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Green Economy: an Engine for Development?

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Green Economy: an Engine for Development?

by

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Kurzbeschreibung

Der Begriff der “grünen Wirtschaft” (green economy) wird schon seit einigen Jahren verwendet, hat jedoch durch die Rio+20-Konferenz 2012 eine deutliche Aufwertung erfahren. Die Konferenz sah darin “eines der wichtigen Mittel zur Herbeiführung einer nachhaltigen Entwicklung.” Während sich im Rio-Abschlussdokument keine genaue Definition des Begriffs findet, gibt es einen wachsenden Bestand an praktischen Erfahrungen aus Ländern in aller Welt, die Initiativen, Strategien oder Programme zur Förderung der grünen Wirtschaft verfolgen. UNEP, das Umweltprogramm der Vereinten Nationen, dient als Plattform für den Austausch von Informationen und Erfahrungen, die durch die verschiedenen nationalen Aktivitäten gewonnen werden. In diesem Papier kommen wir zu dem Ergebnis, dass es zwar theoretisch wünschenswert wäre, eine klare und universelle Definition der „grünen Wirtschaft“ zu haben, dass dies aber in der Praxis kaum wahrscheinlich ist. Stattdessen entwickelt sich aus den vielfältigen nationalen Initiativen die Grundzüge eines gemeinsamen Verständnisses, was die „grüne Wirtschaft“ ist.

Für einen solchen Ansatz spricht, dass in der Vergangenheit schon viele politische Begriffe beträchtlichen Einfluss hatten, ohne dass es eine exakte Definition gegeben hätte – soziale Gerechtigkeit oder Demokratie wären Beispiele hierfür. In diesem Sinn liefert der Begriff der grünen Wirtschaft einen neuen Ansatz, um über wirtschaftliche Entwicklung nachzudenken – aber hierfür bedarf es weniger einer genauen Definition, sondern eher eines überzeugenden, in sich schlüssigen und motivierenden Argumentationsmusters.

Ein solcher Ansatz birgt jedoch das Risiko dass, ohne genaue Definition, der Begriff als beliebig oder willkürlich empfunden wird, und so letztlich wirkungslos wird. Eine Möglichkeit, dem entgegenzuwirken, ist, die wichtigsten Elemente eines Argumentationsmusters zu betonen. In diesem Sinn fasst das vorliegende Papier zunächst einige grundlegende Annahmen und Bestandteile einer grünen Wirtschaft zusammen. Anhand von Beispielen aus verschiedenen Ländern wird dann dargestellt, wie sich die grüne Wirtschaft auf andere Zielgrößen wie Beschäftigung, Armutsbekämpfung oder Gesundheit auswirken könnte. Zudem werden einige wichtige Politikinstrumente diskutiert, die den Umbau zu einer grünen Wirtschaft voranbringen können – darunter marktbasierte Instrumente, Investitions- und Innovationsförderung, Bildung und Ausbildung, sowie ein neues Maß für wirtschaftliche Wohlfahrt.

Abstract

The concept of a ”green economy” has been around for a few years, but has gained in recognition and weight following the Rio+20 Conference in 2012, which recognised it as “one of the important tools available for achieving sustainable development”. While the Conference did not agree on a precise definition of the green economy concept, there is now an increasing body of experience from countries around the world that are implementing green economy initiatives, strategies or policies. These efforts are loosely coordinated by UNEP, which serves as an information hub to promote exchange on best practices. In this paper, we argue that trying to arrive at an exact and universal definition of the green economy might be useful in theory, but appears very unlikely in practice. Rather, what we see is a common understanding of the concept that emerges from its concrete implementation in countries around the world.

This bottom-up approach recognises that, in the past, many concepts did not require a commonly agreed or exact definition to have considerable impact – social justice or democracy would come to mind. The concept of a green economy provides a new model, i.e. a new way of thinking about economic development – and to serve this function, it is not so much an exact definition that is needed, but rather a consistent, convincing and compelling narrative.

The risk of a bottom-up approach is that, without a precise definition, the concept may come to be seen as arbitrary and meaningless. One way to contain this risk is to emphasise the core elements of such a narrative. Along this vein, this paper explores what the core elements and constituting features of the green economy could be. Drawing on examples from different countries and regions, it discusses the expected benefits of a green economy for social and economic development, including employment effects, poverty alleviation and health. It also looks at some of the main policies that can be expected to play a role in the policy mix for a green economy – including pricing tools, new measures for economic welfare, investment support and training and education.

Table of Contents

List of Figures

List of Abbreviations

BAU	Business As Usual
CCS	Carbon Capture and Storage
CO_2	Carbon dioxide
EU	European Union
GDP	Gross Domestic Product
GE	Green Economy
GGGI	Global Green Growth Initiative
IEA	International Energy Agency
IILS	International Institute for Labour Studies
ILO	International Labour Organisation
IMF	International Monetary Fund
OECD	Organisation for Economic Cooperation and Development
PAGE	Partnership for Action on Green Economy
ppm	parts per million
REDD	Reducing Emissions from Deforestation and (Forest) Degradation
TEEB	The Economics of Ecosystems and Biodiversity
UN	United Nations
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for the Asia Pacific
US$	United States dollars
VAT	Value Added Tax

1 Zusammenfassung

Grüne Wirtschaft: Versuch einer Begriffsklärung

Der Begriff der "grünen Wirtschaft" (green economy) wird schon seit einigen Jahren verwendet, hat jedoch durch die Rio+20-Konferenz 2012 eine deutliche Aufwertung erfahren. Die Konferenz sah darin "eines der wichtigen Mittel zur Herbeiführung einer nachhaltigen Entwicklung", um die Bedürfnisse einer wachsenden Weltbevölkerung zu befriedigen, ohne die begrenzte Tragfähigkeit der globalen Ökosysteme dauerhaft zu überschreiten. Während die Rio+20-Konferenz die Bedeutung des Begriffs der grünen Wirtschaft unterstrich, findet sich jedoch im Abschlussdokument der Konferenz keine genaue Definition des Begriffs. Das Dokument beschreibt vielmehr, was die grüne Wirtschaft leisten soll: es soll zur Armutsbekämpfung und zu stabilem wirtschaftlichen Wachstum beitragen, soziale Inklusion befördern, menschliches Wohlergehen verbessern, Möglichkeiten für Beschäftigung und würdige Arbeitsverhältnisse schaffen, und gleichzeitig die Funktionsfähigkeit der globalen Ökosysteme sichern.[1] Neben dem Fehlen einer genauen Definition gibt es – anders als bei anderen Ergebnissen der Rio+20-Konferenz – auch keine Vorgaben für einen konkreten, koordinierten Folgeprozess mit Zielen und Zeitvorgaben. Stattdessen forderte die Konferenz Staaten, internationale Institutionen und andere relevante Akteure auf, ihre Anstrengungen zum Aufbau einer grünen Wirtschaft zu intensivieren.

Eine Anzahl von Ländern in aller Welt sind dieser Aufforderung nachgekommen, sei es, indem sie neue Programme und Initiativen für eine grüne Wirtschaft auf den Weg gebracht haben, oder indem sie vorhandene Anstrengungen intensiviert haben. Auf diese Weise verbreitet sich der Begriff des grünen Wirtschaftens, und wird durch eine Vielzahl von Initiativen weltweit mit Leben gefüllt. Eine – wirtschaftlich wie geographisch – heterogene Gruppe von Ländern wie Brasilien, China, Costa Rica, Indien, Südafrika, Südkorea, Uruguay oder Vietnam verfolgt dezidierte Initiativen, Strategien oder Programme für eine grüne Wirtschaft, und baut auf diese Weise einen Schatz an Wissen und Erfahrungen auf.[2]

Dieser wachsende Bestand an praktischen Erfahrungen aus aller Welt wird lose koordiniert durch UNEP, das Umweltprogramm der Vereinten Nationen. UNEP dient als Plattform für den Austausch von Informationen und Erfahrungen, die durch die nationalen Aktivitäten gewonnen werden, und trägt so dazu bei, aus der praktischen Erfahrung ein gemeinsames Verständnis des grünen Wirtschaftens zu erarbeiten. Die Arbeit von UNEP wird dabei geleitet von einem flexiblen und bewusst breit gehaltenen Grundverständnis des grünen Wirtschaftens. Demnach ist grünes Wirtschaften eine Wirtschaftsform, die menschliches Wohlbefinden und sozialen Ausgleich fördert, und zugleich Umweltrisiken und ökologische Gefahren spürbar verringert. Auf einen einfachen Nenner gebracht: eine grüne Wirtschaft kommt ohne fossile Ressourcen aus, ist ressourceneffizient und sozial inklusiv.[3]

Während dieses Grundverständnis allgemein akzeptiert ist, erscheint es unwahrscheinlich, dass in absehbarer Zeit eine genaue Definition der „grünen Wirtschaft" vereinbart werden kann – nicht zuletzt, weil Länder in aller Welt darauf hinweisen, dass der Begriff an unterschiedlichen Orten, in unterschiedlichen kulturellen und sozioökonomischen Bedingungen eine unterschiedliche Bedeutung haben wird. Dennoch werden aus den vielfältigen nationalen Initiativen und aus den politischen und wissenschaftlichen Diskussionen die Grundelemente der „grünen Wirtschaft" deutlich:

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[1] United Nations, "The Future We Want - Outcome Document."

[2] Samans, "Green Growth and the Post-2015 Development Agenda: An Issue Paper for the United Nations High-Level Panel of Eminent Persons," 5.

[3] UNEP, *Towards a Green Economy*. p.16

- **"Grünes Wirtschaften" ist ein neues, anderes Verständnis von wirtschaftlicher Entwicklung.** Die Grenzen des bestehenden, wachstumsbasierten Wirtschaftsmodells werden immer sichtbarer und greifbarer – dazu zählen zunehmende Krise und Instabilität, zunehmende Ungleichheit in der Verteilung von Vermögen und Einkommen, Übernutzung und Zerstörung natürlicher Ressourcen, und zunehmende öffentliche Unzufriedenheit und wachsender Widerstand in manchen Teilen der Welt. Während der letzten beiden Jahrzehnte haben verschiedene Weltregionen eine Phase schnellen und kontinuierlichen Wachstums durchlaufen. Dieses Wachstum hat es ermöglicht, Hunderte von Millionen Menschen aus der Armut zu befreien, und hat zum Entstehen einer neuen globalen Mittelschicht geführt. Aber das Wachstum hat auch zu neuen Problemen geführt. So sind etwa die Früchte des Wachstums ungleich verteilt, in vielen Ländern kommt ein großer Teil des neu entstandenen Einkommens nur einem vergleichsweise kleinen Teil der Bevölkerung zu Gute. Wachsende Ungleichheit – sowohl bei Vermögen als auch bei Einkommen – lassen sich sowohl in Industrieländern als auch in Schwellen- und Entwicklungsländern beobachten. Daher stellt sich in all diesen Ländern die Herausforderung, dass das Wachstum integrativ ist, und breite Bevölkerungsschichten daran teilhaben. Zudem ging das rasante wirtschaftliche Wachstum einher mit einem ebenso rasanten Anstieg des Verbrauchs an Energie und natürlichen Ressourcen. Die Übernutzung natürlicher Ressourcen hat massive Konsequenzen in Form von Umweltschäden und Umweltverschmutzung, und in der Folge auch für menschliche Gesundheit und Wohlergehen. Die Folge ist, dass wirtschaftliches Wachstum (gemessen durch steigende Einkommen) nicht zu einer entsprechend großen Verbesserung der Lebensqualität führt: die schädlichen Nebenwirkungen des Wirtschaftswachstum, wie Umweltzerstörung und Gesundheitsschäden, machen einen Teil der positiven Effekte steigender Einkommen zunichte.
- **Der Begriff des grünen Wirtschaftens muss sich auf die drängendsten globalen Trends und Herausforderungen beziehen.** Er muss also den geänderten Umständen Rechnung tragen, die sich aus mehr als zwei Jahrzehnten ökonomischer Globalisierung ergeben haben, wie etwa dem Entstehen einer globalen Mittelschicht. Und es muss die globalen Herausforderungen aufgreifen, mit denen sich die Welt konfrontiert sieht – allem voran Klimawandel und der Rückgang der Artenvielfalt – und eine gemeinsame globale Antwort auf diese Herausforderungen voranbringen.
- **Grünes Wirtschaften muss ganzheitlich gedacht werden: es geht darum, die gesamte Volkswirtschaft umzubauen, und nicht nur bestimmte "grüne" Branchen oder Technologien zu fördern.** Dennoch gibt es natürlich bestimmte Branchen, die für die Transformation zum grünen Wirtschaften von besonderer Bedeutung sind. Dazu zählen in erster Linie energie- und ressourcenintensive Branchen wie die Energiewirtschaft, Bergbau, Grundstoffindustrien und andere energieintensive Industriebranchen, Land- und Forstwirtschaft, Fischerei und Verkehr.[4] Zwar können technologische Innovationen helfen, den Energie- und Ressourcenverbrauch dieser Branchen zu senken. Aber zur Lösung werden auch soziale, organisatorische und institutionelle Innovationen gehören, etwa grundlegend andere Wege, um menschliche Bedürfnisse zu befriedigen. Dieser Prozess wird letztlich auch auf einen ökologischen Strukturwandel herauslaufen, in dessen Folge wirtschaftliche Wohlfahrt viel weniger an die Förderung, Verarbeitung

[4] African Development Bank, *Sierra Leone: Transitioning Towards Green Growth. Stocktaking and the Way Forward*, 32.

und Verwendung natürlicher Ressourcen gekoppelt ist, sondern Ressourcenverbrauch durch intelligente Dienstleistungen ersetzt wird. Ein solcher Strukturwandel bedeutet daher auch einen Umbau des Kapitalstocks, und ein Umleiten von Investitionsflüssen, eine Verschiebung der Nachfrage nach bestimmten Gütern und Dienstleistungen, und damit auch Änderungen in Preisen und der Renditeerwartung bereits getätigter Investitionen. Auch deshalb wird eine solcher Umbau auf Widerstand stoßen – insbesondere auf den Widerstand derjenigen, die in das bestehende Modell ressourcenintensiven Wachstums investiert haben.

