[189] More recent treaties incorporating the principle include amongst others the 1992 Biodiversity Convention[190] and explicitly the 2015 Paris Agreement[191]. Moreover, the principle is expressed in Principle 1 of the Stockholm Declaration, and Principle 3 of the Rio Declaration according to which "[t]he right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations".[192] Today, the principle of inter-generational equity is usually considered as one of the elements of the principle of sustainable development.[193]

The basic concept that environmental goods should be preserved for future use is not new. It has long been applied, for instance, in German forest management and enshrined in forest law.[194] Yet theories of distributional justice continue to provide the underpinning for defining what intergenerational equity could mean in normative and legal terms.[195] Conceptual issues include whether and how a state should pursue distributional justice, whether this also applies to inter-generationally across *time,* and whether this applies internationally across *states.* For instance, most theories of distributional justice are based on the assumption that there is a central institution that has the power to distribute. This cannot simply be applied to international law, which is a horizontal legal order of sovereign states without a central authority.[196] In terms of pursuing justice across time, problems include lack of knowledge, the lack of opportunity to cooperate with future generations and the asymmetric influence between the current and the future generations.[197] At the national level, some countries have taken step to address and implement intergenerational equity. For instance, Israel and France have set up institutions representing future generations.[198] In Germany, the Sustainability Council includes generational equity in its policy recommendations[199] and the German Government includes indicators

[187] Dupuy and Viñuales (2015) at 77.

[188] See the Preamble to International Convention for the Regulation of Whaling, 2 December 1946, in force 10 October 1948, *United Nations Treaty Series*, vol. 161, p. 72.

[189] See Art. 4 of Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention), 16 November 1972, in force 17 December 1975, *United Nations Treaty Series*, vol. 1037, p. 151.

[190] Preamble of the Convention on Biological Diversity (CBD), 5 June 1992, in force 29 December 1993, *United Nations, Treaty Series*, vol. 1760, 79.

[191] Preamble of the Paris Agreement, 12 December 2015, in force 4 November 2016, C.N.92.2016.TREATIES-XXVII.7.d, available at https://treaties.un.org/doc/Treaties/2016/02/20160215%2006-03%20PM/Ch_XXVII-7-d.pdf.

[192] "Rio Declaration on Environment and Development", Rio de Janeiro, 13 June 1992, UN Doc. A/CONF. 151/26.Rev.1. Further examples are mentioned in Weston (2012) at 254 footnote 12.

[193] See Birnie et al (2009) at 116; Sands (2003) at 253; Dupuy and Viñuales (2015) at 77, 80.

[194] Kloepfer (2004) at 183.

[195] See inter alia Sanden (2008) and Weston (2012).

[196] Czarnecki (2008) at 73-82.

[197] Meyer (2008) at 2 et seq.

[198] Tremmel (2003) at 376. See also Birnbacher (2003) at 100; Boelling (2003) at 458 and 459.

[199] Rat für Nachhaltige Entwicklung (2005).

for inter-generational justice in its National Sustainability Strategy.[200] At the international level, academic proposals include an international resource tax system.[201]

However, the content and potential *legal* implications of a principle of inter-generational equity remain unclear.[202] According to the theory of intergenerational equity proposed by *Weiss*, each generation (1) should conserve the diversity of natural and cultural resources so as to conserve options for their future use, (2) should maintain the quality of the planet so that it can be passed on to future generations in no worse condition than it was received, and (3) should provide its members with a right to access natural and cultural resources and conserve this access for future generations.[203] The first two elements may well be included in the responsibility of mankind to future generations as an inherent component of sustainable development. In contrast, international practice does not support the third element.[204] However, recognising the first two elements in abstract does not solve the problem of finding the right balance between the present and future generations in the distribution of resources.[205]

Status

As with its content, the legal status of a potential "principle" of inter-generational equity is uncertain.[206] Some argue that future generations have been endowed with justiciable rights in international law.[207] Such a right has already been granted under *national* laws by the Philippines Supreme Court.[208] At the international level, focusing on legal rights and potential standing of future generations is difficult because principle 3 of the Rio-Declaration is not binding and because future generations would have to be represented somehow.[209] The issue is linked to the more general, and equally unclear status of the principle of sustainable development in international law.[210] In particular, while the ICJ referred in the *Gabcikovo-Nagymaros Project case* to "present and future generations" in the context of the awareness of risks of interventions in nature, it referred to sustainable development only as a concept and not as a principle with normative force.[211] Accordingly, *Sands* doubts that the concern for future generations has practical legal consequences.[212] This is in line with the practice of international courts where so far cases involving present generations have only been linked to activities of the past.[213]

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[200] Bundesregierung (2017).

[201] Pogge (1998). See also Pogge (2003).

[202] Dupuy and Viñuales (2015) at 78.

[203] Weiss (1992) at 9; see also Weston (2012) at 264-265.

[204] Birnie et al (2009) at 121.

[205] See especially Birnie et al (2009) at 122, with further references.

[206] Dupuy and Viñuales (2015) at 77-78.

[207] See the references in Birnie et al (2009) at 121. For arguments based on social human rights ("respect-based social justice") see Weston (2012) at 253, 260 et seq.

[208] *Minors Oposa v. Secretary of the Department of Environment and Natural Resources*, decision of 30 June 1993, 33 *ILM* (1994) at 173; but see the explicitly diverging decision of the Supreme Court of Bangladesh in *Farroque v. Government of Bangladesh* (1995), 49 *DLR* (AD) at 1.

[209] Meyer (2008/2015) at 5 et seq. Therefore, some authors focus on the preservation of future *interests* by today's generation, see Schröder (1996) at 164-165; Visser ´t Hooft (1999) at 14 et seq.

[210] See Sands (2003) at 81, and the section on the principle of sustainable development in this study.

[211] ICJ, *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia), *ICJ Reports* (1997), 78, para. 140; see also ICJ, *Pulp mills on the river Uruguay* (Argentia v. Uruguay), Merits, judgment, *ICJ Reports* (2010), 38-39, para. 75-76. But see separate opinion of Judge Weeramantry in the *Gabcikovo-Nagymaros Project* case, ibid. at 88-89.

[212] Sands (2003) at 257.

[213] See Birnie et al (2009) at 121 with references to *Certain Phosphate Lands in Nauru*, ICJ Reports (1993) at 322; *Advisory Opinion on Nuclear Weapons*, ICJ Reports (1996), at 266.

Applicability to abiotic resources and resource efficiency

The principle applies to all natural resources, including abiotic resources.[214] Resource efficiency is not directly addressed but could become relevant indirectly (see below under assessment).

Assessment

The principle of inter-generational equity does not explicitly or directly address resource efficiency. However, using resources efficiently may lead to using less resources and to conserving resources for present and future generations. Notwithstanding the uncertainties as to its exact content, the principle of inter-generational equity may therefore guide present generations to use resources responsibly, which would also mean efficiently in view of the interests of future generations.

Summary

The principle of inter-generational equity is based on the idea that the environment and resources have to be protected also for the benefit of future generations. Nowadays it is usually considered as one of the elements of the principle of sustainable development. Both its legal status and content are uncertain. The principle of inter-generational equity does not explicitly or directly address resource efficiency. However, it is important conceptually insofar as resource efficiency can contribute to conservation of resources for future generations. In guiding present generations to use resources responsibly, the principle could therefore also include efficiency as one element of taking into account the interests of future generations. Despite the conceptual relevance, concrete political opportunities for anchoring resource efficiency appear to be small. The principle could perhaps be used in interpreting norms and concepts that focus on allocation aspects and to add the notion of conservation *over time.*

2.1.1.10 Polluter pays principle

Development and Content

The polluter pays principle embodies the concept that the "costs of the pollution should be born by the person responsible for causing the pollution".[215] It brings together the notion of the "tragedy of the commons" and a view in economic theory that environmental harm is caused because the costs associated with using and polluting the environment were "external" to the polluter and should be internalised. It is, however, open for debate in which cases the principle should be applied, which costs should be covered or who would be the person responsible.[216] The principle is closely related to the obligation not to cause transboundary harm and to liability, and provides the basis for later discussion on economic policy instruments.[217]

The polluter pays principle was first explicitly mentioned in an international document in the OECD Council Recommendation on Guiding Principles concerning the International Economic Aspects of Environmental Policies (1972). The OECD recommended that the costs of goods and services should

[214] See Dupuy and Viñuales (2015) 77, cited in the text above.
[215] Sands (2003) at 279.
[216] Sands (2003) at 280.
[217] Sands (2003) at 159.

cover the costs of environmental protection measures, while not necessarily the costs of environmental damage.[218]

The strongest support for the principle can be observed in Europe, where the (then) European Community adopted the principle in its 1st environmental action programme of 1973. In 1975, the EC Council recommended to the EC and Member States to apply the principle and to give it a broader scope than the OECD: the polluter should pay for the costs of eliminating pollution.[219] The EEC treaty of 1986 explicitly provided that environmental action should be based on the polluter-pays principle. [220]

At global level, the principle was adopted as Principle 16 of the Rio Declaration which states that environmental costs should be internalised, "taking into account that the polluter should, in principle, bear the costs of pollution". The soft wording of Principle 16, including many caveats, reflects the uneasiness some states felt with regard to the concept generally, and particularly with regard to applying it beyond the domestic level, i.e. between states. [221]

Several international treaties such as the Helsinki Convention on Transboundary Watercourses, the 1991 Alps Convention, the 1992 Baltic Sea Convention, 1994 Energy Charter Treaty, or the 1985 ASEAN Convention, make reference to the polluter-pays principle but mostly without further defining its specific implications or application.[222]

Open questions include (1) which costs would be covered, i.e. whether decontamination, clean-up and reinstatement would be included; and (2) which exceptions applied. [223] With respect to the latter, it has been argued that "a great deal of flexibility will be inevitable" in applying and implementing the principle. While strict liability would be the closest translation of the principle, in practice its application would need to reflect the differences in risks and the economic feasibility, especially with regard to high risk technologies.[224]

Status

As with other principles, the question of legal status is distinct from the question of specific content. It is doubtful whether the principle has required the status of a principle of customary international law, especially with respect to its application at the inter-state level. [225] But it might have become *regional* customary law in the EU, UNECE and OECD countries.[226]

In this case, there is a range of views on its legal status and nature. Some argue that the polluter pays concept was a clear normative rule instead of a mere principle that guides interpretation.[227] Others hold that the principle, at least as reflected in Rio Principle 16, "simply lacks the normative character of a rule of law", and that no general pattern of state practice is discernible.[228]

[218] Sands (2003) at 281.

[219] Council Recommendation 75/436/EURATOM, ECSC, EEC of 3 March 1975, Annex para 2.

[220] For the recent development see Sadeleer (2015).

[221] Sands (2003) at 281.

[222] See the list in Beyerlin and Marauhn (2011) at 57 and 58.

[223] Sands (2003) at 285.

[224] Birnie et al. (2009) at 326.

[225] Beyerlin and Maraun (2011) at 59 with regard to the wording in Principle 16 of the Rio Declaration ("should endeavour to promote").

[226] Sands (2003) at 280.

[227] Beyerlin (2007) at 441.

[228] Birnie et al. (2009) at 323.

Applicability to abiotic resources and resource efficiency

The principle is generally applicable to all activities that cause environmental damage, and would thus also cover such activities involving abiotic resources. There is no indication that the principle is supposed to be applied only to "pollution" in the narrow sense, i.e. where substances are introduced into the environment, which would exclude "over-use" of resources.[229] However, there are several definitions of the principle and there is no coherent state practice regarding its specific application. For instance, since exceptions or limitations apply to most areas of legal liability, this could also be an issue for applying the polluter pays principle. Resource efficiency is not directly addressed, but could become relevant indirectly (see below under assessment).

Assessment

The polluter pays principle essentially aims at providing economic disincentives to causing environmental harm. The principle is mainly directed at how states should address the costs for environmental pollution and polluting private parties - i.e. by internalising external environmental costs. However, it does not explicitly or directly cover resource efficiency. There are basically two ways in which the principle could have an impact on resource efficiency:

First, internalising external costs of environmental harm along the value chain could provide an incentive to increase reource efficiency. It is likely that currently the cost of resource extraction and potentially also their use do not fully internalise environmental costs. In cases where applying the polluter pays principle would make extraction and potentially other parts of the value chain more expensive, it might, although not necessarily, in turn result in less or more efficient extraction, processing and use in order to avoid costs. For instance, if the polluter pays principle led a state to increase the costs associated with generating waste, private actors might choose to increase resource efficiency as one way to generate less waste and thus avoid cost increases.

Second, the polluter principle could be directly applied to inefficiency as such. Inefficiency would be treated as contributing to environmental harm, an inefficient user would be treated like a "polluter", and the environmental costs caused by the inefficency would be internalised. However, this would require careful consideration of at least the following issues: (i) which environmental harm should be attributed to inefficiency, e.g. how to define whose, and which, inefficiency causes how much increase in demand for resources, and which incremental costs are caused by this increase? (ii) How to avoid that multiple "polluters" have to internalise costs for the same environmental harm? These questions cannot be resolved by reference to the polluter pays principle alone. For instance, when a mine increases production and thus the environmental costs, several actors other than the operator of the mine could be held to be inefficient "polluters" that cause the incremental costs - e.g. manufacturers down the value chain or consumers whose inefficient lifestyle increases demand for these goods. Who is the polluter is thus a *normative* question that is not determined by the polluter pays principle on its own.[230] It is therefore difficult to define cases in which inefficiency "causes" environmental harm in the legal sense. In theory, the principle could apply perhaps in cases of excessive use of the resource. There is such a broader interpretation of the principle, which argues that it "already includes recovery of both environmental and resource costs."[231] Mainly in respect of the EC Water Framework Directive, this view argues that the principle does not require damage and that 'the use of natural resources' might also be covered by the term 'pollution'.[232] This interpretation of the principle would need to take into account that it blurs the conceptual distinction between paying for damage caused to the

[229] Cf. Birnie et al. (2009) at 189 for definitions of "pollution".

[230] Cf. Birnie et al. (2009) at 325 with examples of similar problems.

[231] Lindhout and van den Broek (2014) at 46 and 58.

[232] Lindhout and van den Broek (2014) at 47 citing WATECO Working Group 2.6, Common Implementation Strategy for the Water Framework Directive (2000/60/EC), Guidance Document No 1, Economics and the Environment, 2003.

environment and paying for using a good, service or resource (the price of which might already include environmental costs). There is no indication that this broad interpretation has so far gained traction in international environmental law.

Summary

The polluter pays principle expresses the economic approach of internalising external costs and is mainly directed at how states should address private parties. Having to bear (i.e. internalise) the costs of pollution is intended to be a disincentive to pollute. It is doubtful whether the principle has the status of customary international law. However, it is recognized on a regional level in the EU, UNECE and OECD countries. With regard to content, while the principle would generally cover abiotic resources, who is the polluter is a normative question that is not determined by the polluter pays principle on its own. Using the principle to address inefficiency, either directly or by analogy, would mean that inefficiency would be treated as contributing to environmental harm, an inefficient user would be treated like a "polluter", and the environmental costs caused by the inefficency would be internalised. There is no indication that this broad interpretation has so far gained traction in international environmental law.

2.1.1.11 Precautionary principle

Development and Content

While there is no uniform formulation or usage for the precautionary principle, the general idea is that lack of scientific certainty about actual or potential environmental impacts should not prevent states from taking approprite measures.[233] Principle 15 of the Rio Declaration states: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

The precautionary principle is enshrined in several treaties and non-binding instruments. In the London Protocol, Article 3.1 requires the application of the precautionary approach. In the Biodiversity Convention, the precautionary approach has been introduced recognizing that "where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat". In article 3(3) of the United Nations Framework Convention on Climate Change (UNFCCC), the precautionary approach is generally considered as intending to prevent states from postponing mitigation measures by referring to scientific uncertainty about climate change. The UNFCCC is of general relevance because it incorporates the precautionary principle in the operative part of a treaty text with near universal participation, including the US.

The precautionary principle has been called "notoriously difficult to define", with no generally accepted definition.[234] Even an internationally agreed and long-established wording such as in the Rio Declaration raises questions of interpretation and application. For instance, would it be a self-standing obligation or merely influence the interpretation of other obligations? Would it imply an obligation to take action or merely serve as a (legal) justification for such measures in the absence of scientific certainty?[235] Would it justify "precautionary" measures that trade off one environmental risk against

[233] Dupuy and Viñuales (2015) at 61.

[234] Scotford (2017) at 81.

[235] Cf. the overview of views in Dupuy and Viñuales (2015) at 61-62.

another?[236] To some extent these questions are inherent in a concept of "principles" in which it is their nature to be neither precise in content nor to provide clear legal consequences.

There is also a more fundamental critique of limiting the precautionary principle to cases of scientific uncertainty. Some scholars in particular in the German legal context argue that the precautionary approach also addresses also related to resources. According to this view, the precautionary approach conceptually includes an unspecified but absolute limit to resource use - a requirement to maintain a "free space" - for the sake of future generations.[237] This notion could also be regarded as one element of sustainable development, to which this view adds the economic aspect of the distribution of resources.[238] However, this view does not seem to have gained traction in legal practice in Germany or EU law[239], which also explicitly enshrines the precautionary principle. Given the growing recognition of the need for addressing the scarcity of resources, it could be worth revisiting such a resource-related understanding of the precautionary approach.

The precautionary principle has also been invoked in relation to the burden of proof. For instance, it has been argued that when a *proposed* activity has the potential for irreversible and catastrophic harm, the burden of proof to show that it is safe to implement should be placed on those proposing the action to show that it is safe, instead of requiring those opposing the activity to show that it is not safe.[240] However, the practical implications of shifting the burden of proof based on the precautionary principle would need to be further elaborated. The precautionary principle could also be invoked to ease or even shift the burden of proof *after* environmental impacts have occurred. For instance, a state would have to rebut a legal assumption that its activity caused the alleged environmental harm.[241] Sectoral applications of the precautionary principle under specific regimes may adopt such or similar legal implications.[242] However, there are not sufficient state practice and precedents to suggest that international law generally requires a state to prove that activities within its jurisdiction or control are environmentally safe.[243] In the *Pulp mills on the river Uruguay* case, the ICJ accepted that a precautionary approach (it did not use the term "principle") "may be relevant" in the interpretation and application of the treaty in question. However, the court also stated that "it does not follow that it operates as a reversal of the burden of proof".[244] The wording of the court is not clear as to whether this applies to the specific case or generally excludes a reversal.[245]

Rickels et al. argue that the precautionary principle can serve to balance conflicting objectives: In this view, because the precautionary principle(s) in different instruments can be satisfied to different degrees, they therefore allow for determining which degree of environmental damage can be accepted in order to advance for instance the comprehensive goal of climate protection.[246] This view appears to

[236] For the UNFCCC, the specific wording of the precautionary principle could be read as supporting an argument in favour of activities that pose risks to the environment, provided that these activities are intended to mitigate the causes and effects of climate See analysis in Bodle et al (2012) at 119-120; Bodle (2013) at 458-459.

[237] Lübbe-Wolff *NVwZ* 1998, 777 (779 f.); Appel *NVwZ* 2001, 395 (397); Erbguth and Schlacke, Umweltrecht (2016) at 51; also Nettesheim in Grabitz, Hilf and Nettesheim, EUV/AEUV, Art. 191 para 94; Epiney in Landmann/Rohmer, EUV/AEUV Art. 191 para 10.

[238] Nettesheim in Grabitz/Hilf/Nettesheim, EUV/AEUV, Art. 191 para 94.

[239] Nettesheim in Grabitz/Hilf/Nettesheim, EUV/AEUV, Art. 191 para 94; Epiney in Landmann/Rohmer, EUV/AEUV Art. 191 para 10, Verschuuren (2003) at 115.

[240] Bodansky (2011) 15.

[241] Bodle et al (2012) at 115-116.

[242] See for instance ITLOS case No.17, "Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)", para 125-135, http://www.itlos.org; Jessen (2012) 77.

[243] Birnie et al (2009) 158.

[244] ICJ, *Pulp mills on the river Uruguay*, para 164.

[245] Bodle (2012) at 115-116.

[246] Rickels et al. (2011) at 101-103.

boil down to an overall cost-benefit analysis, but there is no compelling reason or evidence for assuming that the precautionary principle generally endorses a cost-benefit or "net" approach to environmental risks.

While the precautionary principle still means many things in different contexts,[247] it can provide guidance on dealing with scientific uncertainty - so far mainly by procedural safeguards. On the other hand, it has been argued that if the precautionary principle is applied in isolation, there is a risk of perpetuating the scientific uncertainty that gives rise to its application in the first place.[248]

It should be noted that the precautionary principle is part of EU law and of many national legal orders, and but these instances do not necessarily have the same legal content and implications as the precautionary approach in international law.[249]

Status

As with other principles, the question of legal status is distinct from the question of specific content. The legal status of the precautionary principle in customary international law is not yet clearly established, although it has been invoked several times in international cases.[250] This is highlighted by the fact that some, including the ICJ, avoid or reject the term precautionary "*principle*" and use the term "*approach*".[251]

Applicability to abiotic resources and resource efficiency

The principle does not specifically include or exclude resources. It potentially applies to all activities involving resources along the whole value chain.

Assessment

Conceptual legal uncertainties regarding the precautionary principle, as well as its openness regarding content, make it difficult to draw conclusions without imputing desired outcomes.[252] The most commonly invoked implication is that scientific uncertainty should not by itself be a reason to avoid restricting potentially harmful activities. For resource efficiency, this could mean that measures should be taken to address inefficient resource use even if there is scientific uncertainty about its specific impacts. However, there does not seem to be scientific uncertainty about the link between inefficient resource use and demand for resources. Perhaps the principle could be used as an argument in cases where that link and the ensuing environmental degradation is disputed. But the precautionary principle is no substitute for balancing or prioritising different objectives. All the common ground it can currently provide is to establish interpretative guidance and procedural safeguards for dealing with scientific uncertainty. At least in the current state of international law, the precautionary principle does not provide a sufficient legal tool for making essentially political decisions about conflicting objectives and managing risks.[253]

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[247] Birnie et al. (2009) at 155.

[248] Rickels et al. (2011) at 102.

[249] Scotford (2017) at 84.

[250] Bodle et al (2014) at 52; see generally Erben (2005); Birnie et al (2009) at 157; Bodle et al (2012) at 119 with further references; Recent cases include ICJ, *Pulp Mills on the river Uruguay (Argentina v. Uruguay),* judgment of 20 April 2010, www.icj-cij.org; ITLOS case No.17, *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area (Request for Advisory Opinion submitted to the Seabed Disputes Chamber)*, paras 125-135, http://www.itlos.org.

[251] See the overview in Birnie et al (2009) at 154-155.

[252] Bodle et al (2014) at 52.

[253] Bodle et al (2014) at 54.

Against this background, the practical implications of the precautionary principle, as it stands, for resource efficiency seem small. However, there are views particularly in the German legal debate arguing that the precautionary approach also contains a resource-related element and limits to resource use. While these views have not gained traction at the international level, it could be worth revisiting that argument in view of the increasing recognition of limited resources and resource efficiency as a common and overarching objective. This could strengthen arguments based on the precautionary principle to justify measures to address inefficiency, e.g. when interpreting norms that aim at conserving resources or at reducing environmental impacts resulting from increased demand.

Summary

There is no uniform formulation or usage for the precautionary principle and its legal status in customary international law has not yet been clearly established. All the common ground it can currently provide is to establish interpretative guidance and procedural safeguards for dealing with scientific uncertainty, which is of little relevance to resource efficiency. However, in that sense it might be used as an argument to justify measures to address inefficiency, e.g. when interpreting norms that aim at conserving resources or at reducing environmental impacts resulting from increased demand.

2.1.1.12 Common but differentiated responsibility

Development and Content

The principle of common but differentiated responsibility (CBDR) captures the political proposition that obligations in international environmental law should not necessarily apply equally to all states, but that higher standards should apply to some states.[254] It contains two elements: First, it expresses the common obligation of states to protect the environment where the environmental resources is shared between two or more states, or of a common concern (e.g. the atmosphere, biodiversity, the ozone layer).[255] CBDR thus derives from the principle of cooperation.[256] Second, the principle recognises that states have different responsibilities with respect to environmental problems, resulting in differentiated legal obligations. The different responsibilities might result from different historical or current contributions to the problem, and different stages of development and corresponding capacities or needs of states.[257] There are different views on which of these factors the CBDR principle is based.[258]

While the idea of a common interest or of differential treatment has been present in international law for some decades, the CBDR principle as such was first reflected in the 1992 UNFCCC,[259] and Principle 7 of the Rio Declaration. The wording of the principle slightly varies: Rio Declaration states the common but differentiated responsibilities, while the UNFCCC adds “and respective capabilities”. These variations reflect the different weight put on historical responsibility, on the one hand, and capacities or needs, on the other. More recent MEAs also highlighty the “circumstances” of countries: the 2013 Minamata Convention recalls in its preamble the Rio principle of CBDR while adding “acknowledging States’ respective circumstances and capabilities and the need for global action “.[260]

[254] Birnie et al. (2009) at 133.

[255] Sands (2003) at 286.

[256] Rajamani (2000) at 121.

[257] Sands (2003) at 289 ff.

[258] See International Law Association (2012) at 9.

[259] E.g. in Article 3.1 and 4.1 UNFCCC.

[260] The preamble of the Minamata Convention states “Recalling the United Nations Conference on Sustainable Development’s reaffirmation of the principles of the Rio Declaration on Environment and Development, including, inter alia, common but

Similarly, the 2015 Paris Agreement establishes that it will be implemented to reflect CBDR "and respective capabilities, in the light of different national circumstances". This new wording reflects a political shift away from a strict differentiation of two groups of countries (developed vs developing) towards a more nuanced differentiation.[261]

There is no consensus aas to whether the CBDR principle entails an obligation in its own right and what its content would be. Rajamani notes that the principle is rather "discretionary or guiding" than prescriptive, and also Birnie et al. highlight that the principle might not suffice as a basis for interstate claims but as a "framework principle".[262] In the climate regime, the CBDR principle has undoubtedly shaped the development of the regime, e.g. when establishing quantified emission reduction obligations under the Kyoto Protocol only for developed countries[263] or differentiated reporting and finance obligations. In addition, many MEAs establish differentiated responsibilities, even where the principle is not explicitly spelled out.[264]

It is particularly controversial whether CBDR does not only provide for higher standards for developed countries but whether it does or should also generally entail an obligation by developed countries to provide financial or technical assistance.[265]

Status

The legal status of the principle of common but differentiated responsibility is controversial. Although the CBDR principle is reflected in the operative part of international treaties, the wording often suggests that the parties did consider the principle not as one of general customary law but only as applicable to the specific context of that treaty, e.g. the UNFCCC.[266] The wording of the Rio Declaration is broader but not binding. On the other hand, the inclusion of differential treatment in a range of MEAs with nearly universal participation[267] might also indicate that the CBDR principle "is the bedrock of the burden sharing arrangements crafted in the new generation of environmental treaties".[268] At least where the principle is included in an MEA it can arguably serve as guidance for the interpretation and application of the respective treaty.[269]

Applicability to abiotic resources and resource efficiency

Given the uncertain legal nature of the CBDR principle, it would be difficult to argue that the principle was applicable to all activities involving abiotic resources. In the context of the regimes that refer to the principle, CBDR could become relevant to activities relating to resource efficiency in the use of abiotic resources.

Assessment

The principle of CBDR serves the political purpose of including developing countries in international environmental obligations. It enables parties to differentiate obligations according to factors such as historical contribution to the problem and capacity. It provides a basis for distributing efforts rather

differentiated responsibilities, and acknowledging States' respective circumstances and capabilities and the need for global action".

261 Brunnée and Streck (2013). Bodle and Oberthür (2017) at 97.

262 Rajamani (2000) at 124; Birnie et al (2009) at 135.

263 Deleuil (2012); Pauwelyn (2013).

264 See Vienna Convention, the Montreal Protocol, the CBD, the UNCCD or the UNCLOS.

265 Birnie et al. (2009) at 134; International Law Association (2012) at 11; Rajamani (2000) at 122.

266 Rajamani (2000) at 124.

267 Beyerlin and Marauhn (2011) at 66.

268 International Law Association (2012) at 10.

269 See International Law Association (2012) at 7.

than establishing clear duties of conduct for states. However, state practice does not suggest that there is a legal *requirement* to differentiate. In addition, the grounds for and elements of differentiation vary across issues and change over time, as recent treaties show. The application of the principle to resource efficiency could, for example, entail that developed countries increase the efficient use of fossil fuels at a higher pace than developing countries, or that they phase down the use of certain resources earlier. Such differentiated obligations would, however, usually require further negotiations among states rather than emanating from the principle per se.

Summary

While historically the principle mainly served as a basis for differentiating between developed and developing countries, state practice does not suggest that there is a legal *requirement* to differentiate. With regard to establishing resource efficiency in international environmental governance, CBDR could be useful in considerung differentiated standards and increase political buy-in in particular by developing countries. However, the grounds for and elements of differentiation vary across issues and change over time and resource efficiency might call for other or additional factors to be taken into account.

2.1.1.13 State responsibility

Development and Content

The rules on state responsibility regulate whether there has been a breach of international law and the legal consequences of that breach. They are secondary rules and general in nature, applying to all types of binding primary norms (e.g. obligation to prevent transboundary harm), acts and omissions, or areas of international law.[270]

In 1928 the Permanent Court of International Justice (PCIJ) established in the Chorzow Factory case the general principle that states have to make reparation for an illegal act, and that principle was later affirmed by the ICJ in the Gabcykovo Nagymaros case.[271] States have to make reparations for injuries caused by the breach of an international obligation – under certain conditions.[272] According to the rules of state responsibility codified by the ILC, (1) the conduct in question must be attributable to the state, (2) the conduct must constitute a breach of an international obligation of that state, and (3) no circumstances may prevail that could preclude the wrongfulness (e.g. force majeure). The legal cosequence is that the state responsible is under a new obligation to cease the internationally wrongful act and make full reparation for injuries caused.[273] The forms of reparation include restitution, compensation and satisfaction, separately or in combination. The ICJ has referred to these elements in several occasions and they are widely undisputed.[274]

[270] Fitzmaurice (2007) at 1016.

[271] *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia), *I.C.J. Reports* 1997, 112, para. 149.

[272] Lefeber (1996) at 47.; ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, UN Doc. A/56/10, Art. 1, comm. 2; Boyle (2005) at 6.

273 ILC, *Draft Articles on Responsibility of States for Internationally Wrongful Acts*, UN Doc. A/56/10, Arts 28-33.

274 *United States Diplomatic and Consular Staff in Tehran* (*USA v. Iran*), Judgement, *I.C.J. Reports* 1980, p. 3, para. 56; *Phosphates in Morocco*, Judgement 1938, *P.C.I.J.*, Series A/B No. 74, 10, at 28; *Gabcikovo-Nagymaros Project* (Hungary v. Slovakia), *I.C.J. Reports* 1997, 112, para. 78.

Status

It is established customary law that states are responsible for internationally wrongful acts. The International Law Commission's Articles on Responsibility of States for Internationally Wrongful Acts of 2001 for the most part reflect customary law, although some details may not be universally accepted.[275]

Applicability to abiotic resources and resource efficiency

The rules on state responsibility are secondary rules applying to any breach of international law and are thus not limited to any specific subject area. They apply to any primary obligation that covers abiotic resources and addresses resource efficiency. For resource efficiency, the actions of private actors are particularly relevant. The conduct of private actors is not directly attributable but the state might be responsible for not exercising due diligence in controlling the private actorunder its jurisdiction.[276]

Assessment

The rules on state responsibility are important secondary rules and contribute to enforcing primary rules. Their effectiveness is, however, dependent on the quality of the primary rule, i.e. its specificity. In international environmental law primary rules are often vaguely phrased which makes it difficult to establish a breach with certainty and apply the rules of state responsibility. Furthermore, it is often a legal challenge to establish the causual link between the harmful act and the damage.[277]

For the specific case of international environmental law, the question of standing becomes particularly relevant. According to the rules of state responsibility, it is the injured state that may invoke the responsibility of another state.[278] A breach of international environmental law, e.g. climate change law, may have impacts on a wider group of states or the international community as a whole. In case of damages to global environmental goods or goods of common concern it is not clearly established who would enjoy standing for invoking the breach of such *erga omnes* obligations.[279]

Restitution will often not be a realistic remedy for breaches of environmental law, and there are high uncertainties surrounding the appropriate level of compensation costs, especially if damage reaches beyond economic loss or damage to property.[280] For instance, the depletion of natural resources has been addressed through compensation claims.[281]

State responsibility provides a basic legal framework to address breaches and may also serves as a disincentive for breaches. Where there are no clearly established primary obligations relating to resource efficiency, the still open debate could be relevant whether states can be responsible for damage caused by activities that are lawful but nevertheless hazardous.[282] However, besides issues regarding no-fault liability, this would also raise questions of when inefficient use of a resource amounts to risky conduct and when it "causes" harm.

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[275] For instance, Ipsen in: Ipsen (2014) at 578 holds that the Draft Articles on the legal consequences are "for a good part" customary law, albeit without stating which parts are not.

[276] See Shaw (2008) at 789; see for the link to the due diligence concept Christiansen (2016) at 48.

[277] See for the details Kiss and Shelton (2007) at 20; Plakokefalos (2015).

[278] ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, UN Doc. A/56/10, Article 42.

[279] Birnie et al. 233, Beyerlin and Marauhn (2011) at 363; Verheyen (2005); Dupuy (2012); Christiansen (2016) at 50.

[280] Birnie et al (2009) at 229.

[281] ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, UN Doc. A/56/10, Commentary to Article 36, para 14.

[282] See e.g. Ipsen in: Ipsen (2014) at 560-561. The ILC has exluded this from its Draft Articles on State Responsibility, see Birnie et al (2009) at 223.

Summary

The rules on state responsibility are secondary rules to enforce primary rules: they determine whether there has been a breach of a primary rule of international law and what the consequences of that breach are. Their effectiveness -and their potential impact on resource efficiency- thus depends on the nature the primary rules which they intend to help enforce. Where there are no clearly established primary obligations relating to resource efficiency, it could be relevant to revisit the debate on whether states can be responsible for damage caused by activities that are lawful but nevertheless hazardous. As in other concepts and obligations, this would also raise questions of when inefficient use of a resource amounts to risky conduct and when it "causes" harm in the legal sense.

2.1.2 Treaty law

2.1.2.1 London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter

Table 1: 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 1972 (in force since 24 March 2006)

Key aspects	Summary
Form and legal status	binding, in force
Objectives	Protecting the marine environment from all sources of pollution, especially dumping and incineration
Parties	48 countries that have ratified, but not US and Russia
Territorial scope	Global
Resources covered	Material and substance of any kind, form or description
Stage of the value chain	waste disposal; production-processes and waste recovery, only indirectly addressed
Steering mechanism	Regulation (prohibition and permit system), information, cooperation
Political weight	++ widespread ratification as well as coverage of world shipping tonnage (but not US and Russia); international minimum standards for all states for the regulation of pollution of the marine environment by dumping.
Relevance for RE	+++ prohibition and restriction of waste dumping creates economic incentive for RE

Summary

The 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol) targets pollution of the sea caused by dumping or incineration of wastes, including abiotic wastes, in order to protect the marine environment. As a rule, the Protocol prohibits waste dumping at sea unless one of the exceptions set out in the Protocol apply. For certain wastes, a permit for dumping may be issued under certain conditions, in particular certain measures to avoid dumping in favour of more environmentally friendly waste management options such as waste prevention and recovery.

In prohibiting the export and import of hazardous waste by default, and subjecting it to permit conditions for certain wastes, the London Protocol makes it more expensive to dispose of such wastes. This creates an economic incentive to produce less waste and to recover more, which both leads to more resource efficiency. This incentive is strengthened by the permit conditions which include measures to prevent waste generation and recovery. Thus, the main regulatory technique of the London Protocol is not a direct obligation to produce less waste and recover more but the creation of economic incentives to do so.

Although the Protocol has not yet been ratified by the US, Russia and several developing states, its 48 parties cover almost 40% of the gross tonnage of the world's merchant fleet, and dumping at sea is no longer perceived as legitimate. The Protocol is considered effective and thus creates effective incentives to improve resource efficiency.

Overview

Form and legal status: The Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972[283] ("London Protocol") is an international treaty that was adopted in November 1996 and entered into force on 24 March 2006. The London Protocol supplements the 1972 Dumping Convention[284] and provides that it will supersede the latter for those parties that have ratified both agreements.[285] So far, 48 states have ratified the Protocol, covering almost 40% of the gross tonnage of the world's merchant fleet, compared to 87 parties to the London Convention covering 60%.[286] Some important states such as the USA and Russia are party to the London Convention but not to the London Protocol.[287]

Objectives: The objective of the Protocol is to protect and preserve the marine environment from all sources of pollution at sea[288], particularly resulting from dumping or incineration at sea of wastes or other matter.[289]

Territorial scope: The Protocol covers dumping in all marine waters other than the internal waters[290] of its parties, as well as the seabed and its subsoil, but does not include sub-seabed repositories accessed only from land. It is open to all states. Indirectly, the Protocol affects non-parties, because it prohibits the export of wastes for dumping or incineration.[291] Also, the Meeting of Contracting Parties (MOP) may offer advice and assistance to both, Contracting and non-Contracting Parties. The effect of the Protocol could thus extend beyond the jurisdiction of Parties.

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283 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972. London, 7 November 1996, 36 *International Legal Materials* (1997), p. 7.

284 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (adopted 29 December 1972, entered into force 30 August 1975, 11 International Legal Materials (1972) 1358, for the status of ratification see footnote 1 (87 states are currently Party of the 1972 Convention).

285 Ibid, Art. 23.

286 As of 21 April 2017, see Status of multilateral Conventions and instruments in respect of which the International Maritime Organization or its Secretary-General performs depositary or other functions, www.imo.org.

287 IMO: "Parties to the London Convention and Protocol", available at http://www.imo.org/en/OurWork/Environment/LCLP/Documents/Parties%20to%20the%20London%20Convention%20and%20Protocol%20March%202016.pdf.

288 London Protocol Article 1 (10): "Pollution" means the introduction, directly or indirectly, by human activity, of wastes or other matter into the sea which results or is likely to result in such deleterious effects as harm to living resources and marine ecosystems, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.

289 See Ibid, Art. 2.

290 Article 7 of the London Protocol addresses internal waters by requiring Parties to either apply the London Protocol or adopt other effective permitting and regulatory measures to control activities in internal waters that would qualify as dumping if conducted at sea.

291 Ibid, Article 6.

Resources covered: The Protocol covers dumping of "wastes or other matter", including the dumping of redundant vessels, platforms and other structures, at sea. As it defines "wastes or other matter" as material and substance of any kind, form or description all relevant materials are covered. Matter incidental to or derived from the normal operation of vessels is not covered. The Protocol allows the dumping of eight categories of wastes[292], if a prior permit is issued by the relevant national authorities (Art. 4 in connection with Annex 1, so called "reverse list" [293]). These matters include inert, inorganic material. In sum, the Protocol covers abiotic resources.

Steps of the value chain covered: The London Protocol focuses on waste disposal. However, the permit conditions for dumping in Annex 2 include the consideration of waste prevention and management. Permits must be refused if appropriate opportunities exist to re-use, recycle or treat the waste without undue risks to human health or the environment or disproportionate costs.[294]

Type of steering mechanism: The London Protocol uses regulatory instruments (general prohibition of dumping and incineration at sea, permission for certain categories of wastes under specific conditions), information tools such as reporting and information for other Contracting Parties, and cooperation mechanisms.

Content

Relevant obligations for parties: The most relevant obligation is the requirement to generally prohibit the dumping and incineration of wastes at sea, and to prohibit the export of wastes to other countries for these purposes (Arts 4 to 6). Dumping is defined as: disposal, incineration, abandonment or storage in the seabed or subsoil thereof. As an exception to the default rule, parties may allow dumping for the categories of waste and other matter listed in Annex 1, subject to a permit and conditions that are set out in Annex 2. By setting the prohibition as the default and the permissions as the exception, the London Protocol reverses the regulatory technique of the London Convention, under which dumping is allowed unless prohibited by it.
In addition, the Parties have to take effective measures, according to their scientific, technical, and economic capabilities, to prevent, reduce and where practicable eliminate pollution caused by dumping. The London Protocol explicitly requires parties to apply a "precautionary approach" to environmental protection from dumping of wastes or other matter. This is noteworthy not only because of the clear legal obligation, but also because it explicitly requires parties to take preventive measures.[295]
Some elements in the permit process direct parties and applicants towards prevention of waste in the first place and waste management. Parties have to pay, "[p]articular attention [...] to opportunities to avoid dumping in favour of environmentally preferable alternatives" (Art. 4 (2). The permit conditions in Annex 2 contain a step by step procedure for the assessment of wastes in view of dumping alternatives and the potential effects of dumping. A permit may be issued only if all impact evaluations are completed and certain monitoring requirements determined. It has to be reviewed regularly, taking into account the monitoring results.

[292] Dredged material; sewage sludge; fish waste or material resulting from industrial fish processing operations; vessels and platforms or other man-made structure at sea; inert, inorganic material and organic material of natural origin; bulky items primarily comprising iron, steel, concrete and similarly unharmful materials for which the concern is physical impact, and limited to those circumstances where such wastes are generated at locations, such as small islands with isolated communities, having no practicable access to disposal options other than dumping; carbon dioxide streams from carbon dioxide capture processes for sequestration.

[293] IMO: "Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter", available at http://www.imo.org/en/OurWork/Environment/LCLP/Pages/default.aspx.

[294] Annex 2 para. 6 London Protocol.

[295] Article 3 (1) London Protocol.

One step of the permit procedure is a "waste prevention audit" as part of assessing alternatives to dumping. It includes an evaluation of certain waste reduction and prevention techniques.[296] Moreover, consideration has to be given to the following hierarchy of waste management options, which implies an order of increasing environmental impact: re-use; off-site recycling; destruction of hazardous constituents; treatment to reduce or remove the hazardous constituents; and disposal on land, into air and in water. On an individual basis, the issuance or renewal of a permit can be linked to the implementation of waste prevention strategies or depend on the absence of appropriate alternative waste management opportunities, e.g. recycling. Thus, in order to prevent maritime pollution, the Protocol foresees mechanisms which have the potential to increase resource efficiency by preventing or recovering waste.
The assessment of wastes considered for dumping also requires each party to develop a national Action List, providing a mechanism for screening and classifying candidate wastes and their constituents. This mechanism is supposed to pay attention, in particular, to toxic, persistent and bioaccumulative substances (cadmium, mercury, lead, copper, zinc, petroleum hydrocarbons etc.) If a certain upper level, as determined by the Action List, is reached, the waste must not be dumped. According to para 9 of Annex 2, the Action List "can also be used for further waste prevention considerations", and thus contribute to the efficient use of these resources.
The London Protocol also contains usual provisions on cooperation. Upon request and through collaboration with the IMO, Parties shall support each other through advice on implementation of the Protocol and through information and assistance, relating *inter alia* to environmentally sound technologies, disposal and treatment of waste, waste minimization, clean production processes and corresponding know-how, or to other measures to prevent and reduce pollution caused by dumping (Art. 13).
In sum, by prohibiting the export and import of hazardous waste by default, and subjecting it to permit conditions for certain wastes, the London Protocol makes it more expensive to dispose of such wastes. This creates an economic incentive to produce less waste and to recover more, which both leads to more resource efficiency. This incentive is strengthened by the permit conditions which include measures to prevent waste generation and recovery. Thus, the main regulatory technique of the London Protocol is not a direct obligation to produce less waste and recover more but the creation of economic incentives to do so.
There have been three amendments to the London Protocol: The 2006 amendment added to Annex 1 the storing of captured CO2 streams in sub-seabed formations. It entered into force in 2007. A follow-up amendment to article 6 in 2009 allows the export of CO2 streams for disposal under certain conditions. In 2013, amendments to the text and annexes included marine geoengineering in the general prohibition and added a scientific assessment framework as a condition for permits. The 2009 and 2013 amendments are not in force as yet.[297]

Institutions, review and decision-making

Institutions: The Protocol has the usual institutional structure and establishes a Meeting of Contracting Parties (MOP). The International Maritime Organization (IMO) is responsible for all Secretariat duties in relation to the Protocol.

Evaluation and review: The MOP continually reviews the implementation of the Protocol and evaluates the Protocol's effectiveness. To this end, it reviews reports of the Parties with the assistance of a subsidiary body, the so called Compliance Group and the Scientific Group of the Protocol.

[296] Product reformulation, clean production technologies, process modification, input substitution and one-site or closed-loop recycling.

[297] Status of multilateral Conventions and instruments in respect of which the International Maritime Organization or its Secretary-General performs depositary or other functions, 21.04.2017, www.imo.org.

Reporting: Parties are required to report on the administrative and legislative measures taken to implement the provisions of the Protocol and their effectiveness on a regular basis. Moreover, the Parties have to report recordings of the permits issued and (where practicable) of the dumping actually occurred, as well as information following from the monitoring of the sea, on an annual basis.

Compliance procedures, remedies and dispute settlement procedures: The Protocol itself does not contain compliance mechanisms or procedures. Implementation and compliance is based on assistance and co-operation by the MOP. However, after its entry into force the MOP adopted a compliance mechanism in 2007.[298] The MOP retains the overall responsibility for compliance matters, offers advice and periodically reviews the effectiveness of the compliance procedures and mechanisms. In addition, a Compliance Group (CG) has been established.[299] It reviews reports, assesses compliance issues referred to it and may provide advice and guidance to individual Parties. It can also make recommendations to the MOP, for example on the facilitation of co-operation and assistance, or on the elaboration of compliance action plans. Neither the MOP nor the CG can take binding measures.[300]

The Protocol also contains a provision on dispute settlement, which suggests using either the procedures listed in Art. 287 of the 1982 UN Convention on the Law of the Sea (UNCLOS)[301] or an Arbitral Procedure as set forth in its Annex 3.

Stakeholders and public involvement: The Protocol does not contain provisions relating to public participation or stakeholder involvement.

Assessment

Coherence with other international treaties and policies: A range of international treaties address maritime pollution by dumping. The 1972 London Convention still applies to those parties that have not (yet) ratified the Protocol, but will no longer be amended with regard to new issues.[302] The dumping of items listed in the so called black list (Annex I) is prohibited, whilst the dumping of grey-listed-materials (Annex II and III), is subject to a special permit.[303] As mentioned above, the London Protocol reversed the regulatory technique of the Convention under which dumping is allowed unless prohibited. Since the entry into force of the London Protocol in 2006, the parties to the two treaties have had joint meetings, which however created some problems.[304]

The International Convention for the Prevention of Pollution from Ships (MARPOL) covers pollution from operational or accidental causes.[305] According to the 1982 UN Convention on the Law of the Sea (UNCLOS), states are required to adopt laws and regulations to prevent, reduce and control pollution of the marine environment by dumping, though they do not have to prohibit it.[306] UNCLOS requires

[298] IMO: "Compliance with the London Convention and Protocol" available at http://www.imo.org/en/OurWork/Environment/LCLP/Compliance/Pages/default.aspx.

[299] IMO: "Compliance with the London Convention and Protocol" available at http://www.imo.org/en/OurWork/Environment/LCLP/Compliance/Pages/default.aspx.

[300] Compliance Procedures and Mechanisms pursuant to Art. 11 of the 1996 Protocol to the London Convention 1972, available at http://www.imo.org/en/OurWork/Environment/LCLP/Compliance/Documents/Compliance%20Procedures.pdf.

[301] UN Convention on the Law of the Sea (UNCLOS), 10 December 1982, in force 16 November 1994, 21 *International Legal Materials* (1982), p. 1261.

[302] According to a decision in 2005, see Hong and Lee (2015) at 49.

[303] IMO: "Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter", available at http://www.imo.org/en/OurWork/Environment/LCLP/Pages/default.aspx.

[304] See Hong and Lee (2015) at 49-50.

[305] International Convention for the Prevention of Pollution by ships (MARPOL), 12 *International Legal Materials* (1973), 1319, as amended before its entry into force by the Protocol of 1978 relating thereto, in force 2 October 1983.

[306] Birnie et al. (2009) at 466.

prior consent to dumping waste into the area of jurisdiction of the coastal state, irrespective of a permit granted by another state. In sum, the London Protocol is quite strict but not a comprehensive code for the regulation of dumping, and has to be read together with the provisions of other treaties and customary international law conferring jurisdiction related to dumping on coastal and flag states.[307]

The London Protocol however, is the only international treaty of global scope that prohibits *all* dumping unless explicitly permitted. It thereby significantly strengthens the reverse approach of the 1972 Convention.[308] The new approach under the London Protocol is a much stronger expression of the precautionary principle than in most of the regional agreements concerning the pollution from land-based sources.[309] In particular, the London Protocol not only explicitly requires the precautionary approach, but also sets an example of how to make it operational through specific procedural and scientific requirements. However, due to its smaller membership, it is debated whether the London Protocol has already replaced the 1972 Convention in setting the international *minimum* standard for the national regulation of pollution of the marine environment by dumping, as called by Art.210 (6) UNCLOS.[310] According to IMO, both treaties provide these standards.[311] Because of that and the differences between the London Convention and London Protocol in substance as well as practice[312], it has been argued that the former should be merged into the latter, as intended originally. [313] However, the potential benefits do not seem to outweigh the legal and political uncertainty this would create, and there does not seem any political traction for this idea.

Political weight of the instrument: The 1972 Convention and the London Protocol regulate dumping at sea on a global level. Together they have achieved widespread, although not global, ratification as well as coverage of world shipping tonnage. In line with the system envisaged by UNCLOS, they set international minimum standards for all states for the regulation of pollution of the marine environment by dumping. Moreover, most of the existing regional arrangements for the control of dumping are fully consistent with the Protocol or closely based on the 1972 Convention or the Protocol.[314]

However, Russia, the US and several developing states have not yet ratified the Protocol. Nevertheless, the US is actively participating in the MOP.[315]

The practice under the London Protocol has shown that the instrument is capable of responding to new developments. Parties adopted three amendments in a relatively short time since its entry into force, regulating current issues such as CO2 sequestration and marine geoengineering.

Effectiveness: According to Birnie et al, "[t]he 1972 Convention is generally regarded as one of the more successful treaty of the 1970s".[316] With the adoption of the Protocol, the Parties have developed even more stringent standards for dumping at sea. In line with recent state practice, it is no longer

[307] Birnie et al. (2009) at 470.

[308] Dupuy and Vinuales (2015) at 103.

[309] Birnie et al. (2009) at 467.

[310] See Hong and Lee (2015) at 50 with further references.

[311]See International Maritime Organization: "The London Convention and Protocol: Their Contribution to Protection of the Marine Environment", at 5, available at http://www.imo.org/en/OurWork/Environment/LCLP/Documents/22780LDC%20Leaflet%20without%2040%20Anniv%20logo2012Web1.pdf.

[312] For more details see Hong and Lee (2015) at 48-49.

[313] See Hong and Lee (2015) at 47 with proposals at 51-52 and http://www.imo.org/en/OurWork/Environment/LCLP/Pages/default.aspx.

[314] Birnie et al. (2009) at 471.

[315] EPA (2016): "Ocean Dumping: International Treaties", available at https://www.epa.gov/ocean-dumping/ocean-dumping-international-treaties#US%20Reporting.

[316] Birnie et al. (2009) at 472.

tenable to perceive dumping at sea as principally legitimate, which may have implications for the development of customary law in this field.[317] Due to the interplay of global and regional rules, the control of dumping at the sea can be considered as effective.[318] However, application and enforcement remains linked to the jurisdiction of the parties through the flag or territory. Gaps remain based on the number of parties as well as the amount of shipping covered. High-sea enforcement by the flag state may often be ineffective,[319] although Article 10 (3) requires parties are to cooperate in this respect.

Even before the Protocol, the efforts of contracting parties to the London Convention to find alternative methods to dumping at sea reduced this practice of waste disposal.[320] The Protocol is thus considered effective and therefore creates effective incentives to improve resource efficiency.

Political opportunities and good practice examples:

- The regulation technique of the London Protocol, based on the dumping prohibition by default and the issuance of permits for certain wastes under certain conditions , provides economic incentives for resource efficiency
- The linking of permit issuance or renewal to waste reduction and prevention strategies and the absence of appropriate alternative waste management opportunities such as recovery, furthers resources efficiency
- The mechanism of the national Action List, prohibiting waste dumping if a certain upper level is reached, is noteworthy as such, but may also be used for waste prevention and thus potentially furthers resource efficiency
- The obligations of parties to exchange information and know-how on measures relating to waste minimization and clean production processes also furthers resources efficiency
- The 2013 amendment on marine geoengineering is noteworthy because it draws a legal distinction between legitimate scientific research and other activities. This regulatory technique could be a reference for other areas where the line between research and potentially commercial activities is blurred.[321]

[317] See also Birnie et al. (2009) at 467.

[318] Birnie et al. (2009) at 471.

[319] Frost and Ginzky (2014) at 469; Birnie et al. (2009) at 471.

[320] Birnie eta l (2009) at 472, referring to an IMO report of 1991.

[321] Frost and Ginzky (2014) at 465.

2.1.2.2 United Nations Convention on the Law of the Sea; Agreement on the Implementation of Part XI of the 1982 Law of the Sea Convention

Table 2: UN Convention on the Law of the Sea (adoption: 10 December 1982; in force)

Key aspects	Summary
Form and legal status	Binding, in force
Objectives	Govern various issues related to the seas
Parties	168, incl. Germany and the EU
Territorial scope	Global
Resources covered	All of the resources in the seas
Stage of the value chain	Mining, transport, waste disposal
Steering mechanism	Regulatory (prohibitions and other obligations), information and reporting tools
Political weight	+++ Global participation except for US, partly customary law
Relevance	++ Concerning minerals in deep seabed, effective only with IA

Table 3: Agreement on the Implementation of Part XI (adoption: 28 July 1994; in force)

Key aspects	Summary
Form and legal status	Binding, in force
Objectives	Establish a regime to explore and exploit resources in the deep seabed
Parties	150, incl. Germany and the EU
Territorial scope	Global
Resources covered	Especially minerals and metals in the deep seabed
Stage of the value chain	Mining
Steering mechanism	Regulatory and information tools
Political weight	+++ Global participation except for US, partly customary law
Relevance	+++ Modified strict control regime, Mining Code contains environmental standards

Summary

The United Nations Convention on the Law of the Sea (UNCLOS) and the Agreement on the Implementation of Part XI of the 1982 Law of the Sea Convention (Implementing Agreement) establish a comprehensive regulatory regime governing the world's oceans and the (deep) seabed and its resources. It divides the sea into different spatial zones (internal waters, territorial sea, continental shelf, exclusive economic zone, deep seabed, high seas) with different rights and duties of all states, including to abiotic marine resources. These resources are addressed at the first step of value chain (extraction). In areas under national jurisdiction or where states retain sovereign rights to exploit resources, there are neither requirements nor impediments for coastal states regarding resource efficiency.

The deep seabed (the "Area") and its resources are defined as "common heritage of mankind" and are not subject to sovereign rights. The Implementing Agreement exclusively addresses the Area and is to be applied together with UNCLOS' provisions as a single instrument. Exploration and exploitation of mineral resources in the Area are administered by an international institution, the International Seabed Authority that acts on behalf of mankind. Both the original UNCLOS regime as well as the modified regime under the Implementing Agreement are clearly focused on exploiting mineral resource for the benefit of all. They thus rather impedes resource efficiency and conservation. This is however restricted in two ways: First, access to the resources and their extraction is strongly regulated and controlled by an independent institution. This creates significant transaction costs that reduce the speed of extraction and therefore the total amount of available mineral resources. This factual effect creates an economic incentive to use these resources more efficiently. Secondly, extraction has to be resource efficient in the sense of producing little waste, and shall not harm the marine environment.

Overview

Form and legal status: The UN Convention on the Law of the Sea (UNCLOS)[322] and the Agreement on the Implementation of Part XI[323] (Implementing Agreement) are two binding international treaties but form one single instrument (Art. 2 (1) of the Implementing Agreement). The UNCLOS is often referred to as the "Constitution of the Seas"[324] due to its near-universal participation and wide coverage. Additionally, a considerable amount of the provisions of the UNCLOS are considered to be customary international law.[325] Notably, the UNCLOS, in principle, does not allow reservations.

Despite its title, the Implementing Agreement considerably amends Part XI of the UNCLOS[326] and prevails in case of inconsistency between Part XI of the UNCLOS and the Agreement (Art. 2 (1) of the Implementing Agreement).

Any state acceding to the Implementing Agreement is automatically bound by the UNCLOS (Art. 4 (2) of the Implementing Agreement). Similarly, each state that accedes to the UNCLOS after the Implementing Agreement entered into force also accedes to the Implementing Agreement (Art. 4 (1) of the Implementing Agreement).

Objectives: One objective of the UNCLOS is to settle issues arising from various human activities at sea by establishing a widely accepted instrument.[327] Remarkably, the objectives of the UNCLOS explicitly include the "equitable and efficient" utilisation of the oceans' resources and the conservation of their living resources.[328] It also aims at applying and developing the principle of common heritage of mankind with regard to the area of the seabed (see below at territorial scope) beyond national jurisdiction and its resources; this basically means that the exploration and exploitation of this area has to be carried out for the benefit of mankind as whole.[329]

The main objective of the Implementing Agreement was to facilitate universal participation in the UNCLOS[330] by accommodating the interests of industrialised states that were hesitating to join

[322] United Nations Convention on the Law of the Sea, Montego Bay, 10 December 1982, in force since 16 November 1994, UN Doc. I-31363.

[323] Agreement on the Implementation of Part XI of the 1982 Law of the Sea Convention, New York, 28 July 1994, UN Doc. I-31364.

[324] Jenisch (2013) at 842.

[325] Churchill & Lowe (1999) at 24.

[326] Harrison (2011) at 92f.

[327] See paras. 1-3 of the Preamble of the UNCLOS.

[328] See para. 4 of the Preamble of the UNCLOS.

[329] See para. 6 of the Preamble oft he UNCLOS and the analysis of the principle of common heritage of makind in this report.

[330] See para. 6 of the Implementing Agreement.

because of the provisions governing resource exploitation in the deep seabed.[331] It substantially modified Part XI of the UNCLOS, for instance, by establishing the International Seabed Authority (ISA) as an evolving institution that grows according to its activities and financial possibilities.[332] The ISA is to act on behalf of mankind and to control exploration and exploitation in the Area.[333] Both the original UNCLOS regime as well as the modified regime under the Implementing Agreement are clearly focused on "increased availability of the minerals derived from the Area [...] to ensure supplies to consumers of such minerals", as well as the distribution of benefits and mitigation of negative economic impacts.

Territorial scope: The UNCLOS and the Implementing Agreement apply globally. The UNCLOS contains rules governing the world's oceans whereas the Implementing Agreement only applies to the "Area", which is the "sea-bed and ocean floor and subsoil thereof" beyond national jurisdiction (Art. 1 (1) UNCLOS). Even states that are not party to the UN can accede to the Convention (Art. 305 UNCLOS).[334]

Resources covered: The UNCLOS covers fossil fuels, minerals (especially the provisions governing the continental shelf), and any other abiotic resource that is transported via the sea. For the Area, Art. 133 UNCLOS provides the following definitions: "(a) 'resources' means all solid, liquid or gaseous mineral resources in situ in the Area at or be-neath the sea-bed, including polymetallic nodules; (b) resources, when recovered from the Area, are referred to as 'minerals'".

Manganese nodules occur in the deep seabed, i.e. beyond the outer continental shelf (max. of 350 nm, Art. 76 (5) UNCLOS). They are constituted of different metals: primarily manganese and iron but also cobalt, copper, nickel, and traces of platinum and tellurium.[335] There also are cobalt crusts (cobalt, platinum, and other metals) and sulphur-rich ores.[336] These nodules and crusts are covered by Part XI of the UNCLOS and the Implementing Agreement.

Steps of the value chain covered: Part XI and the provisions on marine scientific research of the UNCLOS and the Implementing Agreement, as well as the general allocation of sovereign rights over resources, primarily affect mineral extraction. Other provisions of the UNCLOS, such as the freedom to lay pipelines and the freedom of navigation, impact transport and trade. Furthermore, the UNCLOS contains provisions on dumping of waste (see for instance Art. 194 (3) of the UNCLOS), which are developed further e.g. by the London Dumping Convention and Protocol.

Type of steering mechanism: The UNCLOS uses regulatory tools (the obligation to preserve and to protect the environment; prohibition of dumping in another state's maritime zones etc.), information tools (obligation to inform other states about marine scientific research activities; promotion of the establishment of national and regional marine scientific and technological centres, promotion of transfer of marine technology), and reporting tools (obligation to publish reports to the competent international organisations in the environmental fields). The Implementing Agreement uses regulatory tools (a comprehensive licence regime for exploring/exploiting mineral resources in the Area) combined with an institutional backbone.

331 Churchill & Lowe (1999) at 20.

332 Churchill & Lowe (1999) at 238.

333 Elferink (2013) at 7.

334 United Nations (2012) at 3.

335 World Ocean Review (2017): "Marine Minerals", available at http://worldoceanreview.com/en/wor-1/energy/marine-minerals/.

336 World Ocean Review (2017): "Marine Minerals", available at http://worldoceanreview.com/en/wor-1/energy/marine-minerals/2/.

Content

Relevant obligations for parties:

Territorial sea, contiguous zone, EEZ: In its territorial sea, contiguous zone, and exclusive economic zone, every coastal state has certain sovereign rights but is obliged to grant other states freedom of innocent passage. This has an impact on the transportation of goods by ship. For instance, resource efficiency is increased when the availability of transportation by sea results in shorter ways and a reduction of the use of petrol - although reduced transportation costs might lead to more overall transport. Similarly, coastal states have to respect the freedom to lay pipelines (Art. 58 (1), 79 (1), 112 of the UNCLOS), in areas other than the territorial sea (Art. 2(1) of the UNCLOS).

In addition to its full sovereignty in the territorial sea, the coastal state has sovereign rights over the resources in the continental shelf (Art. 77 of the UNCLOS) and the EEZ (exclusive economic zone) (Art. 56 (1) (a) of the UNCLOS), including its mineral resources. As a result, other states are prohibited from exploring and exploiting resources in these zones, except when they have the permission of the coastal state. When exercising their sovereign rights, the coastal states are obliged to do so without infringing other states' rights (for example, regarding navigation under Art. 78 (2) of the UNCLOS). Consequently, in these zones, the UNCLOS' influence on resource efficiency is limited, as specific rules on the conservation of resources address living resources only. Its main effect is to allocate the right to exploit the relevant resources to the coastal state, which avoids free exploitation by everyone.

The Area: No state has sovereign rights over resources in the Area, which for this purpose are defined as mineral resources and belong to mankind as a whole (Art. 137, 133 of the UNCLOS). All exploitation activities have to be conducted for the benefit of mankind as a whole in accordance with the system established in Part XI of the UNCLOS and the Implementing Agreement (Art. 140 (1) of the UNCLOS). Accordingly, the purpose of this system is to exploit resources for the benefits of all. As a starting point, it thus rather impedes resource efficiency or conservation. However, one of the general polices for the Area, in Art. 150 (b) of the UNCLOS, requires an "efficient conduct of activities in the Area". It reflects the preamble's objective of efficient (and equitable[337]) use of the oceans' resources, and is not modified by the Implementing Agreement. Moreover, unnecessary waste has to be avoided "in accordance with sound principles of conservation". Thus, the exploitation of mineral resources is restricted to some extent by explicit requirements of resource efficiency and conservation. However, Part XI of the UNCLOS does not contain detailed provisions concerning resource efficiency. In contrast to the provisions in section 2 of Part VII, it does not include specific instruments on resource conservation, either.[338] Part XI of the UNCLOS and the Implementing Agreement mainly address the distribution of access to resources between states and the protection of land-based exporters of mineral resources.[339]

The International Seabed Authority (ISA) is the body that organises and controls activities in the Area, particularly with a view to administering its resources (Annex section 1.1 of the Implementing Agreement). It implements standards for activities in the Area, such as exploration.[340] A party applying for exploration has to present a Plan of Work, which "optimises the recovery and extraction of the

[337] In international law, the concept of "equity" is used for various legal and political purposes, based on notions of "fairness" in the application of rules. It is often used to justify special rules of access such as those for land-locked states in Art. 69 UNCLOS. In particular in the development context, it is often used to differentiate between developed and developing countries.

[338] See Sanden (2012) at 38-39.

[339] Sanden (2012) at 38.

[340] Damian & Ginzky (2016) at 578.

minerals".[341] It also has to demonstrate that is has adequate technology, and has to pay an application fee for exploration that could discourage rash applicants. For cobalt crusts, for example, the application fee is 500,000 dollars (Reg. 21.1 of the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area[342]). Applicants are also required to submit areas sufficiently large for *two* mining operations. The second site is then reserved for subsequent exploration or exploitation by either a developing state or the Enterprise, the institution that is to conduct mining activities on behalf of ISA ("site banking"). The purpose is to provide other states with a time-limited option to explore and exploit sites in the Area and benefit from the revenues.[343] The ISA shall also adopt appropriate rules, regulations and procedures for "the protection and conservation of the natural resources of the Area and the prevention of damage to the flora and fauna of the marine environment" (Art. 145 (b) UNCLOS). While the distinction between natural resources and damage to flora and fauna points to a duty to protect and conserve the mineral resources themselves, the general intention of Art. 145 is to "ensure effective protection for the marine environment from harmful effects which may arise from such activities." It is thus difficult to imagine that the very object of resource exploitation is addressed by this provision, safe for the obligation to avoid unnecessary waste according to Art. 150 (b) UNCLOS.

The recently published Draft Regulations include a provision on the "Avoidance of unnecessary waste in respect of the Resources in the Area".[344] It forbids inefficient mining practices or dissipation of resources and enables the Secretary-General to receive information to detect inefficient mining (Draft Reg. 33 (2)). If inefficient mining occurs, the Authority can give the binding order to stop mining (Draft Reg. 33 (5)) or to mine only at certain rates (Draft Reg. 33 (4)).

The provision on transfer of technology, as set out in the Implementing Agreement, mainly enables developing countries to also exploit seabed resources and thus increase extraction. While in theory it could also reduce inefficient extraction, this seems negligible because applicants have to demonstrate adequate technology anyway.

State responsibility: According to Art. 139 of the UNCLOS, sponsoring states and international organisations bear legal responsibility to ensure that any national entity complies with Part XI of the UNCLOS. The rules differ from customary rules on state responsibility mainly in two respects: First, there has to be damage: Responsibility depends on whether a breach of a direct obligation of the state or an obligation related to activities of a sponsored entity results in damage.[345] According to the International Tribunal on the Law of Sea (ITLOS, see below), this is the case when the Area, its resources and marine environment are damaged.[346] Secondly, the sponsoring states are also liable for damage caused by sponsored (private) contractors.[347] However, this latter liability is excluded by Art. 139(2) if the state has taken all necessary and appropriate measures to secure effective compliance,[348] which requires a "due diligence" standard. In any event, liability requires a causal link between a

[341] Draft Regulation 8 (4) of the International Seabed Authority (2016): Developing a Regulatory Framework for Mineral Exploitation in the Area, Jamaica, available at: https://www.isa.org.jm/files/documents/EN/Regs/DraftExpl/Draft_ExplReg_SCT.pdf.

[342] Decision of the Assembly of the International Seabed Authority relating to the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area, ISBA/18/A/11, 22 October 2012.

[343] See Annex III Art. 9 (4) of the UNCLOS, and Annex section 2 para 5 of the Implementing Agreement.

[344] Draft Regulations on Exploitation of Mineral Resources in the Area, Kingston, 8 August 2017,ISBA/23/ÖTC/CRP.3, available at https://www.isa.org.jm/files/documents/EN/Regs/DraftExpl/ISBA23-LTC-CRP3-Rev.pdf.

[345] Seabed Disputes Chamber of the International Tribunal for the Law of the Sea, Advisory Opinion, Responsibility and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, 1 February 2011 at para. 177.

[346] Advisory Opinon at para. 179.

[347] Advisory Opinon at para. 184.

[348] Similarly, Annex III, Art. 4 (4) of the UNCLOS limits responsibility.

state´s or international organisation´s failure to carry out its responsibilities under Part XI of the UNCLOS and the damage.

Marine scientific research (MSR): Like other activities, MSR in the Area is subject to part XI of UNCLOS (Art. 256). In other zones, MSR requires the consent of the coastal state. The coastal state is bound to give its consent unless, inter alia, MSR is directly linked to exploitation or exploration of natural resources. It has been argued that MSR is a precondition for the efficient exploitation of marine resources because it reveals sites in which mineral resources are available for exploitation, provides information on the probability of a high loss of material or resources due to a harsh environment, and because it helps to reduce adverse environmental effects that are likely to occur during mining activities in the seabed.[349]

Institutions, review and decision-making

Institutions: The UNCLOS does not have the usual institutional structure of modern MEAs with institutionalised regular meetings of the parties and a permanent secretariat. However, the UN Secretary General convenes annual meetings of the parties under a general power in Art. 319 (2)(e) of the UNCLOS. With regard to the Area, the Council of the International Seabed Authority controls implementation of Part XI (Art. 162 (2) (a) of the UNCLOS). Moreover, the Convention establishes the International Tribunal of the Law of the Sea (Annex VI of the UNCLOS) for dispute settlement, and the Commission on the Limits of the Continental Shelf (Annex II of the UNCLOS) which decides on applications for the extension of the continental shelf beyond 200 nm.[350] The Parties elect the members and decide on the budget of these two institutions.

To administer the Area (Part XI and the Implementing Agreement), UNCLOS established the International Seabed Authority (ISA). It has three principal organs (Assembly, Council, and Secretariat) and two subsidiary organs (the Legal and Technical Commission and the Finance Commission).[351] It also establishes the Enterprise, the organ which is to conduct mining activities in the Area for the ISA as its "mining arm",[352] as soon as commercial mining is feasible. The ISA is considered to be the "institutional manifestation" of the principle of the common heritage of mankind.[353] Instead of following financial interests, the ISA acts on behalf of all mankind. Its independency from state interests is supposed to ensure a rational exploration and exploitation that is potentially more efficient than exploration and exploitation led by state interests. Additionally, the ISA issued an evolving Mining Code that contains regulations regarding the prospecting and exploration of polymetallic nodules, sulphides, and cobalt-rich crusts.[354]

Evaluation and review: In the absence of specific provisions on institutions and review,[355] the UN Secretary General reports to the annual Meeting of the Parties on the implementation of UNCLOS, pursuant to a UN General Assembly decision.[356]

Art. 154 of the UNCLOS requires the Assembly to review the functioning of the regime of the Area every five years. The Review Conference provided for in Art. 155 of the UNCLOS, in which parties would have, inter alia, reviewed whether the resource exploration/exploitation in the Area benefitted

[349] Churchill & Lowe (1999) at 400.

[350] United Nations (2012) at 9.

[351] United Nations (2012) at 8.

[352] Churchill & Lowe (1999) at 244.

[353] Bernie, Bolye, Redgwell (2009) at 94. On the concept of "common heritage of mankind" see section 2.1.1.5.

[354] International Seabed Authority (2017): "The Mining Code", available at https://www.isa.org.jm/mining-code.

[355] Rules of Procedure for Meetings of States Parties of the United Nations Conventnion on the Law of the Sea, UN Doc. SPLOS/2/Rev.4, 15th Meeting, New York, 16-24 June 2005.

[356] UN General Assembly, Law of the Sea, UN Doc. A/RES/49/28, 6 December 1994, at para. 12. See also Tanaka (2012) at 36.

mankind as a whole and whether reserved areas were exploited effectively, was abolished by the Implementing Agreement (Section 4 of the Annex to the Implementing Agreement).

Parties can propose amendments to the UNCLOS and the Implementing Agreement (Art. 312-314 of the UNCLOS and Art. 2(2) of the Implementing Agreement), but the process is difficult: A proposal needs active support by half of the parties just to convene a conference which would have to adopt the amendment. A proposed amendment can also be adopted by written procedure if no party objects within 12 months. There is a special procedure for amendments regarding the Area, which require approval by the Council and the Assembly of the International Seabed Authority (Art. 314). However, the Implementing Agreement and the 1995 Straddling Fish Stocks Agreement can be regarded as de facto amendments.[357]

Reporting:

Compliance procedures, remedies and dispute settlement procedures: UNCLOS provides for several fora for dispute resolution (Art. 287 (1) of the UNCLOS): the International Tribunal for the Law of the Sea, the International Court of Justice, arbitral tribunals (Annex VII of the UNCLOS), and special arbitral tribunals (Annex VIII of the UNCLOS). Disputes arising in relation to the Area can only be resolved by the Seabed Disputes Chamber of the ITLS (Art. 186 et seq.)[358].

Stakeholder and public involvement: Not only states can apply for exploration licences. Research institutions and businesses can also apply for a licence on behalf of states. As described above, sponsoring states bear the responsibility to ensure that any national entity complies with Part XI of the UNCLOS.

Pursuant to Art. 169 (1) of the UNCLOS, international organisations and NGOs can make arrangements with the Secretary-General, which subsequently enable them to attend meetings of all bodies of the ISA as observers (Art. 169 (2) of the UNCLOS). Non-governmental organisations that active in the field of law of the sea can participate as observers at the Meetings of Parties (rule 18 of the Rules of Procedure for Meetings of States Parties[359]). Due to these provisions, non-state actors can draw attention to resource efficiency.

Assessment

Coherence with other international treaties and policies: The UNCLOS was negotiated under the umbrella of the UN, and thus, has a close relationship to other bodies of the UN, such as the General Assembly, which arranged the Third UNCTAD and decided upon the annual review of implementation.[360] It is also part of the UN Oceans & Law of the Sea,[361] an inter-agency mechanism that facilitates cooperation between the ISA and other UN organisations.[362]

While UNCLOS provides a detailed regime on some issues such as marine delineation, on other issues it provides a framework to be elaborated by other instruments. This is the case, for instance, regarding the dumping of wastes, where the UNCLOS is the framework within which standards developed elsewhere may be prescribed and designed.[363] Accordingly, together with the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters, the 1996 London Protocol

[357] Tanaka (2012) at 33.

[358] See ITLOS Chambers at https://www.itlos.org/the-tribunal/chambers/, and Jenisch (2013) at 846.

[359] Rules of Procedure for Meetings of States Parties of the United Nations Convention on the Law of the Sea, UN Doc. SPLOS/2/Rev.4, 15th Meeting, New York, 16-24 June 2005.

[360] United Nations (2012) at 10.

[361] See http://www.un.org/depts/los/.

[362] International Seabed Authority, UN-Oceans holds 16th Meeting in Kingston, Kingston, 10 April 2017.

[363] Churchill & Lowe (1999) at 69.

sets the international *minimum* standard for all states for the regulation of pollution of the marine environment by dumping, as called by Art.210 (6) of the 1982 UNCLOS.[364] The 1995 UN Fish Stocks Agreement is another example.

If the UNCLOS and the 1958 Geneva Convention on the Law of the Sea collide, the UNCLOS prevails (Art. 311 (1) of the UNCLOS).

With regard to trade issues, the ISA has to govern the Area in line with the General Agreement on Tariffs and Trade (GATT).

Political weight of the instrument: With its 168 parties in UNCLOS and 150 in the Implementing Agreement, a wide coverage of issues, and its dispute settlement system, the UNCLOS is highly politically influential. Germany, China, the Russian Federation, and Canada are party to both treaties. In 1998, after the Implementing Agreement entered into force, the European Union became party to the UNCLOS, and therefore also consented to be bound by the Implementing Agreement.

The USA is neither party to the UNCLOS nor to the Implementing Agreement.[365] However, several articles are considered to be customary international law,[366] which applies to the USA unless it permanently objects to it.

Effectiveness: The UNCLOS covers the entirety of the world's oceans. Some of its provisions were already or afterwards considered to be customary international law.[367] This suggests a high degree of effectiveness. However, as the UNCLOS was negotiated over 30 years ago, it does not address new topics.[368] It also lacks detail in some areas. Consequently, the Convention is effective as general treaty covering all of the oceans, but in order to increase effectiveness in some areas, additional treaties and instruments are necessary.[369] A positive example is the Mining Code by the ISA. With regard to mineral resources, the zoning approach allocates rights and prevents potential free exploitation ("seaward rush"[370]). On the other hand, the allocation means that resource efficiency up to the EEZ depends on the coastal states.[371] In the high seas there are no mineral resources, so that abiotic materials only play a role as dumped waste which is mainly addressed by the London Dumping Convention and Protocol.

Concerning the Area, the administration of resources by Part XI of the Convention and the Implementing Agreement is highly effective. Although the ISA's own mining institution, the Enterprise, does not exist yet beyond its legal establishment, the administration by the ISA is successful. States, including Germany, currently apply for exploration licences at the ISA and are obliged to comply with the regulations of the Mining Code concerning exploration. To improve compliance with these regulations, the ISA issues recommendations.[372] Furthermore, the ISA may issue new regulations concerning new topics, which increases the effectiveness of its administration activities. As a result, the ISA can manage emerging issues, such as exploitation due to new technology, effectively. The relatively strict regime governing the Area contributes to exploiting the mineral resources efficiently in the sense of avoiding unnecessary waste in the extraction process, as required by Art. 150 (b) of the UNCLOS. The reference in this provision to "sound principles of conservation" is linked to this particular aspect only and is not a general conservation obligation.

[364] Birnie et al. (2009) at 466.

[365] Jenisch (2013) at 842; see a list of Contracting Parties at http://www.un.org/depts/los/reference_files/chronological_lists_of_ratifications.htm.

[366] Churchill & Lowe (1999) at 24.

[367] Churchill & Lowe (1999) at 24.

[368] Bollmann et al (2010) at 205.

[369] Bollmann et al (2010) at 205.

[370] Schrijver (1997) at 214.

[371] See also Sanden (2012) at 38.

[372] See https://www.isa.org.jm/mining-code.

In accordance with the principle of common benefit of mankind, Part XI of UNCLOS is not a conservation regime. Its purpose is not to preserve the resources, but to organise the generation and distribution of revenue from their exploitation. It does not require to *use* the mineral resources efficiently. However, because the regime strictly regulates access to the resources, it creates significant transaction costs that reduce the speed of extraction and therefore the total amount of available mineral resources. This factual effect creates an economic incentive to use these resources more efficiently.

Political opportunities and good practice examples:

- As the Mining Code evolves according to the prospected activities in the Area, parties have an ongoing opportunity to strengthen the respective regulations and recommendations issued by the ISA. One option could be to embed efficiency standards or the precautionary principle. As a current member of the Council, Germany could strive for such initiatives.
- With regard to the Area, the UNCLOS and the Implementing Agreements include elements of good practice:
- The strict regulation of access to exploitation creates an economic incentive to use the available resource efficiently
- The control of access and exploitation by the independent ISA strengthens this incentive
- Art. 150 (b) of the UNCLOS requires to avoid unnecessary waste in the extraction

2.1.2.3 Minamata Convention

Table 4: Minamata Convention (adoption: 10 October 2013; in force 16 August 2017)

Key aspects	Summary
Form and legal status	Binding, in force
Objectives	Protecting human health and environment from mercury
Parties	113, incl. Germany and the EU
Territorial scope	Global
Resources covered	Mercury; gold /coal/lead/copper/zinc (indirect)
Stage of the value chain	Mining, export/import, manufacturing, recycling, waste disposal
Steering tool	Information, regulation, planning
Political weight	+++
Relevance for RE	++

Summary

The Minamata Convention's lifecycle approach has a high potential of reducing the use of mercury at a global level, although its starting point is not resource efficiency but environmental and health considerations. It provides a toolbox of regulatory techniques targeting mercury along the entire value chain from mining, over trade and manufacturing, to recycling and waste disposal. Indirectly, the Convention might also impact the use of other resources, such as gold and coal, but the extent is difficult to estimate. The most important mercury emitters[373] have supported and already ratified the

[373] China and the US have ratified, but not India. See for further information on the status of ratification: http://www.mercuryconvention.org/Countries/tabid/3428/Default.aspx.

Convention, indicating that at least these important players will actually implement it. The Convention's approach to regulating trade in mercury means that even non-Parties will be affected.

Overview

Form and legal status: The Minamata Convention[374] is an international treaty that was adopted on 10 October 2013, after three years of negotiations.[375] The Convention entered into force on 16 August 2017. 113 countries and the EU have ratified it so far, including important players such as China and the United States.[376]

Objectives: The objective of the Convention is "to protect the human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds." (Article 1) The treaty thus does not aim to reduce the use of this resource due to scarcity considerations but due to environmental and health concerns.

Territorial scope: The Convention is open to all states and regional economic integration organisations. Once in force, it will bind all its parties and regulate mercury on their respective territories. Given that the Convention also regulates trade in mercury with non-parties, its effects might reach even beyond: A party may only export mercury to another state, if the importing state – be it a party or not - adheres to the standards of the Minamata Convention, with respect to health and environmental protection and uses of mercury.[377] Similarly, a party may only import mercury from a non-Party, if that state certifies that the source is allowed under the Convention. The effect of the Convention could thus extend beyond the territory of Parties.

Resources covered: The Minamata Convention targets emissions (into the air) and releases (into water and land) from mercury and mercury compounds. Burning of coal and artisanal and small-scale gold mining (ASGM) are the most important anthropogenic sources, but also production of metals, cement production and oil refining are sources. Mercury is also still used in a range of products such as batteries, light bulbs or dental amalgam.[378] **Indirectly**, the Convention impacts gold mining (where mercury is used to separate gold from ore)[379], and activities that cause mercury emissions, such as coal power, cement production and primary production of non-ferrous metals (e.g. lead; copper; zinc). It does, however, not touch the primary production of ferrous metals and oil and natural gas burning, which also cause mercury emissions.[380]

Steps of the value chain covered: The Minamata Convention addresses each step of the lifecycle, from mercury mining, import and export, manufacturing that uses mercury or mercury compounds, to recycling and waste disposal.[381]

Type of steering mechanism: The Minamata Convention uses information tools **(**reporting on mercury stocks, mercury emission inventories), planning tools (national action plan on ASGM, and on emissions and releases) and regulatory instruments, both production-related and product-related (export/import restrictions, mining phase-out, phase-out of mercury-added products and manufacturing, use of BAT/BEP standards for sources of emissions/releases).

[374] Minamata Convention on Mercury. Kumamoto, 10 October 2013, available at http://www.mercuryconvention.org/.
[375] Eriksen and Perrez (2014).
[376] See status of ratification at http://www.mercuryconvention.org/Countries/tabid/3428/Default.aspx.
[377] Hey (2016), at 36, 41.
[378] UNEP (2013).
[379] Eriksen and Perrez (2014) at 206.
[380] Selin (2014), at 7.
[381] See for the details of the five main phases of regulatory intervention Dupuy and Viñuales (2015), at 230.

Content

Relevant obligations for parties: The Convention regulates the entire lifecycle of mercury, and targets emissions/releases from both intentional uses and where they occur as an unintentional by-product. However, many provisions only establish soft obligations or provide for exemptions. Most relevant for **reducing the use of mercury** are the restrictions on mining, on mercury-added products, and manufacturing processes using mercury. New mercury mining is completely banned and already existing mining activities will be prohibited 15 years after entry into force of the Convention at the latest. The Convention also obliges Parties to phase-out manufacturing, import and export of mercury-added products listed in Annex A (e.g. batteries with mercury content by 2020), and to phase-out manufacturing using mercury or mercury compounds, listed in Annex B (e.g. chlor-alkali production). However, Parties can make use of exemptions for limited time periods. Less restrictive obligations apply to ASGM activities: Parties are only required to "take steps to reduce, and where feasible eliminate" the use of mercury or mercury compounds in this sector, and to develop national action plans. The obligations on mining, products and manufacturing processes could potentially significantly reduce the use of mercury, although Parties can register exemptions to the different obligations.

In a more **indirect** manner, the Convention's obligations on the control of trade, emissions, releases, waste and contaminated sites may further reduce the global use of mercury. Export and import of mercury is only allowed with written consent and if the importing country – being a Party or not – complies with the Convention's obligations on storage and waste disposal. Parties are further requested to control "and where feasible, reduce" emissions (e.g. from coal power plants) and releases. For this purpose, they shall establish inventories, require the use of best available techniques (BAT) and best environmental practices (BEP) for new emission sources, and take measures to reduce emissions from existing sources.[382] The COP will develop and regularly update guidance on BAT and BEP.

Mercury waste and contaminated sites are to be managed in accordance with guidance still to be adopted by the Conference of Parties.

These obligations, although not directly targeting the amount of mercury used, make it more difficult and potentially costly for Parties – and companies – to supply themselves with mercury, and to dispose of mercury waste. This could make the use of mercury less attractive.

Next to reducing the use of mercury, the Convention might also indirectly reduce the use of other resources, first and foremost **gold and coal**. The Convention's obligations on ASGM aim at reducing the use of gold mining techniques that use mercury – currently accounting for around 12-15% of global gold production.[383] The alternatives to mercury-based techniques are mostly not affordable to artisanal miners so that steps to eliminate the techniques might overall result in reduced gold mining. However, the Convention's obligations are quite soft in this respect, and banning mercury-based techniques does not seem socially viable. The impact on the amount of extracted gold can thus expected to be minor.

The obligations on emission control could indirectly affect the use of coal, which is the largest source of anthropogenic mercury emissions. The Convention does not ban the use of coal but requires the use of BAT/BEP standards in new coal power plants, and measures to reduce emissions from existing plants. Technologies are already available for capturing 95% of mercury emissions at coal power plants, but are usually more costly. [384] This might result in higher electricity production costs as compared to other energy sources and could thus reduce overall the use of coal. However, such economic considerations will not only depend on the stringency of the BAP/BET guidance but also on

[382] Eriksen and Perrez (2014), at 205.
[383] Artisanal Gold Council (2015), at 4.
[384] Selin (2014), at 12.

many other factors lying outside the scope of the Convention. It is thus difficult to predict the Convention's impact on the use of gold or coal.

Institutions, review and decision-making

Institutions: The Minamata Convention has the usual institutional structure and follows the approach of modern MEAs and establishes a Conference of the Parties (COP) that is to review and evaluate the treaty's implementation.

Evaluation and review: The Convention can be considered a "living treaty": the COP is obliged to regularly review Annexes A and B, guidance on best available techniques and best environmental practices. The COP also regularly evaluates the overall effectiveness of the Convention, starting six years after its entry into force. For this purpose, the COP is set to establish a system to collect comparable monitoring data on mercury and mercury compounds.

Reporting: Parties are required to report on the implementation of the Convention. The reports have to include information on stocks of mercury and mercury compounds, on the phase-out of mining and implementation of trade restrictions, on manufacturing facilities using mercury or mercury compounds, and on whether ASGM is occurring on its territory. The reports also need to provide inventories of emissions and releases. The procedures for reporting, and specifically for the establishment of inventories are still to be decided. The COP is set to review the reports, and to use them as basis for the effectiveness evaluation. In addition to these reports, Parties may also develop implementation plans, but this is not obligation.

Compliance procedures, remedies and dispute settlement procedures: An implementation and compliance committee promotes implementation of, and compliance with all obligations under the Convention, covering both individual and systemic issues. It may make recommendations to the COP but cannot take measures directly itself. The Convention also contains a provision on dispute settlement, suggesting using either the ICJ or an arbitration or conciliation procedure, set out in detail in the Annex E.

Stakeholder and public involvement: The Minamata Convention sets emphasis on making publicly available information on mercury, its health and environmental impacts, and alternatives. The treaty also provides for the engagement of stakeholders. If Parties have notified ASGM activities, they are required to prepare national action plans that include strategies for the involvement of stakeholders. Parties are also set to collaborate with NGOs and vulnerable population in providing education, training and public awareness on mercury. Finally, the COP will provide guidance on managing contaminated sites, which "may include methods and guidance for...engaging the public".

Assessment

Coherence with other international treaties and policies: A range of international treaties regulate hazardous substances, including mercury. The 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade[385] promotes cooperation in trade of certain chemicals, including mercury compounds, by facilitating information exchange. The 1998 Heavy Metals Protocol, placed under the 1979 Convention on Long-Range Transboundary Air Pollution[386] regulates mercury air emissions from industrial sources, combustion

[385] Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 10 September 1998, in force 24 February 2004, 38 *International Legal Materials* (1999), 1.

[386] Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution on Heavy Metals, 24 June 1998, in force 29 December 2003, 2237 *United Nations Treaties* Series (2005), 4. Note that the LRTAP Convention was originally limited to Europe and North America but the Protocol allows accession of other countries from Eastern Europe, South-Eastern Europe, the Caucasus and Central Asia since 2012.

processes and waste incineration. These treaties all address certain aspects of the lifecycle of different hazardous substances. This had resulted in somewhat of a piecemeal network of regulation of mercury. The Minamata Convention in turn takes a lifecycle approach. The consequence is that in some aspects the Minamata Convention duplicates existing international regulation, e.g. on waste, chlor-alkali production and stationary sources of mercury air emissions.[387] On other aspects, it strengthens or complements existing law. Parties to the hazardous substances treaties (Basel, Rotterdam, Stockholm) recognised the partial overlaps between these and initiated a Synergies process in 2008 to better coordinate the work of the COPs. In 2013, they signalled interest in also cooperating with the Minamata COP.[388] The Convention itself refers in its article on waste to the Basel Convention and obliges the COP to cooperate closely with the latter.

Political weight of the instrument: The Minamata Convention fills a critical gap in the piecemeal regulation provided by other MEAs in providing a lifecycle approach to mercury. Support by the US, a major political player at the international level, for addressing the mercury problem was major political trigger for negotiations. [389] However, phase-out deadlines are long, many exemptions are available, and not all relevant industrial processes and mercury containing products are covered.[390] Particularly for the most challenging sources, namely ASGM and point sources of emissions (e.g. coal power), the Convention does not provide numerical targets but only soft action-oriented obligations.[391] "Taken together, treaty obligations, even if properly implemented in all major countries, may at best only limit future projected increases in mercury emissions and releases rather than bringing them down from current levels."[392]

Effectiveness: There is little data since the Convention has only recently in force.

Political opportunities and good practice examples:

- At COP1, Parties will work on the guidance on, amongst others, reporting, effectiveness evaluation and compliance.
- Parties can propose additional mercury-added products for listing in Annex A and manufacturing processes in Annex B
- The COP will assess trade in mercury compounds (no date), listing in Annex A (5 years after EIF), listing in Annex B (5 years after EIF)
- The COP will establish guidance for BAT/BEP on mercury emissions, on interim storage of mercury.
- Parties are invited to exchange information on BAT/BEP, alternatives etc.

[387] Bassett (2016), at 25 f.

[388] Omnibus decision on enhancing cooperation and coordination among the Basel, Rotterdam and Stockholm conventions: Adopted by the Conference of the Parties to the Basel Convention as decision BC.Ex-2/1, by the Conference of the Parties to the Rotterdam Convention as decision RC.Ex-2/1 and by the Conference of the Parties to the Stockholm Convention as decision SC.Ex-2/1.

[389] Selin (2014), at 1.

[390] Selin (2014), at 16.

[391] Bassett (2016), at 70.

[392] Selin (2014), at 16.

2.1.2.4 Montreal Protocol on Substances that Deplete the Ozone Layer

Table 5: Montreal Protocol (adoption: 16 September 1987; in force: 1 January 1989)

Key aspects	Summary
Form and legal status	binding, in force
Objectives	Protect the ozone layer by controlling and eliminating ozone-depleting substances
Parties	197, incl Germany
Territorial scope	Global
Resources covered	-
Stage of the value chain	-
Steering mechanisms	Information tools, regulatory instruments
Political weight	+++
Relevance for RE	o

Summary

The Montreal Protocol is often referred to as the most successful multilateral environmental agreement: it enjoys universal participation and has been effective in fulfilling its objective, namely reducing or even phasing-out most ozone depleting substances. However, the Protocol has no direct impact on the use of abiotic resources.

Overview

Form and legal status: The Montreal Protocol on Substances that Deplete the Ozone Layer[393] is an international treaty that was adopted on 16 September 1987 as a protocol to the Vienna Convention for the Protection of the Ozone Layer. The Montreal Protocol entered into force on 1 January 1989. It enjoys universal support with 196 countries and the European Union being parties.[394]

Objectives: The objective of the Protocol is to protect the ozone layer by controlling and eliminating ozone-depleting substances (ODS), "taking into account technical and economic considerations and bearing in mind the developmental needs of developing countries" (preamble).

Territorial scope: The Protocol is open to all states and regional economic integration organisations. It binds all its parties on their respective territories. Given that the Protocol also regulates trade in ODS with non-parties, its effects reach beyond: Parties are obliged to ban the import of ODS from, and the export to, non-Parties, unless that non-Party demonstrates that it is in compliance with the provisions of the Protocol.[395] These trade restrictions have been an effective tool for incentivising states to adhere to the Protocol's standards or to ratify the Protocol.[396]

Resources covered: The Montreal Protocol does not have a direct impact on the use of abiotic resources. ODS are used in a range of industries that extract or process abiotic resources (e.g. in mines

[393] Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 16 September 1987, in force 1 January 1989, 1552 *UNTS* 3.

[394] See UNTC, Status of Treaties, at https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-2-a&chapter=27&clang=_en.

[395] UNEP Ozone Secretariat (2016a).

[396] Sands (2003) at 352.

ODS are used as synthetic agent to extinguish fires). However, since many alternatives to ODS are available, it is not likely that the Protocol impacts the amount of abiotic resources used.

Steps of the value chain covered: ODS are used along the entire value chain of abiotic resources. The Protocol thus covers each step.

Type of steering mechanism: The Montreal Protocol uses information tools **(**reporting on ODS consumption, production and trade), and regulatory instruments (export/import restrictions, phase-out of ODS consumption and production).

Content

Relevant obligations for parties: The Protocol establishes obligations on parties to limit, reduce or phase-out the consumption and production of different ODS. It provides specific timetables for gradually phasing out first the consumption and later on the production of relevant substances. The phase-out dates range between 1993 and 2020. The list of substances controlled under the Protocol have been expanded and the timetables adjusted several times to reflect new scientific and technological developments.

Developing countries consuming less than annually 0.3kg of controlled substances per capita were granted a grace period of 10 years beyond the regular phase-out dates. They are also entitled to receive support under the Protocol's financial mechanism.

In specific cases, production and consumption of certain ODS is exempt from the phase-out requirements. Such exemptions are agreed by the MOP, for specific countries or uses, only on a temporary basis.[397] Reasons can include health, safety or that the use is critical for the functioning of society, and if there are no technically and economically feasible alternatives.[398]

Parties are prohibited from importing controlled substances from non-parties or exporting to non-parties. Furthermore, parties are required to "discourage the export to any State not party to this Protocol of technology for producing and for utilizing controlled substances" (Article 4.5). To implement these provisions, parties have to establish a licensing system for the import and export of ODS.

Institutions, review and decision-making

Institutions: Convention/protocol model, The Montreal Protocol establishes a Meeting of the Parties (MOP) that meets annually to review and evaluate the treaty's implementation. An Open-ended Working Group meets in the time between MOP meetings and prepares decisions for consideration by the MOP. An amendment of the Protocol in 1990 established a Multilateral Fund that provides financial and technical assistance to developing countries. Developed countries are required to contribute to the Fund according to the UN scale of assessments. The creation of the Fund was key for bringing developing countries into the Protocol.[399]

Evaluation and review: The Protocol is a "living treaty": the MOP reviews the control measures every four years, assisted by three assessment panels providing advice on scientific, environmental, and technological and economic developments. Based on these findings, the MOP has successively strengthened the regime by including additional substances and tightening timetables.[400] Such adjustment decisions may be taken by two-thirds overall majority if efforts to reach consensus have

[397] UNEP Ozone Secretariat (2016b).
[398] Decision IV/25, Essential Uses, UN Doc. UNEP/OzL.Pro.4/15, 25 November 1992.
[399] DeSombre (2000) at 70.
[400] Rowlands (2007) at 323.

been exhausted. If that majority also comprises the majority of both developing and developed countries respectively, the amendment is binding even on those parties that voted against it. The ongoing assessments and adjustments have been labeled as "the first adaptive global environmental regime"[401], and a model for future MEAs, although the latter do not bind parties voting against.

Reporting: The Protocol requires each party to report annually on the production, imports and exports of controlled substances.

Compliance procedures, remedies and dispute settlement procedures: An Implementation Committee, set up in 2000, addresses issues of non-compliance with any provision of the Protocol. The procedure can be triggered by the party concerned, another party or the Secretariat – which in practice is the main channel.[402] On the basis of implementation reports by the Secretariat, the Committee may seek additional information and recommend measures to the MOP, such as providing assistance, issuing cautions or suspending rights under the Protocol, e.g. restricting trade with the non-complying party.[403] The Committee exchanges information with the Multilateral Fund, and in some instances has also recommended to the MOP to cut funding to countries that consistently failed to provide baseline data.[404] The MOP has taken a large number of decisions regarding non-compliance over the years, mostly with respect to economies in transition or developing countries.

Stakeholder and public involvement: A special feature of the Protocol's regime is the Technology and Economic Assessment Panel that provides advice on alternative technologies, as a basis for MOP decisions. The Panel is assisted by various committees that evaluate technical options for specific ODS sectors. Many members of these committees come from ODS industries or regulators that know the practical concerns of the relevant industries on the ground but that also have direct influence and credibility to promote implementation.[405] For example, a committee member from British Petroleum was able to introduce ODS substitutes for fire fighting first in its own company and then convinced other oil and gas companies to follow, irrespective of endorsement by the MOP.[406]The involvement of stakeholders might thus have positive repercussions even beyond what is formally agreed by parties.

Assessment

Coherence with other international treaties and policies: The Montreal Protocol touches on many issues covered by other international agreements, the most prominent being climate change. Since ODS are very potent greenhouse gases, their gradual reduction is supporting the objectives of the UNFCCC and the Paris Agreement. In fact, the Montreal Protocol has been said to have avoided greenhouse gas emissions by 5-6 times as much as the Kyoto Protocol.[407] However, as a substitute for ODS, F-gases – mainly HFCs (hydrofluorocarbons) - were introduced which are greenhouse gases with a very high global warming potential. The increasing use of HFCs might outweigh the climate benefits of the Montreal Protocol. While HFCs are reported under the UNFCCC, the Montreal Protocol seemed to be the more appropriate forum due to the direct link of HFC increase and ODS phase-out. In response, in October 2016, the parties to the Montreal Protocol adopted an amendment (Kigali Amendment[408]) including HFCs in the list of substances controlled under the Protocol. The amendment specifies that it is not intended to exempt HFCs from the mitigation obligations under the UNFCCC or the Kyoto

[401] Parson (1998) at 127.

[402] Brack (2003) at 217.

[403] Decision IV/5, as amended by Decision X/10, Review of the Non-Compliance Procedure, UN Doc. UNEP/OzL.Pro.10/9, 3 December 1998.

[404] Victor (1996) at 24.

[405] Greene (1998) at 97.

[406] Greene (1998) at 98.

[407] European Environment Agency (2017).

[408] Decision XXVIII/1, Further Amendment of the Montreal Protocol, UN Doc. UNEP/OzL.Pro.28/12, 15 November 2016.

Protocol.[409] Conversely, the Kyoto Protocol is the only international agreement covering N2O emissions which are an ODS.

A large range of other MEAs have synergies or overlaps with the Montreal Protocol, for example:[410]

- Certain technologies tested in the context of the Montreal Protocol for the destruction of ODS could also be used destroy persistent organic pollutants, covered under the Stockholm Convention.
- ODS that are toxic or exhibit other hazards are subject to the rules of the Basel Convention on transboundary movement of waste.
- The MOP closely cooperated with the ICAO (International Civil Aviation Organization) in finding alternatives to the use of halons in fire fighting systems of aircrafts.
- LRTAP on N2O and emission inventories; Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone under LRTAP (only small membership) establishes emission reduction obligations for volatile organic compounds, covering also some ODS
- The International Plant Protection Convention established recommendations on reducing use of methyl bromide, an ODS
- The PRTR requires parties to report inter alia on a range of ODS
- MARPOL annex VI regulates ODS on ships, e.g. in fire fighting and refrigeration and air-conditioning systems, and requires large ships to maintain an ODS record book

When negotiating the trade provisions under the Montreal Protocol, the question was raised whether the trade restrictions would be compatible with the GATT. The ban on trade with non-parties was said to discriminate between products stemming from parties and non-parties and thus to violate the GATT's most favoured nation rule. However, the states negotiating the Montreal protocol concluded that the provisions would be covered by the exception under Article XX (b) GATT regarding environmental protection.[411] To date, no country has brought a dispute before the WTO concerning the Montreal Protocol.

Political weight of the instrument: During the negotiations of the Montreal Protocol many observers were doubtful that countries would be able to agree on regulating ODS, given the scientific uncertainty back then and the complexity of the issue (ODS were used in thousands of different products).[412] The strong support by the United States, which had already passed domestic ozone regulations, and the efforts of the United Nations Environmental Programme certainly helped to build the necessary consensus.[413] The Montreal Protocol entered into force already two years after adoption and achieved universal participation as the first multilateral environmental agreement in history in 2009. The mix of flexibilities granted to developing countries, financial and technical assistance together with the trade restrictions have secured the high number of ratifications[414] and established it as a role model.

Effectiveness: The Montreal Protocol is often named as the most successful MEA. While the original version of the Protocol was predicted to not stop the increase of ODS levels, the possibility to strengthen measures with a two-thirds majority allowed to reduce ODS levels over time.[415] The value

[409] "This Amendment is not intended to have the effect of excepting hydrofluorocarbons from the scope of the commitments contained in Articles 4 and 12 of the United Nations Framework Convention on Climate Change or in Articles 2, 5, 7 and 10 of its Kyoto Protocol." Decision XXVIII/1, Further Amendment of the Montreal Protocol, UN Doc. UNEP/OzL.Pro.28/12, 15 November 2016, Article 3.

[410] See for a detailed assessment Miller and Batchelor (2013).

[411] Birnie et al (2009) at 353; Goldberg (1992) at 4.

[412] Sands (2003) at 346.

[413] Birnie et al (2009) at 351; DeSombre (2000) at 57.

[414] Birnie et al (2009) at 355.

[415] Birnie et al (2009) at 355.

of equivalent effective stratospheric chlorine, which is a measurement of the potential for ozone depletion in the stratosphere, peaked in 1997 and has declined by 15% since then. This is about 40% of the decrease needed to return to 1980 benchmark levels.[416] There is plenty of evidence that the introduction of international regulation jump-started the search for ODS substitutes in industry, making such substitutes available in remarkably short time after the adoption of the Protocol.[417] The close involvement of industry and regulators in the assessment of technical options and implementation review supported this development.[418] However, the success of the Protocol has partly been undermined by a vibrant black market in ODS that surged in the 1990s, mainly as a result of the differing phase-out schedules among developed and developing countries.[419]

Political opportunities and good practice examples:

- The adjustment procedure provides an innovative model for adapting an MEA to changing political, technological and economic realities.
- The focus on technological alternatives and the involvement of industries, via the Technology and Economic Assessment Panel has helped to promote acceptance of ODS phase out.
- The flexibilities granted to developing countries has helped to build consensus around ODS phase out.
- The inclusion of trade restrictions has convinced non-parties to join the agreement.
- But despite its role model character, the MP's success has not been repeated so far – this needs to be considered when addressing resource efficiency.

2.1.2.5 Stockholm Convention on Persistent Organic Pollutants

Table 6: Stockholm Convention (adoption: 22 May 2001, entry into force: 17 May 2004)

Key aspects	Summary
Form and legal status	binding, in force
Objectives	Protect human health and the environment from persistent organic pollutants
Parties	181 Parties (as of 21 June 2017), incl Germany
Territorial scope	Global
Resources covered	depends on whether link to POPs
Stage of the value chain	All stages
Steering tool	information, regulation, planning
Political weight	++
Relevance for RE	++

Summary

The Stockholm Convention regulates the production, use, releases and trade in persistent organic pollutants (POPs). The Convention enjoys broad support and its approach to regulating trade in POPs means that even non-Parties are directly addressed and affected. Given that the metal industry and

[416] World Meteorological Organization (2014) at 7.
[417] DeSombre (2000) at 59.
[418] Greene (1998) at 96.
[419] Environmental Investigation Agency (2016).

power generation are important sources of unintentional releases of POPs, the Convention's obligation to reduce POPs might indirectly impact the amount of resources used in these industries. Relevant industries might, however, decide to turn to alternative production methods that release less POPs, without reducing production levels.

Overview

Form and legal status: The Stockholm Convention on Persistent Organic Pollutants[420] is an international treaty that was adopted on 22 May 2001. The Convention entered into force shortly after on 17 May 2004 when the minimum threshold of 50 ratifications was met. Today it has 181 parties.[421] The parties include all European Union member states; the United States have signed but not ratified it.

Objectives: The objective of the Convention is to protect human health and the environment from persistent organic pollutants (POPs).

Territorial scope: The Convention is open to all states and regional economic integration organisationsand binds all its parties on their respective territories. The Convention also regulates trade in POPs with non-parties, its factual effects go further: A party may only export POPs to another state, if the importing state – be it a party or not - adheres to the standards of the Convention with respect to waste management or DDT (dichlorodiphenyltrichloroethane) use. The Stockholm Convention seeks to steer the conduct of non-parties by providing a disincentive for not adhering to its standards.

Resources covered: POPs are produced for agricultural and industrial purposes, or are produced unintentionally through a broad range of industrial processes. While the largest source of unintentional releases in Africa, Latin America and the Pacific is open burning, in other regions the metal industry and power generation are significant sources.[422] For example, POPs occur in iron ore sintering, coke production, iron and steel production, copper, aluminium, lead, zing, brass, bronze, magnesium production.[423] Also the recycling of metal can emit POPs.

Steps of the value chain covered: The Stockholm Convention covers the entire life cycle of the controlled POPs, restricting not only their production and use but also addressing unintentional releases, trade in POPs, and waste management.[424]

Type of steering mechanism: The Stockholm Convention uses information tools (reporting on production, import and export of POPs and on the implementation of the Convention), planning tools (national action plan on unintentional releases, implementation plans on the obligations) and regulatory instruments (elimination of substances, restriction of use and production, export/import restrictions, use of BAT/BEP standards for unintentional releases).

Content

Relevant obligations for parties: The Convention requires parties to eliminate the production and use of substances listed in Annex A (currently 24 substances), and to restrict the production and use of those

[420] Stockholm Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, in force 17 May 2004, 2256 *UNTS* 119.

[421] As of 21 June 2017, see UNTC, Status of Treaties, available at https://treaties.un.org/Pages/ViewDetails.aspx?src=IND&mtdsg_no=XXVII-15&chapter=27&clang=_en.

[422] UNEP (2017), at 91.

[423] Toolkit for Identification and Quantification of Releases of Dioxins, Furans, and Other Unintentional POPs under Article 5 of the Stockholm Convention on Persistent Organic Pollutants, Source Group 2 Ferrous and Non-Ferrous Metal Production, available at http://toolkit.pops.int/Publish/Main/II_021_Metals.html?panel=5#SpryAccordion1.

[424] Dupuy and Viñuales (2015), at 211.

listed in Annex B (two substances).[425] To reflect the different circumstances of countries, parties may register specific exemptions for each of the substances with the Secretariat but such exemptions only apply for a limited time period (usually 5 years, which the the COP may extend).

Parties are further obliged to also take measures to reduce unintentional releases of POPs listed in Annex C (seven substances). To this end, parties have to develop and implement action plans, promote the use of substitutes, best available techniques and best environmental practices.

The Convention requires parties to implement strategies for identifying stockpiles, products and articles containing POPs, and to manage these in a safe, efficient and environmentally sound manner. Recovery, recycling, reclamation, direct reuse or alternative uses of POPs are not allowed.

Export of listed POPs is only allowed for the purpose of environmentally sound disposal, or to a party that is allowed to use the respective POP. Export to a non-party is only permitted if the respective state certifies that it complies with the Convention's obligations on management of POPs stockpiles or DDT controls.

Institutions, review and decision-making

Institutions: The Stockholm Convention has the usual institutional structure and follows the approach of modern MEAs: it establishes a Conference of the Parties (COP) that is to review and evaluate the treaty's implementation. The COP has not found agreement yet on the establishment of a compliance committee foreseen in the Convention. The GEF serves as the financial mechanism of the Convention.

Reporting: Parties have to report every two years on the quantities of production, import and export of substances listed in Annex A and B, and also on the implementation measures it has taken and their effectiveness. While most parties have submitted their initial plans, only around 20% have also provided the required updates.[426]

Evaluation and review: The Convention is designed as a "living treaty": the COP may add or amend the annexes by majority vote, and parties are bound by these amendments unless they opt out within one year. A POP review committee, involving chemical experts, examines the proposals from parties on listing additional chemicals in the annexes, as a basis for such COP decisions.[427] The committee is currently reviewing four additional chemicals, one of which is also used in metal working.[428] The COP has already twice amended Annex A and added six additional substances.

The Convention also requests the COP to periodically evaluate the effectiveness of the Convention. The first such review was conducted in 2009, where it was decided that the reviews should take place every six years. In 2015, an effectiveness evaluation committee was established[429], which presented its first report in January 2017.[430]

Compliance procedures, remedies and dispute settlement procedures: The Convention requires the COP to establish a non-compliance procedure but parties were not yet able to agree. The issue will be on the agenda again at COP9 in 2019.

Stakeholder and public involvement: The Convention requires parties to promote public awareness and public participation in addressing POPs. The COPs of the Stockholm Convention, Basel Convention and

[425] For a listing of POPs see http://chm.pops.int/TheConvention/ThePOPs/ListingofPOPs/tabid/2509/Default.aspx.

[426] UNEP (2017), at 137.

[427] Decision SC-1/7, Establishment of the Persistent Organic Pollutants Review Committee, UNEP/POPS/COP.4/38, 8 May 2009; see also Birnie et al (2009), at 450.

[428] http://chm.pops.int/TheConvention/ThePOPs/ChemicalsProposedforListing/tabid/2510/Default.aspx.

[429] Decision SC-7/24, Effectiveness evaluation, UNEP/POPS/COP.7/36, 23 June 2015.

[430] UNEP (2017).

Rotterdam Convention have established a joint clearing house mechanism as a multi-stakeholder forum that facilitates the exchange of information and expertise. The stakeholders involved include environmental non-governmental organizations, industry and private sector associations, funding agencies and mechanisms and other donors, researchers, universities and related initiatives, workers' unions and national local authorities.[431]

Assessment

Coherence with other international treaties and policies: The Stockholm Convention, Basel Convention and Rotterdam Convention established a so-called Synergies process in 2008/09 to enhance coordination across the Conventions. At joint sessions they address, for instance, common issues such as illegal trade and traffic in hazardous chemicals and wastes. A 2016 workshop showed that there is still room for improvement in the coordination between stakeholders and ministries at national level in implementing the three conventions.[432]

Emissions of a number of POPs released from certain industrial facilities are also estimated and reported under the UNECE Protocol on Pollutant Release and Transfer Registers.

Political weight of the instrument: The Stockholm Convention enjoys almost universal participation but the United States as an important player are not party.

Effectiveness: The Stockholm Convention aims at controlling or even eliminating hazardous POPs. The Effectiveness Evaluation Committee of the Stockholm Convention presented its first report in 2016 which found "evidence that the entry into force of an amendment for a particular chemical is a trigger for some but not all Parties to amend and implement administrative or legal measures to control the production, use, import and export of the chemical." According to the report, POPs listed in 2004, concentrations in air and in human populations have declined and continue to decline or remain at low levels. In other words, the Convention does change the conduct of its parties, and these changes do have an effect towards the Convention's objective. However, for the newly listed POPs, concentrations are only beginning to show decreases, and are in a few instances, increasing and/or stable. The Committee also highlighted that there is a significant gap of data on the implementation, also due to the lack of a compliance mechanism. [433]

Given that POPs also occur in the production of metals, the implementation of the Convention could indirectly reduce the levels of metal production – unless producers turn to alternative production methods emitting less POPs. There is, however, no information available on whether the Convention reduces these production levels.

The trade restrictions affecting non-parties may additionally increase the Convention's effectiveness because (1) they provide an increased incentive for parties to not use POPs and (2) provide a disincentive for non-parties to ignore standards.

The Convention could also partly be regarded as an obstacle to resource efficiency: the recycling of some metals releases dioxine, which is a POP controlled under the Convention.

[431]Synergies among the Basel, Rotterdam and Stockholm Conventions, Joint-Clearing-house Mechanism Communities and Partners, available at http://www.brsmeas.org/Implementation/KnowledgeManagementandOutreach/Clearinghousemechanism/Communities/tabid/5532/language/en-US/Default.aspx.

[432]UNEP (2016a).

[433] UNEP (2017).

Political opportunities and good practice examples:

- The additional listing of POPs for listing in Annex A, B or C can be proposed by Parties at any time. The timeline for COP9 could be favourable.
- The COP still needs to agree on the establishment of the compliance mechanism.
- The review committee is a successful mechanism through which the Convention's scope has been broadened several times already.
- The trade restrictions are a mechanism to impact the use of POPs even beyond parties.
- There is a lack of research on links between POPs and resource use.

2.1.2.6 Paris Agreement

Table 7: Paris Agreement (adoption: 12 December 2015; in force: 4 November 2016)

Key aspects	Summary
Form and legal status	Binding, in force
Objectives	Keep global temperature rise well below 2°C, striving for 1.5°C; adapt to climate change, redirect finance flows
Parties	149 (as of 22 June 2017), incl. Germany
Territorial scope	Global
Resources covered	Fossil resources and all resources for which fossil energy is used during extraction, processing and transport
Stage of the value chain	All stages
Steering mechanisms	Information, regulation, planning
Political weight	+++
Relevance	+

Summary

The Paris Agreement aims at reducing GHG emissions across all sectors, at adapting to climate change and at redirecting financial flows towards low GHG development. Although its obligations are general and not resource-specific, reducing GHG emissions necessitates extracting less fossil resources, because the combustion of fossil fuels is the main source of GHG emissions. Although they are not specifically addressed, the Paris Agreement also covers GHG emissions occurring during the extraction, processing and transport of abiotic resources. Many of the provisions of the Agreement lack precision and prescriptiveness and do not create clear legal obligations for parties. The almost universal ratification in a very short time indicates broad political support and likely implementation including by major emitters, although there are uncertainties about the US.