- Da der Umbau zum grünen Wirtschaften eine Reihe von Branchen und Sektoren betreffen wird, ist es um so wichtiger dass **Nachhaltigkeitserfordernisse in alle anderen Politikfelder integriert werden**, um so auch den notwendigen institutionellen und strukturellen Wandel möglich zu machen. Dies legt auch nahe, dass es einen breiten Mix aus Politikinstrumenten wird geben müssen, wozu sowohl neue Instrumente gehören als auch die Reform bestehender, evtl. kontraproduktiver Instrumente.
- Um den Umbau zum grünen Wirtschaften voranzubringen, bedarf es auch einer **Reform der institutionellen Rahmenbedingungen auf nationaler und internationaler Ebene.** Dazu gehören etwa die Regeln und Regularien, die derzeit maßgeblich sind für die wirtschaftliche Entwicklung, etwa im Handelsrecht, im Finanzsektor, oder bei Investitionen.[5] Diese Regularien sollten starker auf die Ziele für menschliche Entwicklung ausgerichtet sein, etwa die Millenium-Entwicklungsziele der UN (MDGs) oder zukünftige Nachhaltigkeitsziele (SDGs). Weitere Anknüpfungspunkte und Überschneidungen bestehen etwa mit den laufenden Initiativen, neue und bessere Indikatoren für wirtschaftliche Wohlfahrt und gesellschaftlichen Fortschritt zu etablieren, also das BIP abzulösen.
- **Die grüne Wirtschaft wird eine dynamische, prosperierende Wirtschaft sein, geleitet von Innovationen aller Art, und angetrieben von Fortschritten bei Ressourceneffizienz und Produktivität.** Dabei ist es jedoch unabdingbar, dass die Wirtschaft sich innerhalb der planetaren Grenzen bewegt, die durch die Tragfähigkeit der natürlichen Ökosysteme definiert werden. Dazu muss die wirtschaftliche Wertschöpfung zwingend vom Verbrauch natürlicher Ressourcen entkoppelt werden. Gleichzeitig muss das Wachstum integrativ sein, so dass alle Teile der Gesellschaft am erzeugten Wohlstand teilhaben.

Politikinstrumente für eine grüne Wirtschaft

Unabhängig davon, wie genau grünes Wirtschaften in den jeweiligen Ländern definiert wird, wird es verschiedene politische Interventionen und einen Mix aus Politikinstrumenten benötigen, um das gegenwärtige wirtschaftliche Modell in Richtung des grünen Wirtschaftens zu verändern. [6] Marktbasierte Instrumente, wie etwa Steuern und Emissionshandel, können dabei eine zentrale Rolle spielen: um eine dynamische wirtschaftliche Entwicklung in Richtung Nachhaltigkeit zu initiieren, können Märkte eine wichtige Rolle spielen. An sich können Märkte außerordentlich nützlich sein, wenn es darum geht Innovationen zu stimulieren, die Verbreitung neuer Technologien zu beschleunige, und private Akteure – als Innovatoren und Unternehmer – an dem Umbau zu einer grünen Wirtschaft zu beteiligen. Gleichzeitig wird es nötig sein, die Funktionsweise von Märkten dort zu korrigieren, wo sie versagen, insbesondere wo Preissignale die wirtschaftliche Entwicklung in die falsche Richtung lenken.

[5] Poppe et al., "Is Something Wrong with the Green Economy?," 12.

[6] UNEP, *Measuring Progress towards an Inclusive Green Economy*, 25.

Die Preise müssen die ökologische Wahrheit sagen

Eine Umweltpolitik, die versucht gegen den Markt zu regulieren, ist zum Scheitern verurteilt. Wenn die Preissignale, die Investitions- und Konsumentscheidungen leiten, durchgängig in eine andere Richtung weisen als zu einer grünen Wirtschaft, bedarf es eines sehr starken Regulators – oder sehr aufgeklärter und hoch motivierter Verbraucher und Investoren. Leider gilt, dass die Preise wichtiger Handelsgüter weit davon entfernt sind, die "ökologische (und soziale) Wahrheit" über die gehandelten Produkte zum Ausdruck zu bringen. Was die Preise nicht, oder nur ansatzweise, zum Ausdruck bringen, sind die externen Kosten, die über den Lebenszyklus eines Produktes anfallen – etwa die sozialen und ökologischen Folgen des Ressourcenabbaus, der Verarbeitung, des Transports, der Nutzung und der Entsorgung von Produkten. Diese Tatsache führt zu einem massiven Marktversagen: da die externen Kosten nicht in den Preisen zum Ausdruck kommen, werden natürliche Ressourcen – und die Produkte, die damit hergestellt wurden, zu billig gehandelt. Die Kosten allerdings fallen trotzdem an – sie werden aber nicht von den Verbrauchern gezahlt, sondern auf andere abgewälzt, unter anderem in Form von Umweltzerstörung.[7] Der Wert dieses Marktversagens läuft in die Billionen US-Dollar.[8]

Aus diesem Grund sollte es ein zentraler Bestandteil jedweder politischen Strategie für grünes Wirtschaften sein, dass die Preise die ökologischen und sozialen Folgekosten zum Ausdruck bringen. Oder, um es mit den Worten von Ernst-Ulrich von Weizsäcker auszudrücken: Die Preise müssen die ökologische Wahrheit sagen. Dafür ist einerseits ein Abbau umweltschädlicher Subventionen nötig, und andererseits die Einführung bzw. der Ausbau von marktbasierten Instrumenten, die die externen Kosten dem Verursacher anlasten, und so dafür sorgen dass die externen Kosten in die wirtschaftliche Entscheidungsfindung einbezogen werden. An marktbasierten Instrumenten gibt es grundsätzlich verschiedene Optionen, darunter Umweltsteuern und Systeme handelbarer Zertifikate, wie etwa Emissionshandel. Wenn sie richtig gestaltet sind, können diese Instrumente sehr wirksam und gleichzeitig effizient sein, um Umweltziele zu geringen Kosten und mit großer Verlässlichkeit zu erreichen. Zudem erzeugen marktbasierte Instrumente Einkommen, das genutzt werden kann um unerwünschte Nebenwirkungen zu lindern, etwa Verteilungswirkungen auf besonders betroffene Gruppen. Gleichzeitig haben viele Länder die Erfahrung gemacht, dass es alles andere als trivial ist, marktbasierte Instrumente richtig zu gestalten und sie entsprechend umzusetzen. Und auch wenn dies gelingt, gilt dennoch dass marktbasierte Instrumente zwar ein wesentlicher Bestandteil des Instrumentenmixes für ein grünes Wirtschaften sein sollten, dass sie jedoch als alleiniges Instrument nicht ausreichend sind. Die Grenzen marktbasierter Instrumente sind ebenso anerkannt wie ihre Vorteile; daher ist es sinnvoll dass marktbasierte Instrumente durch andere Politikinstrumente ergänzt werden, wie etwa durch gezielte Technologieförderung, Forschung und Entwicklung, aber auch durch ordnungsrechtliche Vorgaben.[9]

Messen, worauf es ankommt

Die Tatsache, dass das aktuell vorherrschende Modell wirtschaftlicher Entwicklung nicht in der Lage ist, zu gesellschaftlich optimalen Ergebnissen zu führen, hängt eng damit zusammen wie wirtschaftliche Entwicklung gemessen wird. Die weltweit etablierte Maßzahl für wirtschaftliches Wohlergehen ist das Bruttoinlandsprodukt (BIP).

Das Problem ist, dass das Bruttoinlandsprodukt ursprünglich als Maßzahl für den Gesamtwert der wirtschaftlichen Produktion eingeführt wurde. Es ist jedoch nicht dafür gemacht, als

[7] UNEP, *Driving a Green Economy Through Public Finance and Fiscal Policy Reform*.

[8] Trucost, *Natural Capital at Risk: The Top 100 Externalities of Business*.

[9] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, 164.

Maß für das Entwicklungsniveau (oder den wirtschaftlichen Fortschritt) eines Landes zu dienen, oder das Wohlergehen oder die Lebensqualität seiner Einwohner zu messen.[10] Wird das BIP in diesem Sinn verwendet, führt es in der Regel zu verzerrten Ergebnissen, da das BIP schlicht viele Faktoren nicht erfasst, die für menschliches Wohlergehen entscheidend sind. So gibt das BIP nur das aggregierte Einkommen eines Landes wieder, ist aber blind dafür, wie gerecht oder ungerecht dieses Einkommen verteilt ist. Des weiteren werden Umweltzerstörung und seine Folgekosten nicht vom BIP erfasst. Erst, wenn Geld aufgewendet wird um die Folgen der Umweltzerstörung zu beheben, schlagen diese sich im BIP nieder. Dann allerdings absurderweise als Steigerung des BIP, obwohl es allen Beteiligten besser ginge, wenn der Schaden gar nicht erst eingetreten wäre.

Im Anbetracht der verschiedenen Begrenzungen und Schwächen des BIP, und angesichts des Bedarfs an einem Indikator, der ein breiteres Verständnis von menschlichem Wohlergehen und Lebensqualität abbildet, stellt sich die Frage wie man vom BIP zu einem ausgewogeneren Indikator gelangen kann. In der kürzesten Form sind die Alternativen erstens eine Korrektur des BIP – indem die Komponenten, die es derzeit nicht misst, monetär bewertet und aufgeschlagen bzw. abgezogen werden; zweitens Ersatz des BIP durch eine einzelnes anderes, aggregiertes Maß für menschliches Wohlergehen; oder drittens Ergänzung des BIP mit wenigen anderen Indikatoren, die als „Armaturenbrett" einen einfachen und schnellen Überblick über die verschiedenen Aspekte menschlichen Wohlergehens und wirtschaftlicher Wohlfahrt liefern.[11] Ein solcher Indikatorensatz könnte eine interessante Gelegenheit bieten, drei Prozesse zu verknüpfen, die im Abschlussdokument der Rio+20-Konferenz angestoßen werden: den Umbau zu grünem Wirtschaften, die Vereinbarung von Nachhaltigkeitszielen (und demnach, zu einem späteren Zeitpunkt, auch zugehörigen Indikatoren), und die Aufforderung, ausgewogenere Indikatoren für wirtschaftliche Wohlfahrt und wirtschaftlichen Fortschritt zu etablieren.

Investitionen mobilisieren und Strukturwandel steuern

Der Umbau zu einem grünen Wirtschaften wird notwendigerweise mit einem Strukturwandel verbunden sein. Die vorherrschenden Strukturen, in denen Wertschöpfung zu einem großen Teil durch die Förderung und Veredelung natürlicher Ressourcen entsteht, haben uns in das aktuelle Dilemma geführt. Um dem in Richtung eines nachhaltigen, grünen Wirtschaftens zu entkommen, wird daher einen Wandel in der Arte und Weise erfordern, wie Wertschöpfung stattfindet.

Das bedeutet auch, dass Politiken für grünes Wirtschaften in manchen Branchen zu Wachstum führen werden, in anderen jedoch das Wachstum begrenzen oder auch die Schrumpfung gestalten müssen, Einige Branchen werden sich quasi per definition bei den Gewinnern dieses Umbaus finden – neben Herstellern von Technologien für erneuerbare Energien und Energieeffizienz sind dies auch die Wasser- und Abfallwirtschaft, aber auch viele Dienstleistungsbranchen, Informations- und Kommunikationstechnologien, (nachhaltiger) Tourismus, Kulturschaffende und kreative Industrien.[12] Für eine Reihe von Branchen bietet der Umbau sowohl Chancen als auch Risiken – wie etwa für die Energiewirtschaft, das verarbeitende Gewerbe, Chemikalien, Verkehr und die Bauwirtschaft, aber auch Land- und Forstwirtschaft

[10] Stiglitz, Sen, and Fitoussi, *Report by the Commission on the Measurement of Economic Performance and Social Progress*, 8.

[11] Philipp Schepelmann, Yanne Goossens, and Arttu Makipaa, *Towards Sustainable Development: Alternatives to GDP for Measuring Progress*.

[12] UN Environment Management Group, *Working towards a Balanced and Inclusive Green Economy: A United Nations System-Wide Perspective*, 13.

und Fischerei.[13] Und schließlich gibt es ein paar Branchen, für die der Umbau zu grünem Wirtschaften in erster Linie eine Bedrohung ihres Geschäftsmodels darstellt – allem voran Bergbau fossiler Energiequellen und Raffinerien. Auch wenn diese Branchen nicht über Nacht verschwinden werden, wird sich das Marktvolumen für diese Branchen doch spürbar verringern. Eine besondere Herausforderung für den Umbau zu einer grünen Wirtschaft ist es daher, auch Unternehmen in diesen Branchen neue Perspektiven zu eröffnen.

Eine weitere Herausforderung wird darin bestehen, die nötigen Investitionen zu mobilisieren, und Investitionsströme in Richtung ressourceneffizienter, post-fossiler Technologien umzuleiten. Die zuvor erwähnten marktbasierten Instrumente können hier eine Rolle spielen, um "grüne" Investitionen attraktiver zu machen. Darüber hinaus werden jedoch auch andere Instrumente und Maßnahmen nötig sein, um private Investitionen anzureizen, wie etwa Investitionszuschüsse, langfristige Garantien oder Instrumente zur Umverteilung von Investitionsrisiken. Das Aufkommen aus marktbasierten Instrumenten – Aufkommen aus Umweltsteuern, oder Erlöse aus dem Verkauf von Emissionsberechtigungen – können dazu beitragen, solche Investitionszuschüsse zu finanzieren.[14] Und schließlich hat der Staat selbst eine Vorbildfunktion, als einer der größten Investoren in der Volkswirtschaft: durch öffentliche Beschaffung und öffentlich-private Investitionspartnerschaften hat der Staat direkte Kontrolle über einen erheblichen Anteil aller Investitionen in einer Volkswirtschaft, und kann diesen Einfluss nutzen um einen Markt für klimafreundliche und ressourcenschonende Technologien und Dienstleistungen entstehen und reifen zu lassen

Training und Bildung

Zu den Maßnahmen, um einen Strukturwandel zu steuern, gehören auch Bildung und Training. Dies ist auf zwei Arten relevant: einerseits für die Branchen und Unternehmen, für die der Umbau zum grünen Wirtschaften eine grundlegende Änderung ihres Geschäftsmodells und ihrer Produktionsprozesse erforderlich macht. Hier geht es darum, die neuen Fertigkeiten zu vermitteln, die für die neuen Geschäftsmodelle oder Technologien nötig sind. Andererseits bedeutet Strukturwandel aber auch, dass es zu einer Verlagerung von Arbeitskräften über Branchengrenzen hinweg kommen wird.[15] Die neuen Arbeitsverhältnisse werden sich vor allem in den Gewinnerbranchen finden (erneuerbare Energien und Energieeffizienz, Wasser- und Abfallwirtschaft, aber auch viele Dienstleistungsbranchen), während die Beschäftung in ressourcen- und energieintensiven Branchen zurückgehen wird. Die Wertschöpfung in den Gewinnerbranchen ist dabei deutlich beschäftigungsintensiver ist als in den Verliererbranchen. Der Umbau zum grünen Wirtschaften hat somit das Potenzial, neue Arbeitsplätze zu schaffen und die Beschäftigung insgesamt deutlich zu steigern. Aber um diese Veränderung des Arbeitsmarkts zu gestalten, und die Mobilität von Arbeitnehmern über Branchengrenzen hinweg zu ermöglichen, werden umfangreiche Trainings- und Fortbildungsmaßnahmen nötig sein. Die OECD schlägt hierfür eine dreiteilige Strategie vor:[16]

1. Trainings-und Fortbildungsmaßnahmen sowie aktive Arbeitsmarktpolitik, um die Anpassungsfähigkeit des Arbeistmarkts zu stärken;
2. Moderater Beschäftigungsschutz und starker Wettbewerb auf den Warenmärkten, um so Beschäftigungszuwachs in innovativen grünen Nischen zu ermöglichen; und

[13] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, ix.