Overview

Form and legal status: The Paris Agreement[434] is a treaty that was adopted on 12 December 2015 under the United Nations Framework Convention on Climate Change (UNFCCC)[435]. The Agreement entered into force on 4 November 2016. The currently 150 Parties include the biggest GHG emitters

[434] Paris Agreement, Paris, 12 December 2015, available at https://treaties.un.org/doc/Treaties/2016/02/20160215%2006-03%20PM/Ch_XXVII-7-d.pdf.

[435] 1992 United Nations Framework Convention on Climate Change, New York, 9 May 1992, 1771 *UNTS* 107.

like the US, China, India, the EU and most EU member states, including Germany.[436] The Paris Agreement was adopted by a decision of the Conference of the Parties (COP) of the UNFCCC. This decision also provides details on how to implement as well as mandates and work programmes for designing and agreeing further guidelines, standards and procedures for implementation. The US have announced their intention to withdraw from the Paris Agreement, but this would in any event not take effect before November 2020. (Art. 28).

Objectives: The objective of the Agreement is to keep the increase in global temperature well below 2°C, or even 1.5°C, to increase the ability to adapt, and to make finance flows consistent with low-carbon development. The Agreement also aims to bring GHG emissions down to net-zero in the second half of the 21st century (Art (4.1)).

Territorial scope: The Agreement is open to all parties of the UNFCCC. The Agreement binds all its parties and is almost global.

Resources covered: The Paris Agreement does not mention specific resources, but it targets anthropogenic GHG emissions and thus indirectly impacts resource consumption in various ways: (1) The objective of net-zero GHG emissions can only be met if the use of coal, oil and gas is reduced to near zero in the coming decades, which also means that the extraction of these resources would need to be significantly reduced; (2) Extraction, processing and transport of most other resources require high levels of energy, which is traditionally fossil-based and thus GHG-intensive. Reducing global GHG emissions as required by the Paris Agreement means that the extractive industries have to become more energy-efficient and in the long run either switch to cleaner energy sources or reduce their activities; (3) Certain resource extraction processes cause fugitive GHG emissions, e.g. in the case of coal mining, or gold and copper mining when mines are located close to methane containing deposits.[437] The Paris Agreement could thus also impact these extraction processes.

Steps of the value chain covered: The Paris Agreement covers all anthropogenic GHG emissions without differentiating between the sources of emissions. It therefore does not address specific steps of the value chain but rather all steps that cause GHG emissions. However, the implied necessity to significantly decrease fossil extraction directly impacts this step of the value chain.

Type of steering mechanism: The Paris Agreement uses what many call a "bottom-up" structure: it is based on mere national planning (nationally determined contributions, national adaptation plans, 2050 climate strategies) and international transparency obligations (reporting on climate policies, GHG emission inventories), and relies on peer pressure and public pressure to safeguard ambition. However, the objective to redirect financial flows in Art. 2.1(c) is gaining increasing attention and could be a highly important steering tool, depending on how parties will implement it in the coming years.

Content

Relevant obligations for parties: The Paris Agreement was a huge diplomatic effort and the quest for consensus among all UNFCCC parties on a binding instrument came at the expense of detail and precision in its individual provisions. Many of the obligations use "should" instead of "shall", are phrased vaguely, or are qualified by expressions like "as appropriate". This means that not all provisions in the Paris Agreement are equally prescriptive or precise.[438]

The Paris Agreement does not oblige parties directly to reduce the use of certain resources or to use them more efficiently. However, based on current scientific knowledge, the objective and the

[436] As of 28 June 2017, see http://unfccc.int/2860.php. It has 195 signatories.

[437] Jain, Cui and Domen (2016).

[438] Bodle et al. (2016) at 17; for detailed analysis see Bodle and Oberthür (2017).

obligations to reduce GHG emissions and redirect finance flows imply that parties need to reduce or even phase-out the use of certain resources, first and foremost coal and oil (see above).

The Paris Agreement establishes the collective goal for parties to peak GHG emissions as soon as possible and to reduce GHG emissions to net-zero by the second half of the century. Parties are required to prepare and present individual climate plans (nationally-determined contributions, NDCs) every five years that set out how the party intends to contribute to the collective objectives. Parties are not obliged to implement or achieve these plans exactly as submitted but they have to take measures with the aim of achieving these NDCs. The Paris Agreement explicitly envisages that parties the NDCs reflect each party's "highest possible ambition" and that each NDCs is a "progression" beyond previous efforts. Developed countries "should" include economy-wide absolute emission reduction targets. Beyond these parameters, there are no more specific rules as to the content or ambition level of the NDCs. The Agreement thus leaves a lot of leeway to countries on the approach they take to reducing GHG emissions and on which sectors to focus. At COP24 in 2018 parties adopted more detailed rules regarding modalities, procedures and rules for implementation. The rules on content of and accounting for NDCs as well as the core reporting rules do not directly address RE.[439] The NDCs presented so far vary widely with respect to specificity (some only mention relevant policy fields, others set quantitative targets) and coverage, and many are conditional on the provision of financial support.[440] Emission projections based on the sum of all NDCs submitted show that countries are not yet on track to keep temperature increase well below 2°C or even 1.5°C. Parties are also invited to prepare long-term low-GHG emission strategies. There are no rules (yet) for their content either and some of the already presented strategies only summarise existing research without setting specific targets or defining policy pathways. Mexico's long-term strategy, in contrast, sets the objective to reduce fugitive methane emissions from mining operations.[441]

While the NDCs mostly do not provide clear emission reduction pathways or targets, in the long-term GHG emissions in all sectors need to be phased-out if parties want to achieve the objectives of the Paris Agreement. This implies a phase-out of the use of oil, coal (unless e.g. carbon capture and storage becomes available at significantly scales) and gas in combustion processes.

Since the mining sector is currently still highly dependent on fossil fuel-based energy, the Paris Agreement could indirectly also impact the extraction and thus availability of other resources. However, the mining sector is already increasingly switching to renewable energy sources.[442] The Paris Agreement also covers fugitive methane emissions of e.g. gold mines and could thus impact the extraction of this resource. However, there are technologies available to capture this methane and use it for electricity production.[443] It is thus not clear to what extent the Paris Agreement will have an impact on the use of resources other than coal, oil and gas.

The Agreement also explicitly aims at making finance flows consistent with low-GHG and climate resilient development but it does not specifically require parties to e.g. revise their subsidy policies or to introduce carbon pricing. Time will tell whether parties will develop further guidelines for implementation of this overarching purpose and how they will address it.

[439] Decision 4/CMA.1, FCCC/PA/CMA/2018/3/Add.1, and 18/CMA.1, FCCC/PA/CMA/2018/3/Add. 2. Regarding "features" of NDCs, the decision simply notes that they are already outlined in the Paris Agreement and postpones further discussion until 2024, Decision 4/CMA.1, para. 19-20.

[440] UNFCCC Secretariat (2016): Aggregate effect of the intended nationally determined contributions: an update Synthesis report by the secretariat. UN Doc. FCCC/CP/2016/2, 2 May 2016.

[441] See Long-term strategies on UNFCCC website: http://unfccc.int/focus/long-term_strategies/items/9971.php.

[442] Van Wyngaardt (2016).

[443] du Plessis and van Greuning (2011).

Institutions, review and decision-making

Institutions: The Paris Agreement has the now usual institutional structure in line with the approach of modern MEAs. It establishes a Conference of the Parties to the Paris Agreement (CMA) and other permanent bodies that guide, review and evaluate the treaty's implementation.

Reporting : The Paris Agreement establishes a transparency framework under which Parties have to regularly report on their GHG emissions in "inventories" and on their progress in implementing their NDCs. The inventory reports have to follow the IPCC guidelines which require reporting on emissions from mining.[444]

Evaluation and review: Similar to other recent MEAs, the Paris Agreement could be labelled a framework or "living treaty" as it mainly provides a direction and an outline of what parties are to do, while further details and work programmes are laid down in the COP-decision that accompanied the adoption of the Agreement. Many issues were left for COP/CMA decisions to allow for future development without needing to undergo a treaty amendment procedure. Accordingly, additional guidance on many issues still needs to be adopted by the CMA. A global stocktake takes place every fives years in order to assess collective implementation and guide the subsequent NDCs.

Compliance procedures, remedies and dispute settlement procedures: An implementation and compliance committee is envisaged to promote implementation of, and compliance with all obligations under the Agreement. Most details on the modalities and procedures of the committee still need to be determined by the CMA.

Stakeholder and public involvement: The Paris Agreement recognises the importance of public participation and engagement of different actors in addressing climate change. The Agreement itself does not establish specific mechanisms in this respect but the accompanying COP decision has established various fora to cooperate with sub-national government levels, the private sector and civil society, e.g. on specific mitigation opportunities. Here too, time will tell whether this new approach will complement the political momentum and push governments towards ambitious implementation.

Assessment

Coherence with other international treaties and policies: The Paris Agreement has been adopted under the UNFCCC, which is a framework convention with few specific obligations. The Paris Agreement is not meant to replace the UNFCCC but rather to specify it and bring it up to date. Since all economic sectors cause GHG emissions, addressing climate change is a broad undertaking that touches on many policy fields. There are thus many potential overlaps, conflicts and synergies with other international treaties not specifically targeting climate change, ranging from the international trade regime and investment law to the CBD or treaties on specific sectors like international shipping.

Political weight of the instrument: 195 UNFCCC parties have signed the Paris Agreement. It entered into force in record time and has so far achieved 150 ratifications. The Agreement also enjoys very high levels of political support: governments of all levels do not only frequently refer to the instrument but many also show commitment to implement their NDCs. During and in the aftermath of the Paris summit, many initiatives were launched to support the implementation of the Agreement. The US announcement of their intention to withdraw has so far not had a knock-on effect on other parties.

Effectiveness: The Paris Agreement only recently entered into force and the first round of NDCs cover periods starting from 2020. There are thus no data available yet on the effectiveness of the instrument.

[444] See categories 1A 2 i and 1 B 1 in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, as refined 2019, vol. 1.8. See also "Overview" at 5-6, an in particular vol. 3.2 and 3.4, available at https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html and made mandatory by Article 13.7(a) of the Paris Agreement and decision 18/CMA.1, Annex, para. 20.

However, it is already apparent that the first round of NDCs will not be sufficient to achieve the global objectives of the Paris Agreement.

Political opportunities and good practice examples:

- Technical expert meetings on mitigation opportunities could discuss the phase-out of fossil fuels (although this is a highly politicised issue), GHG emissions from the mining sector, or concrete mitigation opportunities through increased resource efficiency
- Modalities for the transparency framework to be decided by the CMA: make sure they respect IPCC guidelines and provide data specifically for GHG emissions from mining.
- Features of future NDCs: not very probable that parties can agree on guidance but if so, spell out that it should cover fossil fuel phase out and emissions from the mining sector
- There might be opportunites across the board for addressing links between greenhouse gas emissions and resource use and efficiency, for instance in reporting modalities or through procedural means.
- The global stocktake still needs to be designed: it could potentially also assess the progress on fossil fuel phase out and the mining sector

2.1.2.7 Common Fund for Commodities/ Agreement Establishing the Common Fund for Commodities

Table 8: Agreement Establishing the Common Fund for Commodities

Key aspects	Summary
Form and legal status	Binding, in force
Objectives	Promotion of economic cooperation and economic and social development
Parties	101 member states and 9 international Organisations
Territorial scope	Global
Resources covered	All commodities, including copper, nickel, lead and zinc.
Stage of the value chain	All stages: Mining, export/import, manufacturing, recycling, waste disposal
Steering mechanism	Market regulation, information
Political Weight	++ Large and influential membership, but some important players missing
Relevance for RE	+ depending on individual projects, moving away from abiotic resources

Summary

The Common Fund for Commodities (CFC)[445] is an international organisation that originated in the concept of a New International Economic Order which aimed at actively addressing economic imbalances between newly decolonised countries and developed countries. Its main objective is not resource efficiency but market co-ordination and stability. The CFC's mandate includes all abiotic resources that qualify as tradable commodities. Today its regulatory approach is mainly financing commodity development projects, focused on the commodity instead of particular countries. These include projects that promote resource efficiency, and their impact on resource efficiency depends on the individual projects. The CFC currently appears to move away from addressing abiotic resources.

[445] Agreement Establishing the Common Fund for Commodities. United Nations Conference on Trade and Development 1976-1980, 1989, available at http://common-fund.org/fileadmin/user_upload/Agreement_Establishing_the_CFC/Agreement_Establishing_the_Common_Fund_for_Commodities.pdf.

Overview

Form and legal status: The Agreement Establishing the Common Fund for Commodities is an international treaty that establishes the CFC as an international organisation. It entered into force on 19 June 1989.[446] Currently, the CFC has 101 Member States and 9 institutional members.[447]

Objectives: According to the Agreement, the CFC should achieve the goals set out in the Integrated Programme of Commodities set out in UNCTAD Resolution 93 (IV).[448] The resolution was intended to implement the "New International Economic Order" by improving the position of the then newly independent states in comparison to developed states.[449] The CFC's objectives include stable conditions in commodity trade, to improve market structures in the field of raw materials, to coordinate International Commodity Agreements and to generally improve the economic situation of commodity producing developing states.[450] Resource efficiency is no direct objective of the CFC.

More specific objectives are set out in 5-year-action plans. In 2003-2007, the concept of sustainable development was a guiding principle for this period.[451] During the next period, the CFC intended to set its goal to support developing states in moving up the value chain in their own state.[452] The Action Plan 2008-2012 included the cost-effectiveness of commodity production.[453] Projects funded by the CFC aim at, *inter alia*, increasing production and productivity and the promotion of innovation.[454]

Territorial scope: The Agreement Establishing the Common Funds of Commodities accepts UN member states, any of the UN's specialised agencies, and the International Atomic Energy Agency. Additionally, international organisations that are active in fields of action of the CFC are eligible for membership. Non-member states might be affected by the CFC's commodity market coordination measures, or if the CFC's projects are designed in a manner that has extraterritorial effects.

Resources covered: The term "commodities" is not defined in the Agreement. Projects financed by the CFC show that it covers biotic and abiotic resources, including metals such as copper, nickel, lead, zinc.[455] However, the CFC shows a strong tendency towards biotic resources, such as coffee, cocoa and tropical timber.[456] Depending on the impacts of its market intervention instruments and the projects financed by it, substitute resources may be covered indirectly. If market interventions decrease or increase the price for a commodity, the demand for another commodity might be affected as well. Another aspect is the potential effect of projects: The promotion of copper use might result in a decrease in use of other metals that are used for the same products instead of copper. There are projects with direct relevance for resource efficiency, such as project "Zinc die-casting in India"[457] aims at improving efficiency of the zinc die-casting sector.

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[446] Common Funds for Commodities (2016).

[447] Common Fund for Commodities, "CFC Member States", http://common-fund.org/about-us/members-states/.

[448] Resolution 93 (IV) Integrated Programme for Commodities. Nairobi. 5-31 May 1976, available at http://unctad.org/en/Docs/td218vol1_en.pdf, Art. I; Pelikahn (1990) at 606.

[449] Weberpals (1989).

[450] Art. I of the UNCTAD Resolution 93(IV).

[451] Common Fund for Commodities (2002) at 5.

[452] Common Fund of Commodities (2007) at 2.

[453] Common Fund of Commodities (2007) at 2.

[454] Common Fund for Commodities (2015a).

[455] Common Fund for Commodities, "Projects funded by the CFC", http://common-fund.org/projects/projects-overview/.

[456] Common Fund for Commodities (2015).

[457] Common Fund of Commodities, "Transfer of Technology and Promotion of Demand-Zinc Die Casting in India" Project CFC/LZSG/21FT, available on the internet at http://common-fund.org/newprojects/project-overview/project-details/news/transfer-of-technology-and-promotion-of-demand-zinc-die-casting-in-india-cfclzsg21ft/?tx_news_pi1%5Bcontroller%5D=News&tx_news_pi1%5Baction%5D=detail&cHash=3fcd0c4c423f664e2e90e8b4c6d25104.

Steps of the value chain covered: The CFC supports actions targeting all steps of the value chain.[458] For instance, it funds projects that focus on the recycling of lead acid batteries.[459] Supporting the collection and re-use of lead[460] decreases waste and increases efficient use. By supporting the transfer of technology on manufacturing, such as in the project on Transfer of Technology for High Pressure Copper Die Casting in India,[461] or the promotion of copper use,[462] the CFC covers other steps in the value chain, such as manufacturing and trade.

Buffer stocking operations of the CFC mainly target production, trade, and consumption of commodities.

Type of steering mechanism: The CFC is a financial institution and fulfils its functions with two main instruments ("accounts"). The First Account is for market interventions through financing international buffer stocks and internationally coordinated national stocks. It is designed to support price control actions by associated International Commodity Agreements. The organisations established by International Commodity Agreements enter into agreements with the CFC in order to receive financial support by the CFC for their actions.

The Second Account finances other measures related to commodities, defined as "commodity development measures" with the aim to improve structural conditions in markets and competitiveness of specific commodities (Art. 18(C)(3)(a)). These measures include but are not limited to research, assistance by the CFC in the form of joint financing or technical assistance, and productivity improvements. International Commodity Bodies, for instance, can sponsor projects that are to be financed by the CFC. Financial assistance from the Second Account includes grants and loans.

Besides, the CFC requires from associated International Commodity Organisations reports on market developments of their respective commodity, which is an information tool.

Content

Relevant obligations for parties: The direct obligations for parties under the Agreement relate to the establishment and operation of the CFC. Apart from institutional provisions, the key obligations are financial and enable the CFC to fulfil its mandate: Members have to finance the Fund (art.10 and art. 11), and associated International Commodity Organisations and their Members also have financial obligations to the CFC (art. 14). Furthermore, ICOs are prohibited from borrowing from other institutions to finance buffer stocking operations and are asked to inform the Fund about the resource market they are concerned with. Hence, the Fund aims at avoiding market interferences by other institutions that might jeopardize the Fund's and associated ICO's own interventions and activities.

Although the obligations under the Agreement do not directly affect resource efficiency, the Fund's actions have the potential to indirectly affect it. For instance, a controlled, high price can result in more efficient use of the commodity in manufacturing processes in order to avoid higher production costs.

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[458] Common Funds for Commodities (2016).

[459] Common Fund for Commodities, "Senegal Used Lead Acid Battery (ULAB) Collection and Recycling Project", available at: http://common-fund.org/newprojects/project-overview/project-details/news/senegal-used-lead-acid-battery-ulab-collection-and-recycling-project/?tx_news_pi1[controller]=News&tx_news_pi1[action]=detail&cHash=5a9e9ec454ecbabfa8acf0d5c247581e.

[460] International Lead Association (2014).

[461] Common Fund for Commodities, "Transfer of Technology for High Pressure Copper Die Castaing in India", available at: http://common-fund.org/newprojects/project-overview/project-details/news/transfer-of-technology-for-high-pressure-copper-die-casting-in-india-cfcicsg05-1/?tx_news_pi1[controller]=News&tx_news_pi1[action]=detail&cHash=ed99c4a31def3ffb492cb195340a6435.

[462] Common Fund for Commodities, "Promotion of Copper Use", Project ICSG/01, available at: http://common-fund.org/newprojects/project-overview/project-details/news/promotion-of-copper-use/?tx_news_pi1[controller]=News&tx_news_pi1[action]=detail&cHash=b7d898a07327d7743f155a2ac8933a2d.

Accordingly, the CFC's mandate to stabilise commodity markets and prices can have an indirect effect on resources.

The financial obligations also fund the projects under the second account. In this respect, the eligibility requirements for receiving the CFC's support for a project are also relevant. They are outlined in the Five-Year Action Plans. Selection criteria for projects from the 2015 Guidelines for the Operations of the CFC for the Period 2013 to 2015[463] that potentially impacted resource efficiency were innovation, potential to growth and environmental as well as social sustainability.

Furthermore, the recipients of resources and facilities of the Fund are obliged to use them exclusively to achieve the objectives of the Fund and to fulfil its functions (art. 16).

Institutions, reviews, decision-making

Institutions: The Agreement establishes the bodies that operate the Fund, in particular a Governing Council, an Executive Board, a Managing Director and a Consultative Committee.

The Governing Council has "all the power of the Fund" (art. 20(1)) and consists of one governor and one alternate per Member. Each Member has one vote. Although decisions are to be adopted by consensus wherever possible, in principle a simple majority suffices.

The Executive Board consists of 28 Executive Directors and their alternates, which are appointed by the Governing Council. Its main responsibilities are the operations of the Fund and it reports to the Governing Council. The decision-taking process is similar to the Governing Council.

A Managing Director is appointed by the Governing Council by a qualified majority vote. She or he cannot hold another office in the CFC and conducts the ordinary business of the CFC.

The Consultative Committee is to provide advice to the Executive Board on matters related to the Second Account, such as technical and economic aspects of programmes proposed by International Commodity Bodies.

Evaluation and review: The Agreement can be amended (Art. 51 of the Agreement), but it does not contain a provision allowing for regular evaluation or review.

Reporting: The CFC is obliged to provide annual reports, including an audited statement of accounts to its Members. This information is also to be forwarded to the UN General Assembly, the Trade and Development Board of UNCTAD, to Associated ICOs, and other interested international organisations. Only associated International Commodity Organisations have to report to the Fund on market developments regarding their commodity (Art. 17 (9) (e) of the Agreement).

Compliance procedures, remedies and dispute settlement procedures: In case that a Member fails to fulfil its financial obligations, the Governing Council may suspend its membership by qualified majority. A suspended Member may lose its membership entirely after one year.

Questions regarding the interpretation or the application of the Agreement are addressed first by the Executive Board and potentially then by the Governing Council. If the Governing Council cannot reach such a decision, it shall submit the questions to an arbitral tribunal.

Stakeholder and public involvement: The Agreement Establishing the Common Fund for Commodities involves other international commodity organisations and bodies through their voluntary association. Other stakeholders and the public can be involved through projects supported by the CFC through its Second Account.

[463] Common Fund for Commodities (2015a).

Assessment

Coherence with other international treaties and policies: The Agreement is part of implementing the United Nations Conference on Trade and Development agenda.[464] It also supports close cooperation of the Fund with other International Commodity Organisations. The First Account of the CFC is reserved for International Commodity Organisations providing international buffer stocks or internationally coordinated national stocks. ICOs have to enter into an Association Agreement with the CFC in order to benefit (art. 7.1of the CFC Agreement). Associated ICOs include the International Copper Study Group, the International Lead and Zinc Study Group, and the International Nickel Study Group. The CFC and the ICOs hold annual meetings on which they discuss matters of cooperation and joint actions, whereby the ICOs provide expert knowledge.[465] The CFC functions as a coordinator of commodity agreements, bodies, and organisations.

Political weight of the instrument: Instead of focusing on a specific commodity, the CFC takes a holistic approach: It covers all commodities and all steps of the value chain. It coordinates international commodity bodies and their establishing agreements. It is the first instrument that takes this approach. With 101 member states and 9 IOs participating, it has a large membership and the potential to influence commodity-related politics. Members include China, Russia, Mexico and the EU; but not Australia, Canada and the USA. This limits the political weight of the instruments, as these states have an important role in international commodities trade. It also appears that the CFC is shifting its focus away from market interventions to project financing.[466] This would indicate that its political weight is limited.

Effectiveness: The initial approach of the CFC to use its market intervention and coordination instruments proved to be unsuccessful. Project financing, on the other hand, became the CFC's main course of action and was adapted in 2013.[467] The fact that project financing was adapted and continues after over 30 years of existence of the CFC shows that CFC members regard it as effective. Regarding resource efficiency, the CFC's effectiveness depends on the content of the individual project and potentially on their aggregate effects. The inclusion of sustainability in its guiding principles[468] could be a hook for addressing resource efficiency. However, the CFC's impact on abiotic resources is considerably small, as recent projects mostly cover biotic resources.[469]

Political opportunities and good practice examples:

- Small political opportunity to address resource efficiency in general or at large scale.
- However, projects concerning recycling and transfer of techniques can support the efficient use of resources and prevent waste.
- Buffer Stocks could have more impact but offer no political buy-in.

[464] Common Fund for Commodities, "Organisational Profile", http://common-fund.org/about-us/organisation-and-profile/.
[465] Common Fund for Commodities, "International Commodity Bodies", http://common-fund.org/about-us/partners/icbs/.
[466] Bundesministerium für Wirtschaft und Energie (2017) at 3.
[467] Bundesministerium für Wirtschaft und Energie (2017) at 3.
[468] Ibid.
[469] Common Fund for Commodities (2015) at 37ff.

2.1.2.8 International Study Groups

Table 9: Terms of Reference of the International Study Groups

Key aspects	Summary
Form and legal status	Binding, in force
Objectives	Enhance international cooperation on issues related to respective metal
Parties	30 Members (lead and zinc); 15 Members (nickel); 24 Members (copper)
Territorial scope	Global
Resources covered	Lead and zinc, nickel, copper
Stage of the value chain	All stages, focus on trade, production, and consumption
Steering mechanisms	information
Political weight	+++ significant share of world trade represented and special expertise
Relevance for RE	++ Projects linked to RE, effects of information on RE difficult to assess

Summary

The three International Metal Study Groups are intergovernmental organisations established by their respective Terms of Reference. Each group focuses on specific metals: lead and zinc, nickel, and copper. Their mandate is to influence decision-makers by generating and providing information on metal-related issues, focusing on market developments and the metal economy worldwide. This can indirectly influence resource efficiency. There also are projects in each group that are directly linked to resource efficiency. The groups' political weight is based on the significant share of world trade they represent and their special expertise. It is difficult to assess to what extent the work of the metal study groups promotes or impedes resource efficiency.

Overview

Form and legal status: Each metal study group is an intergovernmental organisation established by a treaty: The Terms of Reference for the International Lead and Zinc Study Group[470] (ToRLZ) entered into force on 5 June 1959; the Terms of Reference for the International Nickel Study Group[471] (ToRN) on 23 May 1990 and the Terms of Reference of the International Copper Study Group[472] (ToRC) on 23 January 1992.

Objectives: According to their Terms of Reference, the main objective of the three international study groups is to enhance international cooperation on lead-, zinc-, nickel-, and copper-related issues by gathering information and establishing intergovernmental consultations and information exchange.[473] To this end, the groups collect data and provide studies.[474] The focus lies on the respective metal

[470] Terms of Reference of the International Lead and Zinc Study Group (ILZSG) – Rules of Procedure of the Group. New York, 6 May 1959, available at http://ec.europa.eu/world/agreements/prepareCreateTreatiesWorkspace/treatiesGeneralData.do?step=0&redirect=true&treatyId=476.

[471] Terms of Reference of the International Nickel Study Group. Geneva, 2 May 1986, available at: https://treaties.un.org/doc/Publication/UNTS/Volume%201566/v1566.pdf at 29ff.

[472] Terms of Reference of the International Copper Study Group. Geneva, 24 February 1989, available at: https://treaties.un.org/doc/Publication/UNTS/Volume%201662/v1662.pdf at 229ff.

[473] See Art. 4 (a) of the ToRC; Art. 4 (b) of the ToRN; Rule 7 of the Rules of Procedure of the Lead and Zinc Study Group.

[474] See Art. 4 (d) of the ToRC.

market and trade. Resource efficiency can implicitly be part of the objective, if it has an impact on trade or the market. Conversely, the studies can affect resource efficiency by influencing the respective market. Producers, manufacturers, and traders will have an interest to make most out of the resources available to them as soon as they have an (economic) incentive to do so.

Territorial scope: The groups cover their respective metals worldwide. All states and intergovernmental organisations with responsibilities as regards to commodity agreements that are interested in the consumption, production, and trade of a respective metal can join the Lead and Zinc, Nickel or Copper Study Group. Only the Terms of Reference of the Lead and Zinc Study Group require membership at the UN, an appropriate specialised agency or the GATT. The work of the study groups has potential impact on non-member states, and can thus have effects beyond the territories of Members.

Resources covered: The International Study Groups respectively target lead and zinc, copper, and nickel. Furthermore, the Groups also publish studies on by-products of nickel, copper, zinc and lead. These include several other metals (bismuth, germanium, cobalt and others) and rare earth elements.[475] Indirectly, the activities of the Study Groups can have an impact on substitute metals, for example by triggering price or supply changes that have an impact on the demand for substitute metals.

Steps of the value chain covered: The International Study Groups concern all steps of the value chain. Their Terms of Reference emphasise trade and the metal economy (see, for example, Art. 4(a) and (c), Art. 16ff. of the ToRC). Specific aspects are addressed, for instance by the International Copper Study Group's annual Recyclables Survey that focuses on refined production and copper alloy scrap,[476] covering the steps of production and recycling or waste reduction.

The terms of reference for the Lead and Zinc and Nickel Study Groups emphasise that they affect all forms of lead and zinc and nickel, including scraps, wastes, and/or residues (Art. 5 of the ToRLZ, Art. 3(b) and 4(a) of the ToRN). For instance, the study groups work together on recycling matters.[477]

Type of steering mechanism: The International Study Groups use **information tools**. These include collection and distribution of statistics and information, annual assessment reports of the world copper and nickel situation, discussions on market development, *ad hoc* studies on the zinc and lead, copper, and nickel economy, and the consultation and exchange of information on world production, stocks, trade and consumption. For instance, the three study groups publish monthly statistical bulletins with an overview of the current situation in the world markets of lead, zinc, nickel, and copper.[478]

Content

Relevant obligations for parties: The Terms of Reference of all three study groups oblige their Members to contribute to their budget. This ensures a financial basis for studies or projects conducted by the group, which may include studies or projects on resource efficiency.

Furthermore, the International Study Nickel and Copper Groups require their Members to "use their best endeavours to cooperate the attainment of the objective of the Group, in particular by providing

[475] Smale, Don, "Importance of Latin America's Contribution to the Global Supply of Copper, Lead, Zinc and Nickel and their By-product Metals", presentation held at the EU-Latin America Dialogue on Raw Materials, Lima, 10-11 March 2014, at 31.

[476] International Copper Study Group, "Environmental and Economic Activities", http://www.icsg.org/index.php/environment-economics/environmental-and-economic-activities.

[477] International Nickel Study Group, "Environmental and Economic Activities", available at: http://www.insg.org/economic14.aspx.

[478] White (2012) at 17.

the data" for the statistics and information (art. 20 ToRC, also art. 17 ToRN). This is relevant if and to the extent that the groups address resource efficiency and need relevant data.

Institutions, review and decision-making

Institutions: The groups have small and functional institutional setup. The International Copper and Nickel Study Groups have a General Session, which is vested with the highest authority, a Standing Committee, and the Secretariat. The International Lead and Zinc Study Group has a Chairman (and two vice-chairmen) instead of a General Session. All groups may establish other Committees as appropriate.

The terms of reference do not mention the legal personality of the Lead and Zinc Study Group. However, the Terms of Reference of the International Nickel Study Group establish a legal personality of the group in its host country. It cannot enter trade contracts. Similarly, the International Copper Study Group has legal personality, which is limited by the prohibition to enter into trade or transaction contracts or other financial obligations.

Evaluation and review: The terms and references of all study groups can only be amended by consensus.[479] They do not provide for periodical review and evaluation of the ToR. However, there is an annual review of the budgetary obligations of the group members. Only the Zinc and Lead Study Group exceptionally allows a vote for budgetary decisions.

Reporting: Since there almost no material obligations on members (besides making their financial contributions and providing data), there are no reporting obligations regarding implementation.

Compliance procedures, remedies and dispute settlement procedures: The Terms of Reference of the International Lead and Zinc Study Group state that a Member that did not pay its annual contribution has to give an explanation before the Standing Committee (Rule 9 of the Rules of Procedure of the International Lead and Zinc Study Group). The Terms of Reference for the International Copper and Nickel Study Groups do not provide for any provisions on compliance procedures, remedies, and dispute settlement procedures.

Stakeholder and public involvement: All Study Groups used the provision allowing for further committees to establish an **Industry Advisory Panel** that includes industry representatives of Members and observers in the annual meetings of the groups. Thereby, the Groups acquire the expert knowledge of industry representatives. In return, industry representatives have the chance to comment on the work of the groups.[480] Their involvement will have a primary focus on economic related topics but might indirectly also impact resource efficiency.

The International Lead and Zinc Study Group allows non-governmental observers in its meetings (Rule 7 of the Rules of Procedure).[481]

Publications of the Study Groups are available to the public, but mostly for sale on their website.

[479] Since the ToR are treaties involving financial obligations for its parties, amendments would probably require domestic approval by its parties.

[480] For the Lead and Zinc Study Group, see International Lead and Zinc Study Group, "Industry's Role", available at http://www.ilzsg.org/static/industryrole.aspx?from=5.

[481] International Lead and Zinc Study Group, "Permanent Observer Organisations", available at http://www.ilzsg.org/static/observers.aspx?from=3.

Assessment

Coherence with other international treaties and policies: All of the Study Groups are partners to the Common Fund for Commodities as International Commodity Bodies,[482] i.e. conduct projects under the Second Account of the CFC.[483] Accordingly, the Study Groups can bring their expert knowledge to the CFC's projects.

The Terms of Reference for the International Lead and Zinc Study Group make a direct reference to the UN and the GATT (Art. 1 of the ToRLZ). Similarly, the ToRC and ToRN include a provision that specifically allows for arrangements with the UN and its entities. UNCTAD is an observer in the Groups for Lead and Zinc and in the group for nickel.[484]

The Study Groups are considered to be sister organisations.[485] They work closely together, for example in their cooperation in recycling and by- and co-products, and are now even co-located in Lisbon.[486]

Political weight of the instrument: The membership of the Study Groups mirrors their political weight: Apart from the Nickel Study Group, in which China is not a member, almost all major producing countries, such as China, Russia, Australia and the USA, participate in the study groups. Additionally, over 85% of the lead and zinc producing and consuming states are part of the ILZSG.[487] The Copper Study Group encompasses 76 % of the copper producing states and 81 % of the copper consuming countries.[488] Only the Nickel Study Group falls short of this result. It only comprises 40% of the nickel extraction and 22 % of the nickel consumption.[489] All groups have a unique pool of information on the respective metals and their by-products. This expertise can also secure political influence of the Study Groups.

Since the main purpose and instrument of the groups is to collect and provide information, there are virtually no material obligations (besides making financial contributions and providing data). The Study Groups rely on the continuing interest of their members to participate in their work.

Effectiveness: The fact that the ILZSG has existed for almost sixty years shows that its members find it effective, as the study group only exists as long as its members consider it has a "useful purpose" (Art. 10 ToRLZ). Additionally, the fact that two more metal study groups were established shortly after the demise of the Sixth International Tin Agreement in 1985 shows that information gathering and exchange is valued by states. However, there is no information on the extent to which the groups' work influences their member's policies and actions. Although their terms of references disclose a strong focus on metal markets, new topics, such as sustainability, have been added to the agenda.[490] As a result, the study groups' focus can be adapted according to upcoming interests, preventing them to become obsolete.

Political opportunities and good practice examples:

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[482] See Common Fund for Commodities, International Commodity Bodies at http://common-fund.org/about-us/partners/icbs/.

[483] See the section on the CFC.

[484] See International Copper Study Group, "Members & Observers", http://www.icsg.org/index.php/who-we-are/members-&-observers and International Nickel Study Group, "Membership: Permanent Observers", available at: http://www.insg.org/members.aspx.

[485] See logos on the website of the International Study Group for Copper: http://www.icsg.org/.

[486] International Nickel Study Group, "Environmental and Economic Activities", available at: http://www.insg.org/economic14.aspx; Smale, Don, "Review and Outlook for Copper, Nickel, Lead and Zinc", presentation held at the Multy-Year Expert Meeting on Com-modities and Development 2013, Geneva, 20 March 2013, at 2.

[487] Bundesministerium für Wirtschaft und Energie (2017) at 11.

[488] Bundesministerium für Wirtschaft und Energie (2017) at 11.

[489] Bundesministerium für Wirtschaft und Energie (2017) at 11.

[490] Bundesministerium für Wirtschaft und Energie (2017) at 11.

- Involvement in the Groups to support their studies with the possibility to include resource efficiency as a study subject
- Use of the new topic "sustainability" as an entry point for resource efficiency
- Resource efficiency issues can be introduced as a topic of its own in the Environmental and Economic Committee.

2.1.2.9 Sixth International Tin Agreement (with Annexes)

Table 10: International Tin Agreement (adoption: 26 June 1981; provisionally in force 1 July 1982)

Key aspects	Summary
Form and legal status	was binding, not in force anymore
Objectives	Regulating tin production and consumption; prevention of price fluctuations
Parties	16 states applied the ITA provisionally; 5 states ratified it
Territorial scope	Global
Resources covered	Tin
Stage of the value chain	Mining, export/import
Steering tool	Regulation, information
Political weight	+ Due to membership loss no extension or renewal of the mandate
Relevance for RE	++ Market intervention instruments for managing tin supply, but effectiveness disputed

Summary

The Sixth International Tin Agreement was part of a series of agreements that were negotiated every five years. It established a Council with the mandate to collect information on tin and influence the tin market. A major objective of the Agreement was to enhance the economies of developing producer countries. Its impact on resource efficiency was high due to the possibility to influence price stability through market interventions such as buying and selling tin in the market and obligatory floor and ceiling prices. In the mid-1980s the International Tin Council became insolvent and caused a major crisis of the tin industry and metals markets. Due to loss of membership, the Sixth International Tin Agreement was neither extended nor renewed.

Overview

Form and legal status: The Sixth International Tin Agreement[491] (ITA 6) was the last agreement of this series that started in 1954.[492] Every five years, a new international tin agreement was drafted in order to adapt to the market.[493] ITA 6 entered into force provisionally in 1982, due to lack of membership,[494]

[491] Sixth International Tin Agreement (with annexes). Geneva, 26 June 1981, available at https://treaties.un.org/doc/Publication/UNTS/Volume%201282/volume-1282-I-21139-English.pdf.

[492] International Tin Agreement. London, 1 March 1954, available at http://treaties.fco.gov.uk/docs/fullnames/pdf/1956/TS0050%20%281956%29%20CMND-12%201954%201%20MAR,%20LONDON%3B%20INTL%20TIN%20AGREEMENT.pdf.

[493] Chandrasekhar (1989), at 312.

[494] Gilbert (1987), at 609.

following a decision by the states that had ratified it.[495] In principle, its duration was limited to 5 years. Extension was possible but did not happen and, consequently, ITA 6 expired mid-1989.[496] ITA´s functions regarding data collection and statistics have been taken over by UNCTAD.[497]

Objectives: The objectives of ITA 6 were, amongst others, to balance tin production and consumption (Art.1 (a)), to stabilise tin prices (Art. 1(b)) and to further the use of tin (Art. 1(f)). Although the objectives primarily aimed at supporting developing producing countries, [498] they can indirectly influence resource efficiency. Maintaining an artificial high price of tin, for instance, may lead to overproduction even though there might not be enough buyers. In this respect, the ITA aimed to "restore equilibrium between supply and demand".[499]

Territorial scope: The Agreement was open to all states. However, parties were categorized in "Producing" or "Consuming" Members (Art. 5(1)) and their membership was based on their domestic mine production or their consumption of tin (Art. 5(2)). In practice this amounted to an inherent geographical restriction because not all states produced or consumed sufficient amounts of tin or did not intend to participate. Notwithstanding, the overall aim of the activities of the International Tin Council was to influence world tin prices which might have affected non-contracting parties.

Resources covered: The agreement covered tin metal. Furthermore, the Council was supposed to encourage close relationships with organizations focusing on efficient tin exploration and production (Art. 10(d)).

Steps of the value chain covered: The ITA 6 covered explicitly the production and consumption of tin metal, i.e. mining as well as import and export. It did not directly address manufacturing, recycling or waste disposal. Yet, market price changes triggered by the Council could impact other stages of the lifecycle by either making tin cheaper or more expensive, thereby increased or decreased use by manufacturers.

Type of steering mechanism: The International Tin Council, established by the previous ITAs, continued to exist under ITA 6. It could request data about tin metal, should keep itself informed about development on the tin market, and was mandated to engage in direct market interventions such as buying and selling tin, setting ceiling ad floor prices and export control. It also used in financial tools, notably borrowing, in order to finance its activities.[500] Thus, it combined information, regulatory and financial tools. For its functions, the Council could utilise the "buffer stock" which contained tin stocks provided by the members. If members did not comply with their obligations under the treaty, the Council could impose sanctions. Market interventions of the International Tin Council, accordingly took two forms: buffer stock operations and export controls.[501]

Content

Relevant obligations for parties: Members had to finance the Administrative Account for administrative expenses of the Council and the Buffer Stock Account for the Council's activities. The Council could oblige members to provide information about the consumption or extraction of tin. Such reporting

[495] Footnote to Title of Sixth International Tin Agreement and Art. 55(2) thereof.

[496] Mallory (1990), at 836.

[497] Thoburn (1994), at 133.

[498] In recital (b), the New International Economic Order is mentioned as a goal. The New International Economic Order was established by the UN General Assembly in 1974, *inter alia*, promoting just and equitable prices of raw materials and primary commodities. Its aim was to balance the economies of (newly independent) developing countries and industrialised countries. See Resolution adopted by the UN General Assembly (3201(S-VI)): Declaration of a New International Economic Order. 1 May 1974, available at: http://www.un-documents.net/s6r3201.htm.

[499] Behrendt (1985), at 196.

[500] Raffaelli (1995), at 187.

[501] Gilbert (1987), at 609.

obligations enhance transparency and awareness and facilitate tin supply management. The Council's had the power to set ceiling and floor prices, supplemented by export restrictions and quotas. This instrument was a strong market intervention instrument for managing tin supply, with a corresponding influence on this aspect of resource efficiency. Artificially high prices due to floor prices can potentially lead to increased efficiency on the demand side.

Additionally, the Agreement imposes a soft obligation on its Members, who were obliged to "encourage the conservation of the natural resources of tin by preventing the premature abandonment of deposits" (Art. 41(3)(c)). Therefore, was directed at exploiting deposits efficiently.

Institutions, review and decision-making

Institutions: The International Tin Agreements established the International Tin Council (ITC) that was continued in the ITA 6. It had legal personality and notably the power to borrow money. It was assisted by seven subsidiary bodies, e.g. an Economic and Price Review Panel and a Statistical Committee.

Evaluation and review: There were two provisions which provided opportunities to review the Agreement: Firstly, the Council could recommend to the Members amendments to the Agreement. In order to do so, it needed the support of two thirds from consuming and producing members respectively (Art. 57 (1)). The members could then ratify them or withdraw from the treaty. Secondly, the duration of the agreement was in principle limited to five years. An extension of not more than two years was possible but required two-third majorities by consuming and producing countries respectively. The regular expiry and re-adoption of the International Tin Agreements also provided their Members with the possibility to amend the treaty according to their needs without the restriction of having to either accept or reject Council recommendations.

Reporting: The ITA requires members to give information about their tin production and consumptions as well as the tin market. If a producing country makes special deposits, it is under the obligation to notify the ITC. Art. 13(8) says that no information concerning the administration or operation of this agreement shall be revealed by a member of staff except authorised by Council.

Art. 7(f) obliges the ITC to annually report on its activities to the members.

Compliance procedures, remedies and dispute settlement procedures: Council decisions under the ITA were binding on members. The Council could oblige members to make an additional contribution to the buffer stock, if the member exceeded the export quota set by it. This contribution would not exceed the allowed exports. Another option was to lower the export quota for the respective country. If these two measures were not successful, the Council could decide to lower this member's part of the liquidation part pertaining to it according to article 26(1). Following the International Tin Council's insolvency, claims were made against the member states but were unsuccessful because of the separate legal personality of the International Tin Council.

Stakeholder and public involvement: The ITA 6 does not contain provisions concerning stakeholder and public involvement.

Assessment

Coherence with other international treaties and policies: The ITAs aimed at the support of the principles of the United Nations, especially the principles from the UN Conference on Trade and Development. In that regard, the Council was able to make the appropriate arrangements to cooperate with and consult the UN, UNCTAD, and other organs or organisations related to the UN (Art. 8 (h)(i)). Article 25 of the ITA 6 provided for the possibility to negotiate an association agreement with the Common Fund of Commodities.

Political weight of the instrument: Especially in between the fifth and sixth ITAs, the ITA suffered a membership loss[502] and was faced more and more by an "outsider problem"[503]. Bolivia and the USA withdrew from the treaty and sold tin outside the reach of the ITC.[504] Russia was also not a Member of the ITA 6. New producing countries, such as Brazil, could not be convinced to accede, [505] which was a major drawback as it impeded the effectiveness of the International Tin Council's price stability measures. Even members undermined the work of the ITC by smuggling tin outside their countries to avoid the quotas and sanctions.[506] As a consequence the political weight of the sixth International Tin Agreement was low.

Effectiveness: The effectiveness of the Council's market measures is in dispute.[507] One argument is that the Council could not effectively maintain its floor price throughout the entire time of the duration of its activity. Others argue that the Council achieved substantial price stabilisation over a considerable period of time. [508] The fact that the first International Tin Agreement came into force in 1956 and was followed by five further agreements underlines that the ITAs were effective during the first years. However, as the tin agreements exclusively regulated tin and excluded other metals, the effectiveness of the agreement was jeopardised by cheaper substitute metals which interfered with the tin market. [509] Together with the membership loss and emerging new producing non-Members, the effectiveness of the ITA was reduced. It ceased to have control over the global tin market. [510] Extensive use of the buffer stock in order to maintain the tin price and less membership contribution due to membership loss eventually led to the insolvency of the International Tin Council in 1985.[511] It was argued that one reason for the failure of the ITA 6 was poor drafting: whether or not the ITC's buffer stock actions complied with the provisions of the sixth ITA, and member states' responsibility for debts were unclear. [512]

Political opportunities and good practice examples:

- The obligation to "encourage the conservation of the natural resources of tin by preventing the premature abandonment of deposits" (Art. 41(3)(c))
- Price regulation could increase resource efficiency by influencing supply and demand. However, it is a complex instrument and its effects are difficult to predict or control.

[502] Mallory (1990), at 847.
[503] Behrendt (1985), at 193.
[504] Mallory (1990), at 846 and 882.
[505] Anderson and Gilbert (1988), at 5.
[506] Gilbert (1987), at 611 and Chandrasekhar (1989), at 313.
[507] Mallory (1990), at 849.
[508] Mallory (1990), at 849; Gilbert (1987), at 612.
[509] Chandrasekhar (1989), at 314.
[510] Chandrasekhar (1989), at 312f.
[511] Anderson and Gilbert (1988), at 6.
[512] Gilbert (1987), at 613f.

2.1.2.10 Bilateral Resource Agreements between the Federal Republic of Germany and Kazakhstan, the Mongolia, and Peru

Table 11: Agreement between the Federal Republic of Germany and the Government of Kazakhstan on Cooperation in the Field of Raw Materials, Industry and Technology (entered into force 8 February 2012)

Key aspects	Summary
Form and legal status	binding, in force
Objectives	cooperation in the field of exploration, exploitation, use, and processing of mineral raw materials; secure supply of raw materials; comprehensive use of resources
Parties	Germany, Kazakhstan
Territorial scope	Territory of the two states
Resources covered	Mineral resources
Stage of the value chain	From exploration to processing
Steering mechanisms	information, planning, and regulation
Political weight	+
Relevance for RE	++

Table 12: Agreement between the Federal Republic of Germany and the Government of Mongolia on Cooperation in the Field of Raw Materials, Industry and Technology (entered into force 13 October 2011)

Key aspects	Summary
Form and legal status	binding, in force
Objectives	cooperation in the field of exploration, exploitation, use, and processing of mineral raw materials; secure supply of raw materials; comprehensive use of resources
Parties	Germany, Mongolia
Territorial scope	Territory of the two states
Resources covered	Mineral resources
Stage of the value chain	From exploration to processing
Steering mechanisms	information, planning, and regulation
Political weight	+
Relevance for RE	++

Table 13: Agreement between the Federal Republic of Germany and the Government of Peru on Cooperation in the Field of Raw Materials, Industry and Technology (entered into force 7 January 2015)

Key aspects	Summary
Form and legal status	binding, in force
Objectives	cooperation in the field of exploration, exploitation, use, and processing of mineral raw materials; secure supply of raw materials; comprehensive use of resources
Parties	Germany, Peru
Territorial scope	Territory of the two states
Resources covered	Mineral resources
Stage of the value chain	From exploration to processing
Steering mechanisms	information, planning, and regulation
Political weight	+
Relevance for RE	++

Summary

The three bilateral resource agreements between Germany and Kazakhstan, Mongolia, and Peru have been negotiated in order to promote economic cooperation in the fields of mineral raw materials. They aim at securing the resource supply for Germany and also at increasing German governmental support to the partner states, inter alia, with regard to resource efficiency. Despite their primarily economic nature, the agreements impact resource efficiency directly and indirectly by explicitly mentioning it as a focus point for cooperation and by imposing measures that have the potential to increase resource efficiency in the long run. Their main goal, nevertheless, is access to and comprehensive use of resources, which impedes resource efficiency.

Overview

Form and legal status: The three bilateral agreements between Germany, Kazakhstan,[513] Mongolia,[514] and Peru[515] will be analysed together, because their structure and even wording are very similar.[516] They are binding international treaties that entered into force on the day of their respective signatures; in the case of the Peru Agreement, at the moment the Peruvian government formally notified Germany that all national requirements for its entry in force are fulfilled. Each of the agreements is in force for five years but is automatically prolonged every five years unless a

[513] Abkommen zwischen der Regierung der Bundesrepublik Deutschland und der Regierung der Republik Kasachstan über Partnerschaft im Rohstoff-, Industrie- und Technologiebereich, signed and entered into force 8 February 2012, BGBl 2012 II S. 625.

[514] Abkommen zwischen der Regierung der Bundesrepublik Deutschland und der Regierung der Mongolei über Zusammenarbeit im Rohstoff-, Industrie- und Technologiebereich, signed and entered into force 13 October 2011, BGBl 2012 II S. 246.

[515] Abkommen zwischen der Regierung der Bundesrepublik Deutschland und der Republik Peru über Zusammenarbeit im Rohstoff-, Industrie- und Technologiebereich, signed and entered into force 7 January 2015, BGBl 2015 II 895.

[516] Nowrot (2013) at 10. Whenever necessary, differences will be pointed out.

contracting party terminates it with one year's notice. In Germany, the agreements were concluded by the government and did not require parliamentary approval.[517]

Objectives: The overall objective of the three agreements is the promotion of economic cooperation in the mineral raw materials sector between Germany and the partner state (Art. 1 (1) of the Kazakhstan Agreement, the Mongolia Agreement, and the Peru Agreement). They primarily aim at securing raw material supply (Art. 1(2) of all Agreements) and at a comprehensive use of the resources available in Kazakhstan, Mongolia, and Peru. The agreements mention "sustainability",[518] but it plays a subordinate role. The wording of the Peru Agreement shows that environmental and social considerations gained more weight in the negotiations that took place three years later than the other two agreements. Enhancing resource efficiency is explicitly included in the list of main points of cooperation between Germany and the three other states (Art. 2(3) of the Agreements).

Territorial scope: The agreements cover the territory of Germany and the respective partner state.

Resources covered: Mineral resources in Kazakhstan, Mongolia, and Peru are covered by the agreements.[519]

Steps of the value chain covered: The agreements cover the entire value chain, from exploration to processing and use of the minerals.

Type of steering mechanism: The agreements mainly rely on mutual cooperation.[520] They do not grant exclusive access rights or promise a certain quota of raw materials for German companies.[521] The Peru Agreement entails **regulatory tools**, as it obliges the government of Peru to comply with "international environmental and social standards"[522] (Art. 6 (4) of the Peru Agreement). In the other two agreements, the German government is obliged to support the other two states in the implementation of environmental and social standards.

Content

Relevant obligations for parties: Germany, Mongolia and Kazakhstan are required to strive for stabilization of the framework for cooperation in the raw material sector (Art. 6 (1) of the Mongolia and Kazakhstan Agreement). Peru and Germany, commit to strengthening a stable, legal framework (Art. 6 (1) Peru Agreement).

All three Agreements mention improving resource efficiency as one of the main areas of cooperation (Art. 2 (3)). Germany is under an obligation in all three Agreements to provide advice on resource efficiency. Only in the case of Kazakhstan and Mongolia, the advice is specifically aimed at supporting the partner country.[523] In the Mongolia Agreement, *Germany* has the obligation to support Mongolia in elaborating measures to improve resource and energy efficiency (Art. 6 (7)). Conversely, in the Peru Agreement, there is an obligation on *Peru* to take measures to improve resource and energy efficiency (Art. 6 (4)).

Despite these provisions, the agreements are clearly directed at enabling the German partner states to fully realize their resource potential and at facilitating access to resources: Several of the other main

[517] Antwort der Bundesregierung auf die "Kleine Anfrage der Fraktion BÜNDNIS 90/DIE GRÜNEN betr.: ‚Umsetzung der Rohstroffstrategie der Bundesregierung'" BT-Drucksache: 17/13212, at 18f.

[518] For instance, sustainable resource supply and sustainable use of resources in Art. 2 (2) of all Agreements.

[519] The full resource potential of K, M, and P is to be exhausted, as mentioned explicitly in the agreements. Conversely, German resources are not covered by the agreements.

[520] This is already suggested by their titles which explicitly states" cooperation on raw-materials".

[521] Dahlmann and Mildner (2012) at 2.

[522] Explicitly including ILO Convention No. 169, to which Peru was already a party.

[523] Art. 6 (4) for Kazakhstan, 6 (5) for Mongolia, 6 (3) for Peru.

areas and provisions are about facilitating access. The governments of Mongolia and Kazakhstan are required to provide or guarantee non-discriminatory and fair access to raw materials for German businesses,[524] whereas the government of Peru is merely required to support German businesses in their activities in Peru, especially in the purchase of raw materials.[525] The governments of Mongolia and Kazakhstan support raw material measures undertaken by the German government (Art. 6 (6) Mongolia Agreement, Art. 6 (5) Kazakhstan Agreement). There is a clear focus on facilitating access to resources for German businesses, which is a disincentive to increase resource efficiency. For instance, the provision on the envisaged projects and measures explicitly mentions exploration, extraction, utilization, and processing of resources but not efficiency (see e.g. Art. 4 (1) of all agreements). The latter could possibly by addressed under "utilisation" and "processing". The provision on supporting companies and business associations does not mention efficiency.

The obligations of the German government differ slightly between the agreements but have a common direction: They mostly include the obligation to support German businesses as well as businesses from the other state in their activities in the raw material sector, such as processing resources. In Mongolia and Kazakhstan, the support includes export credit insurance, investment guarantees, untied financial loans for German businesses, and development aid to the respective partner state.[526] The conditions for financial support are not specified by the agreements. It has been pointed out that this is a missed opportunity to impose environmental and social requirements on businesses,[527] and this argument can applied to resource efficiency as well. Such a provision is not included in the Peru Agreement, according to which the German government is only required to support businesses, not limited to their nationality, in establishing contacts (Art. 6(3)).[528] The German government shall also provide advice on issues such as the exploration, exploitation, extraction, processing and usage of resources (Art. 6 (3) of the Peru Agreement), and the establishment of industry clusters (Art. 6 (4) of the Kazakhstan Agreement). In the Peru Agreement, environmental and sustainability considerations have gained weight.[529] This shift has the potential to enhance resource efficiency in Peru, but the focus of the Peru Agreement remains to extend the Peruvian industry.

Institutions, review and decision-making

Institutions: Each of the three agreements establishes a so-called Government Working Group on Cooperation in the Field of Raw Materials, which regularly engages in a partnership dialogue (Art. 3 (1) of all of the Agreements).[530] The Peru Agreement states that the Government Working Group meets at least every two years. The other agreements are silent on this, but by 2015 the Working Group with Kazakhstan had already met nine times.[531] In addition, an Economic Committee for Cooperation in the Fields of Raw Materials, Industry and Technology is set up by the Kazakhstan and Mongolia agreements. It consists of representatives of businesses and business associations who meet up at least once a year and report to the Government Working Group. The Peru Agreement does not set up such a committee.

The parties or the Government Working Group may agree on specific projects and measures in the resource sector and mandate and supervise Implementing Organisations.

[524] Art. 6 (5) for Kazakhstan, Art. 6 (6) for Mongolia.

[525] Art. 6(3) for Peru.

[526] Art. 6 (3) for Kazakhstan, Art. 6 (2) for Mongolia.

[527] Krajewski (2013) at 3 and 12.

[528] Art. 6 (4) of the Kazakhstan Agreement, Art. 6 (5) of the Peru Agreement contain the same requirement.

[529] See Art. 6 (4) of the Peru Agreement.

[530] The names of the Working Groups differ slightly but not significantly.

[531] Antwort der Bundesregierung auf die Kleine Anfrage der Abgeordneten Gehrcke, Groth, Hahn und der Fraktion DIE LINKE, Drucksache 18/7336, 10 January 2016 at 3.

Evaluation and review: The Government Working Groups on Cooperation in the Field of Raw Materials under each agreement meet at least every two years to discuss the implementation of the respective agreements, objectives, main focus, and measures of the future cooperation regarding the agreement.

By mutual agreement, the contracting parties to each of the three agreements can amend the agreements.

Reporting

Compliance procedures, remedies and dispute settlement procedures: Disputes arising from the application or interpretation of the agreements shall be solved in consultation. Besides, the implementing organisations[532] are to establish agreements according to their competences and national laws that, *inter alia*, set up a monitoring process with regard to the cooperation measures that they supervise (Art. 4(2) No. 5 Kazakhstan and Mongolia Agreements). Their activity is, in return, supervised by the Government Working Groups. The Government Working Groups also supervise other implementing projects that aim at the implementation of the agreement and, therefore, receive reports by the Economic Committee about the state of implementation of the agreement.