[14] Fisher, "The Private Sector's Role in Low Carbon Resilient Development."

[15] Ibid.

[16] OECD, *Towards green growth*, 95.

3. Flankierende Maßnahmen wie Arbeitslosengeld und Unterstützungsmaßnahmen für geringfügig Beschäftigte, um sicherzustellen dass ein dynamischer Arbeitsmarkt nicht um den Preis unsicherer, prekärer Arbeitsverhältnisse oder steigender Ungleichheit erreicht wird.

Den Wandel gestalten

Der Umbau zu einem grünen Wirtschaftsmodell betrifft die gesamte Volkswirtschaft, und erfordert daher einen integrierten Ansatz. Der Umbau wird sich nicht darauf beschränken, bestimmte "grüne" Branchen oder Technologien zu fördern. Um einen Wandel der gesamten Wirtschaft zu bewerkstelligen, gilt es Innovationsprozesse zu verändern, Investitionsflüsse umzuleiten, Arbeitskräften das nötige Wissen und die nötigen Fertigkeiten zu vermitteln, und die richtigen institutionellen und rechtlichen Rahmenbedingungen zu schaffen. Damit der Umbau gelingt, ist es nötig dass alle wirtschaftlichen Sektoren daran beteiligt werden, und dass die Anstrengungen angemessen verteilt sind. Ein integrierter, sektorübergreifender Ansatz ist auch ein Gebot der Effizienz – je besser die Anstrengungen verteilt sind, desto geringer fallen die Gesamtkosten aus.

Der Instrumentenmix für den Umbau zum grünen Wirtschaften muss daher sowohl sektorale Strategien umfassen, als auch branchenübergreifende Instrumente, die die Anstrengungen zwischen den einzelnen Branchen verteilen und koordinieren. Um die nötige Akzeptanz zu schaffen, sollte ein intelligenter Instrumentenmix auch flankierende Maßnahmen beinhalten – die gegebenenfalls die wirtschaftlichen Lasten der Transformation umverteilen, und besonders gefährdeten Branchen oder Teilen der Gesellschaft in der Anpassung unterstützen.

Aber über die klassischen Instrumente der Umweltpolitik und flankierende Maßnahmen hinaus, sollte ein Instrumentenmix für grünes Wirtschaften auch die nötigen Rahmenbedingungen für die Transformation schaffen. Dazu gehören etwa Initiativen in Bildung und Forschung; Maßnahmen, um Akteure zu vernetzen und Allianzen zu bilden; gesellschaftliche Triebkräfte zu bündeln, und auch die kulturelle Dimension des Umbaus zu beleuchten. Dazu gehören aber auch Änderungen des institutionellen und rechtlichen Rahmens, insbesondere dort wo bestehende Institutionen einem Wandel im Wege stehen– wie Staatsmonopole für die Förderung fossiler Ressourcen, fehlende oder verzerrte Märkte für Energieressourcen, oder auch Höchstpreise für Kraftstoffe oder Strom.

Der Begriff des grünen Wirtschaftens kann damit ein neues Verständnis liefern, wie die Wirtschaft im Dienste des Menschen funktionieren kann, so dass Menschen in aller Welt glücklicher, länger und gesünder leben, ohne dabei die natürlichen Ressourcen zu übernutzen. Der vielfältige Nutzen einer solchen Wirtschaftsform ist in zahlreichen Studien untersucht und dokumentiert worden, von lokalen Fallstudien bis hin zu weltweiten ökonomischen Modellen. Und, wichtiger noch – die Zeit ist reif für ein neues Wirtschaftsmodell, da die Grenzen des aktuellen Modells immer deutlicher zu Tage treten. All dies bedeutet jedoch nicht, dass das grüne Wirtschaften ein Selbstläufer ist – dieses Papier diskutiert einige der Bedingungen, die nötig sind um der Idee zum Durchbruch zu verhelfen.

2 Summary

Green Economy: the Concept and the Challenge of Defining it

The concept of a "green economy" has been around for a few years, but has gained in recognition and weight following the Rio+20 Conference in 2012, which featured the green economy as one of its central themes and recognised it as "one of the important tools available for achieving sustainable development", in order to satisfy the needs of a growing world population within the finite carrying capacity of global ecosystems. However, while the summit recognised the importance of the "green economy" concept, it did not specify a concrete definition of what the green economy actually *is*. Rather, it described what it is supposed to achieve: to "contribute to eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems."[17] Also, in contrast to other agenda items, the Rio+20 Conference did not specify a concrete follow-up process with targets and timetables for the green economy. Rather, it encouraged and invited countries, international institutions and stakeholders to intensify their green economy efforts in their respective roles.

A number of countries around the world have responded to the call issued by the Rio+20 conference, either by launching new policies and strategies for a green economy, or by intensifying their existing efforts. Thus, the concept of a green economy is increasingly gaining hold on the ground, through a number of concrete initiatives in various countries. An economically and geographically diverse group of countries – including, for example, Brazil, China, Costa Rica, India, Korea, South Africa, Uruguay or Vietnam – is currently pursuing green economy policies, building up a body of experience and evidence in the process.[18]

These efforts are loosely coordinated by UNEP, which serves as an information hub to promote exchange on best practices, thereby shaping a common understanding of a green economy. UNEP's efforts are based on a flexible working definition of the green economy as an economy 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."[19]

Thus, while there is no exact definition of what constitutes a green economy, and while countries emphasise that the concept will take on a different meaning in different places and circumstances, there are however some constituting elements and essential features of the green economy concept that can be inferred from the political and academic discussions and negotiations:

- **The concept of a green economy represents a new model of economic development**. The limitations of the existing paradigm of economic growth and development are becoming ever more visible and tangible (economic crisis and instability, growing income inequality, environmental degradation, dissatisfaction and unrest). Over the last two decades, several world regions have achieved rapid and continuous economic growth. This growth has lifted hundreds of millions out of poverty and enabled the emergence of a new global middle class. But it also presents a new set of challenges. For instance, in many countries, the benefits of growth have been distributed unequally, with most

[17] United Nations, "The Future We Want - Outcome Document."

[18] Samans, "Green Growth and the Post-2015 Development Agenda: An Issue Paper for the United Nations High-Level Panel of Eminent Persons," 5.

[19] UNEP, *Towards a Green Economy*. p.16

benefits accruing within a small segment of the population. Increasing inequality in the distribution of incomes and wealth can be observed in developing and industrialising countries alike; often as a result of economic policies for which the need to adjust to economic globalisation is invoked as justification. Therefore, in developing and developed countries alike, the challenge is to make sure that economic growth is inclusive, i.e. that incomes rise across all segments of population. Also, the rapid economic growth in many parts of the world has coincided with an equally rapid growth in the consumption of energy, natural resources and other material inputs. The increasing resource use has a severe impact on the environment, and associated impacts on human health and well-being. As a consequence, economic growth (measured as growth in incomes) does not result in a corresponding improvement in welfare: the difference between the two comes in the form of negative side-effects of economic growth, such as environmental degradation and the associated impacts on human health.

- **The concept of a green economy must be defined in relation to the most pressing global trends and challenges.** Thus, it needs to acknowledge the changed circumstances after two decades of economic globalisation, including the rise of a global middle class. And it needs to take up the global challenges that the world is facing – above all climate change and the loss of biodiversity – and promote a joint global response to these challenges.
- **The concept of a green economy needs to be based on a holistic approach: it is essentially about greening the entire economy**, not about fostering a particular "green" sector. Nonetheless, there are of course certain sectors that are of particular importance for the transformation to a green economy. This includes, above all, carbon- and resource-intensive sectors, such as the energy sector, mining, resource-intensive industry and manufacturing, agriculture, forestry, fisheries, and transport.[20] Responses for these sectors will certainly include technological innovations that improve their energy- and resource-efficiency. But it will also include social and organisational innovations – finding entirely new ways of satisfying demands. This will ultimately also result in a structural change, where economic welfare is less and less connected to the extraction, processing and use of natural resources, and instead increasingly relies on smart services. This includes a re-allocation of capital and investment between sectors, a change in the demand for certain goods and services, and, accordingly, a change in prices and thus the profitability of existing investments. This will elicit resistance from those firms who have invested into the current pattern of resource-intensive economic growth, and expect to see a return on these investments.
- Correspondingly, as the transformation for a green economy will need to affect a broad range of sectors, **sustainability concerns need to be mainstreamed into all policies** to bring about the necessary institutional and structural change. This also suggests that there will not be any singular policy instrument to direct the transformation, but rather a broad policy mix, consisting of new policies as well as reform of existing ones. In terms of the policy mix that countries can employ to support the transformation to a green economy, it is understood that economic instruments will have a key role to play.

[20] African Development Bank, *Sierra Leone: Transitioning Towards Green Growth. Stocktaking and the Way Forward*, 32.

- **A green economy will require some amount of reform to the institutional frameworks at national and international level**. In particular, the transformation to a green economy implies a need for reform of the set or rules and institutions that currently shape the process of economic development, be it in the area of trade, finance or investment.[21] This should also take into account the sets of targets that are intended to guide human development, such as Sustainable Development Goals (SDGs) and Millennium Development Goals (MDGs), as well as their interactions with the concept of a green economy. Prima facie, there would also seem to be much overlap between the green economy concept and the ongoing efforts to arrive at new and better measures of progress and economic welfare – i.e. moving beyond GDP.
- **A green economy will still be a growing and thriving economy, lead by innovations, and driven by increases in efficiency and productivity**. But it is imperative that this development changes into a direction that is commensurate with the limits set by the natural environment. This necessarily requires that the generation of economic welfare be decoupled from the consumption of natural resources. At the same time, economic growth needs to be inclusive and enabling – making sure that the benefits of economic development are shared by all segments of society.

Policies for a Green Economy

Irrespective of the exact interpretation of a green economy applied in any country, it will require a range of policy instruments to change the current model of economic development and put economies on track to a green economy.[22] Market-based policy instruments, such as taxes and tradable permit schemes, will have a key role to play in this process: to change the direction of economic development onto a more sustainable trajectory, it will be necessary to make use of markets, but it will be equally essential to correct their functioning where they fail. As such, markets can be extremely useful to stimulate innovation, to speed up the diffusion of new technologies, and to engage private investors and innovators in the transformation process to a green economy. In general, policies for a green economy are therefore well advised to build on the market dynamic and direct it into a sustainable direction, rather than to work against it.

Get the Prices Right

Any environmental policy that works against the market is likely to fail. If price signals consistently direct all investment and consumption decisions in a direction that takes the economy away from a green economy pathway, it becomes very difficult to regulate against the market signals. Alas, the prices of commodities are far from conveying the social and ecological truth about the traded products. The external costs of production – i.e. the social and environmental impacts that are associated with the mining of resources, the manufacturing, transport, use and disposal of products – are not fully reflected in their market prices. This leads to a massive market failure: The failure to account for external costs means that natural resources, and the products that make use of them, are traded too cheaply, because part of their costs are simply imposed onto others, including future generations, in the form of environmental degradation.[23] The gap in the value of production and of externalities is estimated in the trillions of US$.[24]

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[21] Poppe et al., "Is Something Wrong with the Green Economy?," 12.

[22] UNEP, *Measuring Progress towards an Inclusive Green Economy*, 25.

[23] UNEP, *Driving a Green Economy Through Public Finance and Fiscal Policy Reform*.

[24] Trucost, *Natural Capital at Risk: The Top 100 Externalities of Business*.

For this reason, for any green economy policy, a key part of the effort is to "get the prices right" by phasing out environmentally harmful subsidies and by introducing pricing mechanisms that factor the external costs into any economic decision-making. In terms of such pricing mechanisms, there are different policy options at their disposal, including taxes and tradable permit schemes. If designed well, they can be both effective and efficient tools – and they have the potential to generate revenue, which can then be used to ameliorate undesirable social side-effects, such as impacts on particularly vulnerable parts of society. That said, it is also clear that designing and implementing economic instruments in an efficient way is by no means trivial. And even if regulators succeed in doing so, it is also widely recognised that while economic instruments may be necessary to change the direction of economic development to a green economy, they are not sufficient. Economic instruments have their limitations, and therefore need to be supplemented by complementary policies, including R&D support as well as command-and-control regulation.[25]

Measure what matters

The insight that the current model of economic development is not delivering socially optimal outcomes is closely linked to the way how we currently measure economic progress. Around the world, the gross domestic product (GDP) is firmly established as the guiding indicator for economic development.

The problem with this is that GDP was conceived as a measure of economic *output*. But it was never intended to serve as an indicator of the overall *development* (or progress) of a society or a country, and the welfare (or well-being) of the people that live in it.[26] If it is used in this sense, GDP is bound to deliver skewed results, as it simply does not account for many factors that are crucial for human well-being. To begin with, GDP will only count the aggregated incomes in an economy, but it is entirely unaffected by how these incomes are distributed. Environmental degradation and its costs are not reflected in GDP – but if money has to be spent to clean up the consequences of environmental degradation, these expenses will actually increase GDP, and thus appear to be beneficial – where, in fact, people's lives would have been better if the damage had been avoided in the first place.

Acknowledging the various limitations and shortcomings of GDP, and the need to have indicators that are able to measure a much broader concept of human well-being and the quality of life, the next question is how to move from the existing GDP to a more complete indicator. In short, the options are either to correct GDP – by subtracting or adding (in monetary form) those components that it currently does not measure; to substitute GDP with another (aggregate) indicator of human well-being; or to complement GDP with other indicators, together forming a small set ("dashboard") of core indicators for human well-being.[27] Establishing such a dashboard would provide an opportunity to connect three processes that are laid out in the outcome document of the Rio+20 conference: the drive for a green economy, the establishment of sustainable development goals (and, eventually, indicators corresponding to these goals), and the call to develop broader measures of progress to complement GDP.

Mobilise Investment and Manage Structural Change

The transformation to a green economy will inevitably involve some degree of structural change. The existing economic structures, in which wealth generation is still largely based on

[25] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, 164.

[26] Stiglitz, Sen, and Fitoussi, *Report by the Commission on the Measurement of Economic Performance and Social Progress*, 8.

[27] Philipp Schepelmann, Yanne Goossens, and Arttu Makipaa, *Towards Sustainable Development: Alternatives to GDP for Measuring Progress*.

the extraction and processing of resources, have lead us to the difficult situation that we are facing. To escape from this dead-end, and to change onto a sustainable development trajectory, will require a change of how value added is generated in an economy.

This implies that green economy policies will promote growth in some sectors, but will discourage growth in others. Some sectors will be obvious winners of the transformation to a green economy – not only the renewable and energy efficiency technologies as well as water and waste management, but also many services, IT, telecommunications, (sustainable) tourism, cultural and creative industries.[28] For some sectors, there are challenges and opportunities – e.g. the energy sector, manufacturing, chemicals, transport, and construction, but also in agriculture, forestry and fishing.[29] And there are a few subsectors for which the green economy presents a challenge – in particular the fossil fuel industry (extraction, refining). They may not disappear entirely, but will see the size of their market diminish considerably. The challenge in designing an industrial policy for the green economy will be to open up new perspectives for businesses operating in the latter category. Just as importantly, industrial policies can assist companies in those sectors that are neither clear winners or clear losers to recognize and embrace the opportunities brought with the transition to a green economy.

To manage the transformation to a green economy, one key challenge will be to mobilise the necessary investments and guide them towards resource-efficient technologies. Using market-based instruments to correct prices will help to make "green investments" more attractive. Beyond that, other tools for investment support will be needed to create an environment that induces private investment, such as investment subsidies, long-term guarantees and risk-sharing arrangements. Revenue from market-based instruments – such as taxes and permit trading schemes – can help to provide the funding for such measures.[30] Lastly, the government also has an exemplary function: through public procurement, public work schemes and public-private partnerships, it directly controls a considerable share of investments, and can use this market power to build up the market for green economy technologies and services.

Training and Education

Structural policies for a green economy are tightly linked to training and education. There are two dimensions to this process: for those sectors and companies where the move to a green economy entails a fundamental change in business models and production processes, there is a need for workplace training to acquire the necessary new skills. But as the green economy transition also entails structural change in the economy, there is also a need for skills development and education policies to facilitate job transition between sectors.[31] The transition process to a green economy offers considerable potential to generate new employment, but it also entails significant labour market restructuring: employment in sustainable sectors will grow, and employment in resource-intensive and polluting sectors will decrease. Yet the labour force cannot simply be shifted from the "brown" to the "green" sectors and enterprises: to avoid skill gaps and to minimise transitional unemployment, adequate training and education measures are necessary.

[28] UN Environment Management Group, *Working towards a Balanced and Inclusive Green Economy: A United Nations System-Wide Perspective*, 13.

[29] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, ix.

[30] Fisher, "The Private Sector's Role in Low Carbon Resilient Development."

[31] Ibid.

To support the redeployment of the workforce from contracting to expanding sectors during the transition, the OECD argues for a three-legged strategy to enable a smooth and just transition.[32] This would include:

1. Skill development and active labour market policies to support the adaptive capacity of labour markets;
2. Moderate employment protection and strong product market competition to promote employment growth in new green competitive niches; and
3. Flanking measures like unemployment benefits and in-work benefits to ensure that a dynamic labour market is not achieved at the cost of job insecurity or inequality.

Manage the Transformation

The transformation to a green economy is an economy-wide task, which therefore requires an integrated approach. Greening the economy is not (only) about fostering a particular set of green sectors or industries, but about transforming the entire economy, which involves changing innovation patterns, redirecting investment, providing adequate skills and ensuring mobility of the labour force, and creating the right institutional framework conditions. For the transformation to succeed, it is necessary to balance the efforts across sectors. An integrated, cross-sectoral approach is also a matter of efficiency – distributing the efforts will help to lower the overall cost of the transformation.

Thus, the policy mix for greening the economy needs to include sectoral policies and strategies as well as cross-cutting instruments that distribute efforts among sectors. To raise the public and political acceptability, a smart policy mix should include flanking measures – which reallocate the cost burden of the transition according to the carrying capacity of economic sectors, or segments of society. Where necessary, flanking measures may provide targeted assistance and temporary relief to the most affected groups.

But beyond environmental policy instruments and flanking measures, a policy mix for the green economy is also about creating the necessary enabling conditions for the transformation. This may include educational policies, efforts to connect actors, forming networks and alliances, generating social momentum, and also cultural change. Creating these enabling conditions may also involve institutional and governance reform, e.g. where existing institutions lock the economy into a resource- and energy-intensive growth pattern – such as state monopolies on resource extraction, lacking or heavily distorted domestic markets for energy resources, etc.

Thus: the concept of a green economy is needed, as a new narrative how the economy should work to enhance the well-being of people around the world. The benefits of a green economy are obvious, and have been documented in a number of investigations, from local case studies to global economic models. And the time is right for a green economy, as the dissatisfaction with the current economic system is growing, and as its limits are becoming apparent. But – despite all these factors, that does not mean the green economy is going to happen by itself. This paper discusses some of the conditions that are necessary for the concept to gain traction and have a lasting impact.

[32] OECD, *Towards green growth*, 95.

3 Introduction: the concept of a green economy

Over the last years, the concept of a green economy has enjoyed increasing interest in countries around the world, and has triggered concrete action in a number of places. The concept of a green economy starts from the observation that conventional models of economic development are less and less capable of delivering a better life for all but instead impose an increasing cost on the less fortunate – including future generations. While two decades of rapid economic growth in many parts of the world have lifted millions out of poverty, the side-effects of this growth can no longer be ignored:

- Due to the growth of the global economy, and the associated consumption of energy, land and resources, global ecosystems are used beyond their carrying capacity.[33] Human activity has altered the global carbon cycle and disrupted the nitrogen, phosphorous and sulphur cycles, in many locations it has interfered with the water cycle, and destroyed a number of ecosystems. The results are environmental degradation, much of which is irreversible, and increasing scarcity of natural resources that can be observed in many parts of the world.[34]
- Economies around the world are growing, but the benefits of growth are distributed unequally. As a result, income inequality has grown in a majority of OECD countries since the mid-1980s. But also in many emerging economies – including China, India, South Africa and Russia – income inequality is high and has been rising since the 1990s.[35] The results are social imbalance and unrest in many countries – manifested in different ways, ranging from malnutrition, food insecurity and freshwater scarcity in some parts of the world, to widespread unemployment or falling support for democracy and for the market economy in others.
- When the current economic paradigm is criticised for prioritising rapid economic growth over social well-being and environmental integrity, it must be stressed that even in terms of economic performance, the picture is mixed: the 2007-08 financial and economic crisis exposed the instability of the financial system, resulting in a highly volatile boom-and-bust pattern, leading to large-scale devaluation of assets, and protracted economic stagnation in a number of countries.

Obviously, the green economy is not a panacea that could solve all of these problems, but it does promise to perform better than the conventional model of economic development.

3.1 Rio+20 and the challenge of defining a "green economy"

The notion of a "green economy" is not a new one – in various shapes and guises, it has been around on the global stage since at least 2008, when UNEP launched its Green Economy Initiative. In some countries, such as the Republic of Korea, green economy initiatives and strategies were launched in response to the economic downturn that affected economies around the world in 2007-08 and subsequently.

The concept of a green economy received much more recognition, and gained more political traction, through the Rio+20 Conference in 2012, which featured the green economy as one of its central themes. Thus, the Conference for the first time recognised that a "green economy in the context of sustainable development and poverty eradication" can be "one of the important

[33] Rockstrom et al., "Planetary Boundaries: Exploring the Safe Operating Space for Humanity."
[34] UNEP, *Global Environment Outlook GEO 5*.
[35] OECD, *Divided We Stand: Why Inequality Keeps Rising*.

tools available for achieving sustainable development", in order to satisfy the needs of a growing world population within the finite carrying capacity of global ecosystems. However, while the summit recognised the importance of the "green economy" concept, it did not specify a concrete definition of what the green economy actually is, but rather what it is supposed to achieve: to "contribute to eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems."[36] Furthermore, the outcome document provides more context by listing 16 provisions for what green economy policies should help achieve – ranging from technology transfer and sustainable consumption and production patterns to gender equality and the welfare of indigenous peoples.

In terms of the procedure for defining and implementing a green economy, the outcome document underlines the need for flexibility, arguing that different approaches to the green economy could be pursued in different countries, and that the green economy should be seen as an overarching concept, rather than a rigid set of rules. Along the same vein, the Rio outcome document demands on several accounts that countries should be free to choose their own, nationally appropriate approach to implementing green economy policies. It does offer some general suggestions on procedural elements that could be considered in defining these approaches, such as the importance of evaluation and evidence-based policy making and the use of a mix of policy instruments (para 63), the involvement of stakeholders (para 64) or the use of information technologies (para 65). It also recognises (in para 66) the need of international cooperation and exchange on green economy efforts, by linking up interested countries and by sharing information on green economy policies and best-practice examples, and invites the United Nations to coordinate this process.

While a clear definition and a more concrete follow-up process might have been desirable outcomes of the Rio Conference, it remains important that the heads of state adopted the concept, thereby increasing its political weight. The agreement itself was a hard-won compromise, as the green economy emerged to be one of the more controversial negotiation items at the Rio+20 Conference. In particular, some developing countries strictly opposed the concept, fearing that economic and environmental issues were being given precedence over social and equity issues.[37] This opposition was by no means unanimous: many African countries supported the idea of a 'green economy', whereas several Latin America countries rejected the idea of subjecting nature to economic values.[38]

3.2 Follow-up to Rio+20 and the role of the UN

In contrast to other agenda items such as the Sustainable Development Goals, the Rio+20 Conference did not specify a concrete follow-up process with targets and timetables for the green economy, but rather encouraged and invited countries, international institutions and stakeholders to intensify their green economy efforts in their respective roles. This call was reiterated by the UNEP Governing Council in February 2013, who "invites countries to implement green economy policies and requests UNEP (Executive Director) to collect initiatives, experiences and practices on different GE approaches and visions" (Decision 27/8). The key role of individual countries and (environmental) ministers was emphasized, as well as the need to tailor green economy solutions to each country's needs and circumstances.

[36] United Nations, "The Future We Want - Outcome Document."

[37] Poppe et al., "Is Something Wrong with the Green Economy?," 5.

[38] Bigg, "Five Things We've Learnt from Rio+20."

A number of countries around the world have responded to the call issued by the Rio+20 conference, either by launching new policies and strategies for a green economy, or by intensifying their existing efforts. Thus, the concept of a green economy is increasingly gaining hold on the ground, through a number of concrete initiatives in various countries. An economically and geographically diverse group of countries – including, for example, Brazil, China, Costa Rica, India, Korea, South Africa, Uruguay or Vietnam – is currently pursuing green economy policies, building up a body of experience and evidence in the process.[39] For example, India has begun taxing energy from renewable sources at half of the rate of conventional sources and has set the goal of producing 20 GW of solar energy by 2020. Brazil has developed a "National Climate Plan" which includes reducing annual deforestation by 80% by 2020 and is expected to overachieve its 2020 emissions reduction target. South Africa is reforming its tax system, including introducing a carbon tax and tax incentives for CDM and energy efficiency projects.[40]

This range of green economy policies and strategies at the national level is complemented by the efforts of UN bodies, who provide for information exchange, capacity building and other types of support for the national-level efforts. A central player in this respect is UNEP, which had helped to establish the concept of a green economy in the first place. Its Green Economy Initiative (GEI), established in 2008, provides advisory services and research for countries seeking to implement green economy measures. Building on this initiative and expanding it to include additional bodies, the Partnership for Action on Green Economy (PAGE) was founded in 2013 by UNEP, UNIDO, UNITAR and ILO with the goal of supporting 30 countries in transitioning to a GE as a demand-based, voluntary support mechanism. PAGE focuses on advisory services, capacity building, and promoting cooperation and knowledge exchange. PAGE has begun activities in 17 countries and has requests for service and aid pledges from several others.[41]

UNEP's efforts are based on a flexible working definition of the green economy as an economy 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."[42] Thus, UNEP's approach identifies some critical issues that should have a place in a country's strategy for achieving a green economy, yet it does not seek to impose concrete measures, approaches or targets in the countries it assists.

Thus, the resulting situation is a bottom-up process, driven by a growing number of countries that each seeks their own pathway towards a green economy. UNEP and other UN bodies, but also other organisations like the OECD act as information hubs in this process, providing for exchange and a loose coordination of different countries' efforts. National-level experiences are undoubtedly needed: innovative solutions for how to implement a green economy will have to come from the countries pursuing them. And while international institutions such as UNEP or the OECD can offer valuable support in the process of sharing knowledge and best practices, the green economy will not be brought about through top-down recommendations from such institutions.

[39] Samans, "Green Growth and the Post-2015 Development Agenda: An Issue Paper for the United Nations High-Level Panel of Eminent Persons," 5.

[40] The Green Growth Group, "Going for Green Growth: The Case for Ambitious and Immediate EU Low Carbon Action," 31–33.

[41] Poschen, "PAGE: Partnership for Action on Green Economy."

[42] UNEP, *Towards a Green Economy*. p.16

3.3 Constituting elements and essential features of a green economy

As noted, there is no exact definition of what constitutes a green economy – except that the concept will take on a different meaning in different places and circumstances. There is a working definition put forward by UNEP, which is not very specific, but which provides a sense of direction, and is widely accepted.

It is important to realise that policy and politics are full of terms and concepts that have gained considerable political traction, and have made profound impacts, without there being a clear definition, nor an agreement about what exactly they entail. For instance, there is no universally accepted definition of "social justice", neither is there one of "democracy". Despite this ambiguity – or perhaps even because of it – these terms have inspired billions, triggered social movements, and have thereby had considerable impact. Thus, in a favourable sense, the green economy can be seen as a comprehensive tool to promote sustainable development, which leaves room for the negotiation of a consensual agenda.[43]

Yet, while a concrete definition may be dispensable, it is important that the normative content of a concept is clear: which vision of the future does it convey? What is the boundary of the concept, and in particular: which patterns, which developments or which activities are not compatible with it? Unless some kind of understanding of this normative content emerges, the obvious risk is that the concept is perceived as arbitrary or random – a criticism that has often been voiced in relation to the concept of "sustainable development". In the case of the green economy concept, there is the risk that idea would be seen as "just another buzzword", thus failing to inspire – or, worse still, that it comes to be seen (and rejected) as an incident of "greenwashing", whereby unsustainable practices are merely labelled as "green".

As such, the lack of a common and agreed definition need not be a major problem. What is more important is that the content of the concept is clear – in the sense of a narrative or overarching paradigm, which captures the essential features of a green economy. Such a narrative is crucial, as it provides the common conceptual framework for the different policies and instruments that are put in place to bring about a green economy. Showing how the various green economy policies relate to a common narrative will enhance their political credibility, and underline the long-term commitment of the regulator – which, in turn, is necessary to stimulate private investment and mobilise stakeholder support.[44]

This narrative, however, will not be established through negotiations, but rather through practical work on a green economy in different places, and through international exchange about this work. At the same time, there are some constituting elements and essential features of the green economy concept that can be inferred from the political and academic discussions and negotiations:

- **The concept of a green economy represents a new model of economic development**. The limitations of the existing paradigm of economic growth and development are becoming ever more visible and tangible (economic crisis and instability, growing income inequality, environmental degradation, dissatisfaction and unrest). Over the last two decades, several world regions have achieved rapid and continuous economic growth. This growth has lifted hundreds of millions out of poverty and enabled the emergence of a new global middle class. But it also presents a new set of challenges. For instance, in many countries, the benefits of growth have been distributed unequally, with most benefits accruing within a small segment of the population. Increasing inequality in

[43] Poppe et al., "Is Something Wrong with the Green Economy?," 12.