Stakeholder and public involvement: The agreements explicitly aim at promoting the cooperation of companies in the resource sector, and the parties commit to engage companies and business associations comprehensively in the implementation of the agreements (Art. 5 of all agreements). Kazakhstan, Mongolia and Peru are obliged to support German companies in the acquisition of raw materials, investments and technology transfer. The German government assists companies in various matters such as establishing contacts to the relevant ministries.

Representatives of companies and industry associations of the parties may participate in the Economic Committees of the Kazakhstan and Mongolia agreements. The agreements only envisage the involvement of companies and the raw material industry; NGOs are not mentioned and do not seem to have a role in the agreements. This focus on business stakeholders underlines the main objective of the agreements to secure raw material supply and its comprehensive utilisation. Another type of stakeholder involvement in the agreements is the education of professionals and leaders and the connection of research institutions in the field of raw materials.

Assessment

Coherence with other international treaties and policies: Bilateral agreements that ensure access to mineral resources to one party, such as Germany, implement the principle of permanent sovereignty over natural resources (PSNR). Peru, Kazakhstan, and Mongolia exercise their right based on PSNR to grant access to their resources to German actors.

All of the agreements refer to the principle of sustainability: The raw material partnerships established by the agreements are desired to be in favour of sustainable economic and social development (3rd recital of the Preamble of each agreement). Sustainable utilisation and development (Art. 2(3)) and sustainable cooperation (chapeau of Art. 2(3)) are overarching goals of the three agreements.

The Mongolia Agreement explicitly stated that its provisions shall not interfere with the provisions of the WTO. This is not specifically mentioned in the other two agreements, but both of the partner states are party to the WTO (Kazakhstan in 2015 and Peru in 1995).[533]

[532] It is not specified in the agreements which organization constitutes an "implementing organization". There was no information on implementing organizations publically available at this point.

[533] See https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm.

The Peru Agreement states that Germany and Peru support the Extractive Industries Transparency Initiative (EITI) (Art. 2 (4)). No such reference is included in the other two agreements although Mongolia participates in the initiative since 2007[534] and Kazakhstan since 2013[535]. Peru also has to ensure compliance with environmental and social standards according to its international obligations (Art. 6 (4) of the Peru Agreement).

Political weight of the instrument: Their international political weight is limited as the agreements only apply to Germany and its partner states. They might become part of Germany's state practice over time.

Internally, the agreements are an important aspect of the German Resource Strategy of 2010, responding to the interest of German businesses to secure resource supply.[536] Kazakhstan is the most important trade partner of Germany in central Asia,[537] which gives the agreement political importance. For Mongolia, the percentage of exports to Germany has remained very low, as Mongolia heavily relies on its neighbours China and Russia.[538] Germany is a major trading partner for Peru.[539] Diversification of sources for resources is a key aspect of the German raw materials strategy.[540] They are political flanking measures that aim to facilitate the involvement of German businesses abroad.[541]

Although the agreements mention resource efficiency, it mostly seems to be paying lip service, as the focus of most provisions is on facilitating access.

Effectiveness: Although providing advice on resource efficiency is one obligation for the German government, the main objective is to support the resource industry in Germany and the respective partner state. The main focus on access and comprehensive resource utilisation impedes resource efficiency (see obligations).

There was a slight increase in imports from Mongolia between 2011 and 2015.[542] No similar data appears to be available for Kazakhstan, but at least 9 meetings of the German Kazakhstan Government Working Group took place.[543] There is no information regarding the Peru Agreement. Given that all of the agreements, especially the Peru Agreement, are recent, assessing their effectiveness is speculative at this stage. Given the the main focus of the agreements, it it needs to be considered whether including (only) companies and business associations, and developing the partner states' industry are effective strategies for resource efficiency.

Political opportunities and good practice examples:

- Resource efficiency can be introduced as a topic for the partnership dialogue, on the basis of art 2 (3), in order to put it on the agenda and raise its political importance.
- Although the nature of the envisaged "implementing organisations" is not defined, civil society organisations are not explicitly mentioned and likely to be excluded. Future

534 See https://eiti.org/mongolia.

535 See https://eiti.org/kazakhstan.

536 Feldt (2012) at 5.

537 Federal Foreign Office, Kazakhstan: Economy, available on the internet http://www.auswaertiges-amt.de/DE/Aussenpolitik/Laender/Laenderinfos/Kasachstan/Bilateral_node.html.

538 Schmücking (2015) at 23ff.

539 Federal Foreign Office, Peru: Economy, available on the internet http://www.auswaertiges-amt.de/EN/Aussenpolitik/Laender/Laenderinfos/01-Nodes/Peru_node.html.

540 Dahlmann and Mildner (2013) at 3.

541 Antwort der Bundesregierung auf die "Kleine Anfrage der Fraktion BÜNDNIS 90/DIE GRÜNEN betr.: ‚Umsetzung der Rohstroffstrategie der Bundesregierung'" BT-Drucksache: 17/13212, at 1.

542 Antwort der Bundesregierung auf die Kleine Anfrage der Abgeordneten Kekeritz, Roth, Höhn und der Fraktion BÜNDNIS 90/ DIE GRÜNEN, Drucksache 18/9629, 14 September 2016 at 2.

543 Antwort der Bundesregierung auf die Kleine Anfrage der Abgeordneten Gehrcke, Groth, Hahn und der Fraktion DIE LINKE, Drucksache 18/7336, 10 January 2016 at 3.

resource agreements could explicitly allow for the participation of NGOs in the partnership dialogue and or the committees in order to ensure that diverse expertise is available to governmental decision-makers.[544]

- Building on the trend notable in the more recent Peru Agreement to increasingly consider environmental and social matters, future resource agreements could include obligations that trigger corporate responsibility for resource efficiency (and environmental/social matters). A possibility to achieve this is to link the benefits for companies provided by the governments to requirements concerning, *inter alia*, resource efficiency.[545] Export credit insurance from the German government could require compliance with certain standards, transfer of technology, or the requirement to partially hire local workers to increase resource efficiency and knowledge about it in the respective partner state.

2.1.3 Overall assessment of the legal framework

This assessment provides a bird's eye view on the treaties and principles reviewed in respect of whether and how they affect resource efficiency. It is necessarily generalising and focuses on main features.

International law is traditionally based on sovereignty of states, as reflected in the principle of permanent sovereignty over natural resources. The rise of environmental concerns since the early 1970s has been mainly reflected in new environmental treaties or greening existing treaties, and also in customary obligations and general concepts that influence political discourse and governance framework. They balance and limit sovereignty based on the interests of other states, to protect areas beyond national jurisdiction or for matters considered to be in the common interest of all states.

With regard to actual or proposed obligations other than treaties, there are several problems in assessing the actual and potential application of **customary law, general "principles" and concepts** to resource efficiency. **Terminology** is inconsistent. Terms such as "principles" are sometimes used to denote norms that have a higher level of abstraction than "rules" and that may guide interpretation rather than prescribe specific conduct or outcomes. While this to some extent may be a useful approach, there is no general practice or accepted legal meaning, and it does not answer the question whether or not a particular principle is customary law or not. The **legal status** of many principles and concepts as customary law is not clearly established. There is also often a lack of clarity or agreement regarding the actual content and legal consequences of the principle in question, e.g. what it would require states to do, or which direction interpretation should take, if the princple was law. The precautionary principle is an example of divergent assessments by states as well as judiciary bodies regarding both legal status and content.

Another apparent **impediment** for anchoring resource efficiency is that it is difficult to define and link the environmental impact of inefficiency to the principles. There are several interrelated conceptual difficulties: When does an "inefficient" use of a resource have an environmental impact that is covered by the scope of the principle in question? There is e.g. no indication that the established legal requirement to carry out an impact assessment for certain activities would have to address the efficiency of the resource use involved. When, and by which standard, does the use of resources become "inefficient" in a sense relevant for the principle? Which link and causation between a particular use of a resource and an environmental impact would be required for the principle to apply? For instance, when would resource use be so inefficient as to amount to environmental harm or to a

[544] Krajewski (2012) at 2 points out that the involvement of civil society also has the potential to diminish human rights issues.

[545] Krajewski (2012) at 3.

legally unacceptable depletion of resources for future use? Some of these questions could be left to subsequent practice if resource efficiency was brought within the scope of the principle in question.

These **legal and conceptual uncertainties have to be taken into account** when exploring political opportunities and developing strategies and policies for resource efficiency. The context for making an argument, for instance, that one of the principles requires states to be resource efficient, will be different when it is contested that the principle is binding in the first place.

With regard to individual obligations, some principles, such as sustainable development, serve as a counterweight to the sovereign right to exploit natural resources and as an argument that there is a limit to this right. But they do not on their own provide concrete normative content or political opportunities specifically for resource efficiency. However, they could be used to strengthen strategies and arguments involving other principles. For instance, the principle of common but differentiated responsibilities and respective capabilities, in light of national circumstances, could be useful in considering differentiated standards for resource efficiency and increase political buy-in in particular by developing countries.

In contrast, the obligations to prevent transboundary environmental harm, to carry out an environmental impact assessment and to be legally responsible for breaches of such obligations are established in customary law. However, they are conceptually based on notions of environmental harm and attribution that pose significant difficulties for addressing resource efficiency.

Some principles such as equitable utilisation and common areas contain, at least generally, the notion that states have to use resources in a way that enables other states to use that resource as well. However, state practice on transboundary mineral deposits shows that the principle is exclusively concerned with the allocation of the resources or the profits resulting from exploitation between the parties concerned. The legal content of these principles is mainly procedural and they hardly address the conservation aspect over time. This also applies to the concept of common heritage of mankind, although it goes further as it places the exploitation of certain resources under common management.

The principle of common concern of humankind differs from other principles relating to natural resources in that it does not regulate the distribution of resources, but expresses the common interest of all states in certain forms of ecological protection. This approach could provide political opportunities relating to climate change in the Paris Agreement and perhaps more generally e.g. if states regarded the conservation of resources over time as a common concern.

Applying the polluter pays principle or the precautionary principle to resource efficiency also poses difficulties, besides their unsettled legal status in international law. Using the polluter pays principle to address inefficiency, either directly or by analogy, would mean that inefficiency would be treated as contributing to environmental harm, an inefficient user would be treated like a “polluter”, and the environmental costs caused by the inefficency would be internalised. The underpinnings of the precautionary principle aim at addressing scientific uncertainty about environmental impacts, which is of little relevance to resource efficiency. Taking this into account, political opportunities stemming from these principles might include interpreting norms that aim at managing and conserving resources or at reducing environmental impacts resulting from increased demand.

Generally, customary law and proposed principles and concepts do not provide much established normative guidance with regard to resource efficiency. There are **political opportunites** to establish more specific duties and guidance, e.g. in combination with other sources. The principle of inter-generational equity, for instance, could support arguments that a principle that is focused on allocation of resources also includes conservation over time. The same goes for exisiting institutions with a mandate to implement the obligations in relation to specific resources or areas. However, strengthening the legal status of some principles is unlikely to be sufficient in particular where their content poses **conceptual difficulties** for resource efficiency.

With regard to **treaties**, those analysed in this study differ widely in subject matter and regulatory technique. Specifically with regard to resource efficency, the treaties differ e.g. with regard to which part of the value chain they address, whether they address specific resources, and how they affect resource efficency:

For instance, the deep seabed regime under UNCLOS directly regulates all mineral resources in a specific geographical area at the very **beginning of the value chain**. Its objective is to distribute the opportunities for revenue and there are no incentives for using the resource more efficiently after extraction. There is also little indication that it intends to limit the amounts extracted in order to preserve supplies over time. However, the strict and detailed extraction management could have the effect of impeding extraction and thus providing incentives to use those resources more efficiently.

The London Protocol affects all resources by regulating the very **end of the value chain**, i.e. by creating economic incentives as well as obligations to generate less waste and to recycle more. The main regulatory technique is a prohibition of cheap ways of disposing waste.

The Minamata Convention directly regulates **one specific resource** - mercury- **along the whole value chain**. Its objective is not to use mercury more efficiently but to stop producing and using it altogether. But it provides a toolbox of different regulatory techniques for using less mercury, both during the phase-out and for the ban.

Germany's three bilateral resource treaties apply to all mineral resources under the jurisdiction of the parties, although in effect they address the resources in Germany's respective partner countries. All three agreements explicitly address resource efficiency, albeit the actual obligations are few and remain abstract. It is the host country that is to improve resource efficiency, not the country seeking access to more resources. The clear normative focus of the agreements is to facilitate access to resources and resource efficiency has minimal weight in comparison.

The Montreal Protocol and the Stockholm Convention regulate specific substances which are not abiotic resources. They affect only resources that are used in the substance's regulated part of the value chain. The treaties provide an incentive for resource efficiency only if substituting the regulated substance does not use the same amount of resources. The regulatory techniques are interesting because they include trade restrictions that also apply to non-parties. They are also designed to respond to new challenges flexibly and comparatively fast.

The Paris Agreement addresses activities that contribute to climate change, notably greenhouse gas emissions and to some extent sinks, towards the objective of a collective global temperature limit. It does not regulate specific activities, substances or resources, but it potentially affects all resources that contribute to climate change. According to the current state of scientific knowledge, the goals of the Paris Agreement can only be achieved if the **use of fossil fuels** is drastically reduced in the medium term and phased out by about 2050. However, the Paris Agreement contains mainly procedural obligations which leave parties much discretion to define which individual measures they want to take towards the collective goals. The potential substitution effects of the transition to a low-carbon economy are difficult to fully assess at this stage. Since the parties are in the process of negotiating details on implementing the Paris Agrement, there might be political opportunites for addressing links between resource efficiency and greenhouse gas emissions.

The International Metal Study Groups specifically address four abiotic resources worldwide: lead, zinc, nickel and copper. Their regulatory approach is to influence decision-makers by providing information on supply and demand and other market developments. They also address resource efficiency, but it is not clear to what extent this promotes or enables resource efficiency.

The mandate of the Common Fund for Commodities includes all abiotic resources that qualify as tradable commodities. Its regulatory technique today is mainly financing commodity development projects, focused on the commodity instead of particular countries. These include projects that

promote resource efficiency. The CFC currently appears to move away from addressing abiotic resources.

The International Tin Agreement can provide relevant insights although it has been terminated after the International Tin Council went insolvent. It exclusively addressed tin and had a high impact on resource efficiency because its mandate was to maintain price stability through market interventions such as buying and selling tin in the market and obligatory floor and ceiling prices. It also used financial tools, notably borrowing, in order to finance its activities. One lesson learned is that if such instruments are to be used at all, they should be clearly mandated and controlled so as to avoid the financial risks that eventually led to the Tin Agreement's demise.

None of the treaties assessed address resource efficiency explicitly, with the exception of Germany's bilateral resource treaties with Kazakhstan, Mongolia and Peru. It is interesting that these agreements aim at improving resource efficiency in the host country rather than addressing Germany as the country seeking improved access. The few other instances in which efficiency is mentioned refer to e.g. efficient extraction but not efficiency in the sense of a sparing use of the resource.

The treaties have **effects on different aspects of resource efficiency**: One aspect is whether the intention of resource efficiency is to use the resource as long as possible, or to not use the resource at all. From this perspective, a ban on using the resource would be resource conserving but not resource efficient in a narrow sense, because the resource may not be used at all. The phasing out and ban of mercury under the Minamata Convention provides an example, as well as the (not explicit but necessary) phasing out of fossil fuels under the Paris Agreement. A normative or factual ban can provide a strong incentive to use the resources more efficiently until the ban applies, but this effect is not inevitable.

A different aspect is whether the objective is to achieve efficiency for a particular resource or for a particular activity, i.e. reducing its overall resource footprint. Again, the Minamata Convention is an example of addressing one particular resource. In contrast, the deep seabed regime seeks to avoid wasteful extraction for all (mineral) resources.

Perhaps with the exception of direct market intervention in the Tin Agreement model, there is no particular regulatory approach that would appear to be irrelevant or that should be disregarded from the outset with regard to addressing resource efficiency. They address the beginning as well as the end of the value chain, a particular resource or all resources in an area, some use specific measures such as trade restrictions or licensing regimes while others set an objective and follow a procedural approach. Some of the treaties such as the Minamata Convention and the Paris Agreement are relatively new and their impact remains to be seen. The diversity of approaches also means that the different political opportunities for addressing resource efficiency have to be assessed in the context of the particular agreement rather than in abstract.

Although their obligations potentially have more impact on resource efficiency, the treaties show a picture similar to customary law and emerging principles: International environmental law mainly addresses activites with direct physical impacts on the environment. With the exception perhaps of waste, it barely touches upon environmental consequences caused by inefficient use of resources. Where it does, the existing rules are mainly designed to ensure that resources are available or generate revenue.

The main impediment to resource efficiency appears to be the conceptual difficulties in applying the existing norms and concepts to the environmental impacts caused by inefficiency. This could be addressed e.g. through an appropriate interpretation of the existing norms or by designing and establishing new principles or norms, e.g. specifically adressing resource efficiency. There are some political opportunities for both approaches, which will be elaborated in the section on developingthe existing framework.

2.2 International political processes and legally non-binding mechanisms promoting resource efficiency

2.2.1 Introduction

The following sections provide an overview of selected (non-legally binding) international processes and mechanisms that are relevant for resource efficiency; our focus is on resource efficiency with regard to abiotic resources and, more specifically, raw materials.

The overview is not complete. For the sake of parsimony and focus, a range of initiatives, including older ones, have been left out. These include, among others, the Rio+20 Outcome Document ("The future we want", 2012), the Rio Declaration and Local Agenda (1992), the United Nations Environment Assembly (UNEA) Resolution 8 on Sustainable Consumption and Production (2016), the UNEP Life Cycle Initiative, the UNEP & UNIDO Joint Resource Efficient and Cleaner Production (RECP) Programme, the UNEP Financial Initiative (FI), relevant programmes by the Global Environmental Facility (GEF), the Clean Technology Fund of the World Bank, IFC programmes on promoting energy and resource efficiency in the private sector, the Green Jobs Programme of the International Labour Organisation (ILO), the G8 "Science and Technology for Sustainable Development" Action Plan, UNEP's Business & Industry Global Dialogue (BIGD) (1992), the OECD Forum on Responsible Mineral Supply Chains (2006), the Extractive Industries Transparency Initiative (EITI) (2003), the World Resources Forum (WRF), the International Life Cycle Panel (ILCP), the Global Partnership on Waste Management (GPWM) etc.

2.2.2 UN 2030 Agenda for Sustainable Development (2015)

Table 14: UN 2030 Agenda for Sustainable Development (adoption: 25/09/2015)

Key aspects	Summary
Form and legal status	legally non-binding UN declaration
Objectives	ending poverty & hunger, reducing environmental degradation, promoting prosperity and peace
Addressees	UN member states
Territorial scope	global
Resources covered	not specified
Stage of the value chain	all, extraction, production, consumption, waste management
Steering mechanisms	strategy with 17 universal goals, 169 targets, with 2-3 indicators each
Political weight	+++ (accountability to UN, potential availability of funding for RE projects)
Relevance for RE	++ (SDG 12 specifically addresses responsible consumption and production)

Summary

The UN "2030 Agenda for Sustainable Development"[546] sets forth 17 Sustainable Development Goals (SDGs) and 169 targets, developed jointly in consultation with non-governmental stakeholders. The

[546] UN, Transforming Our World: The 2030 Agenda for Sustainable Development. A/RES/70/1.

Agenda seeks to benefit people, protect the planet, ensure prosperity, foster peace and strengthen global partnerships (the "5 Ps").

The sustainable and efficient management of abiotic resources is vital to at least 4 of the 17 goals; when biotic resources are also taken into consideration, at least 12 SDGs are relevant.[547] In particular, SDG 8.4 and SDG 12 deal with (abiotic) resource efficiency and responsible consumption and production, both calling for efficient resource use by 2030. They also provide basic indicators such as material footprint per capita and per GDP.

Overview

Form and legal status: Non-binding strategic policy document adopted by the UN General Assembly, with 17 universal goals, 169 associated targets and 232 indicators[548], valid till 2030.

Objectives: The SDGs are geared towards ending poverty and hunger, ensuring that all human beings can fulfil their potential in dignity and equality and in a healthy environment ("people"); to protecting the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change ("planet"); to ensuring that all human beings can enjoy prosperous and fulfilling lives and that economic, social and technological progress occurs in harmony with nature ("prosperity"); and to fostering peaceful, just and inclusive societies which are free from fear and violence ("peace").

Territorial scope: Global.

Resources covered: All.

Steps of the value chain covered: All - extraction, production, consumption, waste management.

Type of steering mechanism: UN-wide, goal-based strategy & framework of action, supported by a set of indicators so that implementation can be measured and by "means of implementation" (finances etc.) for developing countries.

Content

Relevant provisions: At least four SDGs aim at increasing resource efficiency and are relevant to abiotic resources. The SDGs that most directly address resource efficiency are Target 8.4 ("to improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation") and Target 12.2 ("to achieve, by 2030, the sustainable management and efficient use of natural resources").

Table 15: SDGs with relevance to (abiotic) resource efficiency

SDGs with relevance to resource efficiency, focus: abiotic resources		Indicators
SDG 8.4	Improve progressively, through 2030, global **resource efficiency** in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	8.4.1 Material footprint, material footprint per capita, and material footprint per GDP 8.4.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP

[547] https://www.wrforum.org/sustainable-management-natural-resources-2030-agenda-sustainable-development/.

[548] See https://unstats.un.org/sdgs/indicators/indicators-list/.

SDGs with relevance to resource efficiency, focus: abiotic resources		Indicators
SDG 9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased **resource-use efficiency** and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	9.4.1 CO2 emission per unit of value added
SDG 11.b	By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, **resource efficiency**, mitigation and adaptation to climate change, [and] resilience to disasters	11.b.1 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015 - 2030 11.b.2 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
SDG 12	Ensure **sustainable consumption and production** patterns	
SDG 12.1	Implement the 10-year framework of programmes on **sustainable consumption and production**, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries	12.1.1 Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies
SDG 12.2	By 2030, achieve the sustainable management and **efficient use** of natural resources	12.2.1 Material footprint, material footprint per capita, and material footprint per GDP 12.2.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
SDG 12.4	By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment	12.4.1 Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement 12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment
SDG 12.5	By 2030, substantially **reduce waste generation** through prevention, reduction, recycling and reuse	12.5.1 National recycling rate, tons of material recycled

Source: own collation, Ecologic Institute

Institutions, review and decision-making

Institutions: The Agenda 2030 has some institutional substructure, consisting of the High-Level Political Forum (HLPF) on Sustainable Development which oversees – at the global level – the SDG's

follow-up and review, under the auspices of the UN's General Assembly and the UN Economic and Social Council (ECOSOC). Furthermore, a Global Partnership is part of the Agenda 2030 which aims to provide the "means of implementation" (finances etc.) for developing countries. The "One Planet network", which formed to implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (see Section 2.2.4 in this report), is recognised as implementation mechanism for SDG 12.

Evaluation and review: The Agenda 2030 is equipped with a review process but an evaluation as such is not provided for. The HLPF meets annually to review implementation of a subset of the SDGs. For the SDGs listed in **Fehler! Verweisquelle konnte nicht gefunden werden.** as relevant for (abiotic) resource efficiency, reviews were conducted in 2017 (SDG 9), 2018 (SDG 11, 12) and 2019 (SDG 8). Reviews by the HLPF are based on the voluntary (country-led, country-driven) reviews of progress that UN member states are encouraged to carry out at the national and sub-national levels (para. 79, UN Agenda 2030). The UN annually publishes synthesis reports on the results of the Voluntary National Reviews.[549]

Reporting: Reviews and reporting are voluntary (para. 84, UN Agenda 2030). In addition to a set of universal indicators, nations are encouraged to further develop their own country-specific indicators for measuring their progress in achieving the SDGs. Developing countries are provided financial assistance for developing their statistical capabilities.

Compliance procedures, remedies and dispute settlement procedures: There are no formal compliance procedures, though soft political pressure as well as public or stakeholder pressure may support national commitment to implementing the SDGs.

Stakeholder and public involvement: During the development of the SDGs, the UN Department of Economic and Social Affairs' (UNDESA) Division for Sustainable Development (DSD) coordinated the involvement of "major groups"[550] and other stakeholders (MGoS). Since adoption of the SDGs, the HLPF reviews are to include the participation of stakeholders, including civil society and the private sector, and to "provide a platform for partnerships, including through the participation of major groups and other relevant stakeholders" (Para. 84, Agenda 2030). In addition, the HLPF is to "support participation in follow-up and review processes by the major groups and other relevant stakeholders" (Para. 89, Agenda 2030). Since 2016, a HLPF MGoS Coordination Mechanism (HLPF CM) is operational to ensure stakeholder participation in the HLPF. In addition, specific events are geared towards engaging different stakeholder groups in the SDG follow-up, including Partnership Exchange events, the annual SDG Business Forum, or the annual multi-stakeholder Forum on Science, Technology and Innovation for the SDGs (STI Forum).

At domestic level, the Voluntary National Reviews shall "be state-led, involving ministerial and other relevant high-level participants. They shall provide a platform for partnerships, including through the participation of major groups and other relevant stakeholders" (para. 84, UN Agenda 2030). The modalities of MGoS participation are decided on by the respective UN member states.

Assessment

Coherence with other international treaties and policies: The Agenda 2030 takes up relevant international commitments, either referencing them or turning them into goals/targets. With relevance to resource efficiency, the implementation of the 10-year framework of programmes on

[549] See e.g. UN ECOSOC (2018), (2019).

[550] "Major Groups" in UN processes include: Women, Children and Youth, Indigenous Peoples, Non-Governmental Organizations, Local Authorities, Workers and Trade Unions, Business and Industry, Scientific and Technological Community, Farmers.

sustainable consumption and production (10YFP), which was originally called for in the Johannesburg Plan of Implementation (2002) and adopted at the Rio+20 Summit, was turned into SDG 12.1. Furthermore, the principles of "reducing," "reusing" and "recycling" as contained in the G8 "Kobe 3R Action Plan" (2008) have been taken up in SDG 12.5, widening the base of those who apply the principles from the G8 to all UN member countries.[551]

Political weight of the instrument: The SDGs are one of the most relevant international frameworks of action today. They are comprehensive (including both social and environmental goals), ambitious ("transformative") and universal in scope (i.e., applicable to developing and developed countries). Within their framework, national policies and priorities are respected. In procedural terms, they were developed in broad consultation with stakeholders and have been adopted by the UN General Assembly. As a consequence, their political weight is substantial and their legitimacy high. Their practical relevance is supported by the basic indicators that guide their implementation. All UN member states are expected to adjust their policies to the goals, including their priorities in the context of (uni-/ multilateral) development assistance. In addition, the SDGs provide an overarching framework for other UN and non-UN (e.g. World Bank) initiatives, including action by the private sector and civil society.

Effectiveness: With regard to goals on abiotic resource efficiency, the 2019 report on progress towards the SDGs assesses that with regard to material consumption (SDG 12.2) that "[i]n 2017, worldwide material consumption reached 92.1 billion tons, up from 87 billion in 2015 and a 254 per cent increase from 27 billion in 1970, with the rate of extraction accelerating every year since 2000. (…) Without urgent and concerted political action, it is projected that global resource extraction could grow to 190 billion tons by 2060. Material footprint per capita has increased considerably as well: in 1990 some 8.1 tons of natural resources were used to satisfy a person's need, while in 2015, almost 12 tons of resources were extracted per person."[552]

In 2018, a number of UN entities provided joint recommendations to the review of Goal 12.[553] In line with these recommendations, a One Planet multi-partner trust fund for Goal 12 was established at the 2018 High-level Political Forum.

Generally, implementation of the SDGs has started rather recently, so that is difficult to give an indication of their future effectiveness. Much will depend on whether the SDG's strategic political guidance is followed and governmental as well as non-governmental actors align their priorities – both with regard to otherwise volatile attention and scarce resources – to the SDGs. Such alignment is voluntary even for governments, though some political pressure, inter alia from civil society organisations, can be expected when governments fail to take into account the Agenda's goals. Governing through goal-setting is attributed potential steering power.[554] However, the fact that the Agenda 2030 includes a total of 17 goals and 169 targets implies that the SDGs are too all-

[551] Beyond the issue of resource efficiency, important agreements under the UNFCCC form part of SDG 13; provisions of the CBD and its Aichi Targets are part of SDG 15; the ILO's Decent Work Agenda is part of SDG 8.5, and promoting equal rights of men and women as codified in various human rights treaties is part of SDG 5. Finally, under the header of "strengthening the means of implementation", Target 17.14 of the SDGs itself requires to "Enhance policy coherence for sustainable development".

[552] UN ECOSOC (2016), at 38.

[553] UNEP et al. (2018). The recommendations included to (a) mainstream Goal 12 in the United Nations development system and strengthen the One Planet network multi-stakeholder partnership; (b) coordinate in-country support and development assistance building on the reinvigorated resident coordinator system and the new generation of United Nations country teams; (c) facilitate the streamlining of efforts to monitor progress on Goal 12 targets and indicators; (d) place Goal 12 on the agenda of United Nations agencies at the highest levels to strengthen coherence and support for Goal 12 across the United Nations system; (e) establish a One Planet multi-partner trust fund for Goal 12.

[554] Kanie and Biermann (2017).

encompassing to be meaningful[555] and that funding associated with the agenda may be spread too thin to be effective.[556] Similarly, the 232 indicators and the sometimes thin statistical basis for reporting on these indicators imply that there is some leeway in proving that a country is (not) on track regarding SDG implementation. An assessment of the effectiveness might draw on insights from the implementation of the eight Millennium Development Goals (MDGs), on which the SDGs are based: Selected MDGs were reached in various countries, but despite many successes, the poorest and most vulnerable people were left behind.[557]

Political opportunities and good practice examples: The SDG follow-up process provides opportunities to promote the implementation of resource efficiency related goals and targets, notably reviews of SDGs 8, 11 and 12.

Good practice aspects in the Agenda 2030 include the inclusive process in which the SDGs were developed; the – at least in some cases – quantified and ambitious goals defined; the accompanying set of indicators.

2.2.3 UN Habitat III: The New Urban Agenda

Table 16: The New Urban Agenda (adoption: 2016)

Key aspects	Summary
Form and legal status	legally non-binding UN declaration
Objectives	reinvigorate global commitment to sustainable urbanization, contribute to SDG implementation
Addressees	UN member states; cities/ local governments
Territorial scope	global
Resources covered	all
Stage of the value chain	all
Steering mechanisms	high-level political statement with strategic priorities and guidance
Political weight	moderate
Relevance for RE	some

Summary

The New Urban Agenda[558] was adopted by the United Nations Conference on Housing and Sustainable Urban Development (Habitat III), which took place in Quito, Ecuador, from 17 to 20 October 2016. The document was formally endorsed by the UN General Assembly in December 2016. It aims at specifying SDG 11 ("to make cities inclusive, safe, resilient and sustainable"). The New Urban Agenda is a 29 page document which encompasses the "*Quito Declaration on Sustainable Cities and Human Settlements for All*" and the "*Quito implementation plan for the New Urban Agenda*". The former details a shared vision, principles & commitments and a call for action. The latter includes commitments on sustainable urban development, on effective implementation, on follow-up and review. Resource efficiency is no major topic, but is mainstreamed in several sections of the document. As regards absolute resource

[555] Holden et al. (2016). Others have argued that the lengthy list of goals reflects the complex nature of sustainable development Sengupta (2016).

[556] Lomborg (2015).

[557] UN (2015).

[558] UN, New Urban Agenda: Resolution adopted by the General Assembly on 23 December 2016. A/RES/71/256.

consumption, resource efficiency commitments are counterbalanced by competing commitments to "sustainable and inclusive economic growth" (potentially inducing rebound effects).

The New Urban Agenda is the third UN Habitat strategy document, following the "*Vancouver Declaration*" with the "*Vancouver Action Plan*" (adopted by Habitat I in Canady, 1976) and the "*Habitat Agenda*" with the "*Istanbul Declaration*" (adopted by Habitat II in Turkey, 1996).

Overview

Form and legal status: Non-binding strategic policy document adopted by the Habitat III Conference and endorsed by the UN General Assembly, to be renewed in 2036.

Objectives: The New Urban Agenda's objective is to reinvigorate the global commitment to sustainable urbanization and to contribute to the implementation and localization of the UN Agenda 2030 for Sustainable Development, in particular of Goal 11 ("Making cities and human settlements inclusive, safe, resilient and sustainable"). By readdressing the way cities and human settlements are planned, designed, financed, developed, governed and managed, the New Urban Agenda is claimed to "help to end poverty and hunger in all its forms and dimensions; reduce inequalities; promote sustained, inclusive and sustainable economic growth; achieve gender equality and the empowerment of all women and girls in order to fully harness their vital contribution to sustainable development; improve human health and well-being; foster resilience; and protect the environment" (para 5, New Urban Agenda).

Territorial scope: Global.

Resources covered: Not specified; all natural resources.

Steps of the value chain covered: Not specified; all steps of the value chain, though implicit focus on resource use rather than resource extraction.

Type of steering mechanism: High-level UN statement with strategic priorities and guidance; broad range of commitments, supported by "means of implementation" (finances etc.) for developing countries. No set of indicators specified to measure implementation.

Content

Relevant provisions: Within the *Quito Declaration*, a "shared vision" is spelled out. Among various other aspects, cities and human settlements are envisaged to "[m]eet the challenges and opportunities of present and future sustained, inclusive and sustainable economic growth, leveraging (…) resource efficiency (…)" (New Urban Agenda, para. 13d) and to promote "resource-efficient transport systems for passengers and freight" (ibid, para. 13f). Moreover, citites and settlements shall "[p]rotect, conserve, restore and promote their ecosystems, water, natural habitats and biodiversity, minimize their environmental impact and change to sustainable consumption and production patterns" (ibid, para. 13h). No reference is made to resource efficiency in the Quito Declaration's "principles and commitments"[559] or its "Call for action". Within the *Quito implementation plan*, commitments to resource efficiency are mainstreamed through different sections. They relate to, among others, sound management, reduction, reuse and recycling (3Rs) of waste (ibid, para. 74) and to a circular economy (ibid, para. 71) as well as to resource efficiency with regard to the use of raw materials and recycled materials (ibid, para. 76), to housing (ibid, para. 32) and to infrastructures (ibid, paras 45, 77, 119). In a more overarching way, it is recognized that "urban form, infrastructure and building design are among the greatest drivers of cost and resource efficiencies, through the benefits of economy of scale and agglomeration and by fostering energy efficiency, renewable energy, resilience, productivity,

[559] More broadly, however, "ensuring environmental sustainability" is mentioned as a principle, including by promoting sustainable consumption and production patterns.

environmental protection and sustainable growth in the urban economy" (ibid, para. 44). On the level of planning and policy-making, UN members commit themselves to promoting urban spatial frameworks (ibid, para. 51) and enforceable regulations in the housing sector (ibid, para. 111) ensuring, among others, resource efficiency, appropriate compactness and density.

As regards absolute resource consumption, however, resource efficiency commitments in the New Urban Agenda are counterbalanced by competing commitments to "sustainable and inclusive economic growth" whose realization would potentially induce rebound effects (i.a., paras 13(d), 15(c)iii, 44, 62, 66, 133).

During the preparatory process of developing the New Urban Agenda, several issue papers and policy papers were developed by stakeholders and experts in so called Policy Units. The "Issue Paper on Urban Ecosystems and Resource Managements" defines, in line with UNEP, a resource efficient city as "a city that is significantly decoupled from resource exploitation and ecological impacts and is socio-economically and ecologically sustainable in the long term". Policy Paper No. 8 on "Urban Ecology and Resilience" proposes "that a city can be designed and managed to provide multiple benefits that contribute to quality of human life while improving resource efficiency and reducing overall environmental impact."

Institutions, review and decision-making

Institutions: The New Urban Agenda was developed by UN member countries in a process organised by the Habitat III Secretariat, which was housed within the United Nations Human Settlements Programme (UN-Habitat). UN-Habitat is the UN programme on human settlements and "focal point for sustainable urbanization and human settlements" (ibid, para. 165). The organization is also responsible for coordinating the reporting on the progress of the New Urban Agenda's implementation (see below).

Evaluation and review: While quadrennial reports are to regularly review the state of implementation (see below), no evaluation as such is foreseen.

Reporting: The New Urban Agenda is equipped with a periodic follow-up and review mechanism. Coordinated by UN-Habitat, the UN Secretary General submits every four years a report containing a qualitative and quantitative analysis of the progress made in the implementation of the New Urban Agenda and internationally agreed goals and targets relevant to sustainable urbanization and human settlements (ibid, para. 166-167). The report is based on voluntary contributions of national, subnational and local levels of government and supplemented by contributions from the United Nations system, regional and subregional organizations, major groups and relevant stakeholders (ibid, para. 161-162). The five quadrennial reports are to be published in 2018, 2022, 2026, 2030 and 2034. The 2026 report serves as a mid-term review which will specifically take stock of the progress made and challenges faced in the implementation of the New Urban Agenda (ibid, para. 175). Reporting related to the New Urban Agenda will largely draw on indicators and data available from the SDG monitoring framework coordinated by the UN Statistics Division.[560] The New Urban Agenda's implementation was discussed at the UN General Assembly (2018) and the 27th session of the UN-Habitat Governing Council (April 2019).

Compliance procedures, remedies and dispute settlement procedures: No respective procedures exist.

[560] Cf. UNGA and ECOSOC (2018), para. 29.

Stakeholder and public involvement: Like all "modern" international policy documents since the Rio Declaration of 1992, the New Urban Agenda was developed with the participation of various types of stakeholders. Over 30,000 people from 167 countries participated at Habitat III, making it the conference with "the strongest participation of civil society, stakeholders, and local authorities in the history of the United Nations".[561] Stakeholders could participate via various channels:

- Generally, participation of (accredited) stakeholders from civil society and other non-state actors was organized according to the "major groups"[562] structure articulated in Agenda 21.
- More specifically, the General Assembly of Partners (GAP) was an innovative mechanism involving 16 Partner Constituent Groups with members from the United Nations' major groups and other relevant stakeholders[563] which supported stakeholders' contributions to the PrepCom process and the Conference.
- Policy Units with up to 20 experts each brought together individual experts not only from governments and regional organisations, but from academia and civil society to identify challenges, policy priorities and critical issues for the implementation of the New Urban Agenda and to develop action-oriented recommendations.
- Many governments organized national-level processes of participation (e.g., the "German Habitat Forum").

After the Habitat III Conference, the General Assembly of Partners serves to coordinate stakeholders' work related to the implementation of the New Urban Agenda. The quadrennial report should incorporate, "where appropriate", contributions from civil society, the private sector and academia (New Urban Agenda, para. 167).

The New Urban Agenda itself commits UN member states to promoting national, subnational and local housing policies that enable the participation and engagement of communities and relevant stakeholders in the planning and implementation of these policies (ibid, para. 31).

Assessment

Coherence with other international treaties and policies: The New Urban Agenda is in line with and specifies SDG 11. It claims to be grounded in various human rights treaties and instruments (New Urban Agenda, para.12) and to account of a range of international processes, including the Paris Agreement, the Rio, Rio+10 and Rio+20 Conferences and the World Summit for Social Development (cf. ibid, para. 6). During the preparatory process for the Conference, a United Nations Task Team on Habitat III cooperated as an inter-agency task force. Review and reporting of implementation are to be linked to those of the SDGs and to feed into the High-Level Political Forum on Sustainable Development (ibid, paras 164, 168). The first quadrennial progress report on the implementation of the New Urban Agenda reviews the interlinkages between global development agendas, notably SDG 11 and the New Urban Agenda.[564]

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561 http://habitat3.org/the-conference/participants/.

562 "Major Groups" in UN processes include: Women, Children and Youth, Indigenous Peoples, Non-Governmental Organizations, Local Authorities, Workers and Trade Unions, Business and Industry, Scientific and Technological Community, Farmers.

563 Partner Constituent Groups included local and subnational authorities; research and academia; civil society organizations; grassroots organizations; women; parliamentarians; children and youth; business and industries; foundations and philanthropies; professionals; trade unions and workers; farmers; indigenous people; media; older persons; and persons with disabilities – thus going beyond the major groups concept.

564 UNGA and ECOSOC (2018).

Political weight of the instrument: The political weight of the New Urban Agenda is moderate. On the one hand, it is the outcome of an UN-wide process, and moreover one which takes place only every 20 years. Also, the topic of urbanization has hugely gained in importance, with many developing and newly developed countries rapidly urbanizing. With the huge amounts of resource consumption and of wastes/ emissions (as well as huge efficiency potentials) accruing in cities, it has been said that it will be decided in cities whether the transformation towards sustainability succeeds or not. The New Urban Agenda lays the groundwork for policies and initiatives aiming to shape cities over the next two decades. On the other hand, the weak high-level participation in the Habitat III Conference (only three heads of state or government attended the Conference) indicates that the issue of urbanization is taken less seriously in world politics than it should be.[565]

Effectiveness: There are few indications as yet regarding national and local governments' implementation efforts and the effectiveness of the New Urban Agenda. The first quadrennial report reviewing its implementation, issued 18 months after the adoption of the Agenda, highlights that a number of regional and sub-regional action plans have been adopted[566] and that 76 (of 150 countries analysed) have adopted explicit national urban policies with strong connections to the Agenda.[567] The progress report does not specify to what extent resource efficiency is addressed in these action plans or national policies.

The "*Quito Implementation Platform*" (QIP) collates commitments by various partners intended to contribute to its implementation. It lists 70 rather diverse commitments with a project value of over US-$ 730 Mio (July 2019).[568] These projects range from a university chair's development of an assessment tool with a Life Cycle perspective for sustainable cities (US-$ 1 Mio) to the German government's "Transformative Urban Mobility Initiative" (over US-$ 100 Mio).

There are various factors that may impede the implementation and effectiveness of the New Urban Agenda: Firstly, its commitments are very broad, covering a vast range of topics related to sustainable urban development. Secondly, they are relatively vague and "aspirational". Both their width and vagueness make on-ground operationalization of the commitments difficult for city planners and stakeholder initiatives. Thirdly, the New Urban Agenda lacks a roadmap for implementation, a robust monitoring mechanism[569] and data exists often not at a sufficiently disaggregated level to meaningfully monitor its implementation.[570] At least, the 26th Governing Council of UN-Habitat decided in May 2017 that a proposal should be developed for a unified global monitoring framework, to facilitate the systematic tracking of progress towards achieving the goals of the New Urban Agenda and the urban dimension of the SDGs.[571] Subsequently, the City Prosperity Initiative (CPI)[572] has been proposed to become the basis for such a monitoring framework for the New Urban Agenda (as well as SDG 11).

Internationally, the topic of urbanization and the New Urban Agenda are embedded in an overall architecture (the UN system and UN-Habitat as coordinator of the implementation and review

565 WBGU (2017).

566 among others, the Urban Agenda for the European Union, the Urban Agenda of the European Union for the Mediterranean, the regional action plan for implementation of the New Urban Agenda in Latin America and the Caribbean, the Arab strategy for housing and sustainable urban development, the ESCAP Regional Partners Forum and the harmonized regional framework for the implementation and monitoring of the New Urban Agenda in Africa.

567 UNGA and ECOSOC (2018), paras 61–63.

568 http://nuaimplementation.org/. The number and monetary value of commitments have not increased since mid-2017.

569 WBGU (2017), at 1.

570 Caprotti et al. (2016).

571 Para. 10, Decision 8/26, UN-Habitat Governing Council.

572 http://cpi.unhabitat.org/.

process) that "lacks the mandate, the necessary governance structures, and the financial resources to be able to react appropriately to the challenges of urbanization".[573]

Implementation of the Agenda will likely also meet obstacles at the national level. Like urban planning in general, it will require strong political will, appropriate partnerships involving all relevant stakeholders, an enforceable and transparent legal framework, capacities for sound and flexible urban planning and design, as well as a sound financial basis.[574] These preconditions are not necessarily given in many cities, notably in developing countries. The financial as well as institutional capacity is regarded as especially limited in African cities, which exhibit some of the highest rates of urban growth.[575] Also, depending on national frameworks, the political and financial leeway for local governments may be very limited, and relations between national and local leaders are strained in many centralized countries. While the New Urban Agenda supports "strengthening the capacity of subnational and local governments" this aim is restricted by the qualification "in-line with countries' national legislation" (New Urban Agenda, para. 90). Moreover, some observers argue that the New Urban Agenda is not sufficiently relevant to urban governments and urban dwellers and may therefore not get their buy-in: "it does not have (…) any commitment to support and work with urban governments and urban civil society. Astonishingly, a document claiming to be the New Urban Agenda has no mention of mayors; no mention of democracy; no mention of urban innovations such as participatory budgeting; no reference to grassroots organisations. The 'poor' are mentioned only in relation to their needs; there is no mention of the innovations in urban agendas driven by slum/shack dweller federations or by other urban social movements; not much on water, sanitation, drainage and health care and nothing on electricity, emergency services, solid waste collection and policing"[576].

Political opportunities and good practice examples: The implementation of the New Urban Agenda will be regularly discussed at World Urban Forum sessions; the 10th session in 2020 will start dialogues on the New Urban Agenda Consultation process on the second quadrennial report (to be published in 2022).The next UN-Habitat Governing Council (28th session, 2021) will continue this dialogue. In 2021, the High-level Political Forum on Sustainable Development will review Sustainable Development Goal 11, i.e. the 'cities goal'. These meetings as well as the New Urban Agenda's mid-term review in 2026 provide opportunities where the commitments to resource efficiency could be concretised. A further opportunity is the future development, led by UN-Habitat, the World Bank and others, of a Multi-Partner Implementation Facility for Sustainable Urban Development (IFSUD). Here, resource efficiency could form one funding priority.

In terms of good practice examples, the General Assembly of Partners (GAP) and its role of channeling (wide) stakeholder participation in the prepcom process of Habitat III seems a noteworthy feature.

[573] WBGU (2017), at 1.
[574] UN-Habitat (2015), at 3.
[575] Caprotti et al. (2016), at 373.
[576] Satterthwaite (2017), at 8.

2.2.4 UN 10-Year Framework of Programmes (10YFP) on Sustainable Consumption and Production Patterns (2012) and the One Planet network

Table 17: UN 10-Year Framework of Programmes (10YFP) on Sustainable Consumption and Production Patterns (adoption: June 2012)

Key aspects	Summary
Form and legal status	legally non-binding UN document
Objectives	to accelerate the shift towards SCP
Addressees	UN member states, stakeholders
Territorial scope	global
Resources covered	not specified
Stage of the value chain	all
Steering mechanisms	high-level political statement with strategic priorities and guidance; knowledge exchange; funding; multi-stakeholder partnership for implementation
Political weight	++
Relevance for RE	++ (RE is important dimension of SCP)

Summary

The 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) is a global framework for action to accelerate the shift towards sustainable consumption and production patterns (SCP) in developed and developing countries. To increase resource efficiency and decouple economic growth from environmental degradation and resource use is one of the five stated objectives of the 10YFP. It is specifically referred to in SDG 8.4 and 12.1.

Adopted in 2012 at the United Nations Conference on Sustainable Development in Rio de Janeiro (Rio+20), the 10YFP serves as an umbrella for several programmes and partnerships. It fosters knowledge and experience sharing and facilitates access to technical and financial resources for developing countries. UNEP serves as the 10YFP's Secretariat and administers its trust fund.

To implement the commitment of the 10YFP, the "One Planet network" – an open multi-stakeholder partnership – has formed in 2012.

Overview

The 10YFP goes back to the Agenda 21's call for action and efforts "to define a policy agenda on sustainable production and consumption". Advocated for by European countries, it was first explicitly called for in the Johannesburg Plan of Implementation (2002). It was then prepared in the UN "Marrakesh Process on Sustainable Consumption and Production" (2003-2012) and finally adopted in June 2012 at the United Nations Conference on Sustainable Development in Rio de Janeiro (Rio+20).[577] In the same year, the "One Planet network" was formed to implement the 10YFP commitment.[578]

Form and legal status: The 10YFP is a legally non-binding global framework for action; participation in the programmes is voluntary.

[577] Barber (2010); Clark (2007).

[578] https://www.oneplanetnetwork.org/.

Objectives: The 10YFP's overriding objective is to accelerate the shift towards sustainable consumption and production patterns in developed and developing countries. Specifically, it pursues the following objectives:[579]

- Objective 1: Support capacity building and facilitate access to financial and technical assistance for developing countries, supporting the implementation of SCP activities at the regional, sub-regional and national levels.
- Objective 2: Serve as an information and knowledge platform on SCP to enable all stakeholders to share tools, initiatives and best practices, raising awareness and enhancing cooperation and development of new partnerships.
- Objective 3: Accelerate the shift towards SCP, supporting regional and national policies and initiatives.
- Objective 4: Increase resource efficiency and decouple economic growth from environmental degradation and resource use, while creating decent job and economic opportunities and contributing to poverty eradication and shared prosperity.
- Objective 5: Mainstream SCP into sustainable development policies, programmes and strategies, as appropriate, including into poverty reduction strategies.

The 1018 - 2022strategy to implement the 10YFP (and support implementing SDG 12) defines a common vision, strategic principles and the following objectives:[580]

- Be an effective implementation mechanism for SDG 12, by monitoring trends, prioritising support to national policy implementation, as well as fostering awareness of SCP as an enabler for other SDGs.
- Catalyse ambitious action by providing tools and solutions that support the shift to SCP.
- Lead a cohesive implementation of SCP.
- Demonstrate the impacts of SCP and its role in addressing key environmental and social challenges.

Territorial scope: Global.

Resources covered: Not specified; all natural resources.

Steps of the value chain covered: All steps of the value chain.

Type of steering mechanism: The 10 YFP is a high-level UN statement with strategic priorities and guidance to enhance international cooperation, including through knowledge and experience sharing, capacity building and facilitating access to technical and financial assistance for developing countries. The One Planet Network is a multi-stakeholder partnership of 700+ members to implement the 10 YFP commitment. It inclues national and local governments, civil society, businesses, scientific and technical organisations as well as international organisations.

Content

Relevant provisions: There are currently six programmes under the umbrella of 10YFP and, respectively, the One Planet network. These are (co-) led by different stakeholders and resource efficiency plays a certain role in all of them.

[579] http://www.scpclearinghouse.org/sites/default/files/10yfp_general_brochure_february_2017-.pdf.
[580] One Planet (2018).

Table 18: 10YFP / One Planet network Programmes and their relation to resource efficiency (examples)

Programme	Lead actors	Resource efficiency elements
Sustainable Public Procurement Programme (SPP)	UNEP, KEITI (Korean Environmental Industry and Technology Institute), ICLEI (Local Governments for Sustainability)	e.g. promoting resource-efficient business models and circular economy (led by Netherlands) e.g. promoting Life Cycle costing e.g. promoting SPP best practices
Consumer Information for SCP (CI-SCP)	Germany, Indonesia, Consumers International	e.g. driving change in business e.g. promoting the Life Cycle Approach to enhance the quality of information
Sustainable Tourism Programme (STP)	World Tourism Organisation (UNWTO), France, Korea, Morocco	e.g. Life Cycle Approach to tourism development
Sustainable Lifestyles and Education (SLE)	Japan, Sweden, World Wide Fund for Nature (WWF)	e.g. fostering uptake of sustainable lifestyles, ensuring their contribution to, inter alia, resource efficiency
Sustainable Buildings and Construction	Finland, World Green Building Council (WGBC), Royal Melbourne Institute of Technology (RMIT), UNEP	e.g. promoting resource efficiency, mitigation in building/ construction sector e.g. life-cycle approaches to buildings and materials
Sustainable Food Systems (SFS)	South Africa (Department of Trade & Industry), Switzerland (Federal Office for Agriculture), Hivos, WWF	e.g. promoting more efficient resource-use and recovered materials at every stage e.g. promoting life cycle approaches, cradle to cradle and the 3R concept

Source: own collation, Ecologic Institute, based on https://www.oneplanetnetwork.org/.

Institutions, review and decision-making

Institutions: The 10YFP has a 10-member Board with two members from each UN regional group (including, presently, a representative from the German Federal Environmental Ministry). The board meets every 6 months and reports annually to the UN's High-level Political Forum (HLPF) and its Economic and Social Council (ECOSOC). UNEP ("One Planet") serves as the 10YFP Secretariat and administers a Trust Fund that supports SCP initiatives in developing countries and economies in transition. The 10YFP Interagency Coordination Group (IACG) (with 21 members) is tasked with ensuring UN system-wide cooperation in the 10YFP.

The Global SCP Clearinghouse[581] serves as the knowledge management platform of the 10YFP and as a coordination hub.

130 National Focal Points (NFP) coordinate and support 10YFP implementation at the national level. Additionally, major groups and other stakeholders were invited to set up regional Stakeholder Focal

[581] https://www.oneplanetnetwork.org/about. Main associated SDG indicators: 12.2.1t/clearinghouse-glance.

Points (SFP). Regionally, there are also cooperation mechanisms for SCP such as the Pan-European Strategic Framework for Greening the Economy (2030) or the Regional SCP Roadmap for Asia Pacific.

Evaluation and review: A mid-term review of the 10YFP's implementation was carried out in 2017.[582] Within the "10YFP Indicators of Success Framework", the 10YFP indicators were linked to relevant SDG indicators. With regard to the 10YFP's Objective 4 ("Contribute to resource efficiency and decoupling…"), the indicators include "material use reduction", "waste reduction", water use efficiency and energy use efficiency.[583]

Reporting: The Secretariat annually reports to UN's High-level Political Forum (HLPF).[584] Also, national focal points are encouraged to report on national SCP policies and initiatives to the Secretariat, including in the context of carrying out a 10YFP global survey on national SCP policies and initiatives (publication envisaged fro 2017). Due to the fact that SDG 12.1 requests countries to "Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (…)" and countries are expected to report on SDG implementation, reporting on 10YFP implementation at the national level will likely improve in the future; the review of SDG 12 implementation will be a focus in 2018.

Compliance procedures, remedies and dispute settlement procedures: No respective procedures exist.

Stakeholder and public involvement: Apart from governments and UN bodies, a high number of "major groups and other stakeholders" are engaged in the 10YFP programmes (some 650 including governments and other stakeholder organizations).[585] Presently, some 21 organisations are active in a leadership role within the six programmes and nearly 125 in "multi-stakeholder advisory committees" to each of the programmes.[586] Some of the stakeholder groups interact through regional Stakeholder Focal Points.

Assessment

Coherence with other international treaties and policies: Possible inconsistencies with WTO provisions (regarding public procurement, consumer policy etc.) do not seem to have been an issue so far, since the 10YFP has focused on voluntary, information-based policy approaches.

Political weight of the instrument: The 10YFP has some political weight due to its being developed over a long time span within the UN's Rio process (including the Marrakesh process). Also, its topic of sustainable production and consumption has wide support also from civil society organizations. However, commitments with regard to sustainable consumption and production have been contentious among governments for a long time, leading to a weak mandate for developing the 10YFP.

Effectiveness: Having been adopted in 2012, the 10YFP has now been implemented for some years. Potentially, it can unfold impacts "through multi-stakeholder programmes and partnerships, which develop, replicate and scale up SCP policies and initiatives at all levels"; through "foster[ing] knowledge and experience sharing"[587] and, finally, through "facilitat[ing] access to technical and financial resources for developing countries."[588] UN member states' reporting on SDG 12 (10YFP

[582] In included three elements; i) progress reporting, ii) independent external evaluation (Rouhban (2018)) and iii. and iii) a new strategy for implementing the 10YFP 2018-2022 (One Planet (2018)).

[583] Main associated SDG indicators: 12.2.1; 12.5.1; 6.4.1; and 7.3.1, cf. One Planet and UNEP (2017), at 11.

[584] For the latest report see UN, Progress report on the 10-Year Framework of Programmes on Sustainable Consumption and Production patterns, Note by the Secretary-General. E/2019/64. United Nations.

[585] As of December 2016, cf. UNEP (2017b), at 2.

[586] UN, Progress report on the 10-Year Framework of Programmes on Sustainable Consumption and Production patterns: Note by the Secretary-General. United Nations, New York. E/2016/62, p. 4.

[587] https://envisioninglifestyles.org/what-is-the-10yfp/.

[588] https://envisioninglifestyles.org/what-is-the-10yfp/.

implementation) will potentially increase the pressure on countries to become active with regard to this goal.

The mid-term review of the 10YFP from 2017 concluded, among others:[589]

- The 10YFP is a structured platform, in place, developing action for promoting SCP; it has a real potential to make transformation in this domain, provided it succeeds in strategizing and accelerating its interventions.
- The relevance of the 10YFP and of its objectives are recognized and acknowledged by stakeholders involved.
- 10YFP governance structure is functioning, serving the essence, despite its complexity and inherent administrative burdens.
- Fast growth in partnership is observed over the last three years where collaboration and interaction take place.
- The 10YFP is not yet able to adequately demonstrate results that show a tangible shift towards SCP as a consequence of its action. It is called to show more thorough evidence to governments, to the business community and to the general public that it is yielding tangible outcomes.
- The 10YFP needs to be more active, organized and strategic in utilizing potential opportunities for mobilizing interest and support to it and developing common agendas with donors, countries and development organizations.
- The 10YFP must mobilize enough political will that will trigger more impetus.
- The 10YFP must swiftly develop and pursue a strategy to engage the private sector, SMEs and industry.
- The 10YFP is dramatically resource constrained.
- Short and near-term objectives, namely strategic ones, with milestones, are not obvious.
- It seems desirable and opportune that an in-depth and comprehensive review of the Trust Fund be made. This review should address the relevance of the Fund, its purposes, its possible replenishment and functioning.