[44] Mangalagiu, Meissner, and Jaeger, *Towards a "green Growth" Compelling Narrative*.

the distribution of incomes and wealth can be observed in developing and industrialising countries alike; often as a result of economic policies for which the need to adjust to economic globalisation is invoked as justification. Therefore, in developing and developed countries alike, the challenge is to make sure that economic growth is inclusive, i.e. that incomes rise across all segments of population. Also, the rapid economic growth in many parts of the world has coincided with an equally rapid growth in the consumption of energy, natural resources and other material inputs. The increasing resource use has a severe impact on the environment, and associated impacts on human health and well-being. As a consequence, economic growth (measured as growth in incomes) does not result in a corresponding improvement in welfare, when the cost of the side-effects of growth are accounted for, such as environmental degradation and the associated impacts on human health.

- **The concept of a green economy must be defined in relation to the most pressing global trends and challenges.** Thus, it needs to acknowledge the changed circumstances after two decades of economic globalisation, including the rise of a global middle class. And it needs to take up the global challenges that the world is facing – above all climate change and the loss of biodiversity – and promote a joint global response to these challenges.
- **The concept of a green economy needs to be based on a holistic approach: it is essentially about greening the entire economy**, not about fostering a particular "green" sector. Nonetheless, there are of course certain sectors that are of particular importance for the transformation to a green economy. This includes, above all, carbon- and resource-intensive sectors, such as the energy sector, mining, resource-intensive industry and manufacturing, agriculture, forestry, fisheries, and transport.[45] Responses for these sectors will certainly include technological innovations that improve their energy- and resource-efficiency. But it will also include social and organisational innovations – finding entirely new ways of satisfying demands. This will ultimately also result in a structural change, where economic welfare is less and less connected to the extraction, processing and use of natural resources, and instead increasingly relies on smart services. This includes a re-allocation of capital and investment between sectors, a change in the demand for certain goods and services, and, accordingly, a change in prices and thus the profitability of existing investments. This will elicit resistance from those firms who have invested into the current pattern of resource-intensive economic growth, and expect to see a return on these investments.
- Correspondingly, as the transformation for a green economy will need to affect a broad range of sectors, **sustainability concerns need to be mainstreamed into all policies** to bring about the necessary institutional and structural change. This also suggests that there will not be any singular policy instrument to direct the transformation, but rather a broad policy mix, consisting of new policies as well as reform of existing ones. In terms of the policy mix that countries can employ to support the transformation to a green economy, it is understood that economic instruments will have a key role to play. Economic developments are driven by prices. If prices do not reflect the full social and environmental costs, the economic incentives that guide economic development are not

[45] African Development Bank, *Sierra Leone: Transitioning Towards Green Growth. Stocktaking and the Way Forward*, 32.

in line with the environmental and social limits that the economy needs to reflect. Changing prices through the use of economic instruments is therefore a key part of the policy instrument mix: if this is not achieved, it will always remain necessary to regulate against the market dynamic. That said, it is also widely recognised that while economic instruments may be necessary to change the direction of economic development to a green economy, they are not sufficient. Economic instruments have their limitations, and therefore need to be supplemented by complementary policies, including R&D support as well as command-and-control regulation.[46]

- **A green economy will require some amount of reform to the institutional frameworks at national and international level**. In particular, the transformation to a green economy implies a need for reform of the set or rules and institutions that currently shape the process of economic development, be it in the area of trade, finance or investment.[47] This should also take into account the sets of targets that are intended to guide human development, such as Sustainable Development Goals (SDGs) and Millennium Development Goals (MDGs), as well as their interactions with the concept of a green economy. Prima facie, there would also seem to be much overlap between the green economy concept and the ongoing efforts to arrive at new and better measures of progress and economic welfare – i.e. moving beyond GDP.
- **A green economy will still be a growing and thriving economy, lead by innovations, and driven by increases in efficiency and productivity**. But it is imperative that this development changes into a direction that is commensurate with the limits set by the natural environment. This necessarily requires that the generation of economic welfare be decoupled from the consumption of natural resources. At the same time, economic growth needs to be inclusive and enabling – making sure that the benefits of economic development are shared by all segments of society.

3.4 Different interpretations of the green economy concept

While there is no universally agreed definition of a green economy, the work of UNEP over the last years has done a lot to shape a common understanding of a green economy. Based on the working definition referred to above, and through a number of publications, workshops and conferences, most notably the 2011 Green Economy Report,[48] UNEP has facilitated the international exchange on the green economy, and in the process helped to develop a common understanding of the concept.

Yet, it is also clear – and acknowledged in UNEP's work – that the concept of a green economy will take a different shape in different places, recognising the various national priorities, specificities, starting points and capabilities. Countries around the world therefore follow different visions, models or approaches in pursuing sustainable development. This also entails a range of different interpretations of the green economy concept – in some cases endorsing or re-interpreting the concept, in other cases following alternative approaches. Thus, in the EU, the concept of a green economy largely overlaps with, and is influenced by, the aspirations to establish a low-carbon economy by mid-century, whereas China emphasises the concept of an ecological civilization as the Chinese implementation of a green economy. At the same time,

[46] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, 164.

[47] Poppe et al., "Is Something Wrong with the Green Economy?," 12.

[48] UNEP, *Towards a Green Economy*.

the OECD and other institutions emphasise the role of green growth, as yet another notion that overlaps with the concept of a green economy. Bolivia, supported by other Latin American countries, advocates the concept of Living Well in Harmony with Mother Earth as their ideal of development – a concept that has overlaps with green economy efforts in some respects, but is fundamentally opposed in other respects. These national and regional concepts represent particular interpretations that may bear more or less resemblance to the concept of a green economy as proposed by UNEP. They overlap to a different degree, but not all of them are mutually compatible. A particular difficulty stems from the fact that the concepts themselves are not necessarily clearly defined, but are to some degree expressions of a particular normative approach, which needs to be understood in the cultural and social context from which it emanated. Also for this reason, none of the different interpretations would appear suitable to function as a universal blueprint for a green economy, which would be directly applicable to countries around the world.

China's approach to sustainable development is summarised under the term **Ecological Civilization**. The concept itself was developed in the 1990s. It suggests a strong transformative orientation: after the limitations of the current, industrial civilisation have become apparent, the ecological civilisation should mark the next stage in the development of the Chinese society and economy, and help China to reduce the high ecological cost of the past economic growth. Philosophically, the concept builds on the idea of the harmony of heaven and man that is firmly rooted in Chinese traditional culture. It aims to promote a harmonious and sustainable development between human beings, economy, society and nature.[49] It became anchored as a political concept at the 17th national congress of the communist party in 2007. In terms of practical application, the concept centres on a mainstreaming approach of integrating ecological requirements into other policies: it added the ecological dimension as a fifth dimension to the existing set of development targets (economic development, political development, cultural development and social development).[50]

Thailand advocates the notion of a **Sufficiency Economy**, which is based on three pillars: moderation, reasonableness and resilience. Moderation relates to the need for a balanced development between material and non-material advancement, or between a rural and urban society. Reasonableness relates to the quality of analytical work and decision-making, whereas resilience expresses the ability to manage economic, social and environmental risks. His Majesty King Bhumibol first formulated the concept, partly in response to the 1997 economic crisis. The eleventh National Economic and Social Development Plan (2012-2016) aims to integrate the concept of a sufficiency economy with the notion of a Green Economy, recognising the overlaps and the compatibility between both approaches.[51]

The concept of **Living Well in Harmony with Mother Earth** (Vivir Bien) represents a somewhat different approach, in that it has been put forward as an explicit opposition to the green economy concept, rather than an alternative interpretation of it. It departs from the understanding that, "to reestablish harmony with nature, we must recognize and respect the intrinsic laws of nature and its vital cycles. Not only do human beings have a right to a healthy life, but so do the other components and species belonging to the system we call nature."[52] This implies a fundamental opposition against models of economic developments that advocate free

[49] UNEP, *South-South Cooperation: Sharing National Pathways Towards Inclusive Green Economies*.

[50] UNDP China and Institute for Urban and Environmental Studies, CASS, *Sustainable and Liveable Cities: Toward Ecological Civilization. China National Human Development Report 2013*.

[51] UNEP, *South-South Cooperation: Sharing National Pathways Towards Inclusive Green Economies*.

[52] Bolivian Delegation to the United Nations Conference on Sustainable Development (Rio+20, "Proposal of the Plurinational State of Bolivia for the United Nations Conference on Sustainable Development (Rio+20): The Rights of Nature," III.15.

markets in general, and in particular against approaches that assign monetary values to nature or the services it provides. Rather, it emphasises the cultural and intrinsic value of nature, which cannot be quantified in monetary terms, and which must not be traded off against monetary values. It is framed as an alternative model to capitalism and modernity, and instead emphasises ethical values to promote a holistic, humanistic, solidarity-oriented and community based way of living.[53] The notion of a green economy is viewed sceptically: it is associated with the monetisation and commodification of nature, which is incompatible with the absolute rights of Mother Earth, which must be protected and expanded and cannot be traded off. The concept of Vivir Bien was endorsed in particular by Bolivia, supported by Venezuela and Ecuador. Based on these considerations, Bolivia in particular asserted that no single model of economic development – whatever its colour – should be imposed globally.[54]

The concept of **Green Growth** is rooted in the response to the 2007-08 financial and economic crisis, and the attempts of different countries to re-invigorate their economies with considerable stimulus packages. Yet the concept entails more than short-term crisis response, but rather aims to show how economic reform and growth-enhancing policies can lead to a greening of the economy. The Republic of Korea in particular has been a frontrunner in this respect, with the establishment of a Presidential Commission on Green Growth in 2009 and the adoption of a National Strategy for Green Growth for 2009–2013. The concept of Green Growth has been picked up and endorsed by different organisations, among them key international institutions like the OECD or the World Bank. As each of these institutions has put forward its own definition of green growth, there is no shortage of interpretations of the concept. Thus, the OECD describes green growth policies as "fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies"[55] – which, as observers have noted, is conceptually close to the understanding of sustainable development that underlies the sustainable development strategies of EU Member States.[56] The World Bank understands green growth as "growth that is efficient in its use of natural resources, clean in that it minimizes pollution and environmental impacts, and resilient in that it accounts for natural hazards and the role of environmental management and natural capital in preventing physical disasters".[57] Other institutions, such as UNESCAP or GGGI, define green growth with an explicit reference to climate policy (low-carbon development or climatic sustainability). While the notion of green growth in an abstract sense might still find wider support, the concrete interpretation is less likely to meet with universal agreement. For instance, the emphasis on natural assets and the services they provide is likely to be rejected by advocates of the Vivir-Bien approach as a commodification of nature, subordinating the Rights of Mother Earth to the market. Likewise, the strong role of market-based instruments which the OECD advocates as part of green growth policies is also likely to find the disagreement of many countries – not least because these instruments, at least in theory, require a framework of liberalised markets to deliver their full economic efficiency.[58]

In addition to these – more or less formalised and more or less official – definitions of a green economy, several research and civil society organizations have also put forth different con-

[53] UNEP, *South-South Cooperation: Sharing National Pathways Towards Inclusive Green Economies*.

[54] International Institute for Sustainable Development (IISD), *Earth Negotiations Bulletin UNCSD #1,* 46.

[55] OECD, *Towards green growth*, 9.

[56] Droege and Simon, "The Green Economy: An Economic Concept for Everyone?," 23.

[57] Fay and Banque mondiale, *Inclusive Green Growth the Pathway to Sustainable Development.*, 2.

[58] Poppe et al., "Is Something Wrong with the Green Economy?," 13.

cepts, frameworks, and strategies of green economy, many of which conflict with or contradict each other.[59]

4 Inclusive green economy: an engine for development?

Supported by various studies, governments, civil society, business and other players claim that a green economy could deliver numerous benefits: a green economy improves resource efficiency, reduces pressures on the environment, creates good (or decent) jobs and helps reduce poverty. This section discusses in brief these benefits but also potential trade-offs. The section is organised along these questions: Does a green economy generate jobs, help combat poverty, spur innovation and promote international trade? Does a green economy save economic costs for society as a whole, through, for example, reduced dependency from energy imports and reduced health costs?

4.1 Opportunities for green and decent employment: job creation potential of a green economy

In Europe, eco-industries provide about 1-2% of total employment, more than defence and aerospace combined. This does not include all jobs that could be considered 'green jobs' but only those in the environmental goods and services sector (EGSS).[60] Projections for the EU estimate that energy efficiency implementation could account for 2 million jobs by 2020, the renewable energy sector could reach 3 million jobs by 2020, and the implementation of the revised energy taxation directive could lead to cumulative 1 million new jobs by 2020. These would be jobs at low-, middle-, and high-skill levels.[61] Jobs currently indirectly provided by the ecosystems services sector in the EU are estimated at 14.6 million.[62]

A green economy is not only expected to create jobs in developed countries but also in developing countries. UNEP estimates that net employment gains are likely to be largest in developing countries because they can leapfrog to the technological level of developed countries. They also avoid costs of replacing obsolete infrastructure and associated employment friction.[63] Job growth in the global renewables sector is already 21% annually.[64]

At the same time, while there are good reasons to assume that the transformation to a green economy will result in net job creation, this does not mean that the transition will be smooth sailing all the way. Thus, some industries that are relevant for a green economy, in particular the solar PV industry, have recently seen job losses after years of continuous growth. Solar industries in Germany, for example, lost 21% of their jobs between 2011 and 2012 alone – above all in the manufacturing of PV modules, whereas other segments like the installation and maintenance have been less affected.[65] The decline in solar PV jobs has paused for the time being the overall growth in employment in the renewable energy sector in Germany, which has marginally declined from 2011 to 2012 after growing for years. China, another front runner, has also seen job losses due to recent trade disputes and declines in demand.[66]

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[59] Benson and Greenfield, "Surveying the 'green Economy' and 'green Growth' Landscapes," 2.

[60] European Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Towards a Job-Rich Recovery," 5.

[61] Ibid., 7.

[62] Ibid., 9.

[63] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, viii.

[64] Ibid., vii.

[65] O'Sullivan et al., *Bruttobeschaeftigung durch Erneuerbare Energien in Deutschland im Jahr 2012*.

[66] Wharton School of Business, "Why Is the Sun Setting on China's Solar Power Industry?"

This seems contradictory. Several studies expect large increases in employment, in particular in developing countries, while recent news from the solar industry in Germany in particular seems to suggest the opposite. This seeming contradiction can be explained by the fact that globally, an excess capacity for the manufacturing of PV modules had been building up. As the PV module industry has matured, it has also been undergoing a phase of consolidation and rationalisation. This, however, does not change the long-term outlook for the industry, which keeps reporting new record levels each year in terms of new capacity deployment.