In terms of regional implementation, the SWITCH projects (e.g., SWITCH Asia, SWITCH Africa Green), funded by the European Union, are considered a good practice example of addressing the sustainable use of resources, improvement of resource efficiency and changes in consumption patterns. SWITCH Asia has been assessed by the UNEP Evaluation Office to be of high strategic relevance; and while "[c]reating an enabling policy environment requires time" it "provided notable contributions to raising awareness and understanding of SCP and that SCP has a presence on regional and sub-regional agendas".[590]

With a view to the 10YFP's genesis, it has been recognised that agreeing (in 2002) on its development as such was an achievement, as was the reference (for the first time) of life-cycle analysis in an approved UN document.[591] Still, the original mandate for developing a 10YFP has been criticised as vague, lacking stringent requirements as well as references to "strong" sustainable consumption. NGOs have been disappointed that it took 10 years to develop the actual 10YFP.[592] In terms of the 10YFP's thematic focal areas, experts have recommended that the 10YFP should more systematically address the "big points" of sustainable consumption: food, mobility, and energy use/housing.[593]

[589] Rouhban (2018).
[590] UNEP EOU (2017b), at para. 17.
[591] Fuchs and Lorek (2005).
[592] Barber (2010), at 1.
[593] Tukker et al. (2008).

Political opportunities and good practice examples: Thedevelopment of a new strategic plan for the 10YFP (following its current plan "One Plan for One Planet")[594] for after 2022 as well as a potential review of the 10YFP Trust Fund (as recommended by the 2017 mid-term review, see above) provide opportunities for strengthening the 10YFP implementation and promoting action on resource efficiency and for.

2.2.5 UNEP Green Economy Initiative

Table 19: UNEP Green Economy Initiative (adoption: 2008, updated 2015 - "Inclusive Green Economy")

Key aspects	Summary
Form and legal status	legally non-binding UNEP initiative
Objectives	supporting countries to move towards an inclusive green economy
Addressees	national governments, particularly developing countries
Territorial scope	global
Resources covered	various, abiotic ones (e.g. raw material inputs to manufacturing sector) as well as biotic ones
Stage of the value chain	all
Steering mechanisms	capacity building, policy recommendations (e.g. fiscal policies), knowledge exchange
Political weight	++ (one of UNEP's most visible contributions to the env'l policy debate)
Relevance for RE	++

Summary

The UNEP Green Economy Initiative (GEI) was launched in 2008 and is aimed at sustainable development and poverty eradication.

In 2011, UNEP defined a Green Economy as "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, *resource efficient* and socially inclusive" (own italics).[595] After Rio+20, the initiative was updated to "Inclusive Green Economy" in order to emphasise the goals of equality and inclusiveness: "In its simplest expression, such an economy is low carbon, *efficient* and clean in production, but also inclusive in consumption and outcomes, based on *sharing*, *circularity*, collaboration, solidarity, resilience, opportunity, and interdependence" (own italics).[596] In a Green Economy, recycling minimises the need for raw material extraction and goes along with considerable energy savings. By applying principles of a "circular economy", the economy becomes "regenerative and designed ab initio to eradicate waste and return nutrients and water to ecosystems".[597] At the same time, sharing practices and models help

[594] One Planet (2018).
[595] IRP (2011), p. 2.
[596] UNEP (2015), p. 6.
[597] UNEP (2015), p. 22.

to make the economy less resource intensive, "as fewer products are produced to provide the same service to more people."[598]

The Green Economy agenda is interlinked with the Sustainable Development Goals, especially SDG 8 ("Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all").

Overview

Form and legal status: The GEI is a non-binding UNEP initiative.

Objectives: To expand the community of sustainable practices, helping countries to develop their own policies for a transformation to an inclusive green economy.

Territorial scope: The initiative is geared towards all UN Member States and explicitly provides assistance to developing countries.

Resources covered: Abiotic as well as biotic resources.

Steps of the value chain covered: Resource extraction (including in natural resource sectors), manufacturing, consumption, waste management (concept of "circular economy").

Type of steering mechanism: technical assistance and capacity building; policy dialogue/ policy recommendations and knowledge exchange

Content

Relevant provisions/ guidelines for governments: The Green Economy Initiative is not about requiring specific action or providing concrete guidelines to governments but more about diffusing a concept, providing policy recommendations (e.g., on fiscal reforms), providing technical assistance and helping build capacities in partner countries with regard to their planning and implementation of a greener and more inclusive economic model.

The main elements of the GEI include: producing and disseminating the Green Economy Report (which analysed the implications of implementing a green economy)[599]; coordinating 'The Economics of Ecosystem Services and Biodiversity (TEEB) initiative[600]; providing country-specific advice on ways to move towards a green economy (including identifying GE-related trade opportunities[601]); engagement of a range of researchers, NGOs, UN partners, organisations and businesses;[602] provision of policy guidance, good practices, tools, and data via the Green Growth Knowledge Platform[603] (established in 2012 jointly by UNEP, OECD, World Bank and Global Green Growth Institute).

Despite the fact that resource efficiency is an important component of the (Inclusive) Green Economy concept, the technical assistance projects supported by UNEP and others which are featured on the GEI website seem to focus more on GE dimension such as maintaining ecosystem services[604]

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[598] UNEP (2015), p. 24.

[599] IRP (2011); see also UNEP (2012b).

[600] TEEB (2010).

[601] UNEP (2016b).

[602] UNEP (2010), at 5.

[603] http://www.greengrowthknowledge.org/.

[604] E.g., the project "Assisting Caribbean States' Sustainable Development through Green Economy" (ACSSD-GE), "Greening Economies in the Eastern Neighborhoods: Organic Agriculture" (EaP Green), and the Indonesia project in the "Green Economy Joint Programme" (GEJP) (links to all projects are provided at https://www.unenvironment.org/explore-topics/green-economy/what-we-do/advisory-services.

(agriculture, forestry, fisheries) or renewable energy production[605]. Resource efficiency seems to be covered more under the header of "cleaner production" in a different UNEP division.

Institutions, review and decision-making

Institutions: The GEI is anchored directly in UNEP, more specifically in its Division of Technology, Industry and Economics (part of the Economy and Trade Branch), situated in Geneva.

Beyond UNEP and the Green Economy Initiative, a mechanism has been introduced to coordinate UN action on green economy and to assist countries in planning and implementing their transition to greener, more inclusive economies: the *Partnership for Action on Green Economy (PAGE).* Founded in 2013, PAGE involves five UN agencies – UNEP (which also hosts the PAGE Secretariat and manages the PAGE Trust Fund), ILO, UNDP, UNIDO, and the UN Institute for Training and Research. PAGE has ten "action partners",[606] seven funding partners,[607] and eleven "PAGE countries" which receive funding for their GE transitions. PAGE has its own institutional structure, including national steering committees,[608] and a reporting mechanism.[609] For our purpose, PAGE is interesting as it is currently the most vibrant forum that follows up on the work of the Green Economy Initiative.

Evaluation and review: A terminal evaluation the GEI between 2012 and 2014 was carried out by UNEP's Evaluation Office in 2016 and published in early 2017[610].

Reporting: The GEI does not contain reporting obligations. However, SDG reporting on Goal 8 ("Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all") will likely also include information on the activities and progress of UNEP's GEI. A first review of the implementation of SDG 8 is scheduled for 2019.

Compliance procedures, remedies and dispute settlement procedures: The GEI does not contain any such procedures.

Stakeholder and public involvement: While there is no official mechanism for the involvement of Major Groups and other stakeholders, the GEI does consult with research institutes, government representatives, businesses, consumer groups, various experts, and civil society organisations. Among others, the *Green Economy Coalition (GEC),* a global network of organisations committed to accelerating a transition to a green inclusive economy, represents the voices of stakeholders in such consultation processes.

Assessment

Coherence with other international treaties and policies: The GEI works together with the International Resource Panel (and in the past with the Marrakesh Process) in creating sustainable policies. The IRP

[605] For instance, the Ghana project in the "Green Economy Joint Programme" (GEJP).

[606] 10YFP, Green Economy Coalition, Global Green Growth Institute, Green Growth Knowledge Platform, SWITCH Africa Green, SWITCH Asia, UN Environment Finance Initiative, UN Environment Inquiry, UN-REDD Programme, UNDP-UNEP Poverty-Environment Initiative.

[607] The EU, various European governments and the Republic of Korea.

[608] http://www.un-page.org/about/governance.

[609] http://www.un-page.org/about/annual-report.

[610] UNEP EOU (2017a).

assesses the causes of the problems, while GEI proposes practical solutions and develops economic policies.[611]

Political weight of the instrument: As an initiative driven by a single UN agency with few financial means (US-$ 16,9 mio)[612], the political weight of the GEI can be described as medium.

Effectiveness: UNEP's Evaluation Office considers the "Green Economy Initiative (GEI) (…) one of UN Environment's most visible contributions to the global environmental debate during the past decade".[613] At least two strands of the GEI have had significant effects on the international policy discourse and on policy-making: UNEP's Green Economy Report of 2011 decisively influenced the Rio+20 agenda, and also contributed to filling significant knowledge gaps regarding green growth.[614] Similarly, the TEEB Initiative which formed part of the GEI unfolded great influence on the international discourse on nature protection and land use, and subsequently led to policy adjustments in various countries;[615] however, these are of little relevance for the efficient use of abiotic resources. As regards Green Economy policies in developing countries, UNEP reports a set of success stories,[616] though not all of these successes can be directly attributed to the GEI. Thus far, 65 countries have committed to working towards an inclusive green economy within UNEP's framework.

UNEP's Terminal Evaluation reaches the following conclusion: 'The project managed to bring the concept of Green Economy to the international development debate, while assisting dozens of countries in their initial efforts to transition to more resource efficiency, sustainable consumption and production. The project's innovative character, the high relevance of the concept of Green Economy, ownership by many countries and collaboration with key international organizations, effective mobilization of funds for the umbrella project, and the overall efficient project delivery are the main reasons for the success of the project in producing its different outputs and outcomes. On the other hand, factors which resulted in the incomplete achievement of outcomes at a national level, and moderate likelihood of final impact include: the lack of UN Environment's country presence, its high staff turnover, changes in national governments (including focal points for UN Environment work), political and economic inertia and opposition to change, incomplete stakeholder involvement, and insufficient funds at national level for investment to implement GE recommendations. The overall performance of the GE Project is rated as 'satisfactory', considering its high relevance, its effective achievement of outputs, the full achievement of outcomes at global level and a partial achievement at national level, a moderate likelihood of impact, good sustainability, and high operative and cost efficiency in spite of several operative and administrative challenges".[617] This assessment is rather sobering, pointing to national-level 'opposition to change' towards a greener (more resource efficient) economy.

In terms of regional implementation, the UN Economic Commission for Europe (Eighth Environment for Europe Ministerial Conference) in 2016 endorsed a Pan-European Strategic Framework for Greening the Economy which defines some focus areas relevant for resource efficiency[618] and

[611] An overview of the synergies between these three bodies can be found here: http://www.unep.fr/scp/marrakech/publications/pdf/Background%20Paper%20RP%20Steering%20Committee.pdf.

[612] UNEP EOU (2017a).

[613] UNEP EOU (2017a), at para. 1.

[614] Barbier (2012).

[615] The core recommendations of TEEB have been taken up, among others, within the CBD, UNEP, FAO, World Bank, the Rio+20 Conference, the UN Sustainable Development Goals as well as within many nation states and the EU (see, for instance, Action 5 of the EU Biodiversity Strategy, 2011) see also Braat and Groot (2012); Hedden-Dunkhorst et al. (2015).

[616] UNEP (2010).

[617] UNEP EOU (2017a), at paras 4–5.

[618] Most notably, these are Focus area 5 ("Develop clean physical capital for sustainable production patterns", but also Focus area 2 ("Promote the internalization of negative externalities and the sustainable use of natural capital" and Focus area 4 ("Shift consumer behaviours towards sustainable consumption patterns) (ECE/BATUMI.CONF/2016/6).

launched the *Batumi Inititiative on Green Economy* (BIG-E).[619] The Batumi Initiative is a set of over 100 voluntary national commitments ('pledges') for greening the economy in the pan-European region; many of those pledges, however, are not additional to what countries have been doing anyway.

Political opportunities and good practice examples: Opportunities to further shape the GEI could emerge though the PAGE initiative with its regular events (including Ministerial Conferences) as well as from the Green Growth Knowledge Platform Annual Conferences. However, no date is set for the next PAGE Ministerial Conference.

A related opportunity (though not strictly tied to the GEI) is the 5th Meeting of the UN Environment Assembly (UNEA-3) in February 2021 in Nairobi.

A 'good practice' aspect of UNEP'S Green Economy Initiative is its flexible character as an umbrella project which included 16 individual projects and whose more general project activities were financed on the basis if relatively unrestricted funds. Some of the Initiative's sub-projects later became independent. These include the Partnership for Action on the Green Economy (PAGE) and the Green Growth Knowledge Platform.

2.2.6 UNEP Global Initiative for Resource Efficient Cities

Table 20: UNEP Global Initiative for Resource Efficient Cities (launched: 06/2012)

Key aspects	Summary
Form and legal status	legally non-binding UNEP initiative
Objectives	help cities scale up global resource efficiency initiative goals
Adressees	cities
Territorial scope	global
Resources covered	building materials, energy, water, land, waste & biotic resources: such as food etc.
Stage of the value chain	building construction, consumption, waste management (not so strongly covered: material extraction)
Steering mechanisms	pilot projects, knowledge diffusion & capacity building, networking & learning
Political weight	+ (not much visibility or funding)
Relevance for RE	+++

Summary

The Global Initiative for Resource Efficient Cities (GI-REC) was launched at Rio+20 (2012) and seeks to help cities to scale up global resource efficiency goals.[620] It defines a "resource-efficient city" as "a city that is significantly decoupled from resource exploitation and ecological impact and is socio-economically and ecologically sustainable in the long-term".[621] Cities are treated as important sites for

[619] ECE/BATUMI.CONF/2016/13. Document ECE/BATUMI.CONF/2016/INF/21 lists possible green economy actions for voluntary pledges, including a range on resource efficiency.

[620] www.resourceefficientcities.org.

[621] UNEP and GI-REC (2012).

driving resource efficiency because a large share of resource consumption and waste production can be attributed to them.[622]

The GI-REC helps cities identify and monitor their resource footprints, establishes a network platform to bring together partners and cities interested in resource efficiency, coordinates and supports the development of clear goals and targets and provides expertise and access to funding.[623] Resource efficiency is sought with regards to building construction (materials), building and transport energy efficiency, water, products, food and waste, etc.

Overview

Form and legal status: Non-binding initiative/ cooperation platform hosted by UNEP.

Objectives: The initiative's objectives are "(t)o integrate resource efficiency along with sustainable production and consumption into policies, tools and decision-making at city level"[624]. It also aims at "(…) enhancing the quality of life in urban areas, in particular in rapidly growing cities in emerging and developing countries, by minimizing resource extraction, energy consumption, and waste generation through safeguarding ecosystem services and decoupling city development from resource use and environmental impacts."[625]

Territorial scope: Global.

Resources covered: Mostly those resources that are being used or managed within cities (related to the energy, water, manufacturing and waste sectors; not so much related to the extraction of raw materials).

Steps of the value chain covered: Production, consumption, waste management; less so: resource extraction (which typically takes place outside cities).

Type of steering mechanism: Capacity building, technology and support in the form of networks.

Content

Relevant provisions/ guidelines for governments: The initiative does not specify any binding standards for its addressees, but rather provides:

- demonstration projects in pilot cities
- recommendations to guide city-level resource efficiency improvements[626]
- knowledge "to improve efficiency of processes and use of resources within and across value chains, taking a Life-Cycle approach"[627], including assisting cities in identifying and monitoring their resource footprint
- a platform to "exchange experiences, share best practices, and establish a peer-review process across cities for further improving access to resources and their efficient use"[628]

[622] UNEP (2017c), at 2.
[623] http://energies2050.org/wp-content/uploads/2015/04/7_Cities-and-Climate-Change_GIL.pdf.
[624] http://www.resourceefficientcities.org/about-2/.
[625] UNEP and GI-REC (2012), at 2.
[626] UNEP (2012a).
[627] http://www.resourceefficientcities.org/about-2/.
[628] http://www.resourceefficientcities.org/about-2/.

Institutions, review and decision-making

Institutions: The initiative is part of UNEP's Resource Efficiency (RE) sub-programme which is housed in UNEP's Division of Technology, Industry and Economics (DTIE, Paris), and includes cooperation with a range of external institutional partners.[629]

Evaluation and review: While the initiative helps cities to self-monitor their ecological footprint, no evaluation or review process has been produced[630] or seems to be foreseen for the initiative itself.

Reporting: There is no reporting mechanism provided in the GI-REC.

Compliance procedures, remedies and dispute settlement procedures: The said procedures are not part of the GI-REC.

Stakeholder and public involvement: Cities, city networks, NGOs and businesses organisations, national governments and international organisations have been involved in the GI-REC.

Coherence with other international treaties and policies: As the GI-REC seeks to help cities implement measures on the local level to achieve global resource efficiency goals, it is in line with the SDGs. The initiative is not known to countervail other treaties or policies. Rather, it is related to the "Integrated Environmental Planning" initiative (UNEP & Cities Alliance), the "Sustainable Buildings and Climate Initiative" (SBCI), a partnership between the UN and the building sector (since 2006) and UNEP's Sustainable Social Housing Initiative (SUSHI) which aims at improving sustainability in social housing programmes. In 2013, a report by the International Resource Panel explored the question of city-level decoupling.[631]

Assessment

Political weight of the instrument: The initiative is largely driven by a single UN agency (with a range of external partners). It has few financial means and low visibility (for instance, it is not referred to in the UN New Urban Agenda). Overall, its political weight seems to be low.

Effectiveness: There is very little literature to be found on the success of the initiative. UNEP itself judges that "there is little consensus on a framework definition of resource efficiency; [there is a] need to develop effective tools and methods to better assess resource flows at the city level; [and] the business case for investment on resource efficiency still needs to be made, and practical advice rooted in accessible knowledge from peers is necessary to accompany a shift to greater resource efficiency at city level".[632] This assessment implies that a direct impact of UNEP's initiative on resource efficiency in cities is rather low.

Within the initiative, a 2014 global survey of cities' resource efficiency initiatives was carried out and found that main drivers to actively manage resources at local level are climate change, population growth and rising prices of resources. Main factors for implementing resource optimizing strategies were improvement in city competitiveness, better management of the environment, and improvement

[629] Among others, UN Habitat, the countries Brazil, France, Japan and the US; pilot and partner cities (NYC, Bangkok, Manila, Sao Paolo), city networks (ICLEI, Cities Alliance, World Council for City Data); the China-ASEAN Environmental Cooperation Center (CAEC), the GIZ, NGOs (IIED, Energies 2050, International Federation of Consulting Engineers), the private sector (World Business Council on Sustainable Development, EcoCity Builders), and research orgnaisations (World Resources Institute, Sustainability Institute, Massachusetts Institute of Technology). Cf. http://www.resourceefficientcities.org/partners-2/ as well as http://staging.unep.org/sbci/pdfs/AnoverviewoftheGlobalInitiativeforResourceEfficientCities.pdf ; note that the GI-REC website lists fewer partners than the Powerpoint-presentation by a UNEP official working in the GI-REC.

[630] Cf. https://wedocs.unep.org/handle/20.500.11822/3/discover.

[631] IRP (2013).

[632] http://staging.unep.org/sbci/pdfs/AnoverviewoftheGlobalInitiativeforResourceEfficientCities.pdf.

in social conditions. The support that cities need to improve resource efficiency was access to capacity building programmes, communication campaigns and access to networks of technical expertise, e.g. regarding "smart city" technologies.[633]

Political opportunities and good practice examples: In the context of implementing SDG-11, the Global Initiative on Resource-Efficient Cities could support cities in setting their own goals for resource efficiency. From the GI-REC's website it does not become clear what its role is with regard to the SDG implementation process.

2.2.7 UNEP International Resource Panel (2007)

Table 21: UNEP International Resource Panel (adoption: 2007)

Key aspects	Summary
Form and legal status	Independent scientific panel, established under auspices of UNEP
Objectives	to provide independent scientific assessments and policy advice on resource management, decoupling growth and resource use
Parties	36 scientists from different world regions
Territorial scope	global
Resources covered	abiotic resources (metals, others), biotic resources
Stage of the value chain	holistic: extraction, production, consumption, recycling, waste management
Steering mechanisms	science-policy interface: knowledge production, information dissemination, policy advice
Political weight	++ (renown indep. scientists; advised G7 on concrete resource efficiency policies)
Relevance for RE	+++

Summary

The International Resource Panel (IRP) was launched by the United Nations Environment Programme (UNEP) in 2007 to create a platform for the sharing of knowledge on resource use worldwide.[634] The Panel offers independent scientific advice on sustainable resource management. Scientists present latest findings on scientific, technical and socio-economic aspects of resource use and offer advice to stakeholders. The Panel thus aims to connect experts, policymakers, industry representatives and civil society.

The Panel promotes a holistic approach to resource management. It has published a number of high-profile reports, among others on decoupling (including at the level of cities), global metal flows, environmental impacts of resource use, and cross-cutting issues such as trade.

Overview

Form and legal status: Independent scientific panel under the auspices of UNEP.

[633] UNEP (2014).

[634] Its establishment followed the criteria and guidelines for partnerships decided by the United Nations Commission for Sustainable Development (CSD-11) in 2003.

Objectives: The objectives of the International Resource Panel include to:

- Prepare independent, coherent and authoritative scientific studies and assessments of policy relevance on the sustainable use and management of natural resources and in particular their environmental impacts over the full life cycle;
- Inform international policy discourse and development on emerging challenges and opportunities for the sustainable use and management of and equitable access to natural resources.[635]

The Panel's efforts to reach these objectives are guided by the principles of policy relevance, independence, inclusiveness, objectivity and integrity.[636]

Territorial scope: Global.

Resources covered: Non-biotic resources (including minerals, metals, water, land and soils) and biotic resources (forestry, biofuels, food).

Steps of the value chain covered: Extraction, production, consumption, recycling, waste management.

Type of steering mechanism: Knowledge production, information dissemination.

Content

Relevant provisions/ guidelines for governments: Based on its scientific assessments, the IRP provides policy advice which governments are free to take-up in their policies. The Panel's assessments relate to decoupling and resource efficiency, cities, water, metals, land and soils, food, trade, green technology and global materials flows. Specifically on resource efficiency, the IRP published a report on potentials and economic implications[637] as well as an input for the G20 Resource Efficiency Dialogue[638] in 2017. The latter report underlined, among others, the connections betwen climate and resources, and presented good practices with regard to resource efficiency policies. Its most recent assessment – the Global Resources Outlook 2019 – emphasizes that "Resource efficiency alone (…) is not enough. What is needed is a move from linear to circular flows through a combination of extended product life cycles, intelligent product design and standardization and reuse, recycling and remanufacturing"[639]. The Global Resources Outlook also refers to the concept of a "safe operating space" which is to limit natural resource use.[640] In its 2019 report on minerals governance, the IRP outlines its view on a model for mineral resource governance for sustainable development. While it also recognises the "absolute necessity" to decouple economic growth from negative environmental and social impacts, remains quite vague with regard to concrete governance options. Its concept of a "sustainable development licence to operate" appears to be a catch-all call for addressing the well-known challenges, and the suggested policy framework identifies "what" to achieve, but does not address "how".[641] A further IRP report scheduled for 2020 is to address the interlinkages between resource efficiency and climate change strategies.[642]

[635] Para. 3, http://www.resourcepanel.org/policies-and-procedures-irp.

[636] Ibid, para. 4.

[637] IRP (2017b).

[638] IRP (2017a).

[639] IRP (2019), at 29.

[640] IRP (2019), at 65.

[641] Bodle et al (2020), at 365.

[642] The full report "Resource Efficiency and Climate Change" is planned for the end of 2020. The summary for policymakers is available at https://www.resourcepanel.org/reports/resource-efficiency-and-climate-change.

Institutions, review and decision-making

Institutions: The IRP is independent organisation operating under the auspices of UNEP. It is supported by a Secretariat hosted in UNEP's Paris Office. The IRP's Steering Committee includes over 25 governments from developed and developing countries, the European Commission, OECD, UNEP, civil society and business organisations (IUCN, the World Business Council for Sustainable Development WBCSD, the International Council for Science ICSU, the International Chamber of Commerce ICC). Within the IRP, Working Groups are built to produce assessment reports which are then considered and approved by the Panel as such. A set of "Policies and Procedures"[643] governs the working of the International Resource Panel. Among others, Steering Committee and Panel members are required to ensure that multiple points of view are considered in the preparation of assessments.

The IRP convenes biannual meetings to review progress of work, review and approve drafts of scientific studies and assessments, as well as discuss and agree on IRP strategic and operational issues

Evaluation and review: The IRP was evaluated by UNEP's Evaluation Office in 2016.[644]

Reporting: n.a.

Compliance procedures, remedies and dispute settlement procedures: n.a.

Stakeholder and public involvement: The Panel as such consists of 40 scientists, the Steering Committee involves governments, the European Commission, and UN Environment. While various business organisations are involved as strategic partners, environmental or other civil society organisations are less well represended as strategic partners or elsewhere in the institutional structure.

Assessment

Coherence with other international treaties and policies: IRP assessments build on and complement other international initiatives including the Marrakech Process, the Kobe 3R Action Plan and the 10YPF.

Political weight of the instrument: The IRP offers an independent source of global assessments and advice intended to be used in policy-making. Its policy influence could be greater if it was linked to an international agreement whose conference of parties it would advise, the way the International Panel on Climate Change (IPCC) is linked to the UN Convention on Climate Change or the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) is linked to the UN Convention on Biological Diversity.

Effectiveness: The IRP has rapidly become an authoritative voice on sustainable resource management. The figures published in IRP reports are widely quoted, and its assessments have frequently been received with high interest in the international policy community. The G7 asked the IRP to support its work on resource efficiency, indicating its legitimacy among governmental policy-makers. To what extent governments will actually implement the Panel's recommendations remains to be seen. To date, the policy advice of the IRP has largely been limited to national resource policy while recommendations for *international*-level resource policies have hardly been published.

The independent evaluation by UNEP's Evaluation Office concludes: "The work of the IRP continues to address the needs and topics for which it was created. The need for this work is greater than ever and appetite for information about the policy needs and options is likely growing with the increased awareness of sustainability issues and the SDGs. 204. The IRP has exceeded targets for the main classes of outputs: assessment reports and communications. The IRP has been generating assessment reports at a pace of one per quarter since 2010. (…) The issues facing the IRP going forward include:

[643] http://www.resourcepanel.org/policies-and-procedures-irp.

[644] UNEP EOU (2016).

securing a higher level of uptake of assessment reports, ensuring that the significant pro bono contributions from IRP members and their host institutions are maintained, achieving efficiencies in IRP operations resulting in more effective use of pro bono contributions and reasonable workloads for the Secretariat and co-chairs, securing communications capacities for the IRP and Secretariat and ensuring that communications is built into each assessment from the outset."[645] The evaluators recommend that "the processes it [the IRP] employs to produce assessments needs to engage representatives of potential user interests and useinfluencing interests in the assessment process principally in identifying and specifying the questions to be addressed leading to a more salient assessment". Moreover, the composition of the IRP's Panel and Steering Committee should be multi-sectoral and include "policy and use-seeking sciences".[646]

Political opportunities and good practice examples: The update of the strategic priorities for the IRP after 2021 could offer opportunities to influence the Panel's alignment, for instance with regard to greater focus on international-level policy advice or engagement with civil society.

2.2.8 World Bank's Environmental and Social Framework (ESF)

Table 22: World Bank Environmental and Social Framework (adoption: 2016)

Key aspects	Summary
Form and legal status	strategic guidelines of multilateral organisation, binding both on World Bank and borrowers (developing countries)
Objectives	to improve development outcomes
Addressees	World Bank & borrowers
Territorial scope	global
Resources covered	all
Stage of the value chain	all
Steering mechanisms	regulation
Political weight	+++ (binding for borrowers of World Bank credits)
Relevance for RE	++

Summary

The World Bank's "Environmental and Social Framework" (ESF, also called "Safeguard Policies")[647] were revised in 2016, following a fundamental critique by the Bank's Independent Evaluation Group (IEG) in 2010.[648] As of October 2018, the ESF applies to all new World Bank investment project financing.[649] It consists of the following components: a) the Bank's Sustainable Development Vision; b)

[645] UNEP EOU (2016), at 68-69.

[646] UNEP EOU (2016), at 69.

[647] World Bank (2016d). Note that the World Bank comprises the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). It is a component of the World Bank Group, which additionally comprises the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and the International Centre for Settlement of Investment Disputes (ICSID). The ESF hence apply to the IBRD and IDA, not the rest of the World Bank Group.

[648] IEG (2010).

[649] With existing projects continuing to apply the World Bank's former "Safeguard Policies", the ESF is expected to be applied in parallel to these till circa 2025, cf. https://www.worldbank.org/en/projects-operations/environmental-and-social-policies.

its environmental and social policy for "Investment Project Financing" (IFP) which sets out mandatory requirements for the World Bank, in relation to the projects it supports through IFP; and c) ten Environmental and Social Standards (ESS) which set out mandatory requirements for borrowers (i.e., developing countries) making use of World Bank finance to fund, for instance, transport or energy infrastructures, agricultural projects, policy or capacity development etc. The overall aim is to improve development outcomes by safeguarding that projects funded by the World Bank are environmentally and socially sustainable, both in their conception and implementation. Resource efficiency is particularly addressed by ESS-3.

Overview

Form and legal status: The Safeguard Policies have the status of strategic guidelines of a multilateral governmental organisation. They are binding both internally on the World Bank and externally on borrowers by virtue of the legal agreements between the borrower and the World Bank which define the terms of lending.

Objectives: With its ESF, the World Bank aims to "support (…) Borrowers in the development and implementation of projects that are environmentally and socially sustainable, and to enhance[e] the capacity of Borrowers' environmental and social frameworks to assess and manage the environmental and social risks and impacts of projects".[650]

Material scope: The ESF applies to projects supported by Investment Project Lending[651] (i.e., to project-based physical investments), but not to other financing instruments of the World Bank, such as Development Policy Lending (DPL) or Program-for-Results (P4R). DPL "guarantee budget support to governments or a political subdivision for a program of policy and institutional actions to help achieve sustainable, shared growth and poverty reduction", while PR4 "links disbursement of funds directly to the delivery of defined results, helping countries improve the design and implementation of their own development programs and achieve lasting results by strengthening institutions and building capacity".[652]

Territorial scope: Global, though with a focus on developing countries.

Resources covered: All.

Steps of the value chain covered: All (resource extraction, production, consumption, waste management).

Type of steering mechanism: Vis-à-vis borrowers, the Safeguard Policies are an incentive-based mechanism – a project is funded only when compliance with the ESF is contractually agreed with.

Content

Relevant provisions/ guidelines for governments: The World Bank's ESF consists of the following elements[653]:

- The World Bank's **"Vision for Sustainable Development"**: The vision of 'Securing the long-term future of the planet, its people and its resources, ensuring social inclusion, and limiting the economic burdens on future generations' is intended to underpin the World Bank's two corporate goals of ending extreme poverty and promoting shared prosperity in all its partner countries. The vision includes a reference to the goal of 'promot[ing] the

[650] World Bank (2016d), at 3.

[651] I.e., where the Bank's Operational Policy (OP) 10.00 (on Investment Project Financing) and the accompanying Bank Procedure (BP 10.00) applies.

[652] World Bank (2016d), at 3.

[653] World Bank (2016d), at ix.

efficient and equitable use of natural resources' within the parameters of Bank-financed projects.

- The Bank's **"Environmental and Social Policy for Investment Project Financing"** sets out the mandatory requirements that the Bank itself must follow regarding projects it supports through Investment Project Financing.
- The ten **"Environmental and Social Standards"** (ESS) which, together with the ESS's Annexes, set out the mandatory requirements that apply to borrowers and projects supported by Investment Project Financing. With regard to resource efficiency (and resource extraction), the following ESSs are particularly relevant:
  1. ESS-1 on "Assessment and Management of Environmental and Social Risks and Impacts" requires borrowers to assess, manage and monitor environmental and social risks and impacts along the project lifecycle. ESS-1 also requires a 'mitigation hierarchy 'approach that includes anticipating, avoiding, minimizing (where unavoidable) risks and impacts and compensating/ offsetting significant residual impacts. Stakeholders need to be engaged in the environmental and social assessment of the project proposal. Assessments are required to cover all relevant direct, indirect and cumulative environmental and social risks and impacts throughout the project life cycle. While impacts from the consumption of abiotic resource could potentially count as direct impacts (attributable to the project), indirect impacts (caused by project but later in time/farther away) or as cumulative impacts,[654] resource consumption does not fall under the environmental risks explicitly mentioned to be covered.
  2. ESS-3 on "Resource Efficiency and Pollution Prevention and Management" aims, among others, to promote the sustainable use of resources, including raw materials. Borrowers are required to 'implement technically and financially feasible measures for improving efficient consumption of energy, water and raw materials, as well as other resources', integrating 'the principles of cleaner production into product design and production processes to conserve the said resources'. Where benchmarking data are available, the borrower is required to make a comparison to establish the relative level of efficiency.[655] Finally, to the extent technically and financially feasible, the borrower is to adopt measures specified in the World Bank Group's "Environmental, Health and Safety Guidelines" (EHSG) and other "Good International Industry Practice" (GIIP) to support efficient use of raw materials.[656]
  3. ESS-5 on "Land Acquisition, Restrictions on Land Use and Involuntary Resettlement" addresses resettlements that sometimes go along with resource extraction.

The Bank requires borrowers to conduct an environmental and social assessment of projects proposed for Bank support in accordance with ESS1, and to prepare and implement projects so that they meet the requirements of all ESSs.[657] To increase country ownership, the borrower's initial assessment, development and implementation of the project can follow their own domestic Environmental and Social Frameworks.[658] The Bank classifies projects into four classifications (high, substantial, moderate or low risk)[659] and aligns their own due diligence and their requirements vis-à-vis borrowers to the respective risk categories. For instance, the Bank's due diligence for high or substantial risk projects includes site visits by an environmental or social

[654] These are defined as 'result[ing] from individually minor but collectively significant activities taking place over a period of time' World Bank (2016d), at 16.

[655] World Bank (2016d), at 40.

[656] Ibid.

[657] World Bank (2016d), at 6.

[658] World Bank (2016d), at 6.

[659] Taking into account, among others, the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Borrower.

specialist who provides advice, guidance and clearance during project preparation, and possibly also during implementation.[660]

- The Bank Directive **"Environmental and Social Directive for Investment Project Financing"** sets out the mandatory requirements for the implementation of the Environmental and Social Policy for Investment Project Financing (IPF), applicable to the bank. Notably, this includes the due diligence process that the World Bank needs to follow for each project proposal.

- The Bank Directive on **"Addressing Risks and Impacts on Disadvantaged or Vulnerable Individuals or Groups"** defines provisions for Bank staff regarding due diligence obligations relating to the identification of, and mitigation of risks and impacts on, individuals or groups who, because of their particular circumstances, may be disadvantaged or vulnerable.

Finally, non-mandatory **Guidance Notes for Borrowers** support borrowers in implementing the Safeguards.[661] The Guidance Note on ESS 3 (resource efficiency)[662] specifies that the Borrower "will implement technically and financially feasible measures for improving efficient consumption of energy, water and raw materials, as well as other resources. Such measures will integrate the principles of cleaner production into product design and production processes to conserve raw materials, energy and water, as well as other resources. Where benchmarking data are available, the Borrower will make a comparison to establish the relative level of efficiency."

Institutions, review and decision-making

Institutions: The World Bank's Board of Executive Directors initiated (in 2012) and approved (in 2016) the revision of the ESF. On a strategic level, the Bank's Committee on Development Effectiveness (which oversees policy matters) is responsible for the ESF. Its operational implementation lies with the Bank's project staff who supervise project implementation. The Internal Audit Vice Presidency (IAD) is an assurance and consulting activity focused on evaluating the effectiveness of governance, risk management, and control processes in the World Bank Group. The World Bank Group's Independent Evaluation Group (IEG), which operates independently of the Bank's management carries out ("external") evaluations across the World Bank Group, reporting directly to the Board of Executive Directors. Both IAD and IEG can potentially review the ESF's implementation and effectiveness.

Regional Development Banks are independent of the World Bank and its ESF but have traditionally been oriented towards the World Bank safeguards.

Evaluation and review: The (Bank-internal) "Environmental and Social Policy for Investment Project Financing" will be reviewed on an ongoing basis and be adjusted as appropriate, subject to approval by the Board of Directors. For the ESS, no evaluation and review mechanisms are specified; the last set of safeguards had persisted for some 20 years, before a critical IEG report led to their revision.

Reporting: There are no reporting obligations related to the implementation of the ESF. However, the ESF itself commits the World Bank to monitor the environmental and social performance of an IPF-funded project on an ongoing basis, in accordance with the requirements of the legal agreement between the borrower and the Bank which defines the project and specifies an "Environmental and

[660] World Bank (2016b), para. 39.

[661] See all Guidance Notes at https://www.worldbank.org/en/projects-operations/environmental-and-social-framework/brief/environmental-and-social-framework-resources.

[662] World Bank (2018).

Social Commitment Plan" (ESCP). The mode and intensity of monitoring are determined by the potential environmental and social risks and impacts of the project.[663] At the same time, the borrower is obliged to conduct monitoring (and submit reports) on the environmental and social performance of the project against the ESSs. The Bank reviews these monitoring reports.

Compliance procedures, remedies and dispute settlement procedures: The extent of monitoring is related to the level of the diagnosed potential environmental and social risks and impacts of the project.[664] Monitoring is based on the review of the borrower's monitoring reports, potentially on monitoring site visits[665] and, "where appropriate", on information from stakeholders involved to complement or verify the monitoring reports.[666] Based on these insights, the Bank identifies and agrees with the borrower corrective or preventive measures and actions which will be included in the ESCP. When corrective or preventive measures and actions are not implemented as agreed between the Bank and the borrower, the Bank can apply remedies.[667]

There exists a four-tiered grievance mechanism: project affected parties can avail themselves of project grievance mechanisms, local grievance mechanisms, the Bank's corporate Grievance Redress Service or, finally, to the World Bank's independent Inspection Panel in order to determine whether harm has occurred as a direct result of World Bank non-compliance with its policies and procedures.[668] In 2016, seven complaints were filed with the Inspection Panel.[669] None of these was concerned with resource efficiency. Potentially, a project that is highly inefficient in its use of resources could be object of a complaint. However, most environmentally motivated complaints seem to address the immediate damages to ecosystems through infrastructure projects, and to the related impacts on public health or livelihoods. A report listing the major policy issues raised in cases at World Bank Inspection Panel does not mention resource efficiency among the most relevant eleven issues.[670]

Stakeholder and public involvement: ESS-10 on "Stakeholder Engagement and Information Disclosure" requires engagement as an inclusive process conducted throughout the project, targeting both project-affected parties and other interested parties. The process is to involve: (i) stakeholder identification and analysis; (ii) planning how the engagement with stakeholders will take place; (iii) disclosure of information; (iv) consultation with stakeholders; (v) addressing and responding to grievances; and (vi) reporting to stakeholders. Where appropriate, the Bank can require the borrower to engage stakeholders and third parties (e.g., NGOs, independent experts, local communities) to complement or verify project monitoring information. Where Indigenous Peoples are present in, or have a collective attachment to, the proposed project area, ESS7 requires the borrower to tailor meaningful consultation to Indigenous Peoples and, in specific circumstances, to obtain the Free, Prior and Informed Consent (FPIC) of the affected Indigenous Peoples.

Assessment

Coherence with other international treaties and policies: The ESF refers to other international norms. For instance, the "Vision" claims that "the World Bank's activities support the realization of human rights expressed in the Universal Declaration of Human Rights"[671] but NGOs criticise that human rights

[663] World Bank (2016d), at 10.
[664] World Bank (2016d), at 10.
[665] World Bank (2016b), para. 63b.
[666] World Bank (2016d).
[667] These remedies are set out in the Bank's Operational Policy (OP) 10.00.
[668] World Bank (2016d), at x.
[669] World Bank (2016a), at 54.
[670] World Bank (2016c), at 28.
[671] World Bank (2016d), at 1.

language is limited to the Vision Statement[672] and that references to sexual orientation or gender identity – upholding human rights among others for Lesbian, Gay, Bisexual, Transgender and Queer (LGBTQ) people – had been removed from the new policy.[673] ESS1 demands that borrowers "ensure that the environmental and social assessment takes into account in an appropriate manner all issues relevant to the project, including (…) the country's applicable policy framework, national laws and regulations, (…) and obligations of the country directly applicable to the project under relevant international treaties and agreements".[674] Borrowers are explicitly required to comply with international law relating to the manufacture, trade and use of chemicals and hazardous materials including pesticide products and hazardous wastes (e.g. the Basel and the Rotterdam Conventions and their protocols).[675] ESS2 on labour and working conditions only partly draws on ILO's core labour standards and not all of them are taken up. Finally, the ESF is harmonized to a significant extent with the IFC's performance standards (see below).

Political weight of the instrument: The political weight of the ESF and particularly the Environmental and Social Standards for borrowers is high. With the poor environmental and social record of many World Bank financed projects in the past decades, the requirements of the ESF and their effective implementation have become a centrepiece of the political dispute between the World Bank Group and its (civil society) critics. Accordingly, the update of the ESF took four years and required more public consultations than originally scheduled.

Effectiveness: Effectiveness cannot be empirically assessed as the new ESF hat not been in force long enough. Theoretically, the ESF can support the enforcement of both international and national environmental norms, including those on resource efficiency. This is due to the above mentioned requirement that borrowers "ensure that the environmental and social assessment takes into account (…) the country's applicable policy framework (…) and obligations of the country directly applicable to the project under relevant international treaties and agreements".[676] In addition, the ESF's provision on using and strengthening a borrower's "environmental and social framework" – i.e., its relevant policies, legislation and institutions[677] – implies that this framework is assessed by the Bank. In case an assessment concludes that the respective framework will not enable the project to achieve objectives materially consistent with the ESSs, the Bank is required to work with the borrower to identify and agree on measures and actions to strengthen the framework[678] – and hence its national policies, including with regard to resource efficiency.

In practice, the relatively vaue language of ESS3 and the Guidance Notes on ESS3 (which limit the resource efficiency requirement to "technically and financially feasible measures" leave much room of manoever if a borrower is not ambitious with regard to resource efficiency or has not go the required implementation capacities. In addition, the worth of the ESF will critically depend on the Bank carrying out realistic risk assessments and safeguards ratings, as well as effective monitoring, evaluation, capacity-building for borrowers and enforcement of the safeguards. Project monitoring still relies largely on reports by borrowers, not on independent third-party information. After the focus of the previous Safeguard Policies was on ex ante assessments, more skills will now be required for monitoring and mitigation. Both presuppose a high level of policy as well as technical skills within the

672 Ulu Foundation et al. (2016).

673 https://www.brettonwoodsproject.org/2016/09/world-bank-approves-new-diluted-safeguards/.

674 World Bank (2016d), at 19.

675 World Bank (2016d), at 41-42.

676 World Bank (2016d), at 7, 19.

677 A borrower's "environmental and social framework" includes those aspects of a country's "policy, legal and institutional framework, including its national, subnational, or sectoral implementing institutions and applicable laws, regulations, rules and procedures, and implementation capacity, which are relevant to the environmental and social risks and impacts of the project" World Bank (2016d), at 7.

678 Ibid.

Bank and respective investments in staff capacities. While it has been recognised that the Bank has started moving from a prescriptive safeguards approach to a focus on capacity building of borrowers,[679] the use of borrowers existing environmental and social frameworks in the assessment, development and implementation of projects is a major point of concern: many civil society organisations see it as a means of diluting the safeguard system.[680]

Despite critique of possible implementation deficits, the positive potential of the World Bank Safeguards is often recognised. Taking this potential into account, it has been severely criticised that the ESF's scope of application does not extend beyond project financing to more programmatic loans (DPL, P4R). These make up a significant share of total Bank funding and can have substantial and long-term sustainability impacts.[681]

Specifically with regard to extracting non-renewable raw materials and mining projects, civil society organisations have questioned whether the World Bank should at all fund such activities. With sufficiently high raw material prices the use of public subsidies would not be justified, especially considering the often dramatically negative environmental and social impacts on local communities and production countries.[682]

Political opportunities and good practice examples: With the ESS being implemented only since 2018, it is highly unlikely that they will be opened for revisions during the next years. It therefore seems unrealistic to be able strengthen the requirements on assessing resource consumption related risks and impacts in ESS-1 or the borrower requirements in ESS-3. The Standard requires borrowers to "implement technically and financially feasible measures for improving efficient consumption of (...) resources"; a future revision could give a wide interpretation of what is "financially feasible" and possibly define scenarios where expected severe resource consumption impacts could lead to a non-approval of the project. Changes in the Bank's internal "Environmental and Social Policy for Investment Project Financing", including its Operational Policy 10.00, are more easily feasible and can possibly promote such ideas.

Good practice aspects of the World Bank Safeguards are their bindingness both vis-à-vis borrowers and the World Bank itself; the need to obtain (although in a limited set of circumstances) Free, Prior and Informed Consent (FPIC) of affected Indigenous Peoples; the (new) provision that borrowers engage stakeholders and third parties "to complement or verify project monitoring information" (although it is restricted by the qualifier "where appropriate"); and the relatively elaborate system of grievance mechanisms.

[679] Netherlands (2015), at 27.

[680] e.g., Vöcking (2014).

[681] e.g., BIC & Global Witness (2013).

[682] Cf. contribution of Jürgen Maier, Forum Umwelt & Entwicklung, at a public discussion, https://www.die-gdi.de/veranstaltungen/konsultation-zur-neuen-umwelt-strategie-der-weltbank-gruppe/.

2.2.9 IFC Performance Standards on Environmental and Social Sustainability

Table 23: IFC Environmental and Social Performance Standards (adoption: 2012)

Key aspects	Summary
Form and legal status	Strategic guidelines of multilateral organisation, binding on IFC and borrowers (private sector clients)
Objectives	to improve development outcomes
Parties	IFC & borrowers
Territorial scope	global
Resources covered	all
Stage of the value chain	all
Steering mechanisms	regulation
Political weight	+++
Relevance for RE	++

Summary

The International Finance Corporation (IFC), the private sector financing institution of the World Bank Group, is the largest global development institution focused exclusively on the private sector in developing countries. The Performance Standards on Environmental and Social Sustainability are embedded in the IFC's Sustainability Framework. The standards are directed towards private sector clients, providing guidance on how to identify, avoid, mitigate, and manage risks and impacts, including through stakeholder engagement and disclosure obligations. Performance Standard (PS) 3 addresses resource efficiency.

Overview

Form and legal status: Internal strategic guidelines of the IFC as a multilateral governmental organisation, made binding as lending conditions on its clients.

Objectives: The objective underlying the Performance Standards is that IFC clients "manage environmental and social risks and impacts so that development opportunities are enhanced."[683]

Territorial scope: Global.

Resources covered: All.

Steps of the value chain covered: All (resource extraction, production, consumption, waste management).

Type of steering mechanism: Vis-à-vis clients, the Performance Standards are an incentive based mechanism – a project is funded only when compliance with them is contractually agreed with.

[683] IFC (2012), at 1.

Content

Relevant provisions/ guidelines for governments: The IFC's Sustainability Framework was originally adopted in 2006 and has been updated in 2012 following a highly critical evaluation[684] and an 18-month consultation process with stakeholders around the world. It consists of three elements:

- The **Policy on Environmental and Social Sustainability** defines IFC's own sustainability commitments.
- The **Performance Standards** define clients' responsibilities for managing their environmental and social risks. In particular, PS-1 and PS-3 are relevant for our purpose:
  1. PS-1 governs the "Assessment and Management of Environmental and Social Risks and Impacts". Among others, it requires clients to identify and evaluate environmental and social risks and impacts of the project; to adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to the environment, but also to workers and affected communities; to use environmental and social management systems; and to ensure that grievances from stakeholders are managed appropriately.
  2. PS-3 addresses "Resource Efficiency and Pollution Prevention". Whether or not PS3 is applicable is established during the earlier environmental, social risks and impacts identification process of PS-1. Performance Standard 3 requires clients to implement "technically and financially feasible and cost effective measures" for improving resource efficiency, including with regard to material inputs (para.6, PS-3). These measures should integrate the principles of cleaner production into product design and production processes with the objective of conserving raw materials as well as energy and water. When selecting resource efficiency techniques for the project, the client needs to refer to the World Bank Group's Environmental, Health and Safety Guidelines or to host country regulations, whichever is more stringent (para.6, PS-5). Where benchmarking data are available, clients shall establish the comparative level of efficiency (para.6, PS-3). With regard to waste materials, clients are requested to avoid, or if unavoidable, reduce their generation and to recover and reuse waste (para.12, PS-3).
- The **Access to Information Policy** defines IFC's commitment to transparency.

Institutions, review and decision-making

Institutions: The IFC Sustainability Framework and its components have been adopted by the IFC Board of Directors. Its operational implementation lies with the Bank's project staff who supervise project implementation. As described in the previous Section, the Internal Audit Vice Presidency (IAD) is an assurance and consulting activity focused on evaluating the effectiveness of governance, risk management, and control processes in the World Bank Group. The World Bank Group's Independent Evaluation Group (IEG), which operates independently of the Bank's management carries out ("external") evaluations across the World Bank Group, reporting directly to the Board of Executive Directors. Both IAD and IEG can potentially review the implementation and effectiveness of the FC Sustainability Framework.

Evaluation and review: When a client receives project funding from the IFC, an IFC Environmental and Social (E&S) team reviews the information provided by the client regarding assets and management of E&S risks and impacts and assesses the project against the Performance Standards and EHS Guidelines, potentially including information received in meetings with local stakeholders. The IFC's Environmental and Social Review Summary is published.

[684] CAO (2010).

Reporting: Monitoring of the project includes the review of clients' Annual Monitoring Reports on progress in meeting the E&S terms of the investment agreement, as well as site visits from IFC staff.

Compliance procedures, remedies and dispute settlement procedures: IFC's Compliance Advisor/ Ombudsman (CAO) is an independent office that is required to impartially respond to environmental and social concerns of affected communities, and aims to enhance IFC accountability and outcomes.

Stakeholder and public involvement: PS-1 defines that "stakeholder engagement is the basis for building strong, constructive, and responsive relationships that are essential for the successful management of a project's environmental and social impacts" (para.25, PS-1). Depending on the project's risks and adverse impacts, and its phase of development, clients are required to employ stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanism, and ongoing reporting to Affected Communities. For projects with potential significant adverse impacts on "Affected Communities" and projects involving indigenous peoples, IFC makes a determination of the level of community support for the project.

Assessment

Coherence with other international treaties and policies: The IFC Performance Standards draw on and relate to a number of international norms,[685] these references being much more concrete than in the case of the World Bank's ESS, except for a reference to a human rights instrument.

Political weight of the instrument: Judging from the high profile of the political discussions on IFC standards and their revision, the IFC Standards can be assessed to have a similar high political weight as the World Bank's Environmental and Social Standards, despite their focus on private sector clients. This is likely a consequence of the contentious nature and increasing volume of activities by multinational corporations in developing countries and emerging economies.[686]

Effectiveness: Despite the fact that the current Performance Standards have been adopted already in 2012, no systematic evaluation has since been carried out. It can be assumed that as to its effectiveness and impacts similar caveats apply as in the case of the World Bank's Environmental and Social Standards (see above).

Political opportunities and good practice examples: With the IFC's Sustainability Framework still relatively young, there seem no immediate opportunities ahead for influencing the clout of the provisions on resource efficiency.

[685] Including the Convention on Long-Range Transboundary Air Pollution, the Stockholm Convention on Persistent Organic Pollutants, the Montreal Protocol on Substances that Deplete the Ozone Layer, the Basel Convention on hazardous waste, the Biodiversity Convention, the Ramsar Convention, the World Heritage Convention as well as labour-related conventions by ILO and the UN.

[686] See e.g. UNCTAD (2017).

2.2.10 OECD Green Growth Strategy

Table 24: OECD Green Growth Strategy (adoption: 2009, 2011)

Key aspects	Summary
Form and legal status	Non-binding strategy
Objectives	Promote economic growth while protecting environment, climate; decouple economic growth & environ impacts
Addresees	OECD countries, + 10 non-OECD countries[687]
Territorial scope	global (mostly OECD countries)
Resources covered	all
Stage of the value chain	entire value chain
Steering mechanisms	knowledge exchange, capacity building, policy recommendations, mainstreaming of policies, green growth indicators and monitoring
Political weight	++
Relevance for RE	+

Summary

In reaction to the global financial crisis as well as the climate, oil and food crises, the OECD Green Growth Strategy was first introduced in 2009.[688] It was specified in 2011 by a "Green Growth Strategy package"[689], by indicator framewoks in 2011, 2014 and 2017 and was assessed in 2015.[690] The Green Growth Strategy seeks to provide a policy framework for green growth that can be tailored to different national circumstances and development stages.

The Strategy provides an expanded growth accounting model and offers a toolkit of policies and approaches for countries to better balance economic efficiency, environmental protection and social equity. With regard to resource efficiency, the Strategy posits that new sources of growth can open up through "incentives for greater efficiency in the use of resources and natural assets, including enhancing productivity, reducing waste and energy consumption, and making resources available to their highest value use."[691] A caveat regarding resource protection is that the concept of Green Growth is based on the connection of resource indicators with economic indicators which results in a focus on resource productivity rather than on an absolute reduction of resource consumption. A considerable number of activities have been and are carried out implementing the Strategy.

Overview

Form and legal status: The Green Growth Strategy is non-binding on OECD (and other) countries, intended to serve as a framework for national policies. The Green Growth Declaration which is the basis for the Green Growth Strategy was signed by the 34 OECD member states in 2009.

[687] Non-OECD countries: Bulgaria, Costa Rica, Colombia, Croatia, Georgia, Kazakhstan, Lithuania, Morocco, Peru, http://www.oecd.org/greengrowth/greengrowthincountriesandterritories.htm#oecd.

[688] OECD Council (2009).

[689] The Strategy package consists of four documents: "Towards Green Growth" (OECD 2011e), "Towards Green Growth - Monitoring Progress: OECD Indicators" (OECD 2011d), "Tools for Delivering Green Growth" (OECD 2011b) "Towards green growth: A summary for policy makers" OECD (2011c). For an overview, see. http://www.oecd.org/greengrowth/towards-green-growth-9789264111318-en.htm.

[690] OECD (2015b).

[691] OECD (2011c), at 5.

Objectives: The objectives include the promotion of economic growth (in the face of the financial crisis 2008) while protecting the environment, notably the decoupling of growth and environmental impacts.

Territorial scope: global (all OECD members and other countries).

Resources covered: Biotic and abiotic resources.

Steps of the value chain covered: extraction, production, consumption, waste management

Type of steering mechanism: The Green Growth Strategy includes knowledge exchange, capacity building, recommendations for green growth policies as well as the mainstreaming of policies, the development of green growth indicators and monitoring of country performance with regard to these indicators.

Content

Relevant provisions/ guidelines for governments: The implementation of the Green Growth Strategy itself is voluntary. To support policy makers in implementing Green Growth policies, a number of recommendations and respective toolkits have been developed, most notably the report "Tools for delivering Green Growth".[692] However, these policy recommendations remain at a rather general level and without an explicit reference to resource efficiency (cf. Figure 1):

Figure 1: Possible policies to address green growth constraints

Green growth constraints	Policy options
Inadequate infrastructure	• Taxes • Tariffs • Transfers • Public-private partnerships
Low human and social capital and poor institutional quality	• Taxes • Subsidy reform/removal
Incomplete property rights, subsidies	• Review and reform or remove
Regulatory uncertainty	• Set targets • Create independent governance systems
Information externalities and split incentives	• Labelling • Voluntary approaches • Subsidies • Technology and performance standards
Environmental externalities	• Taxes • Tradable permits • Subsidies
Low returns on R&D	• R&D subsidies and tax incentives • Focus on general-purpose technologies
Network effects	• Strengthen competition in network industries • Subsidies or loan guarantees for new network projects
Barriers to competition	• Reform regulation • Reduce government monopoly

Source: OECD (2011b), at 9.

[692] OECD (2011b).

Additional papers, reports, recommendations research results etc. regarding an abundance of green growth issues are continuously published.[693]

Institutions, review and decision-making

Institutions: A number of OECD Directorates and Committees including the Environment Policy Committee were involved in the Strategy development, and respectively are involved in its implementation.[694] An "OECD Horizontal Programme on Green Growth" has been created.

Evaluation and review: The Green Growth indicators from 2011 and 2014 have been updated in 2017. Indicators with relevance for the efficiency of abiotic resources include (non-energy) "material productivity", including demand based material productivity, domestic material productivity (GDP/DMC) and waste generation intensities and recovering ratios; as well as environmentally adjusted multi-factor productivity. Information concerning a review of the Strategy as a whole is not available.

Reporting: Building on the general framework developed in the Green Growth Strategy, the OECD is mainstreaming green growth in its national and multilateral policy surveillance exercises to provide policy advice that is targeted to the needs of individual countries. These include the Economic Surveys, Environmental Performance Reviews, Innovation Reviews, and Investment Policy Reviews, as well as the Going for Growth annual report and the Green Cities Programme. These analyses cover advanced, emerging and other economies.[695] Additionally, a set of Green Growth indicators has been developed which include indicators on environmental and resource productivity and the natural asset base (land resources, forest resources etc.).[696] The status of countries green growth is assessed and discussed according to this set of indicators.[697] In 2015, a report was published assessing the overall progress[698] and the Green Growth indicators report from 2017 also charts the progress that OECD countries have made since 1990.[699] Its main finding is that while there are signs of greening growth in the OECD, countries are progressing too slowly on green growth. With regard to material productivity and waste, uses material extraction has grown since 1980 by over 200%, largely due to non-metallic minerals (including contruction and industrial minerals) which increased by more than 300%. Productivity gains have been achieved especially in European countries and Korea while it remains low and stagmant in BRICS economies. However, overall consumption of non-energy material resources remains high in OECD countries (ca. 14% higher than in BRICS countries) and changing trade patterns (notably the discplacement of resource-intensive production to other countries) account for some of the productivity gains. With regard to the gernation of waste, a modest decoupling from economic growth and from population growth has taken place in most OECD countries.[700] With regard to policies, environmentally-related tax revenues have decreased between 1995 and 2014, while OECD countries continue to support potentially environmentally harmful activities.

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[693] http://www.oecd-ilibrary.org/environment/oecd-green-growth-studies_22229523, or http://www.oecd-ilibrary.org/environment/oecd-green-growth-papers_22260935.

[694] Apart from the OECD Environmental Policy Committee these include, among others, the OECD Working Party on Environmental Information, the Environment Directorate, the Economics Department, the Directorate for Financial and Enterprise Affairs, the Development Cooperative Directorate, the Public Governance and Territorial Development Directorate, the Directorate for Science, Technology and Innovation, the Trade ad Agriculture Directorate, the Staistics Directorate, the Centre for Tax Policy and Administration and the Internaitonal Energy Agency; cf. OECD (2017), at 5.

[695] http://www.oecd.org/greengrowth/greengrowthincountriesandterritories.htm.

[696] OECD (2017).

[697] OECD (2017).

[698] OECD (2015b).

[699] OECD (2017).

[700] OECD (2017), at 44-49.

Compliance procedures, remedies and dispute settlement procedures: No such mechanisms are in place.

Stakeholder and public involvement: Stakeholders involved in the Strategy's development include so called "Enhanced Engagement Countries" (Brazil, China, India, Indonesia, South Africa), other non-members of the OECD, intergovernmetnal organisations such as UNEP, the World Bank and ILO as well as non-governmental stakeholders.[701]

Assessment

Coherence with other international treaties and policies: The OECD strives to increase policy coherence and has identified green growth as one of the priority areas for policy coherence in its Strategy on Development (cf. the analytical framework developed for Policy Coherence for Sustainable Development, PCSD). In accordance with this, the Green Growth Strategy is embedded into other OECD policies and recommendations. Still, it can be assumed that the stretegy's "green" emphasis and its "growth" impetus can result in incoherence when it comes to the absolute reduction of resource consumption.

Political weight of the instrument: Considering the importance of the OECD as an institution and the considerable number of activities linked to the Green Grwoth Strategy its political weight can be considered as rather high.

Effectiveness: The high number of monitoring, informatory and capacity building activities suggests that the Strategy is implemented with significant commitment. A caveat regarding resource protection, however, is that the concept of Green Growth is based on the connection of resource indicators with economic indicators which results in a focus on resource productivity rather than on an absolute reduction of resource consumption.

Political opportunities and good practice examples: A number of events linked to the OECD Green Growth Strategy take place continuously around the world.[702] A regular event is the "Green Growth and Sustainable Development (GGSD) Forum". However, the events do not necessarily have a focus on resource efficiency.

Best practice includes the attempt at mainstreaming green growth into numerous policies at domestic level, as well as the development of an indictator set to monitor countries green growth status and development over time.

[701] Visser (2009).

[702] cf. http://www.oecd.org/greengrowth/.

2.2.11 OECD Recommendation of the Council on Resource Productivity (2008)

Table 25: OECD Recommendation of the Council on Resource Productivity (adoption: 28/03/2008)

Key aspects	Summary
Form and legal status	non-binding
Objectives	to support efforts to improve resource productivity
Addressees	OECD member states
Territorial scope	OECD member states
Resources covered	minerals, biomass
Stage of the value chain	entire value chain
Steering mechanisms	high-level political statement with strategic priorities and guidance
Political weight	+
Relevance for RE	+++

Summary

Following a 2004 Recommendation on Material Flows and Resource Productivity, the OECD Council in 2008 adopted a recommendation on resource productivity. It encourages the OECD members to improve resource productivity by promoting environmentally effective and economically efficient uses of natural resources and materials at the macro, sectoral and micro levels as well as to strengthen capacity for analysing material flows and the associated environmental impacts. The OECD's Environment Policy Committee facilitated the process and was required to report back to the Council within five years (i.e. 2013). However, there are no current documents available indicating that the Environment Policy Committee has indeed assessed member countries' respective activities.

Overview

Form and legal status: The Council Recommendation is a legally non-binding recommendation for OECD member states. While OECD Recommendations are not binding practice accords them moral force as representing the political will of member countries and there is an expectation that member countries will fully implement a Recommendation. Thus, member countries which do not intend to implement a Recommendation usually abstain when it is adopted.[703]

Objectives: The objective of the recommendation is to guide and support the efforts of the OECD member countries to improve resource productivity along the entire resource cycle. Negative effects on the environment are taken into account as well as the prevention of natural resource degradation. The Recommendation applies to policies and measures that are needed to improve resource productivity and to the knowledge that is needed to inform such policies and measures.[704]

Territorial scope: OECD member states, though members are also encouraged to cooperate on resource productivity with non-OECD members.

Resources covered: The Recommendation covers natural resources (and the materials and products derived therefrom) whose extraction, processing, use and disposal are internationally significant, in both economic and environmental terms. The scope of the Recommendation is limited to minerals (metallic and non-metallic industrial minerals) and biomass. Energy resources (e.g. coal, oil, gas),

[703] http://www.oecd.org/legal/legal-instruments.htm.
[704] OECD Council (2008).

water resources and fishery resources are excluded and are only covered to the extent that they are part of an integrated approach to the entire resource cycle.[705]

Steps of the value chain covered: The recommendation addresses the entire value-chain.

Type of steering mechanism: High-level political statement by OECD with strategic priorities and guidance.

Content

Relevant provisions/ guidelines for governments: The recommendation asks OECD countries governments to promote resource productivity by strengthening their capacity for analysing material flows and the associated environmental impacts, and work to improve measurement systems for material flows and resource productivity. Also, OECD members shall take appropriate actions to improve resource productivity and reduce negative environmental impacts of materials and product use, by encouraging environmentally effective and economically efficient uses of natural resources and materials at the macro, sectoral and micro levels and by involving all relevant ministries and departments of government as well as research and other non-governmental organisations. [706]

Institutions, review and decision-making

Institutions: The institutions involved in developing the Recommendations were the OECD Council, the OECD Environment Policy Committee and the OECD Environment Directorate.

Evaluation and review: No evaluation or review of the Recommendations has taken place.

Reporting: The Environment Policy Committee is instructed to facilitate the process and to report to the Council on progress achieved in implementing the recommendation within five years of its adoption (i.e., 2013). A 2011 publication on "Resource Productivity in the G8 and the OECD"[707] responds to a request by G8 Environment Ministers at their meeting in Kobe in 2008 (see below, Section 2.2.13) and anounces that "A complete evaluation of progress with work related to resource productivity will be prepared for 2013, in the framework of reporting on OECD's Council Recommendation on Resource Productivity". However, no current documents indicate that this evaluation was indeed carried out.

Assessment

Coherence with other international treaties and policies: The Council Recommendation on Resource Productivity refers to several prior OECD recommendations (e.g. the 2004 Council Recommendation on Material Flows and Resource Productivity, various Council Decisions and Recommendations on transboundary movements of waste, waste prevention, extended producer responsibility, environmentally sound management of waste, sustainable materials management and the the implementation of the OECD environmental strategy), to the G8 "3R" initiative and to work by the International Resource Panel.[708]

Political weight of the instrument: Even though the OECD Council is an important institution the lack of follow-up by the Environment Policy Committee indicates that this particular recommendation does not carry sufficient political weight.

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[705] OECD Council (2008).
[706] OECD Council (2008).
[707] OECD (2011a).
[708] OECD Council (2008).

Effectiveness: No evaluation exists of the implementation and effectiveness of the OECD Recommendation. The International Resource Panel's 2016 study "Global material flows and resource productivity"[709] can be seen to indirectly suppprovide data input into such an (impact) evaluation since it created a unified data set on global and country by country material use (not, however, delivering aggregate data on OECD resource use and productivity).

Political opportunities and good practice examples: Since the process seems to have stalled no political opportunities or good practice examples can be identified.

2.2.12 G20 Dialogue on Resource Efficiency

Table 26: G20 Dialogue on Resource Efficiency (adoption: 2017)

Key aspects	Summary
Form and legal status	annex to legally non-binding G20 document
Objectives	Best practice exchange, spread resource efficient solutions and policies
Addressees	G20 countries
Territorial scope	G20
Resources covered	Not specified / all
Stage of the value chain	Not specified / all
Steering mechanisms	knowledge exchange, learning forum
Political weight	(to be assessed when operational)
Relevance for RE	++

Summary

The German government put the issue of resource efficiency onto the "Group of 20" (G20)'s agenda for the first time at the G20 summit in Hamburg, in July 2017, following a G20 workshop on resource efficiency in March 2017 (Berlin). In Hamburg, the launch of a "G20 Resource Efficiency Dialogue" was agreed on, the agreement forming an Annex to the G20s Leaders Declaration.[710] The Dialogue is voluntary and supposed to include the "Business 20" (i.e. the private sector mechanism of the G20) and other relevant stakeholders. The kick-off event was hosted by the German Presidency in November 2017. The Dialogue covers all natural resources and all steps of the value chain. Its political relevance will depend on the weight it is given by the Presidencies and the willingness of G20 member states to participate.

Overview

Form and legal status: The Dialogue is anchored in an Annex to the G20 Leaders Declaration of 2018. Participation is voluntary.

Objectives: The G20 Resource Efficiency Dialogue aims at improving the exchange of knowledge on policy options and good practices for improving resource efficiency along the entire life-cycle of natural resources, products and infrastructure. The Dialogue shall help spread resource-efficient solutions and options to strengthen countries' national resource efficiency policies.[711]

[709] IRP (2016).
[710] G20 (2017).
[711] G20 (2017), p. 1.

Territorial scope: G20 member countries.

Resources covered: Not specified; all natural resources. A focus on *raw materials* was rejected by G20 members interested in exporting such raw materials, while efficiency with regard to other resources (e.g., water) was seen to be less contentious.

Steps of the value chain covered: All steps of the value chain.

Type of steering mechanism: High-level political statement with strategic priorities and guidance; forum for exchange of best practice and learning.

Content

Relevant provisions/ guidelines for governments: The dialogue does not aim at developing guidelines as such. Three broad subjects have been suggested for the dialogue: a) Cooperation on implementing resource-related SDGs, b) Broadening the knowledge base on global resource use and future resource needs, c) Exchange of good practices on resource-efficient solutions along the entire life-cycle.

Institutions, review and decision-making

Institutions: The main institution within the G20 which is supposed to organize and implement the G20 Resource Efficiency Dialogue (by funding workshops, commissioning studies etc.) is the respective G20 Presidency.

Evaluation and review: Currently, no evaluation or review processes are in place.

Reporting: No reporting requirements exist do date.

Compliance procedures, remedies and dispute settlement procedures: No respective procedures exist.

Stakeholder and public involvement: International organizations and relevant stakeholders such as business (including the more than 700 companies forming part of the "Business 20" initiative[712]), academia and civil society 'may be included' in the dialogue. [713]

Assessment

Coherence with other international treaties and policies: The resource-related SDGs are one of the suggested first subjects the Dialogue is supposed to address. A link to the G7 Alliance for Resource Efficiency (see below) was rejected by some of the G20 members, arguing that resource-efficiency problems in newly industrialising countries differ from those in G7 countries.

Political weight of the instrument: While the G20 is a high-level political forum, there is no institutional sub-structure or budget envisaged for initiatives such as the Dialogue on Resource Efficiency. Hence, the political weight of the Dialogue will depend on the importance that G20 Presidencies attribute to it.

Effectiveness: While the Dialogue is not equipped with an implementation mechanism, it represents a first-time obligation to regularly discuss resource efficiency issues within the G20. The extent to which this depends on the engagement of the respective G20 presidency. After its launch in 2017 through the German G20 Presidency, the topic of resource efficiency had not featured prominently during the 2018 Argentinian Presidency[714] but was taken up again by the Japanese Presidency in 2019. Both the

[712] https://www.b20germany.org/the-b20/about-b20/.

[713] G20 (2017), p. 1.

[714] Neither the G20 Leaders Declaration nor G20 communiques from 2018 not mention RE/dialogue, cf. http://www.g20.utoronto.ca/2018/2018-leaders-declaration.html and https://g20.argentina.gob.ar/en/ministerial-declarations-and-communiques.

Leaders' Declaration and the Communiqué by the G20 Ministerial Meeting on Energy Transitions and Global Environment for Sustainable Growth 2019 address resource efficiency and announce the development of a roadmap of the G20 Resource Efficiency Dialogue under the Japanese Presidency.[715]

Political opportunities and good practice examples: Political opportunities to shape the G20 Resource Dialogue regularly occur in the run-up to the annual G20 meetings.

2.2.13 G8 Kobe 3R-Action Plan

Table 27: G8 Kobe 3R-Action Plan (adoption: 26/05/2008)

Key aspects	Summary
Form and legal status	legally non-binding G8 document
Objectives	reduce resource use, increase efficiency, reuse & recycle waste
Adressees	G8 countries
Territorial scope	G8
Resources covered	waste (abiotic and biotic)
Stage of the value chain	waste management
Steering mechanisms	high-level political statement with strategic priorities and guidance
Political weight	+ (G8 countries simply state their commitment to 3R, no specific targets)
Relevance for RE	++

Summary

Adopted by the environment ministers of the "Group of 8" (G8) countries in 2008 (US, Japan, Germany, France, Britain, Italy, Canada, Russia), the "Kobe 3R Plan" establishes a set of values recognised by the participating parties regarding resource use and the "harmonisation of the economy and the environment".[716] It recognised three aspects – to Reduce, Reuse and Recycle ("3R") – as key to sustainable consumption and production. Waste reduction and utilisation are highlighted, including the concept of waste as an alternative source of energy to fossil fuels. The OECD was asked to track the progress of the G8 countries in adopting 3R policies and produced an interim report in 2011.[717] The report found that, despite increased resource productivity, the material consumption of G8 and OECD economies continued to grow and recommended further decoupling.

Overview

Form and legal status: Legally non-binding.

Objectives: The Plan's objective is to promote implementation of Reduce, Reuse and Recycle ("3R") activities in G8 countries.

Territorial scope: Member states of the (then) G8.

Resources covered: Biotic and abiotic wastes.

Steps of the value chain covered: Waste management.

[715] https://www.g20.org/en/documents/.
[716] http://english.cri.cn/4426/2008/05/26/1781@362157.htm.
[717] OECD (2011a).

Type of steering mechanism: High-level political statement with strategic priorities and guidance.

Content

Relevant provisions/ guidelines for governments: G8 countries are to take concrete actions with regard to the three goals of the Kobe 3R Action Plan:

- Goal 1: Prioritize 3Rs Policies and Improve Resource Productivity: This includes the activities of prioritizing implementation of 3Rs policy, improving resource productivity and setting targets, pursuing co-benefits between the 3Rs and GHG reductions, as well as promoting science and technology and creating a market for 3Rs-related products;
- Goal 2: Establishment of an International Sound Material-Cycle Society: Under this goal, the G8 countries are to collaborate to promote sound international resource circulation and to promote international trade of 3Rs-related materials, goods and products;
- Goal 3: Collaborate for 3Rs Capacity Development in Developing Countries: Actions for the G8 member states include promoting collaboration with developing countries, to promote technology transfer, information sharing and environmental education, as well as to promote partnerships between stakeholders.

While the Kobe 3R Action Plan views the free movement of goods, materials and technologies an opportunity to increase the efficient use of resources, a more trade-restrictive approach is taken with regard to wastes: the Plan's primary objective is to reduce waste and to promote its sound management, while transboundary flows of wastes are primarily promoted where they are expected to efficient use of resources and reduce environmental pollution.[718]

Institutions, review and decision-making

Institutions: Adopted by the G8, the OECD functions as a review body to evaluate progress against the Plan's targets.

Evaluation and review: The OECD was mandated to track progress of the Action Plan's implementation in 2011 and 'at appropriate intervals thereafter'.

Reporting: So far, one report has been published by the OECD, reviewing the state of implementation after three years.[719]

Compliance procedures, remedies and dispute settlement procedures: No such procedures are in place.

Stakeholder and public involvement: The Action Plan explicitly aims at promoting partnership between stakeholders, including SMEs, NGOs and the scientific community on 3Rs activities (cf. Goal 3).

Assessment

Coherence with other international treaties and policies: The Action Plan seeks to work with other international comitments like SDG 12 or activities including by UNEP, UNCRD, the Basel Convention and the OECD (e.g., the OECD Council Decision on the transboundary movement of wastes[720]). Due to its general objectives, no target conflicts seem likely.

[718] Grosz (2011), at 293.

[719] OECD (2011a). A newer OECD report on resource efficiency is not specifically related to the implementation of the Kobe Action Plan, cf. OECD (2015a).

[720] OECD Council Decision C(2001)107/FINAL.

Political weight of the instrument: The Plan's political weight is considered to be relatively low. It simply states the G8 countries' commitment to 3Rs. There has been no further follow-up after the OECD's implementation report in 2011.

Effectiveness: The OECD's 2011 Progress Report finds that 'OECD countries will need to make significant additional efforts to further improve the resource productivity of their economies'. While resource productivity has increased in the OECD, overall material consumption continued to rise and was still largely coupled with economic growth (though within the G8, Canada, Germany, Italy and Japan have succeeded in decoupling material consumption from economic growth in absolute terms). These findings are confirmed in a more recent OECD report on material resources and resource productivity (published independent of the Kobe Action Plan implementation).[721] The fact that the Kobe 3R Action Plan requests that aid agencies reflect the concept of the 3Rs in development projects and aims to promote technology transfer indicate that the scope of its impact at least potentially can reach beyond the G8 and even OECD member states.

Political opportunities and good practice examples: Potentially, future G8 (respectively, G7) summits and meetings can serve as platform to review and update the Kobe Plan of Action. It can be assumed, however, that such follow-up activities would be incorporated in the newer G7 Alliance on Resource Efficiency (see below).

2.2.14 G7 Alliance for Resource Efficiency (2015)

Table 28: G7 Alliance for resource efficiency (adoption: 02/10/2015)

Key aspects	Summary
Form and legal status	alliance based on non-binding G7 document
Objectives	improve resource efficiency across the whole value chain.
Addressees	G7 countries
Territorial scope	G7 (indirectly, global)
Resources covered	all natural resources
Stage of the value chain	entire value chain
Steering mechanisms	high-level political statement with strategic priorities and guidance; learning/ exchange of best practice
Political weight	+/++
Relevance for RE	+++

Summary

The G7 Alliance for Resource Efficiency is a forum established by the "Group of 7" (G7) states (launched under German G7 presidency) in 2015 to enhance and align the cooperation between the G7 states regarding resource efficiency.

In 2016, the "Toyama Framework on Material Cycles" was adopted by the Alliance. It defines concrete actions for the following years to help making consumption more resource-efficient, contributing to a resource-efficient circular economy and improving international information resources (see below). In

[721] OECD (2015a).

2017, the "Bologna Roadmap" was adopted which prioritizes actions that advance life cycle based materials management, resource efficiency, and the 3Rs, including in the supply chain (see below).

The UNEP's International Resource Panel and the OECD were requested by the G7 at its Elmau Summit in 2015 to identify the most promising solutions and approaches for increasing resource efficiency.[722] The OECD analyzed existing policy instruments and found that current measures primarily targeted the downstream stages of products' lifecycles.[723] They therefore asked governments to concentrate their focus on the upstream stages as well – for example, on the phases of product design, production and consumption. The OECD has also stressed the value of international cooperation in this area.

Overview

Form and legal status: Legally non-binding forum of G7 states to share knowledge and create information networks.

Objectives: The Alliance' objective is to promote an exchange of concepts on how to address the challenges of resource efficiency, to share best practices and experience, and to create information networks.

Territorial scope: The G7 member countries directly participate in the forum and developing and emerging countries are intended to benefit from the research.

Resources covered: Not specified; all natural resources.

Steps of the value chain covered: All steps of the value chain.

Type of steering mechanism: High-level political statement with strategic priorities and guidance; forum for exchange of best practice and learning.

Content

Relevant provisions/ guidelines for governments: The Toyama Framework on Material Cycles (2016) specified that G7 member countries should increasingly integrate resource efficiency in their national policies and strategies, targeting the whole value chain. The countries also envisioned an expansion of the G7 Alliance on Resource Efficiency, transfer of technology and knowledge to developing and emerging countries and voluntary activities and initiatives within the economic sector and society.

The Bologna Roadmap (2017) determines that the G7 Alliance takes actions to, among others: continue to develop resource efficiency indicators; assess the potential GHG reductions of resource efficiency policies; share information on best practices as well as on barriers to repair, refurbishment, remanufacturing, reuse and recycling from a business perspective, regarding international material management; develop macroeconomic analysis of resource efficiency impacts; strengthen citizen involvement and public awareness regarding resource efficiency goals; develop case studies on industry best practice on resource efficiency; address barriers to recycling and reuse of plastic; build capacity on Green Public Procurement; and explore lifetime extension product policies, explore resource efficiency and the Next Production Revolution.

Institutions, review and decision-making

Institutions: The Alliance is tied to the organisational structures of the G7.

Evaluation and review: No specific mechanisms for evaluation and review are provided for.

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[722] IRP (2017b).
[723] OECD (2016b).

Reporting: There is no reporting mechanism included in the Alliance. However, the G7 asked UNEP's International Resource Panel to prepare a synthesis report highlighting the most promising potentials and solutions for resource efficiency and OECD to develop policy guidance supplementing the synthesis report.[724]

Compliance procedures, remedies and dispute settlement procedures: No such procedures exist.

Stakeholder and public involvement: The Alliance aims to collaborate with businesses, SMEs, and other relevant stakeholders to advance opportunities offered by resource efficiency, promote best practices, and foster innovation.

Assessment

Coherence with other international treaties and policies: The Alliance is in line with other international instruments, including SDG 8.4, SDG 12, the Kobe 3R Action Plan, the OECD Recommendation on Resource Productivity etc.

Political weight of the instrument: The political weight seems low to medium. While focusing on resource efficiency at the 2015 G7 summit attracted significant attention, the Alliance as such is not very visible. Also, it is limited to the G7 and not supported by a specific institutional structure or funding.

Effectiveness: So far, a number of events and workshops have been carried out under the banner of the Alliance, among others in Germany (inaugural event, 2015), the UK (on industrial symbiosis, 2015), the US (on life cycle concepts in supply chain management), Japan (on resource efficiency and low carbon society, 2016), Italy (follow up of Bologna Roadmap; 2017), Canada (on value retention policies) and France (on tools making value chains more circular and resource-efficient, 2019). It is difficult to trace whether these events have inspired the transfer of best practice. In 2018, the G7's environmental ministers expressed support for the Alliance to establish an e-repository for the work and best practices.

Political opportunities and good practice examples: The G7 Alliance on Resource Efficiency regularly meets in the context of G7 meetings.

2.2.15 Assessment

Our analysis shows that a number of international political processes and legally non-binding mechanisms (in the following: "instruments") promoting resource efficiency have emerged in the past years – the process of agenda-setting can be said to have come some way.

In terms of their steering mechanisms, the instruments are most often what we term "high-level political statements with strategic priorities and guidance" – i.e., non-binding recommendations and joint frameworks of action. In some cases, these are combined with a small capacity building component or "means of implementation" for developing countries (e.g., UNEP GEI and GI REC, the New Urban Agenda). Also, various instruments are tied to knowledge dissemination through the exchange of best practice between countries, learning forums, or pilot projects. The International Resource Panel provides the basis for creating new scientific knowledge (such as assessments of policy options with regard to their effects on resource efficiency)[725] and feeding it into the policy debate. It is a valuable mechanism for fostering a common understanding of the problem, its drivers and potential solutions. A relatively new governance mechanism is "governing through goals"[726], as it

[724] The respective report is IRP (2017a).

[725] See, for instance, IRP (2017b).

[726] Kanie et al. (2017).

is embodied by the SDGs. It leaves leeway to countries to operationalise the attainment of (quantified) goals and monitors goal attainment, though it is typically not tied to any sanctions if goals are missed. An interesting governance mechanism is the World Bank's and IFC's sustainability standards for country borrowers and private sector clients, which are binding to the extent that they become part of contracts, though capacity building (of all parties), monitoring and enforcement still provide challenges.

In most cases, the analysed instruments address all UN member states, with an implicit focus on developing countries and emerging economies, as OECD countries have progressed somewhat further in the direction of resource efficiency policies. An exception are the SDG, which explicitly also request industrialised countries to speed up their efforts. Also, the OECD, G7/8 and G20 have committed to further promoting resource efficiency.

Most of the instruments address the complete value chain, i.e. do not specify any particular segments of the value chain (or any particular sectors) in which resource efficiency should be enhanced, though a few are focused on extraction, others on waste and the 3Rs. The intermediate segments of the value chain are rarely addressed explicitly.

We can distinguish at least three different pathways of effects: some instruments directly fund resource efficiency projects (e.g., UNEP GEI); others fund resource-consuming projects but require some attention to resource efficiency (World Bank/ IFC safeguards); most instruments affect resource efficiency more indirectly by defining resource efficiency goals (SDGs, 10YFP, UNEP GEI, OECD Green Growth Strategy etc.) or by stimulating (and partly funding the development of) specific resource efficiency policies (Kobe 3R Action Plan).

Assessing the instruments' effectiveness is difficult. Did they really make governments re-direct, adapt or change their policies? There are only few in-depth evaluations and reviews on the (partly still new) instruments, with the exception of, inter alia, the UNEP Green Economy Initiative and the G8 Kobe 3R Action Plan. However, for obvious methodological difficulties none of the existing evaluations traces causalities from international initiatives to country-level changes in resource consumption. This type of analysis was also beyond the scope of this study. On a more generic level, it seems that while there are plenty policies, forums and platforms, some of these have a short life span and little follow-up. The World Bank Groups' lending conditionalities are relatively strong instruments because they are binding on borrowers and clients. However, they affect only developing countries and actors, which also raises the issue of double standards. Also, it is unclear to what extent specifically those conditionalities relevant for resource efficiency actually have an impact on project design and implementation. Using proxies for effectiveness such as the instruments' specificity in terms of commitment, their political weight and institutional design and substructures, most instruments are relatively unspecific, have only moderate political clout, often feature insignificant international budgets and no systematic review mechanisms. This holds for those instruments that are part of UN Programmes (UNEP GEI & GI REC) and for strategy documents of multilateral groupings (OECD, G20, G8/7). UN initiatives adopted or endorsed by the General Assembly (SDGs, the New Urban Agenda, 10YFP) tend to have a broader basis of legitimacy, but have review mechanisms with varying degrees of stringency. The SDGs presently seem to be the instrument with the best prerequisites to induce change in political practices.

However, the available analyses are sobering: despite past political efforts (as well as economic innovations) promoting resource efficiency, rebound effects and generic economic growth overall outweigh the efficiency gains. This indicates that a new chapter should be opened: that of the absolute reductions in resource consumption (resource sufficiency). Here, the agenda setting process has not even started at the international level.

2.3 Non-state and other governance approaches

2.3.1 Reporting

2.3.1.1 Global Reporting Initiative (GRI)

Table 29: Global Reporting Initiative (GRI)

Key aspects	Summary
Form and legal status	voluntary standard
Objectives	standardised (and therefore comparable) sustainability reporting by companies
Institution/ Addressees	Global Reporting Initiative (multi- stakeholder network)/companies
Territorial scope	global
Resources covered	all
Stage of the value chain	production, use of recycled materials, end of life
Steering mechanisms	information, consultation, capacity building
Political weight	medium: important in the context of non-financial reporting (++)
Relevance for RE	medium/low: transparency about a company's resource consumption (GRI 301: Materials) (+/++)

Summary

Reporting publicly on resource consumption at company level is not in itself an instrument to improve resource efficiency. Nevertheless, transparency can be the basis for further developments, mainly because it requires companies to gather respective data which are necessary if resource efficiency measures are to be adopted. A secondary effect might be that such data influence capital markets by making money cheaper and more easily available for resource efficient companies.[727]

Overview

Form and legal status: The GRI Standard is a voluntary reporting standard for companies and other organisations covering all aspects of non-financial reporting. The standard itself is developed by a private entity, the Global Reporting Initiative.

Objectives: Non-financial reporting provides transparency about the sustainability performance and impact of the respective company to its stakeholders. The objective of GRI is to provide a reporting standard which can be applied universally and therefore serves to make data comparable.

The objective of "GRI 301: Materials" is to indicate an organisation's dependency from and impact on resources and its approach to recycling, reusing and reclaiming.[728]

Territorial scope: Global

Resources covered: GRI 301 refers to "materials" which include abiotic resources like metals, oil or gas. The standard also asks for data on the use of primary and secondary material and for information

[727] https://www.globalreporting.org/Information/about-gri/Pages/default.aspx.
[728] GRI (2016).

about the reuse and reclaiming of products and packaging.[729] Other resources like water or energy, which are not within the scope of this study, are covered in separate chapters of the reporting framework.

Steps of the value chain covered: The GRI itself covers all steps of the value chain. Information on supply chains, waste management etc. is also required. However, a specific reference to (abiotic) resource use is only required within GRI 301.

Type of steering mechanism: The GRI uses information tools like the standard itself or the GRI reporters' summit but also does capacity building in the form of webinars or conferences.[730] Furthermore, there is a peer-to-peer learning platform for companies called the GRI Gold Community.[731]

Content

Relevant provisions/ guidelines: As the GRI Standard is voluntary and does not address governments, no respective provisions or guidelines exist for states. Organisations publishing their sustainability reports referring to the GRI Standard have several options which include different obligations. If the Standard is only taken as a point of reference for sustainability reporting, they may use the statement 'GRI-referenced' on their publications. For reporting in accordance with the GRI Standard the options "core" or "comprehensive" may be chosen:

- Core option: For each identified material aspect, the organisation has to disclose the Generic DMA (Disclosure on Management Approach) and at least one indicator.
- Comprehensive option: For each identified material aspect, the organization should disclose the Generic DMA and all indicators related to the material aspects.[732]

In the latter cases GRI has to be notified of the statement of compatibility so it can be used in the report that the organisation publishes.[733]

Institutions, review and decision-making

Institutions: The GRI (Global Reporting Initiative) is a multi-stakeholder initiative which comprises the following governing bodies: board of directors, stakeholder council, GRI nominating committee, GRI Gold Community and the secretariat.[734]

Evaluation and review: Evaluation and review of the standard is undertaken by the Global Sustainability Standards Board (GSSB) under specific terms of reference[735] following a formally defined due process[736]. The recent revision process has resulted in the development of the so called "GRI Standard" (in contrast the former guidelines where named GRI 1 to GRI 4). In the future there will be no revision of the entire standard but updates of the different modules.[737]

[729] GRI (2016).

[730] https://www.globalreporting.org/information/events/Pages/default.aspx.

[731] https://www.globalreporting.org/information/about-gri/governance-bodies/Pages/default.aspx.

[732] GRI (2015).

[733] https://www.globalreporting.org/standards/questions-and-feedback/writing-a-report-in-accordance-with-the-standards/.

[734] https://www.globalreporting.org/information/about-gri/governance-bodies/Pages/default.aspx.

[735] GSSB (2015b).

[736] GSSB (2015a).

[737] http://info.greenstoneplus.com/blog/everything-you-need-to-know-about-the-new-gri-standards.

Reporting: The GRI Standard consists of modules divided into following chapters: foundation, general disclosure, management approach, economic, environmental, and social.[738] In addition, there are supplementing sector guidelines e.g. oil and gas, media or NGO.[739]

Compliance procedures, remedies and dispute settlement procedures: None

Stakeholder and public involvement: One of the GRI governing bodies is the stakeholder council consisting of members from industry, civil society, labour organisations and mediating institutions. Its task is to advise the board on strategic issues. Additionally, there is the GRI Gold Community for reporting organisations and the Governmental Advisory Group which is comprised of members from governmental and administrative entities from different countries.

Assessment

Coherence with other international treaties and policies: The importance of sustainability reporting has been highlighted in para. 47 of the resolution adopted at the Rio +20 conference in 2012.[740] The closest legal link is to the EU directive on non-financial reporting.[741] National implementation may require companies to include information about resource use/resource efficiency. The directive explicitly states that resource efficiency is one of its aims: "Investors' access to non-financial information is a step towards reaching the milestone of having in place by 2020 market and policy incentives rewarding business investments in efficiency under the roadmap to a resource-efficient Europe"[742]. Such provisions however, are currently not in place in any of the EU member states. Nevertheless, due to the current political importance of climate change (Paris Agreement), mandatory reporting of specific ESG issues has been limited to resource use but on CO_2 emissions.[743]

Diffusion: 75% of all sustainability reports published today are following the GRI Standard.[744] Some institutions like the Japanese stock exchange consider making sustainability reporting in accordance with the GRI Standard mandatory for listed companies.[745] Being the most widely used reporting framework globally, the GRI Standard sometimes serves as a reference point for the development of national policies on non-financial reporting.[746]

Effectiveness: It can be said that the gathering and publication of data relevant to resource use is a precondition for the improvement of resource efficiency. In particular, publication of such data can be an incentive for companies to increase resource efficiency when performance is benchmarked with other companies of the same sector and if it influences access to funding. The general importance of sustainability reporting is increasingly acknowledged by governments (see above), not least due to the demand for transparent and reliable Environmental, Social and Governance (ESG) data, from financial market actors[747].

738 https://www.globalreporting.org/standards/gri-standards-download-center/.

739 https://www.globalreporting.org/information/g4/sector-guidance/sectorguidanceG4/Pages/default.aspx.

740 United Nations (2012).

741 Directive 2014/95/EU (2014).

742 Directive 2014/95/EU (2014), p. 3.

743 See Art. 174 VI of the loi n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte and the amendments in art. L.533-22-1 of the Code monétaire et financier.

744 http://www.umweltdialog.de/de/csr-management/csr-nachrichten/2016/Nachhaltigkeitsberichte-boomen-aber-Format-und-Verbreitung-in-der-Kritik.php.

745 http://www.umweltdialog.de/de/csr-management/csr-nachrichten/2016/Nachhaltigkeitsberichte-boomen-aber-Format-und-Verbreitung-in-der-Kritik.php.

746 https://www.globalreporting.org/standards/getting-started-with-the-gri-standards/.

747 Business & Sustainable Development Commission (2017).

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency:

- The GRI Standard has been revised recently and is being launched in a number of events around the globe (North America, Africa, Australia, Asia).[748] In the future there will not be a revision of the entire standard but of the modules. There is, however, no schedule for future revisions identifiable at the moment.
- Additionally to the revision process for the standard itself GRI is hosting a continuous discussion process involving business and thought leaders called "Reporting 2025". The aim is to examine how the reporting practice is evolving in the future.[749]

Good practice examples:

- The GRI reporting standard includes a continuous and formally institutionalized revision process.
- Due to its focus on stakeholder involvement GRI has managed to become the international benchmark regarding sustainability reporting even though it is a voluntary instrument.

2.3.1.2 KPIs for ESG (by the Commission on ESG Environmental, Social & Governance Issues (CESG) of EFFAS (European Federation of Financial Analysts Societies))

Table 30: KPIs for ESG (EFFAS)

Key aspects	Summary
Form and legal status	voluntary standard
Objectives	standardised ESG reporting by companies for investors
Institution/ Addressees	EFFAS, DVFA/companies, investors
Territorial scope	global
Resources covered	critical production materials, packaging
Stage of the value chain	purchasing/supply chain, design, end of life
Steering mechanisms	information
Political weight	medium: ESG reporting and sustainable financial markets are gaining importance on the political agenda (++)
Relevance for RE	medium/low: some indicators address material consumption and recycling, but other issues are more prominent, nevertheless, investors have potentially high leverage (+/++)

Summary

Reporting publicly on resource consumption at company level is not in itself an instrument to improve resource efficiency. Nevertheless, transparency can be the basis for further developments, mainly because it requires companies to gather respective data which are necessary if resource efficiency measures are to be adopted. Additionally, this set of indicators (KPI Key Performance Indicators) is especially designed to address the capital markets and may therefore make money more cheaply and

[748] https://www.globalreporting.org/information/events/Pages/GRI-Standards-Launch-Events.aspx.

[749] https://www.globalreporting.org/information/Pages/Reporting-2025.aspx.

easily available for resource efficient companies. However, unlike the GRI reporting standard, no set of KPIs exists to date which is recognised as a global standard.

Overview

Form and legal status: The KPIs developed by EFFAS are a voluntary ESG reporting standard.

Objectives: The KPIs for ESG are supposed to meet the requirements of investment professionals who wish to include sustainability criteria into their investment decisions.[750]

Territorial scope: Global

Resources covered: The scope of addressed resources depends on the sector. For most sectors data on packaging materials and recycability of products is required which can include abiotic resources. For some sectors additional information on certain critical raw materials like cobalt or titanium have to be reported. Another KPI refers to production shortfalls due to material supply problems which also may include abiotic resources.[751]

Steps of the value chain covered: By reporting on critical raw materials the supply chain is addressed, while the issues of packaging and recyclability refer to design, production and end of life.

Type of steering mechanism: The KPI system is an information tool. Additionally, EFFAS offers training programs regarding the integration of ESG criteria.[752]

Content

Relevant provisions/ guidelines: As the EFFAS set of KPIs is a voluntary reporting standard and does not address governments, no respective provisions or guidelines exist. For companies reporting ESG KPIs according to the standard certain criteria, e. g. concerning data validity, are recommended but not mandatory.[753]

Institutions, review and decision-making

Institutions: The Standard is developed and published by private institutions: the EFFAS Commission on ESG Environmental, Social & Governance Issues (CESG) and DVFA (Deutsche Vereinigung für Finanzanalyse und Asset Management GmbH).[754]

Evaluation and review: The standard is the result of a three-year process which included collaboration with a network of investment professionals and experts around the globe. DVFA and EFFAs will review the framework and make modifications if necessary.[755]

Reporting: The framework itself is a reporting standard for companies with different criteria according to sectors.[756]

Compliance procedures, remedies and dispute settlement procedures: No such procedures could be identified.

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[750] EFFAS and DVFA (2010).
[751] EFFAS and DVFA (2010).
[752] EFFAS and DVFA (2010), p. 8; EFFAS (n.d.).
[753] EFFAS and DVFA (2010).
[754] EFFAS and DVFA (2010).
[755] http://www.effas-esg.com/?page_id=206.
[756] EFFAS and DVFA (2010).

Assessment

Coherence with other international treaties and policies: The ESG reporting is linked to the discussions and policies addressing non-financial reporting, resulting e.g. in para. 47 of the resolution adopted at the Rio +20 conference[757] or in the EU directive reagarding financial reporting[758]. Otherwise compliance with international GAAP (Generally Accepted Accounting Principles) is recommended.[759]

Diffusion: Unlike the GRI reporting standard, there does not yet exist a set of KPIs which is recognised as a sort of global standard and there are no data on the number of companies applying the EFFAS KPIs for ESG globally. However, there are indicators which point at a certain impact. According to a survey among German DAX30 companies some of them already use the set of indicators and the Swiss index provider Stoxx aligns their index family Stoxx ESG Leaders Index with the EFFAS ESG KPis. Internationally the International Corporate Governance Network (ISCGN) refers to the KPIs and refrains from developing their own set of indicators. EFFAS KPIs for ESG are also an integral part of the Global Business Reporting Framework issued by the World Business Reporting Network. [760]

Effectiveness: It can be said that the gathering and publication of data relevant to resource use is a precondition for the improvement of resource efficiency. In particular, publication of such data can be an incentive for companies to increase resource efficiency when performance is benchmarked with other companies of the same sector and if it influences access to funding.

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency:

- No revision of the KPIs is currently scheduled.

Good practice examples:

- The KPIs for ESG offer different indicators regarding the use of resources adjusted to specific sector characteristics.
- Addressing financial market actors might result in high leverage for resource efficiency.

[757] UN, A/RES/66/288, The future we want: Resolution adopted by the General Assembly on 27 July 2012, para. 47.
[758] Directive 2014/95/EU (2014).
[759] EFFAS and DVFA (2010), p. 9.
[760] https://www.nachhaltigkeit.info/artikel/dvfa_schluesselkriterien_zur_nachhaltigkeit_esg_k_1630.htm.

2.3.2 Environmental Management Systems

2.3.2.1 EMAS

Table 31: EMAS (Environmental Management Systems)

Key aspects	Summary
Form and legal status	management system, non-binding
Objectives	evaluate, report, and improve the environmental performance of companies and other organisations
Institution/ Addressees	European Union (national implementing bodies)/companies, other organisations
Territorial scope	global, de facto mainly within the EU with highest number of users in Germany
Resources covered	all
Stage of the value chain	production
Steering mechanisms	information, reporting, audits/assessment, management system
Political weight	medium: depending on specific country (++)
Relevance for RE	medium/high: Resource efficiency is one of the key performance indicators (+++)

Summary

The EU Eco-Management and Audit Scheme (EMAS) is a management instrument developed by the European Commission for companies and other organisations to evaluate, report, and improve their environmental performance including the use of resources.[761] In order to register with EMAS, organisations must meet the requirements of the EU EMAS-Regulation. Because EMAS goes beyond the requirements of ISO 14001, companies that comply with EMAS automatically comply with the ISO standard.[762] The fact that EMAS is the more demanding management system, however, might be the reason that internationally ISO 14001 is far more widely adopted.

Overview

Form and legal status: EMAS is a voluntary environmental management system based on the EMAS-Regulation (EG).[763] In addition, Germany has a number of provisions regarding the implementation and promotion of EMAS.[764]

Objectives: The aim of EMAS is to evaluate, report, and improve the environmental performance of companies and other organisations.[765]

Territorial scope: EMAS is applicable worldwide but has been developed by the European Union and is mostly implemented there

Resources covered: The indicator set of EMAS covers a wide range of different aspects, among them "material efficiency" and "waste". The EMAS environmental core indicator of material efficiency is the

[761] http://ec.europa.eu/environment/emas/index_en.htm.
[762] For details on the differences between EMAS and ISO 14001, see: UGA (2015).
[763] EMAS-Regulation (EG) Nr. 1221/2009 (OJ L 342/1, 22. December 2009).
[764] UGA (2016).
[765] http://ec.europa.eu/environment/emas/emas_for_you/premium_benefits_through_emas/key_benefits_en.htm.

annual mass flow of different materials used, expressed in tonnes. Whether abiotic resources are included depends on the resources used by the specific company. The EMAS environmental core indicators on waste are: Wa1: total annual generation of waste, broken down by type, expressed in tonne Wa2: total annual generation of hazardous waste, expressed in kilograms or tonnes.

Steps of the value chain covered: EMAS does not apply to products but to organisations/sites and their environmental performance. Hence, only processes taking place within the respective company are reviewed.

Type of steering mechanism: EMAS is a management system that uses different information tools and reporting/audit mechanisms.

Content

Relevant provisions/ guidelines: Countries in the EU have to install/assign: competent bodies, accreditation and licensing bodies and environmental verifiers. Organisations have to register their participation with EMAS and publicise an annual externally reviewed report. The process of implementing EMAS follows the logic of: plan/do/check/act: After an initial environmental review an environmental policy and a programme have to be developed (plan). This is followed by the implementation of the environmental management system (do) and the internal environmental audit (check). Based on this audit, continuous environmental performance improvements are to be attained (act). [766]

Institutions, review and decision-making

Institutions: There are five stakeholders/institutions responsible for implementing EMAS: EU Commission (with the EU-EMAS Helpdesk), the competent bodies assigned by the national environmental authorities, accreditation and licensing bodies also assigned by the national environmental authorities, environmental verifiers, as well as organisations implementing EMAS.[767]

Evaluation and review: The following institutions are responsible for the development of EMAS: European Commission, the EMAS Committee in which member states are represented.[768]

Reporting: EMAS demands the publication of an annual, independently validated environmental report with detailed information on the core indicators.

Compliance procedures, remedies and dispute settlement procedures: Apart from the publication of an annual, independently validated environmental report and the implementation process (see 2.1.3), no other procedures are in place.

Stakeholder and public involvement: See “Institutions”

Assessment

Coherence with other international treaties and policies: EMAS is linked to different international norms and standards: ISO 50001 (energy management system), ISO 26000 (Social Responsibility), ISO 9001 (quality management) and OHSAS 18001 (occupational health and safety).[769]

[766] http://ec.europa.eu/environment/emas/join_emas/how_does_it_work_step0_en.htm.
[767] http://www.emas.de/meta/english-summary/.
[768] http://ec.europa.eu/environment/emas/join_emas/emas_governance_en.htm.
[769] http://www.emas.de/rechtliche-grundlagen/internationale-normen/.

Diffusion: The promotion of EMAS in the different member states differs and new registrations have only been increasing moderately or not at all within the last years.[770] Internationally ISO 14001 is the more widely used environmental management standard. Currently there are 320.000 organisations applying the ISO standard[771] compared to 9200 using EMAS[772]

Effectiveness: Even though organisations can define their own aims, the management system is suitable for attaining relevant gains in resource efficiency on an individual organisational level.

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency:

- For EMAS there is currently no revision scheduled.

Good practice examples:

- Companies have to define concrete targets for resource efficiency and measure their attainment.
- The instrument is based on clearly defined management processes.
- In the case of Germany EMAS, even though still being a voluntary instrument, is embedded in legislation.

2.3.3 Products Environmental Impact Assessment

2.3.3.1 ISO 14040, 14044 (Life Cycle Assessment, LCA)

Table 32: ISO 14040, 14044 (Life Cycle Assessment)

Key aspects	Summary
Form and legal status	voluntary standard
Objectives	standard for LCAs which makes products within the same category comparable
Institution/ Addressees	ISO/companies
Territorial scope	global
Resources covered	all (focus on environmental impact)
Stage of the value chain	all (Life Cycle Assessment)
Steering mechanisms	information
Political weight	medium: basis for European PEF process (++)
Relevance for RE	medium/low: focus on environmental impacts not on resource efficiency itself (+/++)

[770] http://ec.europa.eu/environment/emas/emas_registrations/statistics_graphs_en.htm.

[771] https://www.umweltbundesamt.de/themen/wirtschaft-konsum/wirtschaft-umwelt/umwelt-energiemanagement/iso-14001-umweltmanagementsystemnorm#textpart-1.

[772] http://ec.europa.eu/environment/emas/emas_registrations/statistics_graphs_en.htm,

Summary

The ISO 14040 and 14044 standards are designed to assess a product's environmental impact along its life cycle. Resource efficiency plays a role insofar as it is linked to environmental impacts. The importance of the ISO standard is based on its global recognition. Thanks to its international recognition ISO is an effective regime, but there are still missing links like the possibility to make claims (labelling) or governmental regulation making the application mandatory.

Overview

Form and legal status: ISO 14040 and 14044 are voluntary standards for life cycle assessments (LCA) issued by the International Organization for Standardization (ISO).

Objectives: LCAs allows for direct comparison of products. This comparison is based on the environmental impact a product causes during its entire lifecycle.

Territorial scope: Global

Resources covered: All, because life cycle assessments address the environmental aspects and potential environmental impacts of products, services and processes e.g. use of resources and environmental consequences of releases, throughout a product's life cycle from raw material acquisition through production, use, end of-life treatment, recycling and final disposal (i.e. cradle-to-grave). However, due to the impacts focus the use of resources is not in itself a key indicator but its impacts on global warming, water or soil are assessed.

Steps of the value chain covered: All, because LCAs address the environmental aspects and potential environmental impacts, e.g. use of resources and environmental consequences of releases, throughout a product's life cycle from raw material acquisition through production, use, end of-life treatment, recycling and final disposal (i.e. cradle-to-grave).

Type of steering mechanism: The ISO Standards are an information tool.

Content

Relevant provisions/ guidelines: As the ISO standards are voluntary they do not include provisions or guidelines for governments. Companies using the ISO standards should follow the recommended steps (e.g. validation by a third party), but are not obliged to do so, since it is a voluntary standard that cannot be certified.[773] If however, companies wish to publicise LCA data and refer to having used the ISO standard a critical (external) review is mandatory.[774]

Institutions, review and decision-making

Institutions: International Organization for Standardization (ISO).

Evaluation and review: ISO Standards are revised every five years by technical committees and working groups which are formed by experts nominated by the national standard bodies. Additionally, ISO liaison members exist which typically come from the industry.[775]

Reporting: No formal reporting requirements exist.

Compliance procedures, remedies and dispute settlement procedures: No formal sanction mechanisms or compliance procedures exist.

[773] DIN (2006).
[774] Klöpffer (2013).
[775] http://www.british-assessment.co.uk/guides/iso-90012015-why-and-how-are-standards-revised/.

Stakeholder and public involvement: Stakeholders take part in the technical committees and the working groups. The general public is not involved.

Assessment

Coherence with other international treaties and policies: The development of the PEF (Product Environmental Footprint) standard of the European Commission is based on the ISO Standards.

Diffusion: There are no data available regarding the overall use of ISO 14040 and 14044 not least because in many cases LCAs are only applied for internal use. However, an international survey among 274 companies has shown that more than half of the top managers are at least aware of LCAs.[776]

Effectiveness: The effect of LCAs on resource efficiency depends on the focus of the respective life cycle assessment. If for example only CO_2 emissions are considered the effect will be different from an assessment where all environmental impacts are measured. The general effect is also difficult to assess because resource efficiency is no direct target of LCAs but rather an indirect effect which may occur due to measures which are aimed at reducing specific environmental impacts.

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency:

- ISO Standards are revised every five years by technical committees and working groups which are formed by experts nominated by the national standard bodies.[777] No data on the schedule for the next revision of ISO 14040 and ISO 14044 are available.

Good practice examples:

- LCAs have the potential to make resource consumption/efficiency (indirectly) comparable.
- ISO norms are voluntary but represent globally agreed upon standards.

[776] https://www.pre-sustainability.com/lca-has-a-story-to-tell.

[777] http://www.british-assessment.co.uk/guides/iso-90012015-why-and-how-are-standards-revised/.

2.3.3.2 PEF Product Environmental Footprint (European Commission)

Table 33: PEF (Product Environmental Footprint - European Commission)

Key aspects	Summary
Form and legal status	unclear yet (pilot phase)
Objectives	development of single market for green products, setting (international) standards
Institution/ Addressees	European Commission/ companies
Territorial scope	EU
Resources covered	all
Stage of the value chain	all
Steering mechanisms	Unclear yet (pilot phase) likely: information, consultation
Political weight	medium/high: importance will depend on legal status (++/+++)
Relevance for RE	medium: depending on the standards developed in the pilot phase (++)

Summary

The PEF standard (Product Environmental Footprint) developed under the auspice of the European Commission is based on the ISO standards for life cycle assessments (LCAs). Currently PEF is in its pilot phase. The political weight and impact on resource efficiency in the future will depend highly on the specific design of the standard as well as on the legal framework.

Overview

Form and legal status: Currently the development of PEF is in its pilot phase. Therefore the future legal status is unclear. Different scenarios from keeping it entirely voluntary to making it mandatory for companies and products or for public procurement are discussed. Politically the development of PEF is anchored in the European Resource Efficiency Roadmap.

Objectives:

The general objective is to make products comparable regarding their environmental impacts (see ISO above in Section 2.3.3.1).

Politically the PEF is following several objectives:

- Support the development of a "Single Market for Green Products" by limiting the number of "green claims"
- Support international efforts towards the coordination of methodological developments and data availability
- The provision of principles for communicating environmental performance, such as transparency, reliability, completeness, comparability and clarity[778]

Territorial scope: Currently the PEF is developed for members of the European single market. A future global uptake might be envisaged.

[778] http://ec.europa.eu/environment/eussd/smgp/policy_footprint.htm.

Resources covered: All, insofar as their environmental impacts are of relevance.

Steps of the value chain covered: All (Life Cycle Assessment).

Type of steering mechanism: Unclear, since the development of PEF is still in its pilot phase. Nonetheless, in its pilot phase stakeholders have been invited to express their interests via the EU COM Wiki web platform. The Wiki web platform will be progressively completed with content and developed further as the PEFCR (product category rules) work progresses, e.g. containing drafts to which comments will be collected via the Wiki webpage, information about meetings and a discussion platform. Moreover, in February 2016 a Guidance of the PEF in its pilot phase has been published.[779]

Content

Relevant provisions/ guidelines: As described above the future legal status including provisions and guidelines for governments and companies are still under discussion.

Institutions, review and decision-making

Institutions: The PEF Process is initiated and organised be the European Commission.

Evaluation and review: The process of PEF development is currently in its pilot phase. At this point "Technical Secretariats" (composed mainly by manufacturers from the respective sector) are developing rules for their respective products. The drafts composed for each sector are then made available for public consultation consultation. On the basis of the consultation a second draft is produced.[780]

Reporting: Currently there are no general reporting procedures in place. Nevertheless, the different results of the pilot phase are available.

Compliance procedures, remedies and dispute settlement procedures: Apart from the above mentioned stakeholder processes no formalised procedures are currently in place.

Stakeholder and public involvement: The European Commission gathers views and additional information on potential measures related to Sustainable Consumption and Production through a public consultation. As part of this, the Commission is consulting on options for policies implementing the Product Environmental Footprint.[781]

Assessment

Coherence with other international treaties and policies: The development of PEF (Product Environmental Footprint) standard of the European Commission is based on the ISO Standards for LCAs. PEF is linked to the EU Resource Efficiency Roadmap that has been launched by the European Commission on 9 April 2013.[782]

Diffusion: The uptake of PEF will depend on its de facto implementation. In the current pilot phase two projects are being conducted.[783]

Effectiveness: The effect on resource efficiency will depend on how the PEF standards are used meaning the focus of the respective life cycle assessment.

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[779] https://www.aise.eu/our-activities/sustainable-cleaning-78/contributing-to-the-eu-agenda/product-environmental-footprint-pef.aspx and http://ec.europa.eu/environment/eussd/smgp/pdf/Guidance_products.pdf.

[780] http://ec.europa.eu/environment/eussd/smgp/ef_pilots.htm.

[781] http://ec.europa.eu/environment/eussd/smgp/policy_footprint.htm.

[782] http://ec.europa.eu/environment/eussd/smgp/policy_footprint.htm.

[783] http://ec.europa.eu/environment/eussd/smgp/policy_footprint.htm.

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency

- Until the end of 2017 he instrument is still in its pilot phase, which provides a number of opportunities to integrate resource efficiency into the standards.

Good practice examples:

- The PEF process provides the chance to realize the chances LCAs offer regarding resource efficiency e.g. including appropriate indicators for resource use, making LCAs mandatory or offering the chance to use LCA results for marketing products.

2.3.4 Type I Eco-labels (Der Blaue Engel, Nordic Swan), GEN (Global Eco-Labelling Network)

Table 34: Type I Eco-Labels

Key aspects	Summary
Form and legal status	voluntary label
Objectives	to label environmentally preferable choices within a product or service category enabling consumers to make environmentally friendly choices
Institution/ Addressees	national or regional certification bodies, depending on the country, often linked to governmental agencies or ministries/companies, consumers
Territorial scope	different national labels, GEN as global network
Resources covered	biotic resources, abiotic resources, energy, water etc., depending on specific product
Stage of the value chain	product life cycle
Steering mechanisms	specific criteria sets for products and services (information), audits/certification
Political weight	medium: usually supported by governments, but potential (e.g. public procurement) not fully utilized (++)
Relevance for RE	medium/ high: resource efficiency targets are defined specifically for each product category (++/+++)

Summary

Type 1 eco-labels are externally certified and allow comparison regarding ecological preferability within a certain product category including resource efficiency. Even though they are awarded by national or regional bodies they can be used internationally. Additionally, GEN (Global Eco-Labelling Network) facilitates international knowledge exchange and the harmonisation of standards. While these eco-labels are usually supported by governmental agencies their full potential, e.g. in public procurement, is not utilised.

Overview

Form and legal status: Type I eco-labels have to adhere to the ISO 14024 standard. This means that they are voluntary, multiple-criteria based, third party programs that award licenses which authorise

the use of environmental labels on products indicating overall environmental preferability of a product within a particular product category based on life cycle considerations.[784] GEN (Global Eco-Labelling Network) is a non-profit organisation.[785] Whether the labels have a specific legal status depends on national legislation.