A range of factors has to be taken into account for the determination of "green jobs":

- **Terminology:** There are different definitions of the term "green job". According to the ILO/IILS, "green jobs are those jobs maintained or created in the transition process towards a green economy that are either provided by low-carbon intensive industries (enterprises) or by industries (enterprises) whose primary output function is to greening economy [sic]".[67] This is a circular definition. A more convincing definition lists sectors that are essential for the transformation towards a green economy, such as energy, water, and air quality to name a few particularly relevant sectors, but even such definitions face significant terminology challenges, largely because it is difficult to delimit these sectors. It is also a challenge to count jobs that overlap into different categories, such as a plumber who installs both solar panels and bath tubs. Depending on the definition of the term "green job", studies can arrive at different results.
- **Net vs. gross effects:** It makes a difference if the focus is on estimating the number of "green jobs" (however defined) or if the focus is on estimating the net effects of environmental policies. The latter also include job losses, either because "green jobs" replace other jobs, or because environmental policies increase costs for some industries, leading to job losses in these sectors.[68] Both of these measures have their merits and provide useful information; arguably the net effects are more relevant when it comes to evaluating the overall employment performance of a green economy.
- **Causality:** There are similar problems with causality. Many factors are relevant for creating employment. Feed-in-tariffs, for example, are generally credited as a measure particularly successful in greening the power sector and the economy, but interest rates are also an important factor for the expansion of renewable energies. This leads to the question of which factor has actually created the job – the policy measure (feed-in-tariff) or the macroeconomic factor (interest rate)?
- **Country specific:** Job creation potential depends on many factors and is always country specific.[69] Different green investments have different job creation potentials in different countries: for example, biomass spending in China is taken to be nearly 30 times more effective in generating jobs per dollar spent than wind power.[70] In the US, solar PV creates the most jobs per electricity unit output, and in Honduras water infrastructure management has a much higher job creation factor than hydropower.[71] An ILO study found that a lack of policy coordination and coherence in several countries led to job

[67] International Labour Organisation, "Defining 'green': Issues and Considerations," 22..

[68] Bundesministerium fuer Umwelt, Naturschutz und Reaktorsicherheit and Umweltbundesamt, *Report on the Environmental Economy 2011. Facts & Figures for Germany*, 31.

[69] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, viii.

[70] Bowen, *"Green" Growth, "Green" Jobs and Labor Markets*.

[71] Ibid.

creation and environmental potential that was less than expected. Often green economy policies were just added to the existing policy spectrum without reforming other policy areas. Better mainstreaming and coordination are therefore still needed.[72]

- **Sector specific:** Sectors that are particularly relevant for the green economy have developed differently. The solar industry is suffering from excess capacity worldwide; in particular European manufacturers are experiencing a massive crisis. **Other** sectors of the green economy, such as water and sanitation, are not undergoing such a crisis. In the United States, building renovation remains at stably high levels since recovery from the economic crisis has begun, as renovation is seen as a safe and cost-effective investment regardless of the economic environment. This marks a departure from historical patterns, where renovation levels have tended to fall as economic upswings begin.[73] The total value of the organic agriculture market has grown steadily worldwide showing no evidence of the crisis.[74] The market for car-sharing has also grown steadily, with membership in North America growing at a steadily increasing rate over the past decade.[75] Car sales between 2006 and 2009 in Europe tended over time towards smaller cars,[76] and increases in demand for high-fuel efficiency cars correlate with poor economic performance, especially since 2007.[77]

The employment effects of the Green Economy will not be a linear upward development, but like employment in general, will still be subject to periodic ups and downs. Despite these uncertainties, there are a few conclusions that appear fairly well established: Building a green economy entails – inevitably – deep structural reform of many sectors, such as the energy sector, industries, transport or agriculture. Depending on the adaptation capacities of these sectors, this can lead to employment gains or losses in these sectors. Structural change increases demand for skills in growing industries. The ILO and UNEP report that a synthesis of studies found a long-term net gain potential of 15 to 60 million jobs from a transition to a green economy, a growth of 0.5 to 2%.[78] Skills and knowledge used in existing industries will shift to more sustainably-focused modes of production (e.g. no-till agriculture, energy efficiency). The change regarding energy efficiency will probably have the largest effect on employment and skill demand.[79] "The renewable energy and low carbon sectors generate more jobs per unit of energy delivered than the fossil fuel-based sector".[80] Renewables are more labour-intensive than conventional energy, especially at the construction, manufacturing and installation stage (though less so in operation and maintenance, partly because fuel input management is not necessary).[81] Additionally, for those countries that rely on fuel imports, renewable energy as a domestic energy source will – at least partly – replace fossil fuel imports, thus keeping value added within the country.[82]

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[72] International Labour Organisation, "Are 'green' Jobs Decent?".

[73] Jackson and Feld, "Companies Forego New Buildings for Renovations: EcoPulse."

[74] Arbenz, "Global Market Outlook: The World of Organic Agriculture, Statistics and Emerging Trends," 7.

[75] Shaheen, *Innovative Mobility Carsharing Outlook: Carsharing Market Overview, Analysis, and Trends - Summer 2013*.

[76] European Automobile Manufacturers' Association, "Trends in New Car Characteristics."

[77] European Automobile Manufacturers' Association, "The Drive towards Fuel Efficiency."

[78] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, viii.

[79] Bowen, *"Green" Growth, "Green" Jobs and Labor Markets*.

[80] Ibid.

[81] Ibid., 14.

[82] Bundesministerium fuer Umwelt, Naturschutz und Reaktorsicherheit and Umweltbundesamt, *Report on the Environmental Economy 2011. Facts & Figures for Germany*, 39.

4.2 Health benefits of a green economy

By definition, a green economy improves the quality of the environment. This has various health benefits. For example, respiratory and cardiovascular disease/death from air pollution or water borne disease from pollution would be reduced. Mitigated climate change would have enormous health benefits. Climate change is likely to affect the health of millions through increases in malnutrition, or increases in disease and injury due to extreme weather events.[83] In total, the WHO estimates that global climate change, air pollution, lead exposure, indoor smoke from solid fuels and unsafe water combined account for nearly 10% of deaths and disease burden globally and around one quarter of deaths and disease burden in children under 5 years.[84]

4.3 The economic case for tackling environmental pressures

There is compelling scientific evidence that natural systems have 'tipping points' or biophysical boundaries beyond which rapid and damaging change becomes irreversible.[85] There is also abundant evidence that environmental degradation comes at (high) economic costs. This has been calculated for climate change on many occasions. Inaction has been estimated to lead to permanent reductions in output of up to 10% by 2100;[86]by 2200 the costs of damages from climate change will have reached US$ 74 trillion (at 2000 prices).[87] The Stern Review estimates that by 2200 in a BAU scenario, consumption losses due to the impacts of climate change will be at least 5% and up to 20% - this is contrasted with annual mitigation costs of 1% of GDP to stay within an atmospheric carbon concentration of 500-550 ppm (the amount required to avoid the most severe risks) if action is not further delayed.[88]The IEA World Energy Outlook 2012 shows "that delaying action on climate change is a false economy. Investments of around US$ 1.5 trillion are avoided in the period to 2020, but an additional US$ 5 trillion of investments are required between 2020 and 2035" to keep CO_2 levels below 450 ppm in the long term (this level corresponds to the agreed upon 2° limit to temperature rise).[89] In addition, estimates of the costs of climate action may be too high, as they do not take the savings from climate mitigation into account.[90]

Concerning sanitation and water quality, the cost-benefit-ratio of investing can be up to 7:1 in emerging economies.[91] UNEP has shown that "the restoration of ecosystems or ecosystem services following their degradation or collapse is generally more costly and time-consuming than preventing degradation, if that is possible at all".[92] Concerning a range of environmental policies, the World Bank estimates that US$ 900 billion to US$ 1,700 billion of green investments in land, water, and energy could yield economic returns of around US$ 3 trillion per year or

[83] Intergovernmental Panel on Climate Change, "Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change: Summary for Policy Makers," 12.

[84] World Health Organization, Global health risks: mortality and burden of disease attributable to selected major risks, Geneva, 2009, p. 23

[85] OECD, *OECD Environmental Outlook to 2050: The Consequences of Inaction*, 26.

[86] Stern, *The Economics of Climate Change*.

[87] Jordan and Lenschow, "Environmental Policy Integration: A State of the Art Review"; European Environment Agency, *Environmental Policy Integration in Europe - State of Play and an Evaluation Framework*.

[88] Stern, *The Economics of Climate Change*.

[89] International Energy Agency, *Redrawing the Energy-Climate Map*, 116.

[90] OECD, *OECD Environmental Outlook to 2050: The Consequences of Inaction*, 27.

[91] Ibid., 278.

[92] UNEP, *Ecosystems and Human Well-Being*, 83.

even US$ 3.7 trillion with carbon at US$ 30 per ton and a phase out of energy, agricultural, or water subsidies.[93]

Trucost estimates that the total value of unpriced natural capital costs are US$ 7.3 trillion, or about 13% of global economic output in 2009 (in 2009 prices).[94] The 100 regional economic activities with the highest environmental impacts are estimated to generate negative externalities of US$ 4.7 trillion. The most significant impacts come from GHG emissions, water use, and land use. Coal power generation and agriculture generate particularly high negative externalities, far exceeding profits generated in many regions. The extent to which these external costs impact consumer and business costs throughout the supply chain depend on the region and sector, but the business risk from unaccounted for externalities is growing as impacts increase globally. Especially as severe events such as droughts increase, the costs of environmental impacts of production and consumption are likely to be increasingly internalized through volatile and sudden price effects if these risks are not incorporated by enterprises into business strategies.

All of these examples can serve as evidence that there is a very fundamental market failure at work: they show that, since prices have failed to convey the "ecological truth" about the costs of exploiting ecological resources, too much investment has flown into the wrong uses. The return on these investments would be diminished considerably if the social and environmental costs were accounted for. This suggests that the funds could have been invested into better, more productive uses – generating more welfare.

While these long term and general estimates make a compelling case for building a green economy, they disguise the fact that short term costs might be high and that some sectors are bound to lose market shares or their business case altogether. If fossil fuels must stay in the ground – as required to combat climate change successfully – the oil industry or coal mining are likely to suffer, even if CCS or other technologies should become economically viable. Those businesses that have invested into resource-intensive technologies may find that their investments turn into stranded assets. These interests in combination with real and perceived fears of – for example – losing economic growth make building a green economy a more difficult undertaking than might be suggested by the overall and long term estimates of possible green economy benefits.

4.4 The link between environmental degradation and poverty

It is well established that the poor tend to be at highest risk of negative impacts from climate change.[95] Low income communities and households cannot afford capital-intensive climate change mitigation and adaptation measures.[96] They often live in high-risk areas, such as coastal and river flood plains.[97] In addition, climate change and environmental degradation have a disproportionally high negative effect on populations that derive their livelihood from natural resources, such as those working in fisheries, agriculture and forestry. [98] These also tend to be sectors with low income and low security. The countries most vulnerable to climate

[93] World Bank, Inclusive Green Growth, Washington, 2012, p. 11

[94] Trucost, *Natural Capital at Risk: The Top 100 Externalities of Business*.

[95] Intergovernmental Panel on Climate Change, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*.

[96] Ibid., 48.

[97] Intergovernmental Panel on Climate Change, "Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change: Summary for Policy Makers," 12.

[98] Intergovernmental Panel on Climate Change, *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*.

change are all developing or LDCs.[99] A similar case can be made for water and air pollution, which both tend to affect more the poor, who are generally more exposed to this type of pollution.

There is also a link between environmental degradation and poverty. Lower income countries tend to be more reliant on natural capital for their income.[100] Ecosystem and soil degradation as well as water pollution may undermine food production and the availability of clean water, thereby particularly impacting the livelihoods of the poor.[101] There is also a case for protection of biodiversity as a tool to combat poverty. Biodiversity conservation's effect on poverty alleviation, however, depends largely on how the conservation efforts are designed and carried out.[102]

4.5 Green economy to reduce the cost of resource imports and import dependency

Dependencies on energy imports in developing countries vary considerably. While a number of developing countries are energy exporters, there are various developing countries with high import rates. Examples of poor countries with high energy import rates include Morocco (95% of total energy use), Jamaica (85%), Namibia (80%), Panama (78%), Dominican Republic (77%), Armenia (64%), Kyrgyz Republic (59%), Senegal (52%), Cuba (52%), and Botswana (52%).[103] It is noteworthy that numbers are not available for many other poor countries. Low energy sovereignty comes with high bills for energy imports. Richer countries may be able to shoulder these bills – in 2011, the EU spent over US$ 500 billion or 3.3% of its GDP on energy imports.[104] For the weaker economies in many developing countries, the import dependence – and therefore the effect of price changes, is amplified. Thus, the ODI found that a doubling of oil prices would lead to GDP losses in many African countries, including some oil exporting countries, due to higher energy import/consumption prices and/or declining terms of trade.[105] The IMF also found that a US$ 0.25 increase in fuel prices led to a 5.9% decrease in real household incomes on average.[106]

Energy costs put an even heftier price on developing countries if energy is subsidized – as is the case in many developing countries. Many MENA countries, for example, subsidize fossil fuels at rates over 50% of the price, and subsidization levels range to nearly 90% of the price. Other countries such as Argentina, Indonesia and India subsidize fossil fuels at rates around 20% of the price.[107] Electricity subsidies in South Saharan Africa total on average 1.7% of GDP - in some countries over 2% - and effective tariffs only represented about 70% of cost-recovery between 2005 and 2009.[108] In various developing countries, energy subsidies are much larger than social spending – in Uzbekistan, for example, post-tax energy subsidies are about seven times higher than spending on education and healthcare combined, in Iran and Bangladesh

[99] Holyoak and Poplawski-Stephens, "Discussion Note: The Offset Scandals in the Effort Sharing Decision."

[100] World Resources Institute, "Distribution of Total Wealth by Income Group, 2000."

[101] Howe et al., "Elucidating the Pathways between Climate Change, Ecosystem Services and Poverty Alleviation," 105.

[102] Bille, Lapeyre, and Pirard, "Biodiversity Conservation and Poverty Alleviation," 31.

[103] World Bank, "Energy Imports, Net (% of Energy Use)."

[104] International Energy Agency, "Impact of high oil prices on the economy".

[105] Cantore, "Energy Price Shocks: Sweet and Sour Consequences for Developing Countries," 18–21.

[106] Arze del Granado, Gillingham, and Coady, *The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries*, 8.

[107] International Energy Agency, "Fossil Fuel Consumption Subsidy Rates as a Proportion of the Full Cost of Supply, 2011."