Objectives: Type I eco-labels identify products or services that have proven to be environmentally preferable overall, within a specific product or service category. Therefore they are designed to help consumers make environmentally friendly choices.[786] Furthermore, they can help producers to develop more environmentally friendly products.[787]

Territorial scope: Eco-labels have a national (e.g. Germany: Der Blaue Engel) or a regional (e.g. EU: EU Eco Label; Scandinavia: Nordic Swan) scope, but can also be used internationally when the required certification procedures can be implemented by the respective certification body. Additionally, there exists a global network (GEN) where all national and regional labels can become members. At the end of 2015 there were 27 members and four associate members spread across 57 countries and territories. [788]

Resources covered: The resources addressed by the eco-label criteria depend highly on the specific product. E.g. in the case of returnable bottles and glasses the addressed resource is e.g. silicium dioxide.[789]

Steps of the value chain covered: Which steps of the value chain are covered depends on the specific product. E.g. in the case of computers there is a strong focus on the use phase meaning the longevity which is an important aspect regarding resource efficiency. Measures to improve a product´s lifespan are in this case among others: rechargeability, replaceability, battery/accumulator durability etc.

Type of steering mechanism: Information (criteria sets), certification

Content

Relevant provisions/ guidelines: There are no provisions or guidelines for governments. For companies in order to use the eco-label their product has to be certified by an independent certification body.

Institutions, review and decision-making

Institutions: GEN: Activities are managed by a Board of Directors, and day-to-day operations are administered by a General Affairs Office and Secretariat, both reporting to the Board.

National and regional labels: The specific institutions involved differ according to national or regional context. GEN members operate independently and take various forms, including government or quasi-governmental bodies, private organisations, trusts, institutes and councils.[790]

E.g. in Germany the Blue Angel is awarded by the following institutions:

- Environmental Label Jury: independent, decision-making body that includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, the media, churches, young people and the German federal states.

[784] https://www.globalecolabelling.net/what-is-eco-labelling/.
[785] https://www.globalecolabelling.net/about/gen-the-global-ecolabelling-network/.
[786] https://www.globalecolabelling.net/what-is-eco-labelling/.
[787] http://www.nordic-ecolabel.org/about/the-mission/.
[788] https://www.globalecolabelling.net/about/gen-structure/.
[789] RAL gGmbH (2011).
[790] https://www.globalecolabelling.net/about/gen-structure/.

- The Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit): owner of the label.
- The Federal Environmental Agency (Umweltbundesamt): acts as the office of the Environmental Label Jury and develops the specialist criteria in the form of the Basic Award Criteria for the Blue Angel environmental label.
- RAL gGmbH is the awarding body for the environmental label. It organises the process for developing the relevant award criteria in independent expert hearings – which involve all relevant interest groups.[791]

Evaluation and review: On the international level GEN members are subject to regular peer reviews called GENICES. GENICES is a peer review process that benchmarks members, after which they may give input on standards/specifications to be included in the common internationally accepted database of criteria. The aims of the peer review are: help new programs start more quickly, facilitate certification of products that have been certified elsewhere, make international certification more cost-effective, facilitate exports of environmentally certified products, address and allay concerns about trade barriers.[792]

Furthermore, the national and regional labels can have their own evaluation and review processes. In the case of the German Blue Angel for example the Federal Environmental Agency and the RALgGmbH develop and update the criteria sets together with the respective experts. [793]

Reporting: There are no reporting requirements in place.

Compliance procedures, remedies and dispute settlement procedures: The specific processes may vary for the different labels. In the case of the German "Blauer Engel" in the event of misuse of the label, a warning letter will be sent to the label user. In the event of a breach of the Basic Award Criteria the eco-label can be withdrawn.[794]

Stakeholder and public involvement:

As described above, the specific institutions involved differ according to national or regional context. In Germany, for instance, the Environmental Label Jury includes representatives from environmental and consumer associations, trade unions, industry, the trade, crafts, local authorities, academia, the media, churches, young people and the German federal states.

Assessment

Coherence with other international treaties and policies: Type I eco-labels, unlike other eco-labels, are compliant with WTO rules because they do not present a trade barrier.

Diffusion: There are currently 25 different Type I eco-labels from around the world registered as GEN members.[795] The uptake of is very different from label to label. E.g. in Germany there are around 12.000 products certified by the "Blaue Engel"[796] while the Russian "Vitality Leaf" has certified 96 products so far[797]. However, being a best in class approach the number of products carrying a type I eco-label will always be limited.

[791] https://www.blauer-engel.de/en/blue-angel/who-is-behind-it.

[792] https://www.globalecolabelling.net/gen-members/genices/.

[793] https://www.blauer-engel.de/en/blue-angel/who-is-behind-it.

[794] https://www.blauer-engel.de/en/blue-angel/faqs-consumers.

[795] https://www.globalecolabelling.net/eco/green-certification-by-country/.

[796] https://www.blauer-engel.de/de/unser-zeichen-fuer-die-umwelt.

[797] http://ecounion.ru/en/vitality-leaf/%d0%be-%d0%bf%d1%80%d0%be%d0%b3%d1%80%d0%b0%d0%bc%d0%bc%d0%b5/vitality-leaf-program/.

Effectiveness: With its holistic and product-specific approach to determine eco-friendliness, including resource efficiency and the rather strict certification procedures type I eco-labels offer a good orientation for sustainable consumption.

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency:

- The integration of resource efficiency into the eco-labeling standards could be promoted within the peer review processes as well as the national and regional standard review processes.

Good practice examples:

- Type I eco-labels allow for the development of product specific resource efficiency measures.
- The GENICES peer review process facilitates the dissemination of knowledge and the alignment of different national and regional standards.

2.3.5 Global Recycled Standard (GRS)

Table 35: Global Recycled Standard (GRS)

Key aspects	Summary
Form and legal status	voluntary label
Objectives	certification for products that are at least partially made out of recycled materials and recycled materials
Institution/ Addressees	Textile Exchange (non profit)/companies, consumers
Territorial scope	global
Resources covered	practically: textiles (fibres), theoretically: all products that can contain recycled materials, all recycled materials
Stage of the value chain	end of life (recycling), design, purchasing, production
Steering mechanisms	information, capacity building, certification
Political weight	medium/low: circular economy is relatively high on the political agenda, labels for the use of recycled material themselves are not yet very prominent (+/++)
Relevance for RE	low/medium: currently the standard is only applied to textile fibres (+/++)

Summary

The GRS (Global Recycled Standard) covers all steps of the value chain for products containing at least 20% recycled materials. Currently the standard is only used within the textile industry while theoretically it can be used for all products/recycled materials. Being a private labelling standard with a limited reach its political relevance or relevance for resource efficiency can be regarded as rather low. Nevertheless, the establishment of such a standard on a higher level could be meaningful in the context of creating a circular economy.

Overview

Form and legal status: The GRS is a voluntary product label issued by the non-profit organisation Textile Exchange.

Objectives: The GRS is a product standard for tracking and verifying the content of recycled materials in a final product. It aims to ensure accurate content claims, good working conditions, and that harmful environmental and chemical impacts are minimised for products that contain recycled materials.[798]

Territorial scope: Global

Resources covered: Currently the label is given to products containing textile fibres. The aim is to extend the scope to other materials as well which could include plastics, metals or glass.[799]

Steps of the value chain covered: Recycling (end of life), production: "The standard covers processing, manufacturing, packaging, labelling, trading and distribution of all products made with a minimum of 20% recycled material."[800]

Type of steering mechanism: The GRS uses information tools like the standard itself or the certification toolkit. Additionally, capacity building in the form of trainings is undertaken.[801]

Content

Relevant provisions/ guidelines: As the GRS Standard is voluntary and does not address governments, no respective provisions or guidelines exist. Companies that want to be certified have to follow certain requirements like third party audits. Regarding public claims the product label must show the exact percentage of recycling material used.[802]

Institutions, review and decision-making

Institutions: Textile Exchange, a non-profit organisation, is the owner of the standard, additionally there is the International Working Group (IWG) of Certification Bodies.[803]

Evaluation and review: The International Working Group (IWG) of Certification Bodies revises the standard. A broader stakeholder group including retailers, brands, suppliers, and other industry members reviewed the standard to ensure it is a relevant and useful industry tool.[804] GRS is supposed to be reviewed every five years, in the intermediate time suggestions from the general public can be given to Textile Exchange.[805]

Reporting: In order to be certified companies must submit audit reports done by qualified third party auditors.[806]

Compliance procedures, remedies and dispute settlement procedures: Apart from the standard being open to public commentary, no further procedures exist.

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[798] Textile Exchange (2014).
[799] http://www.made-by.org/consultancy/standards/grs/.
[800] Textile Exchange (2014), p. 4.
[801] Textile Exchange (2014).
[802] Textile Exchange (2014).
[803] Textile Exchange (2014).
[804] Textile Exchange (2014).
[805] Textile Exchange (2017).
[806] Textile Exchange (2014).

Stakeholder and public involvement: A broad stakeholder group is involved in the standards revision, while the general public has the opportunity to comment on the standard.[807]

Assessment

Coherence with other international treaties and policies: The development and implementation of standards for recycling and products containing recycled materials can be linked to the EU´s circular economy package.[808]

Diffusion: The standard itself does not seem to have large coverage. Currently only about 400 companies from the textile sector, mainly manufacturers, are certified.[809]

Effectiveness: No data available.

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency:

- GRS is supposed to be reviewed every five years the International Working Group (IWG) of Certification Bodies and a stakeholder group that includes retailers, brands, suppliers and other industry members[810] , in the intermediate time suggestions from the general public can be given to Textile Exchange.[811]

Good practice example:

- By establishing a label for the use of secondary materials the GRS makes the use of resource efficient materials more attractive economically.

[807] Textile Exchange (2014), (2017).

[808] http://ec.europa.eu/environment/circular-economy/index_en.htm.

[809] http://textileexchange.org/wp-content/uploads/2017/03/GRS-Combined-List.pdf.

[810] Textile Exchange (2014).

[811] Textile Exchange (2017).

2.3.6 GeSI (Global E-Sustainability Initiative)

Table 36: GeSI (Global E-Sustainability Initiative)

Key aspects	Summary
Form and legal status	global network of the ICT sector
Objectives	foster collaborative approaches to sustainability
Institution/ Addressees	GeSI (sector network comprised by 40 of the world's leading service providers and vendors from the ICT sector)/companies from the ICT sector, different other addressees depending on project
Territorial scope	global
Resources covered	all
Stage of the value chain	all
Steering mechanisms	Information, cooperation, capacity building
Political weight	low: the initiative does not have evident links to the political arena (+)
Relevance for RE	low: few initiatives are directed at resource efficiency mostly related to electricity (+)

Summary

GeSI is an industry network with the objective to make the Information and Communication Technology (ICT) sector more sustainable. Except for the SASF there are no specific standards because the work of GeSI is based on projects addressing different sustainability issues within the ICT sector. The difference to other sector initiatives is that several of those projects do address resource efficiency. The network does not seem to have political relevance.

Overview

Form and legal status: The Global e-Sustainability Initiative (GeSI) is a network comprising members from the ICT sector; participation does not include any formal requirements.[812]

Objectives: GeSI supports efforts to ensure environmental and social sustainability in the ICT sector and aims to foster collaborative and innovative approaches to sustainability.[813]

Territorial scope: global

Resources covered: The projects that address resource efficiency are either referring to electricity thus only indirectly to fossil resources or all resources used in electronical products, thus mainly abiotic resources.

Project examples include:

- Universal Power adapter and charger solution: The adoption of a universal charger solution for mobile phones would result in a 50% reduction in standby energy consumption. A universal power adapter and charger solution would also reduce the

[812] http://gesi.org/ICT_sustainability_member_benefits.
[813] http://gesi.org/About_ICT_sustainability.

number of power adapters and chargers produced and recycled by widening their application to more devices and increasing their lifetime.[814]

- GeSI and StEP e-Waste Academy: The project does capacity building especially in developing countries regarding the handling of e-waste. The aims are to reuse or recycle material to the greatest extent possible.[815]
- Sustainability Assessment Framework (SASF): SASF is an assessment framework for evaluating Information and Communication Technology (ICT) products and services in terms of their sustainability performance including issues of resource efficiency.[816]

Steps of the value chain covered: The entire value chain is covered by different kinds of projects, but only few address resource efficiency directly (see examples above).[817]

Type of steering mechanism: GeSI uses different information and collaborative tools as well as capacity building.[818]

Content

Relevant provisions/ guidelines: There are no general provisions for companies being members of GeSI. The SASF Standard offered by GeSI is management tool which does not include any mandatory aspects.[819]

Institutions, review and decision-making

Institutions: GeSI represents around 40 of the world's service providers and vendors from the Information and Communication Technology (ICT) sector.[820] It is governed by the GeSI Board.[821]

Evaluation and review: None

Reporting: None

Compliance procedures, remedies and dispute settlement procedures: None

Stakeholder and public involvement: None

Assessment

Coherence with other international treaties and policies: Coherence depends on the specific projects. For example, the development of universal power adapter and charger solutions is linked to EU-Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC Text with EEA relevance.

Diffusion: There are 40 member organisations, however, it is unclear how many of these participate in the different projects.

Effectiveness: No data available.

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[814] http://gesi.org/portfolio/project/52.
[815] http://gesi.org/portfolio/project/18.
[816] http://gesi.org/ICT_sustainability_projects?project_page=3.
[817] http://gesi.org/ICT_sustainability_projects.
[818] http://supply-chain.unglobalcompact.org/site/article/37.
[819] http://gesi.org/SASF/qa/.
[820] http://gesi.org/ICT_sustainability_members_and_partners.
[821] http://gesi.org/ICT_sustainability_governance.

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency:

- The work of GeSI is project based therefore no review or similar processes are evident.

2.3.7 Zero Waste International Alliance

Table 37: Zero Waste International Alliance

Key aspects	Summary
Form and legal status	network (civil society)
Objectives	zero waste worldwide
Institution/ Addressees	Zero Waste International Alliance (civil society network)/businesses, cities/communities
Territorial scope	global
Resources covered	all
Stage of the value chain	whole life cycle, focus on end of life
Steering mechanisms	information, training
Political weight	medium: depending on national/local circumstances (++)
Relevance for RE	medium/ high: pursuing the goal of zero waste is significant forRE (++/+++)

Summary

The Zero Waste Alliance is a global civil society network that encompasses NGOs, businesses and communities/cities. Its goal is to promote the shift from waste to resource management. In order to achieve this goal there are standards for companies as well as communities. Pursuing the aim of zero waste worldwide can be regarded as significant for resource efficiency. The impact and political weight of the network differs significantly according to specific national and local circumstances. There are for example 232 Zero Waste Cities in Italy but only one in the UK and zero in Germany.[822]

Overview

Form and legal status: The Zero Waste International Alliance (ZWIA) is a non-profit organisation/network. Members of the network can be national organisations promoting zero waste in their country, businesses and cities/communities. National or regional members might be organised differently (e.g. Zero Waste Europe).

Objectives: ZWIA aims to zero waste worldwide as an ideal. It promotes alternatives to landfill and incineration and raises community awareness of the social and economic benefits that can be gained when waste is regarded as a resource.[823] This means that ZWIA encourages designing, managing and processing products in order to systematically avoid and eliminate the volume and toxicity of waste and materials, and to conserve and recycle all resources instead of burning or burying them. In the long run communities and businesses ZWIA are supposed to shift from waste management to resource management.[824]

[822] Zero Waste Europe (n.d.).
[823] http://zwia.org/aboutus/.
[824] http://zwia.org/aboutus/zwia-history/.

To reach this goal ZWIA uses three different strategies:

- Producer responsibility for industrial production and design
- Community responsibility for consumption, discard use and disposal
- Political responsibility for bringing community and industrial responsibility together

Territorial scope: Global

Resources covered: ZWIA covers all forms of waste and therefore also abiotic resources.

Steps of the value chain covered: ZWIA covers the whole lifecycle of the value chain (except the supply chain) taking the end of life phase as starting point.

Type of steering mechanism: The Zero Waste International Alliance initiates and facilitates research and information sharing for the promotion of Zero Waste. Furthermore, it builds capacity to effectively implement Zero Waste and sets standards for the application of Zero Waste.[825]

Content

Relevant provisions/ guidelines: ZWIA offers voluntary programs, therefore no provisions or guidelines for governments exist. However, if businesses or communities want to be recognized as "Zero Waste Communities" or "Zero Waste Businesses" certain requirements have to be met.

Community Recognition:

The Recognition Program is designed to recognise communities that have a Zero Waste goal and have reduced or are working towards reducing their waste disposal by landfilling an dincineration by 90% or more. There are a number of additional conditions in order to participate in the Program.

Eligible entities are local governments or Regional Districts that have jurisdiction over residents and/or businesses, or entities that work on behalf of locally elected representatives (not state, provincial or federal governments).[826]

Business Recognition:

The Recognition Program is designed to recognise communities that have a Zero Waste goal and have reduced or are working towards reducing their waste disposal by landfilling and dincineration by 90% or more. As with communities there are a number of other specific requirements for recognition.

Eligible businesses are institutions (including schools, colleges, universities, hospitals, prisons and other government facilities), commercials, industries (including manufacturing), venues and events and non-governmental organizations and Social Enterprises.[827]

Both recognition programs apply the "Zero Waste Hierarchy" which is a more differentiated version of the internationally commonly referred 3Rs (Reduce, Reuse, Recycle). [828]

Institutions, review and decision-making

Institutions: ZWIA consists out of different civil society and business organisations, foundations, cities and experts around the globe. ZWIA is led by a Board of Directors.

Evaluation and review: No information available.

[825] http://zwia.org/aboutus/.
[826] http://zwia.org/community-recognition/.
[827] http://zwia.org/standards/zw-business-principles/b/.
[828] http://zwia.org/standards/zero-waste-hierarchy/.

Reporting: No reporting required apart from those specified for businesses and communities (see above).

Compliance procedures, remedies and dispute settlement procedures: No information available.

Stakeholder and public involvement: Being largely a civil society network ZWIA's work is based on working with stakeholders and public involvement.

Assessment

Coherence with other international treaties and policies: There is a strong link to the EU´s circular economy package.

Diffusion: ZWIA is essentially global. Nevertheless, membership and degree of activity is distributed unevenly.[829] The strongest regional organisation seems to be Zero Waste Europe with 232 Zero Waste Cities and about 25 Zero Waste businesses.[830]

Effectiveness: Pursuing the the aim of zero waste can be regarded as highly significant for resource efficiency. The effectiveness of ZWIA depends, however, on the progess reached. As mentioned before, there are 232 Zero Waste Cities in Italy but only one in the UK and zero in Germany.[831] No data could be found on the progress towards reducing landfilling and incineration by the members of ZWIA.

Political opportunities and good practice examples:

Opportunities for improving the instrument regarding resource efficiency:

- No data about a planned revision or the like could be found.

Good practice examples:

- ZWIA takes a holistic view on resource efficiency addressing different stages of production and consumption (product design, consumer choices, waste management etc.) as well as different actors (business, municipalities, consumers).
- Designation of "Best practice municipalities" by Zero Waste Europe awarded to cities with per capita residual waste less than 75kg per year.[832]

2.3.8 Assessment of non-state governance approaches

The **relevance for resource efficiency** of the non-state government approaches differs considerably. While some will only have indirect effects, others impact resource use directly. Reporting standards like the GRI or the KPIs for ESG might have indirect effects by making resource use by companies transparent. The same can be said for LCAs on a product level. Other standards use targets to generate a direct impact. E.g. EMAS' requirement to set specific targets on resource consumption will support companies in reducing the use of resources when applying the management system. Another initiative which provides specific targets regarding resource efficiency is the Zero Waste International Alliance. Type I eco-labels as well as the GRS have direct impact by certifying certain aspects of resource efficiency for specific products.

Regarding the **institutional setting**, most of the initiatives are based on multi-stakeholder networkd and include actors from business, civil society or other institutions like standard setting agencies. The

[829] http://zwia.org/links/.
[830] https://www.zerowasteeurope.eu/.
[831] Zero Waste Europe (n.d.).
[832] http://zerowasteeurope.eu/zerowastecities.eu/.

degree of influence among the groups, however, differs considerably, businesses being the most influential stakeholder in many cases. In some cases, state actors also play a relevant role in supporting the creation as well as the diffusion of the respective initiative.

The **addressees** of most of the analysed initiatives are companies. The instruments either refer to corporate processes/ management or to companies' products and services. The ZWIA is an exception because it also addresses municipalities and the civil society.

In terms of **steering mechanism**, all initiatives apply information tools. Additionally, capacity building or cooperative instruments are used by some.

Nearly all of the initiatives have **review processes** for their standards in place. In the case of the GRI or the German eco-label "Blauer Engel", these are highly formalized and standardised mechanisms with clearly defined time frames and specific institutions assigned with the implementation of the review. In most other cases, review proesses are more informal.

The **degree of diffusion** differs strongly between the standards and initiatives. While some initiatives, such as the GRI, have managed to become globally applied standards that set a benchmark even though they are voluntary in nature, others (like the GRS or GeSI) are limited in their geographical or sectoral application and therefore impact.

2.4 Overarching assessement

Binding international law and emerging principles and concepts analysed in this study for the most part do not address resource efficiency directly in terms of resources used per unit of output. There are a few general references to efficiency in bilateral resource treaties and the seabed regime, but so far they have been more focused on facilitating extraction and allocating the resources. In contrast, some non-binding mechanisms and non-state governance approaches address resource efficiency directly.

Indirectly, binding international law provides a range of incentives to improve resource efficiency. The most relevant links in binding instruments are resource conservation aspects and treaties concerning waste. Both resource conservation and recovery are inherent parts of the circular economy of wastes. Regulatory approaches that involved direct market interventions, such as the tin agreement, have been abandoned. Indirect links in customary international law and emerging or proposed principles are difficult to ascertain because their legal status, normative content, or both are often not established, unclear or abstract. They could serve as a counterweight to the sovereign right to exploit natural resources, and there could be political opportunities to use them to interpret existing norms with regard to resource efficiency. It remains to be seen whether the rationale behind concepts such as "safe operating space" and "planetary boundaries", which have found their way e.g. into the EU's circular economy policy,[833] can feed into further developing existing legal principles and rules at the international level.[834]

As for the **political processes and non-binding mechanisms** screened, the most widespread mechanism is recommendations, often in the form of high-level political statements with strategic priorities and guidance, which are frequently accompanied by joint frameworks of action. These range from G7/ G8- via OECD- to UN-wide commitments such as the SDGs and New Urban Agenda. In addition, there are several relevant programmes by international organisations, most notably, UNEP, targeted towards increasing resource efficiency, a science-policy interface (IRP) and project lending standards by the World Bank Group that address, among others, resource efficiency. Many of the instruments are relatively unspecific, have only moderate political output and feature insignificant institutional embedding and international budgets. An exception is the SDGs which specify resource efficiency goals and (abstract) targets, combined with a political monitoring mechanism. At least at present, they also have political weight and momentum and appear to be the instrument with the best prerequisites to induce change in political practices. The newly established G20's dialogue could also provide political opportunities.

Non-state governance approaches include mainly reporting and other information and management tools regarding products and production processes. Their steering impact is mainly based on informal market incentives, i.e. to provide the company in question with a competitive advantage by making it or its products more attractive for investors, consumers etc. Several include reporting requirements on the use of resources or resource efficiency in a general manner, while others address either overall environmental impacts or the type and total amount of resources used. Product certification schemes can involve criteria that are directly linked to resource efficiency like longevity or repairability.

International law mostly addresses either the whole **value chain** in a general manner, or specifically its beginning (extraction) or end (waste). Most of the non-binding instruments address the complete value chain, although a few are focused on extraction, others on waste and the 3Rs "reduce, reuse and recycle". Several non-state governance approaches address specific products or production processes.

[833] COM(2020) 98 of 11.03.2020, "A new Circular Economy Action Plan For a cleaner and more competitive Europe, at 18.

[834] For a critical view see Müller et al (2017).

From an **institutional perspective**, some institutions have the potential to address resource efficiency directly or indirectly. The COPs of several MEAs may include resource efficiency in their agenda, and the International Seabed Authority provides for a strict extraction management of mineral resources in the deep seabed that may provide incentives to use resources more efficiently. The World Bank's Environmental and Social Standards and the IFC's performance standards include resource efficiency in a general manner and subject to a number of caveats such as technical and financial feasibility. They are a special case as they are binding insofar as they form part of the loan agreements with the borrowers.

The stocktake provides a **mixed picture**: There are virtually no binding standards for resource efficiency. One reason might be that so far states found it easier to agree on environmental obligations and restrict their sovereignty and with regard to traditional environmental impacts. The environmental impacts of inefficiency are caused less directly than "usual" environmental impacts and difficult to ascertain. Another aspect could be that resource efficiency brings environmental concerns to process and product standards and competitiveness, an issue which is addressed by international trade rules. The WTO system, which is not specifically addressed in this study, has rules on process and product standards, although these do not *require* resource efficiency but instead determine to what extent states may be *permitted* to require such standards. States might be reluctant to consider binding rules in this area in order to avoid problems with trade rules. A further impediment could be that resource efficiency standards, unless they remain fairly abstract, would entail technical requirements that are highly specific to individual production processes and would therefore be difficult to negotiate as well as to keep up to date. While at first sight non-binding and other approaches are more specific, they are mostly reporting and management tools with varying degrees of specificity regarding resource use. Even in this area, few non-state standards specifically address resource efficiency in the sense of actually quantifying a permitted amount of material per output.

On the other hand, recent non-binding approaches show that resource efficiency has been included on the **international political agenda**. The SDGs and the G20 are different process but both high-level and with political weight and legitimacy. Although in the past, both processes (or, in the case of the SDGs, their predecessors) had in some cases problems with sustaining political momentum and achieving concrete results, with regard to resource efficiency they are both in relatively early stages with potential political opportunities.

There is **no clear link or discernible deliberate division of labour between binding and non-binding or other approaches**. So far neither non-binding political initiatives nor other non-state and approaches relating to resource efficiency appear to have spurred the development of binding obligations. However, this does not exclude from the outset that existing non-binding approaches could be used to either build political will in this regard, show feasibility or serve as a model.

These considerations will have to be taken into account when developing policy recommendations in the following section.

3 Further Development of the Current Framework

3.1 Assessment of governance proposals in academic literature

The following section assesses proposals in academic literature for a better governance of resource efficiency. It follows the structure of the stocktake in Section 2.The methodology used for this section is described in the Section 1.3, but some aspects, particularly concerning scope, are presented in the introductory part of the relevant subsections.

3.1.1 Governance proposals related to international law: A new treaty?

Research for this sub-section indicated that in the literature on international law, there seem to be almost no concrete proposals for addressing and increasing resource efficiency at the international level. Therefore this section focuses on an **international treaty for sustainable resource management**.

Description: Apparently, only Bleischwitz (2009)[835] presented a comprehensive proposal for an international treaty related to resource efficiency, to which he also referred in other publications.[836] Such a convention would be part of a governance system at the international level that would also comprises institutional elements. The aim of the treaty would be to establish sustainable resource management as well as principles of resource conservation. In this concept, resources are generally addressed as raw materials or commodities[837] and apparently focus on abiotic resources.[838] "Basic legal principles" for sustainable resource management would include the principle of common heritage of mankind[839] and the "principle of material stewardship". By the latter principle Bleischwitz means the optimal and adequate extraction, production and use of resources for the benefit of society while respecting the environment, thereby creating an obligation for states, companies and consumers to use resources sustainably and to avoid material waste.[840] In legal terms, resources would be transformed into a common good.[841] Other elements of the proposal include improving the information basis (especially through an international databank), economic incentives (especially fiscal incentives through taxation), promoting bilateral programmes and agreements, institutionalizing further negotiation processes, and possibly compensation mechanisms for developing countries with an environmentally-intensive resource extraction and processing industry. Regarding the timeline, Bleischwitz emphasises that such a treaty could only be established stepwise, and that it would need to include industry.

Assessment: According to Bleischwitz there is sufficient pressure for political action since the availability of raw materials is limited in times of increasing global demand, and thus increasing competition will lead to rising costs in the long run.[842] In our view, however, for the time being these factors do not appear to create political momentum towards a legally binding instrument. For example, some of the relevant commodity prices have considerably decreased compared to five years ago.[843]

Bleischwitz' proposal includes some interesting concepts such as principles of resource conservation, improving the data base, economic incentives, the involvement of the industry, financial and other

[835] Bleischwitz (2009), at 147 et seq.

[836] E.g. Bleischwitz (2011), at 408; Bleischwitz et al. (2012), at 67.

[837] "Rohstoffe" in German.

[838] See especially Bleischwitz (2011), at 400 et seq.

[839] Which is understood by Bleischwitz as including inter-generational equity, but compare with the analysis of this principle in the stocktaking section above.

[840] Bleischwitz (2009), at 154.

[841] See Bleischwitz (2011), at 405-407.

[842] Bleischwitz (2013), at 400-403.

[843] Cf. https://www.boerse.de/rohstoffpreise#.

support for developing countries with an environmentally-intensive resource extraction and processing industry. However, some of these elements remain fairly general, while for others the specifics provided do not appear convincing. In particular, international legal provisions on a resource tax do not seem to be a realistic financial incentive. Moreover, the concept as whole amounts to an extraordinary dirigiste governance of resources that are turned into common goods.

Bleischwitz concedes that currently, and in contrast to international climate change law, quantitative requirements for resource conservation or efficiency do not appear to be feasible. This makes it difficult, for the time being, to identify viable elements of an international treaty. Agreeing on mere qualitative requirements, e.g. in the form of general principles, would arguably need to be backed up by effective economic incentives which, however, are not easy to identify. Moreover, it is questionable whether limiting the content of a resource treaty to elements such as improvement of the data base and information exchange would be sufficient to create political buy-in for an international treaty on resource efficiency.[844]

Generally, however, the idea of general, not too prescriptive treaty could make sense. Although resource efficiency is a widely accepted objective, there is a difference between being politically supportive and becoming party to a binding instrument. Similar to the concept of a "framework convention" in the climate regime, the framework nature of a treaty could help bringing states on board. Such a treaty could include general duties to increase resource efficiency and refer to the global benefits of resource efficiency, e.g. its indirect effects on climate change mitigation.

Levers for resource efficiency: A treaty would address those states who chose to ratifiy it (plus the EU). Subject to specific content, it would overarching, cross-cutting.

3.1.2 Governance proposals related to international political processes and non-binding mechanisms

In the following, we present a number of proposals and recommendations for international political processes and non-binding aiming to foster resource efficiency. To identify the proposals, we carried out a screening of websites, papers, reports and newsletters and then followed a 'snowball systems'.[845] In the search, keywords such as 'resource efficiency', 'resource productivity', 'material productivity', 'material efficiency', 'circular economy', 'decoupling' and '3R' were taken into account.

Many relevant actors make proposals on how to promote efficiency with regard to abiotic resources at the sectoral or national level but they rarely advocate an anchoring of resource efficiency policies at the international level. The different actors whose websites and / or publications we screened include the following:

- **International organizations**: World Bank / International Comparison Program (ICP), UNEP, UNCTAD, UNIDO, OECD
- **National governmental actors**: German Ministry of Economic Affairs (BMWi), Enquete-Commission of the German Bundestag on "welfare and quality of life"
- **Advisory bodies, scientific actors and platform**: International Resource Panel (IRP), the Green Growth Knowledge Platform, Chatham House, Intraw, German Advisory Counsil on Global Change (WBGU), the German Advisory Council on the Environment (SRU), Centre for European Economic Research (ZEW)

[844] Bleischwitz (2012), at 67, proposes information exchange and certification as potential initial steps.

[845] The screening also included the search for proposals regarding international non-state approaches to resource efficiency.

- **Non-governmental and civil society organisations**: Ellen MacArthur Foundation, World Resources Institute, Greenpeace, World Wildlife Fund (WWF), Friends of the Earth, the German "AK Rohstoffe"
- **Multi-stakeholder networks and initiatives**: World Resource Forum, World Material Forum, eeforum, Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP), RECPnet

The proposals we present start with 'low intervention' proposals and end with 'high(er) intervention' suggestions.

3.1.2.1 International Multistakeholder Forum

Proposal: According to a scientific proposal an International Multistakeholder Forum for the management of resources could discuss current resource-related developments and trends, possible mechanisms to improve resource efficiency and to elaborate policy and industry recommendations.[846] The forum is proposed to assemble representatives from nation-states, industry and civil society, with the OECD and / or G20 proposed to initiate the forum. This proposal mainly refers to critical materials, namely phosphorus, coltan, rare earth elements, platinum group metals and copper.[847]

Assessment: The political viability of a Multistakeholder Forum depends on the economic and/ or political weigh of the involved stakeholders, on the practical commitments that the stakeholders subject to and thus on the dynamics that unfold within (and possibly outside) the forum.

In 2017, the German G20 presidency was able to start a dialogue on resource efficiency at the political level. It remains to be seen whether this could serve as a long-term international resource forum as proposed by Bleischwitz.

The establishment of an International Multistakeholder Forum could be carried out in the short-term future.

Funding a Multistakeholder Forum would require covering the costs of participating public actors and of civil society organisations (which could otherwise be underrepresented, due to lacking funds). Industry stakeholders would fund their participation themselves. All paying partners would fund a secretariat structure and a budget for programme activities. Costs would vary in accordance with the number of (non-industry) participants and the ambitiousness of the programme of work.

Levers for resource efficiency: An International Multistakeholder Forum would serve to exchange opinions and best practice as well as to diffuse innovative solutions (e.g., for "integrating resource efficiency into product development"), thus addressing (at least) the lever of "strengthening research and improving the science basis; transfer of technology and knowledge and creating awareness". Depending on the mandate that the forum would develop for itself, the stakeholders could work together to "expand a resource efficient circular economy", for instance by developing solutions for "optimizing the collection and recycling of resource-relevant bulk wastes" across borders or by "promoting recovery structures in developing countries and emerging economies". In addition, a stakeholder forum might help to "boost resource efficiency in production", when its industry stakeholders use the forum to transnationally cooperate on the "development and diffusion of resource- and energy-efficient production and handling processes".

[846] Bleischwitz (et al. 2012) at 60.

[847] Bleischwitz (et al. 2012) at 10.

3.1.2.2 An emerging International Multistakeholder Forum? EU Horizon 2020 project "FORAM: Towards a World Forum on Raw Materials"

Proposal: The FORAM project is a two-year project that was launched in November 2016, led by the World Resources Forum Association based in Switzerland and funded by the European Union's Horizon 2020 research and innovation programme. FORAM is claimed to function as a platform for the exchange between international experts and stakeholders related to raw materials and resource efficiency.

While the Forum in principle covers all raw materials, its focus is on mining materials. The forum is made up by twelve core partners. Participants of FORAM's Stakeholder Panel represent a relevant part of the entire raw material value chain, however, main part covers mining, processing and recycling part.[848] Stakeholders range from the mining and transportation sector to consultancies and the recycling industry. To date, however, representatives from the mining sectors predominate. There are no civil society actors in the core team, among the 'third parties' of the Forum or on the advisory board of the project. The project seeks to engage the participation of G20 Member countries.

FORAM aims to improve international collaboration on raw material policies and investments, as well as international resource transparency and governance, with ultimate goal being stability, predictability and resource-efficiency related to raw material management. Moreover, the project aims at contributing to policy and governance recommendations on an international scale.[849]

Assessment: According to the project initiators, this project will be the largest cooperation on a global scale that is carried out. Moreover, it aims at making the entire resource supply chain more transparent, resource-efficient and less complex. However, as the forum is bound to the project´s duration, it is unclear whether it could continue in the context of another project or otherwise. Finally, its political effectiveness may depend on its ability to establish sound links to the beginning G 20 dialogue on resource efficiency.

Since the project was already launched (in November 2016) and is supposed to last two years; establishing a World Forum on Raw Materials will be carried out in the short term future.

The FORAM project is funded by the European Union's "Horizon 2020" research and innovation programme under Grant Agreement No 730127.

Levers for resource efficiency: Creating a World Forum on Raw Materials will address primarily the lever of "strengthening research and improving the science basis; transfer of knowledge".

3.1.2.3 International data hub

Proposal: An international data hub on sustainable resource management is suggested by academics to provide information related to the entire supply chain and life span of resources.[850] The data hub could contain information about harmonized, open-access geological data; geo-spatial data; data on critical materials and the resource nexus on the use of resources in economies and across industries; basic socio-economic data; environmental impacts of key materials and agricultural goods; as well as key data for scenario analysis about future use.[851] Another group of scientists suggest the data hub focuses on global material flows and resource productivity.[852]

[848] FORAM (2017) at 2.
[849] FORAM, Project, available at http://www.foramproject.net/index.php/project/.
[850] Bleischwitz et al. (2012) at 59.
[851] Ibid.
[852] Bringezu et al. (2016) at 19.

The data hub could be established in collaboration with already existing agencies and mechanisms and tools, such as the UN Food and Agriculture Organization (FAO), geological surveys, the IRP and tools such as the Environmental Impact Assessment (EIA).[853] It might draw on already existing datasets, such as Eurostat data on trade in raw materials, the Eurostat Data Centre for Waste and the OECD database on material flows.

The Enquete-Commission of the German Parliament on "Growth, welfare and quality of life" (Wachstum, Wohlstand, Lebensqualität; 2011-2013) aimed for an improved global governance structure in the trading of resources and supports the idea of establishing an international metal or resource forum. In this forum, geological services from various countries could cooperate in order to achieve more transparency and geological data related to resource management. According to the Enquete-Commission, the International Energy Forum or the International Renewable Energy Agency (IRENA) could function as examples for managing resources on an international scale. [854]

Assessment: An international data hub can help to draw a picture about current resource use and allow building scenarios about future resource use. It may thus inform international or national-level policy-making with regard to resource efficiency. However, it does not directly address (regulate, incentivize etc.) changes in the behaviour of mining companies, producers, the recycling industries, let alone consumers. Its effectiveness will depend on the availability, costs and subsequent usage (for policy-making purposes) of relevant data.

When considering the establishment of a data hub, it needs to be taken into account that in November 2017 the "International Raw Materials Observatory" (IRMO) was launched. The IRMO is an independent entity that functions as a knowledge management infrastructure focused on raw materials. It provides a database on cooperation opportunities between the EU and international cooperation countries and addresses, inter alia, raw material policies and strategies and exploration, extraction, processing and recycling practices.[855] To date, the IRMO has no focus on resource efficiency.

Since the idea of establishing an international data hub can draw on already existing datasets, an international data hub can be carried out in the short term future.

Costs for an international data hub will correlate with the kind of required data and the desired scope that the data should cover. Some form of secretariat would need to be financed, too.

Levers for resource efficiency: Creating a World Forum on Raw Materials will address the lever of "increasing transparency in supply chain, strengthening research and improving the science basis; transfer of knowledge".

3.1.2.4 Intergovernmental Panel on Sustainable Resource Management

Proposal: Based on the observation that a better scientific observation and politics is necessary, the German Advisory Council on the Environment (SRU) suggests establishing an Intergovernmental Panel on Sustainable Resource Management (IPSRM). This is also suggested by Bleischwitz (2009, 2015).

According to the SRU, an intergovernmental platform that brings together international political actors with scientists is needed in order to reduce negative environmental impacts of resource extraction, its production, usage and disposal on a global scale. The Intergovernmental Panel on Climate Change (IPCC) is claimed both by the SRU and Bleischwitz[856] to serve as a good practice example for establishing a Resource Panel: It brings together current knowledge of a large number of scientists

[853] Bleischwitz et al. (2012) at 59.

[854] Enquete-Commission (2011) at 513.

[855] Intraw Project, available at http://intraw.eu/.

[856] Bleischwitz (2009) at 152; Bleischwitz (2015) at 19.

about climate change and connects it with international environmental politics via regularly published reports and the identification of possible action. The SRU acknowledges that the already existing International Resource Panel under the aegis of the United Nations Environmental Programme (UNEP) fulfils some of the suggested functions of an IPSRM. However, according to the SRU it lacks financial and human equipment, intergovernmental political connections and institutionalized anchoring.[857]

The proposal of establishing an IPSRM refers to the management of metallic and mineral resources.

Assessment: Platforms like the IPCC or the IPBES already exist and can function as an example. They show that the political viability of establishing a science-policy interface can be high.

Taking the IPCC as a leading example, the establishing of an IPSRM will have a high effectiveness. For instance, without the regularly report of the IPCC, an international consensus about the 2degree limit for fighting global warming would not have been reached. However, existing platforms are linked to an international political process – the UNFCCC and CBD processes, respectively –, and their political viability is rooted in their role within these regimes. An IPSRM would be a stand-alone institution, not linked to any existing international processes. It is hence not obvious that it could unfold a similar political clout and policy-making support as the existing examples.

In addition, the analogy to the IPCC appears to be valid only to a small extent. It is true that the IRP has some potential to provide important impetus similar to the IPCC, e.g. through its report on Global Assessment on Natural Resources Use and Management, which is envisaged for 2019 and regularly every two or four years thereafter. On the other hand, the IPCC has much more solid foundations and is firmly linked to other institutions. Moreover, its results have a higher legitimacy due to broader involvement of experts nominated by the states and process standards: the IPCC drafts its reports following an elaborated international procedure for the selection of hundreds of researchers who analyse the relevant literature worldwide and review the drafts in extensive public and political consultations. Furthermore, the IPCC is legally rooted in international climate change law and partially vested with normative powers. It is up for debate whether the IRP could and should assume a comparable role. The recent example of the IPBES for biodiversity should be taken into account, which was conceived following the role model of the IPCC.

The establishment of an IPSRM could be carried out in the medium term future, building on the already existing structure of the IRP.

Launching a science-policy-interface in the dimensions of an IPCC or even IPBES is linked to a considerable amount of costs. Even when deducting the operational costs of the IRP, which could then be replaced, the higher amount of scientists would involve a more complex mode of writing assessments, presumably with more physical meetings and more participants. Also, the support infrastructure would probably need to be increased.

Looking at existing science-policy interfaces, the IPCC is financed by voluntary contributions of few Member Countries to a Trust Fund,[858] while scientists that contribute to the work of the IPCC work on a voluntary basis, sometimes traveling expenses to editorial meetings are reimbursed by the IPCC fund.[859] The seat of the IPCC is at the World Meteorological Organization in Geneva, while the different technical support units are located in various member countries and financed by them.[860]

Levers for resource efficiency: An IPSRM would address the lever of "strengthening research and improving the science basis; transfer of knowledge". Ideally, it would help increasing the legitimacy of

[857] SRU (2012) at 92.

[858] http://www.climateactionprogramme.org/news/countries-to-increase-financial-contributions-to-the-ipcc-to-cover-for-uss.

[859] Klimafakten, "Der IPCC – ein Kurzportät (Teil 1)", https://www.klimafakten.de/meldung/der-ipcc-ein-kurzportraet-teil-1.

[860] Ibid.

the scientific state of the art and would provide an interface between science and policy-makers and help.

3.1.2.5 International Resource Management Agency

Proposal: Several actors call for establishing an International Resource Management Agency (IRMA). The most elaborate proposal stems from Bleischwitz.[861] According to them, an International Resource Management Agency could provide services concerning observation, data, establishing a conflict-risk radar and sustainability scenarios. It is not specified what kind of data the agency would collate and how exactly the data would further increases in resource efficiency.The agency could improve dissemination and learning through coordinated programmes of awareness-raising and training courses.[862]The Agency could also serve as the secretary of the international multistakeholder forum presented above (Section 3.1).[863] This proposal mainly refers to the management of critical materials, namely phosphorus, coltan, rare earth elements, platinum group metals and copper.

The German Advisory Council on the Environment (SRU) supports the idea of establishing an international Resource Management Agency as well. According to the SRU, the agency could function as a central node that gathers, stores and processes data and information about extraction sites, extraction conditions and environmental impact.[864] According to the SRU, the international Resource Management Agency should manage metallic and mineral resources.

The Enquete-Commission of the German Parliament on "Growth, welfare and quality of life" also mentioned the establishment of an International Resource Agency under the aegis of the United Nations. However, it does not evaluate or detail this idea.[865] The Enquete-Comission did not specify which specific resources the Agency should manage.

Assessment: The tasks of an International Resource Management Agency as proposed by Bleischwitz include in the first place the task of a central information desk similar to IRENA. It is questionable whether such an agency would provide added value compared to other relevant institutions which already exist or are proposed as well: The IRP could provide for the scientific foundations and data, and there are also proposals for an international data center for the resource intensity of products and services in order to enable the sustainable management of international substance flows in support chains (see above).[866] In addition, multiple multilateral institutions already provide support through knowledge, capacity building, technology and finance. Finally, a modern international treaty would normally create its own institutions. Launching an International Resource Management Agency would require achieving consensus on the need for such an agency among a sufficient number of countries willing to finance the organisation. It could probably be carried out only in the medium term future.

In order to (roughly) estimate the costs related to establishing an International Resource Management Agency, we can look at the IEA as an example: The IEA is funded by its 29 member countries and the revenue it generates from its publications. Its 2016 budget amounted to some 27 mio Euro. IEA member countries pay assessed contributions, calculated with a formula that takes account of the size of each member's economy, and additional voluntary contributions Countries. In 2015, 29% of IEA's spending was based on voluntary contributions.[867]

[861] Bleischwitz (2009) and (2013); Bleischwitz et al. (2012).
[862] Bleischwitz et al. (2012) at 59.
[863] Bleischwitz et al. (2012) at 59.
[864] SRU (2012) at 92.
[865] Enquete-Commission (2011) at 513.
[866] Bleischwitz et al. (2012) at 59.
[867] https://www.iea.org/about/structure/.

Levers of resource efficiency: Establishment of an International Resource Management Agency would address the lever of "strengthening research and improving the science basis; transfer of knowledge".

3.1.3 Governance proposals related to international non-state governance approaches

With one exception no proposals that suggest making international non-state governance approaches to resource efficiency in any way legally binding could be identified. The search which included the screening of websites, papers, reports and newsletters focused on the different "instruments" identified in AP 1: reporting requirements for companies, environmental management systems, products environmental impact assessment, (eco) labels, recycling and waste related initiatives.[868]

The different actors whose websites and / or publications we screened include the following:

- **non-financial reporting requirements:** SSE (Sustainable Stock Exchanges Initiative), Integrated Reporting, Project Delphi, Global Sustainable Investment Alliance.
- **environmental management systems:** European Commission (Eco-Management and Audit Scheme), EMSA (Environmental Management Network)
- **products environmental impact assessment:** European Commission (Single Market for Green Products Initiative)[869], American Center for Life Cycle Assessment (ACLCA), SETAC (Life Cycle Assessment Interest Group) plus a number of other industry specific associations.
- **(eco) labels:** GEN (Global Ecolabelling Network),[870] OECD 2002
- **recycling and waste related initiatives:** Business Europe (Circular Economy)

3.1.3.1 Mandatory Reporting on R-KPIs (resource efficiency Key Performance Indicators)

Proposal: Scientists propose the introduction of mandatory reporting requirements on key performance indicators relevant to resource efficiency (R-KPIs).[871] They also mention (international) frameworks.[872] However, this part of the proposals remains unsubstantiated. The more substantial ideas put forward address national legislation or non-binding frameworks like GRI. The International Financial Reporting Standard – which is legally binding in the EU – is mentioned as well. The proposal also points at the issue of enforcement and suggests governmental as well as private controls (audits).

Assessment: No direct conclusions can be drawn from the proposal. Overall it must be said, that while the question of content and economic rationale is addressed quite in detail. The issue of political implementation, especially at the international level, is only hinted at briefly.

No time frame is mentioned in the proposal.

The incurring costs for the companies are roughly estimated, although the given data refers to non-financial reporting in general not specifically to the requirements of resource efficiency related data collection.

[868] Since the screening conducted in Section 3 also covered international non-state governance approaches a search using the same keywords and looking at the same institutions was not reproduced here.

[869] On the webpage it is stated that the European Commission "supports international efforts towards more coordination in methodological development and data availability" (http://ec.europa.eu/environment/eussd/smgp/index.htm) However, this is not regarded as a sufficiently substantiated proposal to be further analyzed.

[870] Scientific papers such as Bonsi et al. (2008) and Lind (1996) tend to focus on compatibility with international trade law.

[871] Bienge, Berg (2015).

[872] Bienge, Berg (2015) at 9-10.

Levers for resource efficiency: The idea is that R-KPIs would show resource related chances and risks, inefficiencies and resource consumption for the individual company, giving the opportunity for improved strategic management.[873]

3.1.3.2 International Metal Covenant for the Automotive Industry

Description: Another proposal is an "international metal covenant" between key car manufacturers and suppliers, the recycling industry and the competent authorities in major export and destination countries. The aim of such a covenant is the establishment of long-term resource efficiency goals through a high-quality recycling market. This would imply that industrial enterprises and their associations commit themselves to resource protection goals, while the states ensure "a stable and supportive environment for the agreed terms". In contrast to non-binding commitments, the covernant should provide for effective dispute resolution and sanctions, and be enforceable in court.[874]

Assessment: There are no examples of an international treaty between several states and industry sectors, only sectoral agreements at national level, most of them non-binding.[875]

Legally, this proposal would be similar to an investment agreement between states and enterprises as non-state actors. It is likely to pose the same legal, political and substantive problems.[876] This is particularly the case for the proposed enforceability in court, especially if several states should be involved. Politically, the proposal would require huge efforts, since achieving a novel form of contract at the international level with so many different players is a particularly ambitious task.

Levers for resource efficiency: An international metal covenant for the automotive industry would address the levers "optimization of the collection and recycling of relevant wastes" and "prevent illegal waste exports, promote recovery structures in emerging and developing countries".

3.2 Policy options and recommendations

3.2.1 Strengthening resource efficiency in international law

3.2.1.1 Work towards a treaty on resource efficiency in the medium to long term

We do not recommend pursuing a new standalone treaty on RE at this stage, even if it was merely a general framework treaty.

Mid-to long-term: Under these circumstances, one option is to work towards creating more political buy-in for a new treaty. The discussion in the context of international fora such as the G7 Alliance for Resource Efficiency, G20 Dialogue on Resource Efficiency, the OECD etc. should gradually be brought to consider an international RE treaty, for instance in the form of a general framework treaty. Besides a stand-alone treaty, there is also the option of a new instrument under an existing treaty (e.g. a "Protocol").

Potentially Long-term: In order to be prepared in the long run, we provide an outline of potential treaty provisions as food for thought in Annex 2.

Description: The political effort that required at this stage to create support for and start negotiations on a treaty appears substantial in terms of lobbying and building coalitions. There is some political momentum for it in the G7 or G20, but for the short term the political effort required seems out of proportion to the potential gain. This would also be the case even if the envisaged treaty would just be a framework with little detail in its obligations.

[873] Bienge, Berg (2015) at 7-10.

[874] Bleischwitz (2012) at 63; Wilts, Bleischwitz and Sanden (2010) at 80-91; see also Bleischwitz (2010) at 227-244.

[875] Wiltd, Bleischwitz and Sanden (2010) at 49-51.

[876] For details see Viñuales (2016).

However, since a treaty on RE is one of Germany's long-term strategic objective, one option is to work towards creating the political conditions and right moment for a new treaty. Germany could strategically invest political capital in keeping the issue on the agenda and probing the possibility of discussing a treaty and starting an international negotiating process. It should regularly re-assess the progress of its own agenda-setting efforts and of RE generally. For instance, the G7 and G20 efforts might lead to better understanding of tools and options for RE and prepare political opportunities for international cooperation in binding form. Creating the opportunity and right moment is not always predictable. For instance, based on a French initiative for a new global instrument, a "Global Pact for the Environment", the UN General Assembly started a process for identifying gaps in international environmental law and for a round of negotiations to consider a potential international instrument to address them.[877] The French government supported a treaty at the highest level, promoted the treaty at the UN and gained the support of the UN Secretary-General.[878] However, the negotiations indicated a significant reluctance of state to work towards a new binding instrument. The recommendations to the General Assembly of May 2019 merely envisage a mandate to the 5th UN Environment Assembly in 2021 to prepare a draft "political declaration".[879] Besides concerns about legal form generally, the recommendations are quite vague and initial ideas for addressing resource eficiency were dropped completely. It remains to be seen whether it will be brought back in in the follow-up process towards a political declaration.

If and when there is political momentum or the right moment, the German government should also be able as well as prepared to use it. Since RE encompasses a broad range resources and diverse approaches, it could be useful to consider starting with a framework structure that envisages subsequent amendments for particular resources or issues, e.g. in annexes or protocols. With regard to political feasbility, it should be noted that a treaty can address different issues differently, more or less prescriptively and precisely, and it can leave flexibility for parties in order to facilitate buy-in and implementation over time. It could include mandates for further work and permanent institutions such as a usual Conference of Parties (COP) which adopts decisions to specify and guide parties' implementation over time. We provide a potential draft of treaty provisions as food for thought in an annex below.

In line with its framework nature, the treaty's objective could be broad and be based on existing political agreements such as the SDGs. A question for future discussion would be to what extent a treaty on RE could include targets and indicators.

Apart from an overarching treaty on resource efficiency, another option is to support initiatives for binding rules for particular issues that are related to resource efficiency, such as an instrument to address plastics generally or marine plastics litter. Germany would also have to take into account the role of the EU not only politically, but also legally if and when it comes to actual negotiations: Since the treaty would in all likelihood at least partly fall within the EU's shared competence, Germany would not be free in acting at the international level and would instead have to act through a coordinated EU position.

Levers for resource efficiency: A treaty would address states (and the EU) who would have to implement its obligations in their respective national jurisdictions. Depending on the treaty's specific content, it would be overarching and cross-cutting, with genral obligations that could be elaborated over time in annexes for specific sectors, resources etc.

3.2.1.2 Interpret the polluter pays principle and existing customary law in terms of resource efficiency

Long-term: Germany could work towards establishing and interpreting existing customary law in a way that includes aspects of RE. For instance, it could develop and support an expanded legal interpretation

[877] UN GA resolution 72/A/L.52 of 07.05.2018. See https://www.unenvironment.org/events/conference/towards-global-pact-environment.

[878] http://www.un.org/sustainabledevelopment/blog/2017/09/french-initiative-to-create-global-environment-pact-deserves-support-says-secretary-general/.

[879] UN Doc. A/AC.289/6/Rev.1 of 13.06.2019 at 9.

of the polluter pays principle by which inefficient resource use would qualify as "polluting" and actors using resources inefficiently would be regarded as "polluters" who should bear the costs caused by the inefficiency.

Description: The objective would be to anchor resource efficiency in a binding manner in customary international law. However, "resource efficiency" as a concept on its own does not seem suitable for requiring specific conduct from states. Instead, similar to other principles of international environmental law, Germany could seek to establish a general notion of RE.

In general, customary law requires two elements state practice and corresponding acceptance as law. If Germany wanted to promote and eventually establish a *new* principle of resource efficiency as customary law, we would recommend developing and sticking to a specific wording in order to facilitate both elements. The approach we recommend instead is to build on *existing* principles of international law. Germany would seek to promote and establish that an existing principle of international law, e.g. the polluter pays principle, includes aspects of RE. It would have to state its view in official statements, negotiating positions etc, and to try to include it in international documents such as declarations, resolutions, outcome documents etc. This approach could be less difficult politically and legally than establishing a *new* legal principle, because it could focus on interpreting the content of an existing principle, rather than meeting the requirements for establishing legal status and content of a new principle from scratch. In addition, promoting a certain interpretation provides additional flexibility compared to a establishing a new principle.

If successful, this could be a basis on which to build internationally as well as domestically. Once established or at least recognised as emerging, the impact of a legal principle would be long-term and could justify, support and shape future (national as well as international) policies and actions.

However, even though it could be less difficult than establishing a *new* principle, establishing a specific interpretation of an *existing* customary law also requires a long-term, strategic political effort. Germany would have to assess the implications of this approach in relation to its overall position on international environmental law and agree internally on pursuing it. It would then need to sustain its political will as well its efforts at the international level over a long period of time. It would have to state and gain support and allies for its legal view. It would also have to support its view, at least to some extent, by its own practice, in order to be credible.

In terms of content, Germany would need to decide whether to pursue an interpretation that addresses RE generally, or specific aspects or resources, e.g. abiotic resources. One particular aspect could be the notion of saving resources in order to keep development sustainable for future generations.

With regard to which existing principle to build on, **the polluter pays principle** would be the recommended option. One advantage is that the principle is fairly well established internationally, even if there is no clear and authoritative statement regarding its status as customary law. The German government could develop and support an expanded legal interpretation of the polluter pays principle by which inefficient resource use would qualify as "polluting". In other words, actors using resources inefficiently should be regarded as "polluters" and should bear the costs caused by the inefficiency. This interpretation could partly build on international practice with regard to waste.

There are few established or potential legal principles that have at least some plausible link to RE and could be potentially built upon. Obviously, the principle of sustainable development could include notions of RE, but apart from questions about its legal status, it has been used for so many claims and uploaded with so many notions that it does not appear to be useful for giving legal weight to RE. More likely principles include the **precautionary principle**, the **principle of intergenerational equity** and the **status principle of common concern**. All of these options have drawbacks which would make it more difficult for Germany to build on: Besides the open question of its legal status, the precautionary principle is aimed at dealing with and acting on the basis of scientific uncertainty. Its wordings give no indication that it is directed at using resources efficiently or saving them for future use. If Germany wanted to build on the precautionary principle, it would have to add a meaning to it that is quite far

from the current concept. We suggest that this would require much higher political effort than building on the polluter pays principle.