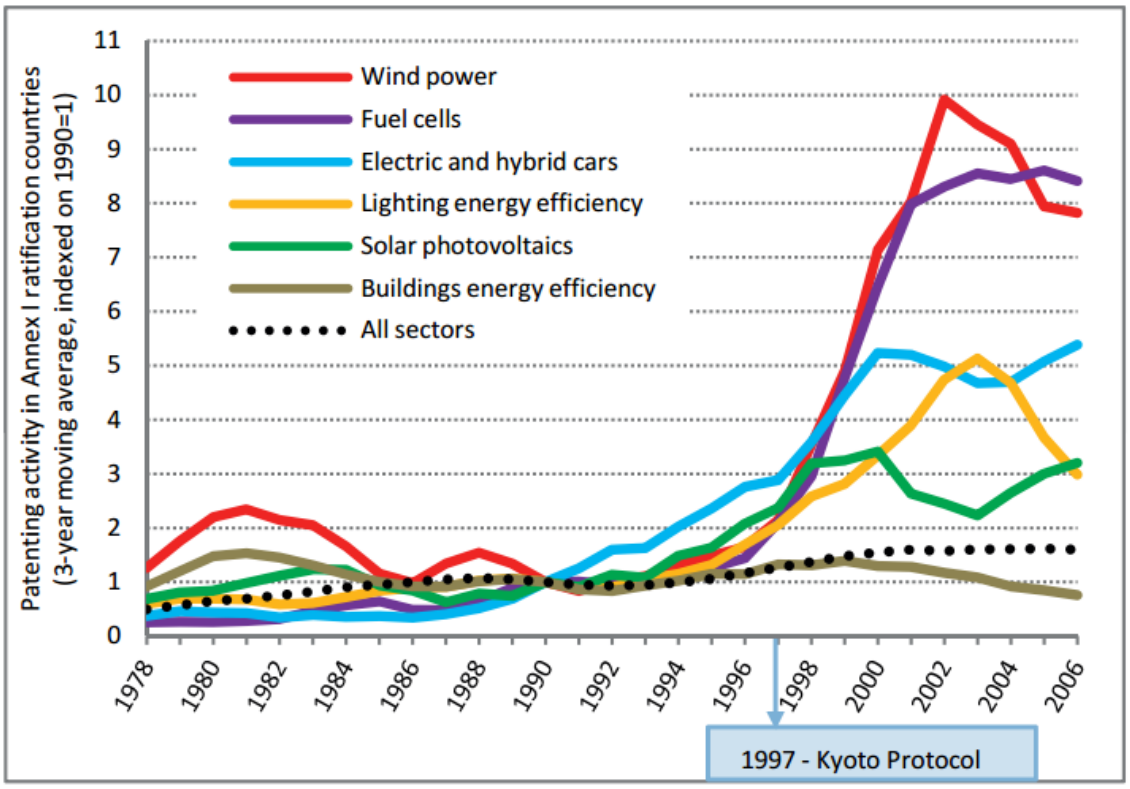
[108] International Monetary Fund, *Energy Subsidy Reform: Lessons and Implications*, 15.

about three times as high, in Algeria, Egypt, and Ecuador about twice as high.[109] Absurdly, energy subsidies lead to higher energy consumption, which in turn drains public budgets even further.

4.6 Green economy as a driver of innovation

Green technology, i.e. technology designed to lessen environmental pressures, is among the most innovative area, as indicated in the graph below.

Figure 1: Innovation in climate change mitigation technologies, compared to all sectors



Source: OECD, "Environmental Policy and Technological Innovation (EPTI)."

Markets alone will not create a green economy – in fact, today's environmental degradation is a textbook example of market failure. For this reason, building a green economy requires a wide range of policies and measures. Similarly, innovation does not simply happen; it depends on the right policy frameworks. For green innovation there are various examples where policies and measures have helped to bring innovation to the market:

- **Environmental regulation:** There are various examples of environmental regulation that induced innovation. Emission standards for cars are a well-known example.
- **Pricing:** Pricing resources can also foster green technological progress. Higher energy prices will lead to production factor substitution between energy, capital, and labour.[110] This means more efficient capital investments must be made and, under the right conditions, could lead to higher employment.

[109] Ibid., 16.

[110] European Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Towards a Job-Rich Recovery," 6.

- **Environmental strategies and targets.** It is widely agreed, for example, that having a legally binding renewables target at the EU level for all Member States has drastically strengthened national action: Between 1995 – 2000, when there was no regulatory framework in place, the share of renewable energy in the EU grew by only 1.9% per year, but grew by 4.5% between 2001 and 2010 when the indicative and voluntary targets were adopted. With legally binding national targets (from 2009 onwards), the growth accelerated further.
- **Innovation programmes:** Denmark with its wind turbines and Japan with hybrid engine and catalytic converter technologies are two examples of countries that embarked upon costly resource management and innovation programmes early, and then benefited when other states and companies needed to license their proprietary technology.[111]

4.7 Trade effects of a green economy

Greening the economy will have numerous effects on trade. UNEP has produced a comprehensive report on the relationship between trade and green economy. According to this report, "sustainable production and trade can positively impact different elements of the supply chain and consequently make exports more competitive in international markets".[112] More specifically, UNEP estimates that sustainable farming methods can increase productivity and strengthen export markets. Products with an environmentally friendly design often have better market access and a competitive advantage in global markets. In line with these findings, trade in environmental goods has constantly grown.[113]

At this general level and in its generic terminology, the case for the positive trade effects of a green economy is strong. However, even if dynamic and growing, trade in environmental goods, when compared for example with the value of global trade in materials and resources, remains a small fraction of total merchandise trade.[114] In addition, more thorny questions arise if specific impacts on sectors are considered. Trade in fossil fuels, which accounts for large shares in global trade, is likely to suffer if the world economy becomes less dependent on fossil fuels. In the absence of cleaner alternatives, aviation is likely to lose market shares on short and medium distances, if transport emissions are reduced as required by meaningful climate action. Such changes are likely to affect airlines as well as aircraft manufacturers. Reducing trade-related emissions is another challenge for achieving more sustainable trade and mitigating climate change.

In response to these challenges for specific sectors, the transition to a greener economy will necessitate greater fuel efficiency, the use of renewable energy sources, and the development of new markets in carbon credits as stated by UNEP. However, while greater fuel efficiency often comes at negative costs and creates win-win situations, renewable energy sources in the transport sector raise difficult questions. Biofuels are still by far the most important source of renewable energies in the transport sector, and in practical terms the only type of renewable energy that can be traded internationally. Yet their impacts on the local environment and food security remain contentious.

[111] UNEP, "Green Economy Briefing Paper: Innovation."

[112] UNEP, "Green Economy and Trade: Conclusion."

[113] Ibid.

[114] http://unep.org/greeneconomy/Portals/88/GETReport/pdf/Chapitre%208%20Conclusion.pdf

5 Policies for a green economy

Irrespective of the exact interpretation of a green economy applied in any country, it will require a range of policy instruments to change the current model of economic development and put economies on track to a green economy.[115] Market-based policy instruments, such as taxes and tradable permit schemes, will have a key role to play in this process: to change the direction of economic development onto a more sustainable trajectory, it will be necessary to rely on markets, but it will be equally essential to correct their functioning where they fail. As such, markets can be extremely useful to stimulate innovation, to speed up the diffusion of new technologies, and to engage private investors and innovators in the transformation process to a green economy. In general, policies for a green economy are therefore well advised to build on the market dynamic and direct it into a sustainable direction, rather than to work against it.

Yet, a few clarifications to this general statement are necessary: first, the fields where private green economy investments are called for will often touch upon services of general interest – such as electricity supply, water and sanitation, or waste management. For such services of general interest, market forces will only lead to social welfare gains if they are effectively regulated. This requires strong regulatory and administrative structures, which cannot be taken for granted in many countries. Second, the emphasis on market forces should not be misread as claiming that, in the interest of a green economy, all types of non-traded assets should be marketed (as, for instance, with biodiversity offset mechanisms or payments for ecosystem services). Such instruments can be useful in a given context, provided the right administrative conditions are in place, but they are not an end in itself.

Also, it would be misleading to think that market-based instruments (pricing tools, such as taxes and cap-and-trade) by themselves could bring about the fundamental transformation that is needed to achieve a green economy. This task will require a broad policy mix, combining a number of different instruments. However, economic instruments should be an indispensable part of this policy mix: to change the direction of economic development, it is indispensable to get the prices right. Yet, it is also true that many of the success stories of environmental regulation in the past have been achieved by command-and-control regulation. Since market-based instruments are fewer in number and more recent, it comes as no surprise that there are also fewer success stories.

While there is a growing repository of information on the different policy instruments that can support the transition to a green economy,[116] it needs to be kept in mind that the transferability of policy instruments, and of insights about the performance of policies, is limited. Policy instruments originate in a particular economic, political, legal and cultural setting, and their performance depends on this setting. Transferring policies from one setting to another is difficult: absent the political, legal and cultural framework, the policies may deliver different results; and deriving general conclusions about the merits of different policy instruments can be misleading. Therefore, it is equally necessary to consider what framework conditions need to be in place for policies to function well. For instance, to exploit their full potential, market-based tools require some amount of flexibility in the market environment in which they operate: if electricity prices are strictly regulated, a cap-and-trade scheme covering the power sector will not yield the same efficiency gains as in a context of freely fluctuating prices. Another insight is that market-based solutions require a solid regulatory framework to function well,

[115] UNEP, *Measuring Progress towards an Inclusive Green Economy*, 25.

[116] See also the "Green Economy Toolbox" compiled by UNECE, http://www.unece.org/fileadmin/DAM/GET/#!, as well as part III of the UNEP Green Economy Report (UNEP, *Towards a Green Economy*), or OECD, *Towards green growth*.

including a good deal of command-and-control-type oversight, for instance when it comes to monitoring, reporting and verifying emissions, or assuring market oversight for trades in emission permits.

Keeping these caveats in mind, the following sections spell out some of the generic findings that can be drawn for green economy policies.

5.1 Getting the prices right

Any environmental policy that works against the market is likely to fail. If price signals consistently direct all investment and consumption decisions in a direction that takes the economy away from a green economy pathway, it becomes very difficult, if not infeasible, to regulate against the market signals. Alas, the prices of commodities are far from conveying the social and ecological truth about the traded products. The external costs of production – i.e. the social and environmental impacts that are associated with the mining of resources, the manufacturing, transport, use and disposal of products – are not fully reflected in their market prices. This leads to a massive market failure: under textbook conditions, markets would be expected to maximise social welfare. However, reality is far from the textbook ideal: The failure to account for external costs means that natural resources, and the products that make use of them, are traded too cheaply, because part of their costs are simply imposed onto others, including future generations, in the form of environmental degradation.[117] As previously mentioned, the gap in the value of production and of externalities is estimated in the trillions of US$.[118]

For this reason, for any green economy policy, a key part of the effort is to "get the prices right" by phasing out environmentally harmful subsidies and by introducing pricing mechanisms that factor the external costs into any economic decision-making. In terms of such pricing mechanisms, there are different policy options at their disposal, including taxes and tradable permit schemes. If designed well, they can be both effective and efficient tools – and they have the potential to generate revenue, which can then be used to ameliorate undesirable social side-effects, such as impacts on particularly vulnerable parts of society. The observation that a failure to include external costs reduces economic welfare, and that governments could increase welfare through a tax that internalises these costs, was put forward by the British economist Arthur Cecil Pigou almost a century ago. Some progress has been made since, but a lot remains to be done.

5.1.1 Phasing out environmentally harmful subsidies

Before thinking about new instruments to internalise the external costs of economic activity, it is worth considering the effects of existing support mechanisms. Around the world, governments employ a range of support mechanisms, often at great expense to the public budget, which make it cheaper to indulge in emitting activities. That is, governments use public funds to provide an incentive to pollute more, not less. As described in section 2.5, the effect on the public budget and the economy as a whole can be detrimental: a number of countries spend several percentage points of their GDP on subsidising fuels – often in excess of what they spend on public healthcare or on education. This leads to fiscal imbalances, crowds out other public and private spending, and distorts investment incentives away from energy efficiency and low-carbon energy.[119]

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[117] UNEP, *Driving a Green Economy Through Public Finance and Fiscal Policy Reform*.

[118] Trucost, *Natural Capital at Risk: The Top 100 Externalities of Business*.

[119] Clements, *Energy Subsidy Reform: Lessons and Implications*.

Defining such environmentally harmful subsidies is not easy – as they are often not in the form of explicit subsidies out of public budgets, but rather support measures such as tax exemptions. Among the different types of environmentally harmful subsidies, subsidies to fossil fuels are best documented, particularly through the work of the International Energy Agency (IEA). The IEA applies the price-gap method to measure the difference between the difference between the domestic price level for fossil fuels (which, in many countries, is guaranteed in domestic legislation) and an international reference level for the same fuel. Using this method, the IEA estimates that global subsidies to fossil fuel amounted to US$ 409 billion in 2010, or about 0.5% of global GDP.[120] And this merely accounts for the public money that governments use to support fuel consumption. If one recognises that, from a public welfare perspective, fossil fuel consumption should be taxed to reflect the external costs they cause, the volume of subsidies is much higher. According to IMF calculations, the foregone tax revenue due to the failure to include external costs as well as VAT is about four times the size of the pre-tax subsidies, as measured in the price-gap approach, as applied by the IEA. Including the foregone tax revenue, total fossil fuel subsidies amounted to a staggering US$ 1.9 trillion in 2011, or about 2.5% of global GDP.[121]

Due to the method used, both the IEA and the IMF figures mostly apply to developing countries: while fossil fuel subsidies are also found in developed countries, the latter tend to subsidise the production of fossil fuels rather than their consumption, e.g. by supporting coal mining. Where developed countries support energy consumption, it is mostly in the form of exemptions from existing energy taxes (or, in the case of tradable permit schemes, free allocation of allowances). And while developing countries typically invoke social considerations to justify the existence of subsidies, governments in industrialised countries deem such support measures necessary to protect the competitiveness of companies or to entire industries. Whether or not this claim is justified, whether the support measures are targeted at the right companies and sectors, and whether they achieve what they are expected to, has been a matter of much debate.

Recognising the multiple problems associated with fossil fuels subsidies, the G20 agreed in 2009 to progressively reduce "inefficient energy subsidies", and eventually to phase them out altogether. However, little progress has been made to follow up on this agreement; in the two years following the agreement, the G20 countries failed to even agree on a definition of what constitutes "inefficient energy subsidies", let alone concrete steps towards their phase-out.[122]

But while fossil fuel subsidies often take centre stage in the discussion about environmentally harmful subsidies – partly because of their sheer volume, and because they are relatively well-documented – they are only one subset of all environmentally harmful subsidies. The World Bank estimates that, in addition to US$ 455–485 billion of fossil fuel subsidies, there are US$ 200 – 300 billion of annual water subsidies, US$ 370 billion of transfers to agriculture, and US$ 10–30 billion for fisheries, bringing the total volume of environmentally harmful subsidies to US$ 1–1.2 trillion each year.[123] For instance, fisheries continue to receive subsidies that encourage unsustainable capacity building and fishing methods: research indicates that about 60% of fishery subsidies support unsustainable practices, and should therefore be seen as environmentally harmful subsidies.[124]

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[120] International Energy Agency, *World Energy Outlook 2011*.