Similar considerations apply to "inter-generational equity" and "common concern". In terms of substance, the concept of inter-generational equity is close to RE and could plausibly incorporate the notion that it is fair to use resources efficiently in order to leave enough for future generations. On the other hand, its legal status is far weaker than the precautionary principle and the polluter pays principle. While it could be fairly easy for Germany to adopt a position that inter-generational equity also includes RE, it would be more difficult to give legal weight to this view at the international level. The concept could also be used for interpreting other norms or principles that are focused on allocation of resources in a way that also includes conservation *over time*.

With regard to common concern, there is no single concept to build on. One option is to work towards establishing resource efficiency as a "common concern" at the international level. This is not implausible, since there is no internationally agreed or common understanding of what being a "common concern" entails. But we suggest that even if successful, establishing RE as a "common concern" would have less impact compared to an interpretation of the polluter pays principle. The few existing examples of "common concern" are less widely accepted and less clear in terms of content than the polluter pays principle, and draw potential specific meaning mainly from treaty provisions. Another option is to interpret existing common heritage or common concern in light of RE, for instance based on the concept of intergenerational equity (see above). However, this option would have to specifically address the few items that have the status of "common concern" or "common heritage", and impact would be limited to them.

Of course, Germany could pursue more than one option, although it is likely to require a high internal coordination and positioning effort.

Levers for resource efficiency: Cross-cutting general obligation on states.

3.2.1.3 Paris Agreement: Address resource efficiency

Mid-term/long-term: Germany could address and promote RE as a topic through the Paris Agreement. The on-going negotiations under the climate offer a range of options for doing so, e.g. from one-off events to regular agenda items, and from a platform for exchanging information to anchoring normative text in COP decisions. In terms of specific issues, options include, inter alia, including RE in NDCs or in reporting formats.

Description: Germany could promote and address RE in the Paris Agreement. As part of the climate regime, the Paris Agreement provides an existing and basically universal multilateral platform.[880] It provides a thematic hook for addressing RE, since the preamble expressly recognises the important role of sustainable patterns of consumption and production in addressing climate change. Moreover, the operative part lists sustainable management of natural resources as one possible content of adaptation action that parties have to engage in. There is also political recognition of the general relevance of RE for climate goals among a number of governments, as e.g. in the G7's 2017 statement that a "substantial increase in resource efficiency is essential to meet [...] climate goals."[881]

However, RE is currently not a topic that is explicitly or separately addressed in the climate regime in terms of process or content. This leaves open a whole range of objectives and options that Germany could pursue, from e.g. a **one-off space for discussing RE** to **anchoring normative text in COP decisions**. The disadvantage of not having an already existing formal space for discussing RE is that more political effort is required to establish such a space for a new issue. In addition, Germany does not engage in the climate regime on its own and instead has to negotiate as part of the EU. Germany

[880] We note that the US administration notified the UN in August 2017 that it "intends to" withdraw from the Paris Agreement, but has not done so as of April 2018.

[881] G7 Bologna Environment Ministers' Meeting, 11-12 June 2017, Communique, para 34.

would have to first embed its own objectives regarding RE in the EU position and negotiating lines and then pursue them through the EU.

Germany would therefore have to carefully define its objectives in order to focus its political effort. For instance, it would have to decide whether it wants to **address RE as part of an existing agenda item,** e.g. regarding reporting rules, or whether to **aim at a new and separate space**. The latter would probably require high and long-term political effort.

Political considerations would include which aspects of RE are relevant for climate change and more likely to be acceptable. Germany could build on work by IRP, which has started paving the ground by highlighting the link between resource use and climate change, and on a side event it co-hosted at COP23 in 2017.[882] Another aspect could be whether addressing more and more topics could at some stage overburden the UNFCCC process and have little impact. On the other hand, the climate regime has been able to accommodate and address "new" topics over time.[883]

Germany could start addressing RE through a purely procedural approach such as a **workshop** or **round table**. New topics have sometimes started this way in the past.[884] In order to get political support for a procedural approach that is formally part of the negotiations, Germany might be able to build on the side event on RE it hosted at COP23 in Bonn in 2017. While procedurally this may seem to require only little political effort, in practice this is not necessarily the case.

It might be simpler to work towards addressing RE in a **COP decision under a relevant agenda item**, starting with relatively simple and general content e.g. based on SDG language. The thematic basis could be coherence and co-benefits between adaptation SDGs, together with the IRP reports relevant to climate change and emissions. It could build on the IRP study on the potential of RE for emission reductions as envisaged by the G7 in the Bologna Roadmap.

A more ambitious objective could be to **include RE in the Nationally Determined Contributions (NDCs)**, i.e. the climate action plans each party has to periodically prepare and update. This does not necessarily have to be prescriptive. RE could also be included **in the various reporting formats** such as the Biennial Reports and Biennial Update Reports.[885] The reporting guidelines could be amended to include information on RE. However, we do not recommend pursuing these options at this stage. Since the "rulebook" with more detailed rules was adopted at COP 24 in 2018 and scheduled for review in 2027,[886] political opportunity very small until the review. For reporting, it is particularly difficult to introduce new topics for reporting because the Paris Agreement explicitly requires that the new transparency regime avoid placing undue burden on parties. On the other hand, the rules do not prevent parties from including RE as part of their NDCs, strategies and as other relevant information in their reporting about implementation.

Levers for resource efficiency: Potentially all relating to climate change, depending on Germany's preferences and opportunities pursued in the climate regime.

[882] For instance, UNEP/IRP, "10 Key Messages on Climate Change", available at http://www.resourcepanel.org/reports/10-key-messages-climate-change.

[883] For instance, agriculture is undoubtedly highly relevant for climate change and yet it took years of negotiations until the first substantive COP decision was adopted in 2017.

[884] E.g. the issue of "Reducing Emissions from Deforestation and Forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries" (REDD+), cf. Petsonk (2007).

[885] On the Paris Agreement see Section 2.1.2.6.

[886] Decision 4/CMA.1, para 18; 18/CMA.1, para. 2.

3.2.2 Strengthening resource efficiency in political processes, organisations and non-binding mechanisms

3.2.2.1 G20 dialogue: Keep resource efficiency on the agenda and develop further into recommendations and actions

Short-term, medium term: Actively follow-up on the G20 Dialogue on RE and ensure that it is continued and that RE stays on the G20 agenda.

Short-term, medium term: Explore to what extent the existing work under the G7 Alliance for Resource Efficiency can feed into and be coordinated with the G20.

Medium term: Move the G20 Dialogue on RE towards more concrete work and outcomes e.g. by setting goals, definitions, or actions.

Description: The G20 is currently a key forum for RE because its members represent high political and economic weight and because it has recently started a process specifically for addressing RE. Since Germany successfully invested political capital into setting up this process during its presidency in 2017, it makes sense to sustain this process and its political dynamic. However, it is not self-evident that there will be a meaningful follow-up on its initiatives.

Having and keeping an issue on the G20 agenda is not necessarily a major step towards legal provisions, but it is highly relevant step politically. In the short term, Germany should signal and offer its continued support of the RE Dialogue to the current G20 presidency. This should require only small political effort, in particular in view of the incoming presidency of Japan at the end of 2018.

In the medium term, Germany could move the RE Dialogue towards more concrete work and outcomes, e.g. goals, definitions, or actions. This would be the next step after the issue has been put on the agenda and the RE Dialogue has established itself as a continuing process. In terms of content, Germany could explore to what extent the work under the G7 Alliance could be introduced into and picked up by the G20. Besides, the link between RE and climate change could provide a separate or additional basis for obtaining political buy-in from other countries.

Moving the RE Dialogue from being an exchange of ideas to potentially developing recommendations for action by G20 member states might require medium political effort. The shift could be sensitive for some members.

Levers for resource efficiency: Defining political targets, strengthening research and improving the knowledge base, promoting resource efficiency in production and consumption.

3.2.2.2 Continue G7 Alliance for Resource Efficiency and coordinate with G20 dialogue

Mid-term: Germany should review progress on the Bologna Roadmap through the G7 and direct it towards more specific plans and actions regarding RE.

Mid-term: Germany should pursue opportunities for co-ordinating the G20 dialogue with the G7 Alliance for Resource Efficiency.

Description: Besides the G20, the G7 also address RE, inter alia with the Toyama Framework on Material Cycles and the 5-year Bologna Roadmap of 2017. Similar to the G20, the G7 is a political forum with no direct opportunity for strengthening RE in legal terms. But as a regular high-level forum it can strengthen and expand acceptance of RE as a shared objective, and its agreed goals and action plans can lay the groundwork for potentially embedding RE in international law in the future.

The G7 explicitly welcomed the G20 Resource Efficiency Dialogue. There is obvious potential for linkages and co-ordination, even though the political parameters for the two fora remain separate. One option could be to maintain a division of labour between the G7 and G20. For instance, the G7 Bologna Roadmap could set out concrete actions for G7 members while the G20 provides a platform for exchange. Alternatively, the G7 could take the lead while the G20 follows suit later.

Levers for resource efficiency: Defining political targets, strengthening research and improving the knowledge base, promoting resource efficiency in production and consumption, improving policy coherence.

3.2.2.3 IRP follow-up: Define and feed in mandate for further work

Short and medium term: Germany should support and increase the IRP's legitimacy as a scientific supporting body. But we do not recommend changing the IRP's institutional setup or mandate.

Description: Although the IRP is not the only or biggest scientific institution working on RE, it has gained standing in providing scientific advice for the policy level. Since its establishment in 2007, the IRP has gained credibility and political relevance as an expert body, as demonstrated by the G7 Bologna Roadmap. Germany should continue to support that role at the international level. This includes support for the reforms suggested by the 2016 evaluation of the IRP, which pointed to a more general re-thinking of the Panel's approach to achieve policy impact. The evaluators recommend, among others, inclusion of "policy and use-seeking sciences" in the Panel and strengthening the role of stakeholders. Beyond "potential user interests" from industry, this should clearly include representatives from civil society.

We do not recommend changing the IRP's institutional setup or mandate without a clear strategic vision, in particular in in relation to the proposals for an International Resource Agency (see Section 3.2.2.11 below). In our view, the IRP's institutional setup or mandate should be maintained in principle, besides incremental improvements such as financial support. Changing them would risk jeopardising its impact rather than being an opportunity for increasing it. There is no necessity in moulding the IRP into e.g. an IPCC equivalent, as the scientific and political issues relating to RE are different from climate change. The physical science and impacts are not a similar challenge or politically controversial. In addition, the IPPC has an explicit role for providing scientific input into a specific treaty regime - the climate regime with UNFCCC, KP and the Paris Agreement. As yet there is no similar demand or role that the IRP could fulfil in respect of RE. Similar considerations would in relation to a potential International Resource Agency. Such an international organisation would be quite different in all aspects from the current IRP and it would require careful assessment whether it could make sense to try to shape the IRP in that direction.

Levers for resource efficiency: Depending on the specific mandate: Strengthening research and improve the knowledge base, promoting resource efficiency in production and consumption; promoting advice on resource efficiency for companies, the use of environmental management schemes, the integration of resource efficiency in standardization.

3.2.2.4 IRP to explore potential of international-level policies for resource efficiency, including a global taxation of resources

The IRP should be commissioned (e.g., by the G20 or the OECD) with a study on potential future international-level policies for resource efficiency, including the potential design and impacts of a global system to tax resources. This could be a first step towards future economic instruments that provide incentives for more RE.

Description: To date, the International Resource Panel has provided policy advice focusing on national-level resource policies. An important new field of advice would be potential *inter*national-level resource policies, beyond the existing set of policies (objectives, binding and non-binding provisions etc.). The report at hand already provides a stocktake and a number of suggestions for strengthening resource efficiency through international policies. However, the IRP due to its mandate and composition has greater international legitimacy as well as more communicative capacities than the project team authoring this report. An assessment of options on how to further develop international resource efficiency governance from the IRP could hence provide an important impetus to the international debate. Such an assessment would benefit from involving "policy and use-seeking

sciences", including the legal sciences, as generally recommended by the 2016 evaluation of the IRP for its future work.[887]

One field to explore in such an assessment could be the global taxation of resources. It would provide an economic incentive for all actors (companies, the state, consumers) to use resources more efficiently.[888] If it was introduced as part of ecological tax reforms it could also help shift the tax base away from labour towards ecological impacts.[889] Currently such taxes exist in some countries for specific resources like building materials or energy.[890]

However, several questions remain to be answered before such a scheme should be proposed internationally and for all resources. First, further research is necessary regarding appropriate taxation rates and bases of taxation in order to avoid e.g. environmentally undesirable substitution effects. Secondly, legal issues have to be solved like the implementation of border adjustments.

Globally implemented resource taxes could have a significant impact on all aspects of production and consumption. However, before the idea can be brought forward on the international level some basic questions have to be answered, making it a medium- to long-term proposition.

An IRP study on the global taxation of resources could solve knowledge gaps and place a respective tax on the international agenda.

Levers for resource efficiency: Improving knowledge base; economic instruments/incentives.

3.2.2.5 Reporting requirements for companies regarding resource efficiency

There are opportunities to promote RE reporting requirements for companies at the national level e. g. regarding the implementation of the EU directive on non-financial reporting which could be done by introducing resource efficiency into the German "Sustainability Code". Also research on appropriate (sector specific) indicators could be commissioned.

Description: Reporting publicly on resource consumption at company level is not in itself an instrument to improve resource efficiency. Nevertheless, transparency can be the basis for further developments, because it requires companies to gather respective data which are necessary if resource efficiency measures are to be adopted. Additionally, publication of such data can be an incentive for companies to increase resource efficiency when performance is benchmarked with other companies of the same sector and if it influences access to funding. Furthermore, such data could also improve governmental statistics on national resource consumption as a whole and regarding specific sectors.

While anchoring reporting requirements for companies regarding resource efficiency in an international treaty is not very realistic it could be integrated into the national implementation of the EU-directive on non-financial reporting[891]. If a change of the law itself is not currently possible, RE could be integrated into the German "Sustainability Code" because the fulfillment of the codes requirements is equivalent to meeting the CSR RUGs specifications.[892] International standards like GRI or KPIs for ESG (see Section 2.3.1) could be taken as reference points for specific reporting requirements regarding RE. Additionally a legal assessment on wether reporting on RE could already

[887] UNEP EOU (2016), at 69.

[888] IMF (2012).

[889] Ludewig et al. (2016).

[890] Hogg et al. (2015).

[891] Richtlinie 2014/95/EU des Europäischen Parlaments und des Rates vom 22. Oktober 2014 zur Änderung der Richtlinie 2013/34/EU im Hinblick auf die Angabe nichtfinanzieller und die Diversität betreffender Informationen durch bestimmte große Unternehmen und Gruppen, ABl. EU L 330 vom 15.11.2015, S. 1. Gesetz zur Stärkung der nichtfinanziellen Berichterstattung der Unternehmen in ihren Lage- und Konzernlageberichten (CSR-Richtlinie-Umsetzungsgesetz - CSR-RL-UG) vom 11.04.2017.

[892] https://www.deutscher-nachhaltigkeitskodex.de/de-DE/Home/DNK/CSR-RUG.

be seen as necessary due to the reporting requirements regarding due diligence processes and risks could be an important step.

While the direct impact might not be very high, reporting requirements can lay the groundwork for increasing resource efficiency in production and promoting circular economy schemes.

Levers for Resource Efficiency: promote resource efficiency in production

3.2.2.6 Promoting environmental management systems

While the idea to make the implementation of environmental management systems legally mandatory on an international level might not be relevant yet, different ideas to promote EMAS on the national and EU level like linking it to public procurement or making it mandatory for public institutions could be pursued.

Description: Environmental management systems help to track energy and resource consumption in companies and other institutions and usually also entail processes to reduce energy and resource consumption over time.

As is the case with non-financial reporting requirements in the context of an international treaty states could commit themselves to oblige companies to implement environmental management systems.

The likelihood of achieving the political support of making environmental management systems mandatory on an international level are limited. Alternative opportunities include strengthening the diffusion and implementation of EMAS (the European environmental management system which is more demanding than the ISO Standards) within the EU. Another option would be to make environmental management systems a requirement for public tenders (see also Section 2.2.7). Taking the national level into focus the implementation of an environmental management system could be made mandatory for public institutions, at least at the federal level.

If environmental management systems were mandatory the impact on resource efficiency in production could be significant.

Levers for resource efficiency: promoting resource efficiency in production (promoting the use of environmental management schemes)

3.2.2.7 UNEP: Strenghtening National Cleaner Production Centres and the global network for Resource Efficient and Cleaner Production (RECPnet)

The German government could, firstly, provide support for the UNIDO and UNEP programmes on National Cleaner Production Centres and Resource Efficient and Cleaner Production (RECP). Secondly, it could promote expanding the financial basis of the programmes (including the number of donors, e.g. at least all G7 countries). Among others, Germany could provide an own financial contribution. The overall objective of the initiative is that NCPCs can be established in further countries and that existing NCPCs can branch out to the regional levels.

Description: National Cleaner Production Centres (NCPCs) and National Cleaner Production Programmes (NCPPs) have been assessed to have "resulted in substantial benefits at country and global levels"[893]. Yet, the potential of the programme is seen as "not yet fully utilized"[894]. Among others, the transition of the Centers from international technical cooperation projects to nationally-owned and nationally-directed service providers competitive with other business services providers has been a challenge.

[893] UNIDO and UNEP 2015, p. 21.

[894] Ibid.

The NCPC programme is implemented in ca. 47 developing and transition countries, funded by a small group of donors.[895] Strengthening the financial basis of the programme as well as of RECP-Net[896] would help disseminating the programme and network to further countries. It could also be used to tackling the outstanding problems in existing NCPCs, e.g. through organisational development advice. In addition, resources should be invested in addressing structural issues such as the transition from fully-funded to financially independent Centres, their institutionalisation and positioning into nationally directed and/or locally-owned service providers.[897]

Since the measure would build on an existing, tried and tested programme and experienced programme sponsors, the effort for the government (beyond the provision of moneys) would be relatively low.

The German government could make available funds, among others, through the International Climate Initiative, whose funding area "[Climate Change] Mitigation" includes funding on sustainable consumption and production, circular economy, resource and waste management.

Implementing the recommendation could produce RE benefits on-the-ground in developing countries.

Levers for resource efficiency: The proposal aims at promoting advice on resource efficiency for companies as well as fostering the development and diffusing of resource- and energy-efficient production and treatment processes.

3.2.2.8 UNEP & UN Habitat "Zero Waste Cities" Award (or: programme/fund)

We recommend the German government to suggest, as part of its Habitat III follow-up activities, the launch of a "zero waste cities" award.

Description: A "Zero Waste Cities" Award would reward innovative cities worldwide for actions to reduce waste. The initiative would address cities as the locus where most goods and services are produced, consumed and the respective waste is created. The initiative's core mechanism would be the creation of an annual award with significant price money for cities with a "zero waste policy". The price money could be provided by (members of) the G7 Alliance on Resource Efficiency, including by Germany.

The initiative could either award cities for having implemented outstanding zero waste policies (ex post), or it could co-fund the implementation of ambitious action plans to create zero waste cities (ex ante). Activities would need to be defined as eligible for funding through the award.[898]

The award could be anchored within UNEP's "Resource Efficient Cities Programme" or within the "Greener Cities Partnership" of UNEP and UN Habitat (which covers, among others, resource flows, efficiency and waste management)[899].

Instead of an award, a (sub-)programme or fund could be launched as well.

The award would help internationally diffusing the idea of waste reduction at a municipal level, provide best practice examples and thus enable learning. It would also co-fund concrete activities.

[895] Principal support stems from the governments of Switzerland and Austria; other contributions are provided by Norway, Italy, Slovenia, Czech Republic, Spain, Denmark and The Netherlands.

[896] Presently funded principally by Switzerland, but also Austria, Norway, Slovenia, the European Commission and select multi-donor trust funds.

[897] UNIDO and UNEP 2015, p. 165-195.

[898] Examples of such activities are local incentives/ policies to prevent creation of household / industry wastes (industrial metabolism…); introduction of separate collection systems; the establishment of recycling/ recovery facilities; the introduction of door-to-door collection; 'urban mining' etc.

[899] https://unhabitat.org/urban-initiatives/initiatives-programmes/greener-cities-partnership/.

Levers for resource efficiency: The initiative would contribute to "strengthening resource efficiency as a criterion for the retail sector and consumers", "optimising the collection and recycling of bulk wastes" and possibly "integrating resource efficiency in public procurement" (at the municipal level).

3.2.2.9 World Bank and IFC: Strengthen the anchoring of resource efficiency within the Bank

The German government, with the support of the G7 or G20, should advocate the strengthening of resource efficiency within the different branches of the World Bank. This includes promoting (in the medium-term) a systematic review of the implementation and effectiveness of the World Bank's safeguard policies and the IFC's performance standards with regard to resource efficiency, a broadening of the scope of application of the Safeguards from project financing to programmatic loans and increased funding for circular economy business models under the IFC.

Description: The initiative could comprise a) a systematic review of the implementation and effectiveness of the World Bank's safeguard policies and the IFC's performance standards with regard to resource efficiency, b) a broadening of the scope of application of the Safeguards from project financing to programmatic loans and c) increased funding for circular economy business models under the IFC.

a) The World Bank's[900] "Environmental and Social Framework" (ESF, also called "Safeguard Policies"; adopted in revised form in 2016) as well as the Performance Standards of the World Bank Group's International Finance Corporation (IFC) (since 2012) have a potential to strengthen resource efficiency in the projects funded by the Bank, in particular through ESS-3 and PS-3. However, it is unclear how effective these standards currently are with regard to resource efficiency – an issue that is much less 'visible' and less under civil society or public scrutiny than, for instance, pollution, degradation of nature or social impacts.
   It would hence be recommendable to conduct an evaluation on how effective these standards are with regard to actually increasing resource efficiency.
b) The initiative could also include the suggestion that the standard's scope of application is extended from project financing to more programmatic loans (DPL, P4R). These make up a significant share of total Bank funding and can have substantial and long-term sustainability impacts.
c) Finally, the initiative would also aim at the IFC's private sector investments. In developing countries, investments in a circular economy are hampered by specific challenges. The IFC as the private sector branch of World Bank could increase its financial support (through loans, equity, venture capital etc.) to companies in developing countries that invest in new Circular Economy Business Models. This would fit with the "Sustainability" priority in the IFC's investments in the manufacturing sector and the "Cities" priority related to the infrastructure sector. Along with finance, the IFC's advisory services[901] on such business models would be strengthened. Increased emphasis on resource efficiency and circular economy business models within the IFC would also need to be 'passed on' to the financial intermediaries with which the IFC works and which on-lend money to SMEs.

The initiative would probably require significant political efforts. Forging a coalition with the G7 or G20 would therefore be an important precondition for success. Considering that the revised ESF have only been in force since 2016, they will likely be reviewed only in a few years' time (e.g., 2021). Efforts in this respect should therefore focus on putting resource efficiency on the World Bank's agenda so as to increase the likelihood of focusing on the issue in the future review.

[900] i.e., the IBRD and IDA.

[901] http://www.ifc.org/wps/wcm/connect/CORP_EXT_Content/IFC_External_Corporate_Site/Solutions/Products+and+Services/Advisory.

Potential impact: The initiative would improve development outcomes by strengthening the RE-related safeguarding of World Bank funded projects (in their conception and implementation). It would also improve access to capital for companies investing in the circular economy in developing countries.

Levers for resource efficiency: The initiative addresses the development and diffusion of resource- and energy-efficient production and treatment processes; promotion of the use of environmental management schemes; and innovation though mainstreaming resource efficiency in product design.

3.2.2.10 OECD: Implementation review of OECD Recommendation of the Council on Resource Productivity (2008) – Ten years later

The German government could request the pending evaluation of progress with work related to the OECD's Council Recommendation on Resource Productivity.

Description: In 2008, the OECD Council adopted a recommendation on resource productivity.[902] It encourages the OECD members to improve resource productivity by promoting environmentally effective and economically efficient uses of natural resources and materials at the macro, sectoral and micro levels as well as to strengthen capacity for analysing material flows and the associated environmental impacts. The OECD's Environment Policy Committee was required to report back to the Council within five years (i.e., till 2013). However, there are no current documents available indicating that the Environment Policy Committee has indeed assessed member countries' respective activities.

Ten years after the Council Recommendation was adopted, a new effort should be made to review its implementation and, based on the evaluation, to develop further avenues for action.

The request for the progress report could be voiced jointly with the other G7 countries. (In 2008, it had been the G8 that had called for an interim report on "Resource Productivity in the G8 and the OECD")

The request would improve the state of knowledge with regard to policy implementation and could stimulate further action within the OECD.

Levers for resource efficiency: The recommendation addresses the lever "improving the knowledge base".

3.2.2.11 Creation of an International Resource Agency

Germany could support the creation of an International Resource Agency.

Description: An international Resource Agency, as called for by several actors[903], could be established either under auspices of UNEP, UNEP & UNIDO, or as an independent institution. It could be modeled on the example of the International Renewable Energy Agency (IRENA)[904] or the International Energy

[902] OECD (2008).

[903] The most elaborate proposal is by Bleischwitz et al. (2012); see also Deutscher Bundestag (2013) and SRU (2012).

[904] IRENA is an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on renewable energy (http://www.irena.org/aboutirena). IRENA's ultimate decision-making authority is the Assembly, made up of one representative from each Member. IRENA's Council is composed of 21 Member States which are elected for a two-year term on a rotating basis, representing both developing and developed countries and a fair and equitable geographical distribution. The Council is accountable to the Assembly and responsible for facilitating consultation and cooperation among IRENA members, reviewing the draft work programme, draft budget and annual report. The Secretariat (i.e., the Director-General and his staff), provides administrative and technical support to the Assembly, the Council and their subsidiary bodies (http://www.irena.org/institutionalstructure). IRENA is funded both by voluntary and mandatory contributions made by members (the latter on the basis of the IRENA scale of contributions which in turn are base d on based on the scale of assessments of the United Nations (cf. Article XII, paragraph A (1) of the IRENA Statute). IRENA's products and services include annual reviews of renewable energy employment; renewable energy capacity statistics; renewable energy cost studies; Renewables Readiness Assessments; a 'Global Atlas' which maps resource potential by source and by location; renewable energy benefits studies; a roadmap to double renewable energy use

Agency (IEA).[905] It could either focus on "resource efficiency" ("International Resource Efficiency Agency") or it could be mandated to deal with sustainable resource management in a broader sense ("International Resource Management Agency").

Depending on the concrete scope of its mandate, it could provide services concerning observation, data and sustainability scenarios, information dissemination and learning through awareness-raising programmes and training courses. The Agency could also serve as the secretariat of an international multistakeholder forum (see below).[906]

Launching a new agency would require significant political efforts. Its establishment would require an interested circle of founding governments; further states could become members later on. The visibility and clout of the agency might be increased if it was linked to a specific policy process, such as an international treaty or a "2% Initiative for Resource Efficiency" (see below). With regard to the organizational setup, the model could be IRENA with its global membership and equitable representation of developing and developed countries in the Council as the operational decision-making body, and with contributions being based on the UN scale of assessments.

Creating a new institutional actor (agency) with a mandate for resource efficiency can shift the balance in the international discourse. This holds particularly when the agency can offer an 'exclusive' service, such as high quality data.

Levers for resource efficiency: Depending on its mandate, establishing an International Resource Agency could address the lever of "strengthening research and improving the science basis; transfer of knowledge".

3.2.2.12 Define mid-level goals on resource efficiency (e.g., in OECD, G20 and potential Framework Convention on Resource Efficiency)

The German government could stimulate an international debate (in various fora) on the definition of mid-level goals and indicators on resource efficiency. These goals and indicators would be sector and raw material specific and could build a bridge to economy-wide goals and indicators on general resource efficiency.

Description: The debate on resource efficiency is characterized by two main levels. A meta-level aiming at increasing resource efficiency on the level of economies, and a level where resource efficiency is implemented in very concrete cases such as the optimization of individual industrial processes. Although both levels are necessary for increasing resource efficiency, they often appear to exist in parallel and with few interlinkages. A major reason for this situation is the fact that many meta-level goals have not been broken down to individual resources and sectors. Vice-versa, sector specific gains are difficult to be accounted for on meta-level indicators.

worldwide by 2030 ('REmap'); renewable energy technology briefs; facilitation of regional renewable energy planning; renewable energy project development tools (cf. http://www.irena.org/aboutirena). IRENA's statute entered into force in 2010 and it has 156 members, with 25 countries being in the process of becoming members. The process of launching IRENA was strongly supported by the German government.

[905] The IEA is an autonomous body within the OECD framework working on providing clean, reliable and affordable energy for its 30 member countries, focusing on four main areas, namely energy security, economic development, environmental awareness and engagement worldwide (https://www.iea.org/about/). The IEA has attracted 30 members since 1974. The IEA's main decision-making body is the Governing Board, composed of energy ministers or their senior representatives from each member country. Through the IEA Ministerial meeting that takes place every two years, the IEA Secretariat develops ideas for existing or new work programmes, which are then discussed with member countries in various IEA committees and ultimately presented to the Governing Board for approval. The IEA also has several Standing Groups, Committees and Working Parties made up of member country government officials, meeting several times a year. The size of the IEA budget and the scope of its work are determined biannually by member countries, with assessed contributions for member countries being based on a formula that takes account of the size of each member's economy (http://www.iea.org/about/structure/).

[906] Bleischwitz et al. (2012) at 59.

To overcome this problem, it is recommended to fill this mid-level gap with sector and raw material specific analysis, goals and indicators. An approach on how this could be achieved was developed within the research project "Germany 2049" by the Öko-Institut (2017).

Generally, one first step could be to define resources and sectors that should be addressed by specific analysis, sector consultations and subsequently efficiency targets and measures. This could encompass construction materials, steel, aluminum, non-ferrous metals, industrial minerals, biotic raw materials for manufacturing, as well as oil based raw materials for manufacturing (e.g. polymers, lubricants).A convention would be the most appropriate locus for said goals, and their anchoring in a treaty would supplement analogous goals at the level of the OECD and G20. In the latter case, the goals would be binding. In the former cases, they would be non-binding but still carry political weight, in particular if linked to a monitoring and review mechanism.

The definition of mid-level (raw material and sector specific) goals allows taking into account the material/ sector specific problem characteristics as well as differing economic, ecologic and social impacts and improvement potentials of resource consumption. Breaking down general resource efficiency goals to mid-level goals also allows a targeted involvement of relevant industries.

Levers for resource efficiency: The proposal provides a 'meta' lever for RE. The goals can stimulate action promoting resource efficiency in production and consumption as well as fostering a circular economy. Defining goals can also raise public awareness.

3.2.2.13 Voluntary Country and Company Guiding Principles on Strengthening Resource Efficiency

Voluntary guidelines could be an alternative to a binding treaty on RE. Such guidelines could address both states and the private sector and be the basis for further legal developments.

Description: If resource efficiency cannot be anchored in an international treaty, another option would be the development of voluntary guidelines or guiding principles on resource efficiency for states as well as business.

Guiding principles for states and businesses already exist for other issues, for instance in the form of the UN Guiding Principles on Business and Human Rights or the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.

The interesting aspect here is that especially the UN Guiding Principles define state responsibilities as well as the responsibility of companies – which, at least partially, ended the shifting of responsibilities regarding the protection and respect of human rights and spurred legislative action, e.g. the French Duty of Vigilance Law, on the national level. The definition of responsibilities would set such Guiding Principles apart from mere handbooks or "how to"- manuals.

Guiding Principles on RE could define content, processes and indicators regarding resource efficiency for governments[907] as well as economic sectors and individual businesses.[908]

The political effort and the potential impact would largely depend on the institution or forum the guidelines would be linked to. Interesting options could be either the UN (UNEP/UNEA) or the OECD.

A more limited alternative to such guiding principles would be resource efficiency guidelines that only address companies and could be initiated by a global industry association like the WBCSD.

Potential impact: Taking the impact of the UN Guiding Principles on Business and Human Rights as a reference point, such voluntary guidelines could stimulate on the ground learning by businesses and

[907] First ideas for potential content could be taken from ProgRess and would include the promotion of resource efficiency in production and consumption, promoting the circular economy and closing material flows.

[908] Relevant aspects might include the elimination of waste throughout the entire lifecycle, optimizing efficiency or moving products, services and the process that develop or deliver them out of the physical world and into the virtual realm (Heck and Rogers (2014)).

governmental institutions as well as constitute the groundwork for further legally binding instruments. Which means the potential impact can be rated as high.

Levers for resource efficiency: potentially all levers addressed in ProgRess.

3.2.2.14 "2% Initiative for Resource Efficiency" (e.g., UNEA, incl. GEF funding)

The German government could promote an international initiative where countries would commit themselves voluntarily to increasing economy-wide resource efficiency by a certain percentage.

Description: The initiative would be non-legally binding. UN member states would commit to increasing their resource efficiency by a certain share per annum (e.g., 2 %, in analogy to "2 Degree" climate goal). It would need to be made certain that the share is both realistic and ambitious, and surpasses the (medium-term) increases in productivity. If no single figure can be internationally determined, countries could 'pledge' their own targets, maybe in a predefined range.

It would be necessary to agree on an adequate RE definition[909], on indicator(s) for measuring progress and a simple review mechanism/ monitoring system.

The initiative could be adopted by the UN Environmental Assembly (UNEA). It might be framed as an international effort to implement SDG 8.4.

To provide means of implementation for developing countries, a funding sub-priority could be established under the Global Environmental Facility (e.g., under the 'Chemicals and Waste' focal area or a suitable focal area/ integrated approach under GEF-7).

The initiative would create pressure on national governments to continually work on RE. Regular reviews would keep up the pressure.

Levers for resource efficiency: The (cross-cutting) lever addressed is "goal / target setting", which can stimulate different types of concrete RE-promoting action.

3.2.2.15 Resolution on Extended Producer Responsibility and Eco-design (e.g., as UNEA Resolution)

The German government could organise an international coalition (e.g., in the context of the G20) to initiate the process for an international (e.g., UNEA) resolution on Extended Producer Responsibility and Eco-design. Such a resolution should motivate industrialised countries to update and make more ambitious their EPR schemes and support South-South learning in order to expand (and in some cases establish) EPR schemes in the Global South.

Description: The OECD defines Extended Producer Responsibility (EPR) as an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle.[910] While in recent years, EPRs systems have been expanded, most of them have been implemented in the EU and North America, mostly covering electronics, packaging, tires and vehicles/auto batteries. Frequently, EPR schemes have focused on recovering material from waste products while neglecting the re-use and reduction of waste (which have higher priority in the waste hierarchy).[911] The OECD assesses that existing ERP schemes can be made more effective by, inter alia, increasing their level of ambition; broadening the scope of products covered; better internalising environmental costs; and strengthening enforcement, particularly to reduce free-riding and leakage.

[909] To date, according to UNEP, there is little consensus on a framework definition of resource efficiency.

[910] An EPR policy is characterised by the shifting of responsibility (physically and/or economically; fully or partially) upstream toward the producer and away from municipalities; and by the provision of incentives to producers to take into account environmental considerations when designing their products. EPR seeks to integrate signals related to the environmental characteristics of products and production processes throughout the whole product chain. See http://www.oecd.org/environment/extended-producer-responsibility.htm.

[911] OECD (2016a).

EPR schemes also suffer from the conceptual drawback that obligations to take back a product do not determine the recycling of the materials contained and that even mandatory recycling rates – which usually refer to the total weight of a product – do not provide incentives for the recovery of specific materials, such as precious metals.[912] Finally, EPR schemes have not succeeded to the expected extent to encourage producers in designing their products more environmentally-friendly.[913] Hence, ERP schemes need to be developed further, adjusted to the specific challenges of emerging economies and developing countries[914], and should be complemented by efforts to strengthen the incentives for the eco-design of products. Generally, EPR models should follow clearly defined targets related to collection, recycling and refurbishing volumes.

An international resolution on Extended Producer Responsibility and Eco-design should motivate industrialised countries to update and make more ambitious their EPR schemes. It would need to be linked to support for sharing experiences and in particular South-South learning on EPR and eco-design. The resolution should call for EPR approaches that translate the polluter pays principle in a way that companies placing related products onto the market are charged with the tasks and all related costs to organize environmentally sound collection and recycling.

The initiative would help to internationally raise the profile of the concepts of EPR and eco-design and promote an update of EPR activities in countries that already implement the concept.

Levers for resource efficiency: The Resolution would address the lever "strengthening producer responsibility" in order to promote a circular economy.

3.2.2.16 Creation of an international (public-private) recycling fund

The German government could promote the creation of an international recycling fund. It would provide economic incentives (e.g. pre-defined premium payments on pre-defined volumes of soundly recycled waste) in order to stimulate environmentally sound recycling in developing countries.

Description: The background of this idea is the fact that recycling is commonly only applied when economically feasible or where a stringent regulatory framework encourages related activities. From a global perspective, these preconditions are only given for certain waste types (valuable waste types such as metal scrap) and for countries with mature governance. Thus, in vast parts of the world, low and mid value waste is disposed or burned and not fed back into the industrial cycle. At the same time, related disposal or burning practices often have severe adverse impacts on human health and the environment.

There are various pilot projects where donors (public or private industry donors, mostly from industrialized countries) incentivize the environmentally sound collection and recycling of waste in developing countries and emerging economies. The goal is to avoid unsound treatment of waste and to increase recycling rates. In this context, economic incentives (e.g. pre-defined premium payments on defined volumes of soundly recycled waste) can provide a means to stimulate environmentally sound recycling in environments where such recycling could not exist under free market conditions.

As many such pilot projects with limited local or bilateral scope are ongoing, experiences from related initiatives could be collected to determine whether a larger initiative such as a global recycling fund under a public-private partnership would be meaningful and feasible.

From the current perspective, private financing could come from internationally operating producers of equipment such as cars, batteries and electronics, starting with a voluntary initiative. Public donors could facilitate the set-up of a related system, including structure, conditions, mechanism and monitoring. The motivation of producers to contribute to such a scheme could be to show compliance with the concept of Extended Producer Responsibility that has a global acceptance, but that can often

[912] Wilts et al. (2011).

[913] OECD (2016a) at 17.

[914] E.g., grey markets for some (e.g. electronic) products, illegal imports of wastes, the role of an informal recycling sector, weak capacities to enforce regulatory EPR schemes etc.

not be soundly implemented in various countries due to governance problems. Producers could also be interested in the initiatives in order to avoid that numerous states come up with differing (regulatory) solutions.

A potential mechanism for disbursing the fund's means would be to require evidence (e.g., a certificate) on the appropriate recycling of a defined amount of waste.

The fund would contribute to creating a business case for recycling, even in (developing) countries with weak governance structures.

Levers for resource efficiency: The levers addressed are "strengthening recycling" as well as "Optimising the collection and recycling of bulk wastes", with a focus on developing countries.

3.2.2.17 Country-driven resource-efficient procurement initiative (e.g., OECD initiative)

The German government could initiate a country-driven sustainable procurement initiative in which governments commit themselves to increasing the share of publicly sourced products and services sourced that are resource efficient.

Description: The initiative would be a self-commitment of countries to set national targets for the share of sustainable products sourced by governments and public agencies. For instance, this could be an escalating target of 30% to 50% of products complying with resource-efficiency standards, drawing on criteria of existing ecolabels.

The initiative could be started within the G7 Alliance for Resource Efficiency and / or then be spread to the OECD member states. It could be designed as a "challenge", comparable to the "Bonn Challenge" on restoring tropical forests, where governments make 'pledges' as to the hectares of forests that they will restore.[915] The "Bonn Challenge" also provides a forum for regularly discussing progress.

Public procurement constitutes some 15% of GDP within OECD countries, so that a greater integration of RE in public procurement could significantly strengthen market signals in favour of RE.

Levers for resource efficiency: The initiative addresses the lever "integrating resource efficiency in public procurement".

3.2.2.18 G7 "Golden carrot" initiative to internationally promote ecological product design

The German government could promote the creation of a 'Golden Carrot' initiative to internationally stimulate ecological product design in selected product groups.

Description: Golden Carrot programmes are financial rewards ('golden carrots') offered by the public sectors to producers in order to simulate innovation with regard to ecological product design, thus accelerating the development and commercialization of super-efficient end-uses. First introduced in the 1990s in the US, golden carrot programmes have focused on energy efficiency and have been operated at national levels.[916]

Germany could suggest that the G7 creates an international fund which finances a Golden Carrot Programme. Under the programme, regular international producer competitions would be organized for designing products in more resource efficient ways. The steering committee of the fund would consider which (internationally traded) products are of specific interest with regard to increasing resource efficiency and would develop criteria for the award procedure. Potentially interesting products are batteries or standardised recycable thermal insulation modules.

[915] www.bonnchallenge.org/content/challenge.

[916] On the history of the idea, cf. https://www.cee1.org/content/golden-carrots-beginning. See also Grießhammer et al. (2011).

It would be necessary to examine whether a Golden Carrot Programme on resource efficiency was eligible under international (WTO) state aid rules.[917]

The programme would help overcoming financial restraints of ecological product design.

Levers for resource efficiency: The initiative addresses the lever "Innovation though mainstreaming resource efficiency in product design".

3.2.3 Strengthening resource efficiency in non-state and other governance approaches: Global Multistakeholder Forum on Resource Efficiency

The German government could promote the launch of a Global Multistakeholder Forum on Resource Efficiency. In the Forum, different industries and stakeholders would collaborate (in material-specific sub-forums) to develop environmentally and socially sustainable processes to close material flows (secondary material supply chains). The Forum could be linked to industry and civil society actors involved in the G20 process and its Resource Efficiency Dialogue.

Description: As material flows in today's economy can span the globe,[918] circular economy solutions and other options to increase resource efficiency in production and consumption also have to cross borders.

Therefore, a global multistakeholder forum with several sector/resource specific sub-forums should be initiated. Here, technical solutions as well as agreements between companies etc. can be developed and implemented. To improve legitimacy and include further sources of knowledge, the involvement of civil society organisations is necessary and should be financially supported. It should help preventing circular economy solutions at the cost of environmental standards and decent work conditions in recycling countries.

First steps include the identification of critical resources (either regarding environmental and human rights impacts or regarding the volume) and the initiation of respective (industry / stakeholder) "pilot forums".

Getting industry interested in such a forum might require some political effort. Promising avenues include starting with forerunners and emphasising the industry benefits of closing resource flows in a global environment of increasing scarcity for a number of raw materials. The Forum could be linked to industry and civil society actors involved in the G20 process and its Resource Efficiency Dialogue. The Forum would be more targeted in its composition than the existing "Business 20" (B20) group (i.e. the official business dialogue of the G20) and more focussed in terms of its mandate. However, interested members of the B20 could form the initial core of the Forum, in collaboration with interested members of the "Civil 20" (C20) civil society organisations involved in the G20 process.

Ideally, the Forum would develop environmentally and socially sustainable processes to close material flows. If the Forum would be somehow linked to, for instance, a strengthening of producer responsibilities, its impact would likely be higher.

Levers for resource efficiency: provision of sustainable raw materials, resource efficiency in production, resource efficiency in consumption, circular economy

[917] Grießhammer et al. (2011) at 25.

[918] IRP (2019).

4 Annexes

4.1 Annex 1: Levers for resource efficiency (based on ProgRess)

Dimension	**Lever for improving RE (German „Handlungsfeld“)** *The following levers correspond to the areas for action identified by ProgRess for improving RE. We bracketed those approaches that we consider to be linked merely indirectly to RE.*
Secure sustainable raw material Rohstoffversorgung	Increasing **efficiency in mining and processing of raw materials** and strengthen **recycling**
	[Increasing transparency in value chains]
	[Supporting sustainable resource extraction in partner countrires]
	[Targeted expansion of material utilisation of renewable raw materials]
Promote resource efficiency in production	Promoting **advice** on resource efficiency **for companies**
	Developing & diffusing of resource- and energy-efficient **production and treatment processes**
	Promoting the use of **environmental management schemes**
	Innovation though mainstreaming resource efficiency in **product design**
	Promoting the integration of resource efficiency in **standardization**
Promote resource efficiency in consumption	Raising **public awareness**
	Strengthening resource efficiency as a criterion for the **retail sector and consumers**
	Introducing new or increasing use of existing **certification systems for raw materials**
	Integrating resource efficiency in **public procurement**
Promote a circular economy	Strengthen **producer responsibility**
	Optimising the **collection and recycling of bulk wastes**
	Preventing **illegal exports and imports** of wastes
	[Closing international [better: regional?] material flows = steht so nicht in ProgRess]
Übergreifende Instrumente	[Defining RE-targets politically = steht so nicht in ProgRess]

	Developing instruments that promote the **market penetration** of resource efficient products and services
	Using **economic instruments** and **phasing out subsidies** that foster resource consumption
	Strengthening **research** and improving the **knowledge base**
	Transfer of technology and knowledge, advice

4.2 Annex 2: Outline for a Framework Convention on Resource Efficiency

While we are hesitant to recommend actively pursuing a treaty at this stage (see above), this section sets out potential treaty provisions for discussion or future use.

With regard to scope, we recommend to pursue a treaty on resource efficiency in general rather than a treaty only on RE for abiotic resources. The approach and overarching principles would be the same for all resources. The framework treaty structure we propose could lay down these general principles and set, or allow for, specific obligations and provisions, such as reporting obligations, in separate parts, for instance in annexes. In contrast to e.g. the UNCCD, the annexes should be for specific sectors, products, materials etc., instead of regional. This treaty would be flexible and could be successively expanded over time.

Abiotic resources would be specifically addressed in one annex. Goals and indicators are currently placed in that annex - but it is up for discussion whether they could be placed in the treaty's main part.

Not all provisions are drafted in legal treaty language. The articles' headings are mainly to assist the drafting and could be deleted in the final treaty text. The following draft includes comments in italics and footnotes:

Preamble

The Parties to this Agreement,

In pursuit of the United Nations' Sustainable Development Goals,

Mindful of the Earth's long-term boundaries,

Acknowledging that resource efficiency yields numerous benefits for the environment, climate, health, jobs and sustainable economic growth,

Recalling the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns,

Recalling the Paris Agreement, which recognises that sustainable lifestyles and sustainable patterns of consumption and production, with developed country Parties taking the lead, play an important role in addressing climate change,

Recognizing the specific needs and special circumstances of developing country Parties, in particular the special situations of the least developed countries with regard to funding and transfer of technology,

Affirming the importance of education, training, public awareness, public participation, public access to information and cooperation at all levels on the matters addressed in this Agreement,

Recognizing the importance of the engagements of all levels of government and various actors, in accordance with respective national legislations of Parties, in addressing sustainable development,

Have agreed as follows:

Comment: The preamble could also restate the principle of permanent sovereignty over natural resources and the duty to prevent transboundary environmental harm: "Re-affirming that States have, in accordance with the Charter of the United Nations and the principles of international law, a sovereign right to exploit their own resources pursuant to their environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." This might be supplemented by a statement that excessive use of a resource could result in significant harm to another state, and that in this sense the obligation limits the sovereign right of states to exploit their resources.

Article 1 - Objective

The objective of this Agreement is to achieve the sustainable management and efficient use of natural resources along the entire life cycle of natural resources, products and infrastructure, and to contribute to progressively improving global resource efficiency in consumption and production, in the context of sustainable development, with a view to decoupling economic growth from environmental degradation.

Comment: Based on SDG 8.4 and 12.2 in order to stay close to previously agreed language and to avoid over-burdening the objective. Potential targets and indicators would be developed and agreed as part of the specific annexes

Article 2 - Definitions

For the purpose of this Agreement:

"Party" means a Party to this Agreement,

"Resources" or "natural resources" means [...],

[...]

Comment: Does it seem useful, necessary, and feasible to include an agreeable definition of natural resources, resource efficiency or other terms? Definitions may provide clarity on the scope of the agreement. On the other hand it could be better to leave it open for parties to either develop a definition over time, or to be pragmatic and leave it undefined, because the framework treaty envisages future guidance and annexes for specific materials, products or sectors. For instance, for the OECD the term "resource" includes natural resources but is limited to metallic and non-metallic industrial minerals, and biomass, while excluding energy resources such as coal, oil and gas. The OECD notes that G7 countries operationalise the term differently and not always consistent with how such terms are used internationally.[919]

Article 3 - Guiding Provisions

In taking action towards achieving the objectives of this Convention and implement its provisions, the Parties shall be guided, inter alia, by the following:

(a) Parties should utilise natural resources sparingly and economically with a view to conserving existing natural resources for future generations and minimising negative environmental impacts associated with resource extraction and use.

(b) Parties should include resource efficiency in promoting the internalisation of environmental costs.

[Alternative wording: The internalisation of environmental costs should include resource efficiency.]

(c) Parties should avoid that risks and burdens are shifted between stages in the value chain, phases in the life-cycle, sectors, regions, resources and impacts.[920]

(d) [...]

[919] OECD (2016) p. 23-25.

[920] OECD (2016) p. 40; UNEP (2017) p. 8.

Comment: This article is intended to contain overarching principles and guidance as opposed to specific individual obligations for parties. However, the distinction is not clear-cut and difficult to draw.

With regard to (b), the polluter pay principle could promote resource efficiency basically by better internalising external costs along the value chain and by treating inefficient resource use directly as pollution. The latter would blur the conceptual distinction between paying for actual damage caused to the environment and paying for using a good, service or resource (see the analysis of the polluter pays principle in the Research Report, section 2.1.1.10). The text suggested here chooses to avoid resolving these difficult questions in the treaty text and instead to leave it to be addressed by parties through subsequent treaty practice.

Article 4 - General Obligations

1. Parties shall, in the light of different national circumstances and with developed country parties taking the lead,

(a) prepare, communicate and regularly update national strategies on resource efficiency,

(b) take steps to increase resource efficiency progressively over time with aim of achieving the objective of the Agreement as set out in Article 1, for instance by,

i. addressing and improving policy integration and coherence;

ii. promoting resource-efficient production and consumption patterns, in accordance with national policies and priorities,

iii. discouraging or preventing inefficient production and consumption patterns;

iv. promoting and implementing public procurement practices that are sustainable, in accordance with national policies and priorities;[921]

v. advancing technologies for obtaining materials from natural resources that eliminate waste and toxics and support long-term ecosystem health;

vi. promoting and requiring, where feasible and appropriate in accordance with national policies and priorities, the application of environmental management systems;

vii. promoting sustainable materials management;

viii. improving information about, and monitoring of, materials, their flows and environmental impacts;

ix. [...]

2. In addition to paragraph 1, each Party shall take measures with regard to each annex it is listed in.

Comment: Paragraph 2 is the legal link between this framework treaty text and specific commitments in annexes.

Potential targets and indicators would be developed and agreed as part of the specific annexes.

Article 5 - Transparency on implementation

[921] SDG 12.7

1. Parties shall regularly provide information to the COP on how it implementsthis Convention and any Annexes applicable to it, for consideration by the COP.

2. The information submitted under paragraph 1 shall contain at least the following information:

(a) The national strategy referred to in Article 4(1)(a);

(b) Information on action taken to implement this Agreement, including its annexes as applicable and the national strategy;

(c) [...]

3. COP to determine further content, modalities such as format and timetable.

4. Reports to be made public.

5. Follow-up to the reports, e.g. review, synthesis by Secretariat; discussion by COP.

Article 6 - Cooperation and Support

1. Parties recognise the importance of international cooperation and support for the effective implementation of this Agreement and the importance of taking into account the needs of developing country Parties, especially the Least Developed Countries.

2. All Parties should cooperate to enhance the capacity of developing country Parties to implement this Agreement, including through regional, bilateral and multilateral approaches, and through appropriate institutional arrangements.

3. Parties should strengthen their cooperation, including with regard to:

(a) sharing information, good practices, experiences and lessons learned, including, as appropriate, as these relate to science, planning, policies and implementation;

(b) strengthening institutional arrangements to support the synthesis of relevant information and knowledge;

(c) technology development and transfer in order to improve resource efficiency;

(d) strengthening knowledge on resource efficiency;

(e) education, training, public awareness, public participation and public access to information;

(f) [...]

Comment: A regular issue in international environmental treaties is the capacity of developing countries to implement their international commitments. In this respect the treaty would need to address support, which usually comprises capacity building, technology development and transfer, and financial support.

Main options:

- no provisions on financial obligations or a financial mechanism

- provisions on / a mechanism for mobilising voluntary support

- general obligation to support developed countries

- general obligation to support developed countries plus financial mechanism and operating entity such as GEF, other fund etc.

- platform for scientific and technology transfer; potentially: link to industry;

- Institutions? Could link to IRP, but might not be useful because IRP is small and might be better as an independent body.

- provisions on further development of the treaty

Article 7 - Institutions

1. Conference of the Parties - supreme body of this Agreement. Standard clause as e.g. in Paris Agreement: It shall perform the functions assigned to it by this Agreement and shall:

   (a) Establish such subsidiary bodies as deemed necessary for the implementation of this Agreement; and

Comment: This would inter alia allow establishing a body for engaging with non-party stakeholders such as industry representatives. In addition, the treaty could explicitly provide a mandate to establish means for such engagement.

   (b) Exercise such other functions as may be required for the implementation of this Agreement.

2. Secretariat - standard functions.
3. Permanent Subsidiary Body - e.g. on Science and Technical Advice.

Comment: Are there other functions for the COP, Secretariat, or Susidiary Body, that are not standard but specific to RE and for which a mandate would be needed? Example: Data collection; Reviewing reports?

4. [To be discussed: Link to specific institutions such as the IRP.]

Article 8 - Annexes

1. Annexes are an integral part of this Agreement.
2. Procedure for parties to join and withdraw from annexes.
3. Procedure for amending existing and adopting new annexes.

Article 9 - final clauses: entry into force etc.

1. Signature, ratification, EU clause. If a global treaty is envisaged, we recommend that 50 ratifications required for entry into force. In any case no less than 30.
2. Other standard issues and clauses: Entry into force, reservations, amendments, dispute settlement, depositary, withdrawal, authentic texts.

<u>Annex 1 - Resource efficiency for abiotic resources</u>

Article 1 - Scope

This annex applies to [*definition of scope regarding abiotic resources*]

Article 2 - Goals, targets and indicators

[Sector and raw material specific analysis, goals/targets and indicators.]

Comment: A key challenge will be to consider which, if any, targets and indicators could be useful and feasible specifically in a treaty, i.e. a legally binding instrument at the international *level. For instance,*

goals targets and indicators can be formulated as quantitative or qualitative. In addition, they can be formulated as collective or individual. A treaty can combine all options.

- In this draft we do not draw a categorical distinction between the terms "goal" and "target". Both specify and guide how parties are to pursue the overarching objective in Article 1 of the Agreement. The term "goal" may seem more general and "target" may suggest that is measurable. For instance, the UN's 17 Sustainable Developments Goals are underpinned by 169 "targets". However, some of the SDG "goals" could be regarded as measurable ("end poverty in all its forms everywhere"), while some of the "targets" would not seem so ("By 2030, achieve the sustainable management and efficient use of natural resources"; "Promote public procurement practices that are sustainable").

- As a means to an end, indicators can provide a common understanding on what goals and targets mean and how to measure progress towards achieving them. Specifically for a treaty under international law, it should be taken into account that only states that agree to a treaty are bound by it, and that the obligations frequently are of a higher level of abstraction than national or EU laws. Further discussion should inter alia address: Which targets and indicators would be suitable specifically for the international level and for supporting certain objectives, bearing in mind that the different views and capacities of other states? Which targets or indicators could be mentioned in the treaty in a general manner, and what could be deferred or mandated for parties to elaborate and agree later on?

Article 3 - Undertakings

Each party should require undertakings which are public-interest entities exceeding on their balance sheet dates the criterion of the average number of 500 employees during the financial year[922] to make available to the public information regarding resource efficiency. [Further details, see comment]

Comments:

- Compared to international legal practice, this would be rather specific obligation. It is important to keep in mind that this would remain an obligation on the parties at the international level to then oblige the companies at their respecitve respective national levels. A softer version could be an obligation to "promote" reporting by companies, e.g. in Article 4.1 of the Agreement.

- In order to define reporting obligations, some degree of clarity might be needed on which companies or facilities should report, as well as on how to report. However, since parties might regard this as unsually intrusive, taking into account different national circumstances and capacties would be key.

The treaty could, for instance, merely set broad and unspecified requirements: This would be similar to the EU directive on non-financial reporting which leaves substantial room for specification to national governments. The potential downside is insufficiently ambitious and incoherent implementation by parties. On the other hand, broad leeway for states could increase political buy-in and acceptance.

The Agreement could also refer to an existing (sustainability oriented) reporting framework. One example is the EU-Regulation on conflict minerals[923], which is links some of its obligations to the OECD Due Diligence Guidance. The potential problem with this approach is that the internationally most prominent reporting frameworks like GRI are developed by private entities, which raises issues of legitimacy, political buy-in and changes.

The treaty could defer all or part of this issue by mandating future discussion by parties on guidance.

[922] Definition taken from EU CSR directive, Directive 2014/95/EU of 22.10.2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups, OJ L 330, 15.11.2014, p. 1–9.

[923] Regulation (EU) 2017/821 of the European Parliament and of the Council of 17 May 2017 laying down supply chain due diligence obligations for Union importers of tin, tantalum and tungsten, their ores, and gold originating from conflict-affected and high-risk areas, OJ L 130, 19.5.2017, p. 1–20.

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