[121] Clements, *Energy Subsidy Reform: Lessons and Implications*.

[122] Belschner and Westphal, *The G20 and Inefficient Energy Subsidies*.

[123] Fay and Banque mondiale, *Inclusive Green Growth the Pathway to Sustainable Development.*, 9.

[124] Pew Environment Group, *Subsidizing Global Fisheries*, 1.

There is no shortage of convincing arguments for phasing out environmentally harmful subsidies: the phase-out increases economic welfare, benefits the public budget, increases energy security and reduces import dependency, promotes the functioning of energy markets, and of course reduces both CO_2 emissions and local (air) pollution. But despite all these arguments, the politics of phasing out – or even reducing – environmentally harmful subsidies are extremely difficult, if not risky. Subsidies to energy consumers are typically justified on social grounds: providing cheap access to energy is seen as instrumental to reduce poverty. However, this ignores the fact that only a small share of the subsidies actually benefits the poorest households: according to the IEA, only 8% of the US$ 409 billion in global annual fossil fuel subsidies benefited the poorest 20% of the population. Most of the subsidies actually benefit the middle class and the rich. Energy subsidies are, therefore, an extremely inefficient tool for assisting the poor.[125] The same is true for fishery subsidies: the environment, but also the local economy and coastal communities would benefit if fishing subsidies could be redirected to support sustainable management practices and resource conservation, or to boost other industries in fishing communities.[126]

5.1.2 Introducing new market-based instruments for pricing externalities

Recognising the efficiency and effectiveness of markets, countries around the world have increasingly relied on markets as the basic mechanism to allocate capital and labour resources to their most productive use, resulting in high economic growth rates and booming global trade. However, as the importance of markets around the world grows, so does the need to correct their failures when they occur. This includes the use of market-based policy instruments, such as taxes or tradable permit schemes.

The main benefit of market-based instruments is that they correct the price signals in an economy, and thereby change the incentives that influence both the consumption decisions of private households and the investment decisions of businesses. In this way, market-based instruments help to correct the functioning of markets, using their strengths as a discovery mechanism for new products and services.

While changing relative prices is arguably the main function of market-based instruments, the generation of revenue is another important aspect: both taxes and tradable permit schemes generate additional revenue for the public budget, which can be put to different uses. For instance, the OECD estimated that for industrialised countries alone, the revenue that they could raise from taxes or from the auctioning of emission allowances to achieve their Copenhagen pledges could amount to about US$ 250 billion, or 0.6% of their combined GDP.[127] The EU found that if all EU member states raised environmental taxes to 10% of overall tax bill, this would yield an additional 1.4% of EU GDP that could go towards supporting green economy reforms (currently they make up about 6.3%).[128]

This revenue can be used in different ways:

[125] International Energy Agency, *World Energy Outlook 2011*.

[126] Pew Environment Group, *Subsidizing Global Fisheries*, 4.

[127] UN Environment Management Group, *Working towards a Balanced and Inclusive Green Economy: A United Nations System-Wide Perspective*, 15.

[128] European Commission, "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Towards a Job-Rich Recovery," 6.

- It could be used to cut labour taxes, thereby stimulating employment. The ILO calculated that imposing a tax on CO2 and using the revenue to cut labour taxes could create up to 14 million net new jobs.[129]
- Alternatively, the revenue can be used to mitigate adverse impacts on particularly vulnerable groups, e.g. through lump-sum refunds to the poorest households. Such support measures at the household level can be targeted much better at those who need them and are, therefore, a much more efficient compensation tool than low prices for energy and resource-consuming activities.
- The revenue can serve to fund other environmental measures, particularly those that provide environmental benefits at low cost, but which are not implemented because of other non-market barriers. This can include a lack of awareness and information, which can be addressed through targeted campaigns and information provision, but also lacking access to finance. An example of the latter are subsidised loans for energy efficiency improvements in private homes. Such measures are not only beneficial at the household level, they also provide a net saving for the economy as a whole: the IEA estimates that "additional investment of US$ 11.8 trillion in efficient end-use technologies is more than offset by a US$ 17.5 trillion reduction in fuel bills and a US$ 5.9 trillion cut to supply-side investment by 2035".[130]

Efforts to introduce market-based instruments, or to increase the level of ambition of existing ones, are often hampered by the concern that this will undermine the international competitiveness of domestic industries. Such concerns can be alleviated through regional or global cooperation on environmental tax reform, investment, and regulation policies. [131]

5.1.3 Reflecting the value of nature

The approach championed by the initiative on The Economics of Ecosystems and Biodiversity (TEEB) advocates true cost accounting to reflect the real value of ecosystems and biodiversity. Activities that involve the consumption or destruction of natural assets must reflect the real value of these assets, including all positive and negative externalities. Otherwise, the consequence is wasteful destruction of assets. Building on the TEEB methodology, a recent study identifies several examples of economic activities in which the costs to society far exceed the economic benefits. The activities with the highest overall negative impact on natural capital are coal power generation in Eastern Asia and North America, cattle ranching and farming in South America, and wheat and rice farming in Southern Asia.[132] The combined costs to society of the 20 most environmentally harmful regional sectors are estimated to be over US$ 3 trillion. These activities are only viable because the profits are collected privately, while the costs are borne by the society (including future generations), meaning enterprises and sectors have no incentives under current political economic conditions to pursue sustainable business strategies. But as such, the activity is entirely wasteful; society would be better off if the activity was simply stopped.

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[129] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, x.

[130] International Energy Agency, "World Energy Outlook 2012 Factsheet: How Will Global Energy Markets Evolve to 2035?," 4.

[131] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, 171.

[132] Trucost, *Natural Capital at Risk: The Top 100 Externalities of Business*.

Governments need to analyze overall economic risk of externalities and implement policies to efficiently internalize these costs to provide the correct economic incentives.[133] However, this approach should not be confused with a call to create markets for anything and everything, and then leave it to the market to identify the best solutions. There are examples where this approach can work: concepts such as payments for ecosystems services (PES) and programs such as REDD and greening measures in agricultural subsidies are existing attempts to integrate true costs into the market via policy measures. But it is also clear that markets require a solid regulatory environment to function well. This applies especially to politically created markets such as PES or REDD: while there is a real and tangible benefit underlying the trade, the rules of the market are entirely due to political decisions. To define these rules in a non-distorting and non-discriminatory way and to avoid regulatory capture requires a strong, impartial and independent administrator, and good market oversight – which cannot be taken for granted in many countries. One alternative could be to recognise the economic value of natural resource, but use command and control methods to protect resources in cases where the revenue from production and the cost of environmental degradation are clearly out of balance, or where it would be prohibitively costly or simply infeasible to implement a market-based solution.

5.2 Measure what matters – welfare indicators beyond GDP

The insight that the current model of economic development is not delivering socially optimal outcomes is closely linked to the way how we currently measure economic progress. Around the world, the gross domestic product (GDP) is firmly established as the guiding indicator for economic development.

The problem is not so much that there is something wrong with GDP as such. The problem is rather that GDP was conceived as a measure of economic *output*. But it was never intended to serve as an indicator of the overall *development* (or progress) of a society or a country, and the welfare (or well-being) of the people that live in it.[134] If it is used in this sense, GDP is bound to deliver skewed results, as it simply does not account for many factors that are crucial for human well-being. To begin with, GDP will only count the aggregated incomes in an economy, but it is entirely unaffected by how these incomes are distributed. Environmental degradation and its costs are not reflected in GDP – but if money has to be spent to clean up the consequences of environmental degradation, these expenses will actually increase GDP, and thus appear to be beneficial – where, in fact, people's lives would have been happier if the damage had been avoided in the first place.

The insight that GDP is a poor measure of human well-being is not a new one: the EU and the OECD have advocated for more than a decade that new welfare indicators are needed that go "beyond GDP", in order to replace or supplement GDP. At the same time, GDP has proven to be very long-lived: it is widely used, it is relatively easy to calculate, and despite its limitations easy to communicate.

One of the most influential voices that was raised in the discussion about better welfare indicators beyond GDP was the Stiglitz-Sen-Fitoussi commission (officially the Commission on the Measurement of Economic Performance and Social Progress), which submitted its final report in 2009, deriving twelve recommendations for developing better indicators of economic well-being and social progress. Among other things, they recommended that indicators for well-being should look at income and consumption rather than production, and emphasise the

[133] Ibid.

[134] Stiglitz, Sen, and Fitoussi, *Report by the Commission on the Measurement of Economic Performance and Social Progress*, 8.

household perspective. In so doing, indicators should pay more attention to the distribution of income, consumption and wealth, as key determinants of the quality of life. Income measures should be expanded to reflect non-market activities. As regards quality of life, the commission emphasised the connection to people's objective conditions and capabilities, which suggests that factors such as health, education, personal activities and environmental conditions have a role for well-being, as well as social connections, political voice, and insecurity that can be shown to predict life satisfaction. In this context, the commission recommended considering measures of both objective and subjective well-being to provide information about people's quality of life. The Stiglitz-Sen-Fitoussi Commission regarded the assessment of sustainability as a complementary task to the measurement of well-being. In particular, they found a need for an indicator of our proximity to dangerous levels of environmental damage (tipping points, e.g. related to climate change or the depletion of fishing stocks). [135]

Acknowledging the various limitations and shortcomings of GDP, and the need to have indicators that are able to measure a much broader concept of human well-being and the quality of life, the next question is how to move from the existing GDP to a more complete indicator. In short, the options are either to correct GDP – by subtracting or adding (in monetary form) those components that it currently does not measure; to substitute GDP with another (aggregate) indicator of human well-being; or to complement GDP with other indicators, together forming a small set of core indicators for human well-being.[136]

- An example of the first approach – adjusting GDP by subtracting defensive social and environmental costs, and by adding factors such as unpaid labour (voluntary or housework) is the National Welfare Index that was recently developed for the case of Germany, and that is being considered by other EU countries.[137] In total, the NWI aggregates 19 indicators to yield a monetary measure of national welfare. The NWI is based on private consumption, weighted by household income to account for inequality in the income distribution. Added to this are household and voluntary work as well as public expenditure on health care and education, whereas the cost of crime and traffic accidents, as well as the cost of environmental degradation, is subtracted.
- With its "Better Life Index", the OECD has suggested a composite indicator that aggregates 24 indicators across eleven topics, ranging from income to education and from environment to life satisfaction. It is only marginally related to GDP – one of the indicators for the topic "income" is the household disposable income, which represents a part of GDP, and would tend to move in line with GDP changes. Consequently, the Better Life Index does not provide a monetary result. Interestingly, the OECD chose not to assign weights to the different topics that make up the Better Life Index, but instead leave it to each user to assign his / her own weights.[138]
- UNEP takes a different stance at this, advocating a set of indicators to replace GDP, rather than a composite index that would aggregate all different dimensions and aspects into a single number.[139] UNEP argues that the best solution is a suite of indica-

[135] Stiglitz, Sen, and Fitoussi, *Report by the Commission on the Measurement of Economic Performance and Social Progress*.

[136] Philipp Schepelmann, Yanne Goossens, and Arttu Makipaa, *Towards Sustainable Development: Alternatives to GDP for Measuring Progress*.

[137] Zieschank and Diefenbacher, *The National Welfare Index as a Contribution to the Debate on a More Sustainable Economy*.

[138] http://www.oecdbetterlifeindex.org/

[139] Stiglitz, Sen, and Fitoussi, *Report by the Commission on the Measurement of Economic Performance and Social Progress*, 23.

tors with a subset of core or headline indicators that are applicable to all countries. This would facilitate international comparison, but at the same time allow for high degree of customisation to individual country circumstances.[140]

- In a similar fashion, the Stiglitz-Sen-Fitoussi Commission has argued for a dashboard of indicators to assess sustainability, rather than one single aggregate indicator. A monetary index would have its place in such a dashboard but should remain focused only on the economic aspects of sustainability. For other aspects of sustainability, they advocated separate, non-monetary indicators as parts of the dashboard.

These are just selected examples of some recent alternative measures of welfare: the history of alternative measures is as long as the criticism of GDP.[141] One reason for the persistence of GDP as an indicator is that all of the alternative indicators have their own limitations: composite indicators involve an aggregation of different dimensions, which requires the definition of weights for the different components. Approaches that correct GDP avoid this by expressing all factors in monetary terms – however, this requires that environmental and social costs are valued in monetary terms, often using non-market valuation methods, as environmental goods and services are typically not traded on any market. This is possible, but also a time-consuming and tedious task.[142] Therefore, pragmatic arguments in favour of a dashboard approach is that it avoids the problem of aggregating impacts across different dimensions, it offers more flexibility for divergent national approaches, and it allows for all types of indicators.

The Green Growth Knowledge Platform, a joint effort by UNEP, OECD, GGGI and the World Bank, has started work towards a common approach for a set of green economy indicators, including the option of a green economy dashboard of indicators.[143] Establishing such a dashboard would provide an opportunity to connect three processes that are laid out in the outcome document of the Rio+20 conference: the drive for a green economy, the establishment of sustainable development goals (and, eventually, indicators corresponding to these goals), and the call to develop broader measures of progress to complement GDP. While these three processes differ in terms of their scope and level of detail, there are also obvious interlinkages. Along these lines, UNEP argued that the existing set of sustainable development indicators as well as MDGs should provide the basis for outcome indicators, through which the effectiveness of green economy policies could be measured.[144]

5.3 Industrial policies and investment support for a green economy

The transformation to a green economy will inevitably involve some degree of structural change. The existing economic structures, in which wealth generation is still largely based on the extraction and processing of resources, have lead us to the difficult situation that we are facing. To escape from this dead-end, and to change onto a sustainable development trajectory, will require a change of how and where value added is generated.

This implies that green economy policies will promote growth in some sectors, but will discourage growth in others. Some sectors will be obvious winners of the transformation to a green economy – not only the renewable and energy efficiency technologies as well as water

[140] Ibid., 29.

[141] For a more exhaustive discussion of the different alternative welfare measures and their respective merits and criticisms, see e.g. Philipp Schepelmann, Yanne Goossens, and Arttu Makipaa, *Towards Sustainable Development: Alternatives to GDP for Measuring Progress*.

[142] Ibid., 51.

[143] Green Growth Knowledge Platform, *Moving towards a Common Approach on Green Growth Indicators*.

[144] UNEP, *Measuring Progress towards an Inclusive Green Economy*, 19.

and waste management, but also many services, IT, telecommunications, (sustainable) tourism, cultural and creative industries.[145] For some sectors, there are challenges and opportunities – e.g. the energy sector, manufacturing, chemicals, transport, and construction, but also in agriculture, forestry and fishing.[146] It will be up to each enterprise in these sectors to make the most of the new opportunities. And there are a few subsectors for which the green economy presents a major challenge – in particular the fossil fuel industry (extraction, refining). They may not disappear entirely, but will see the size of their market diminish considerably. The challenge in designing an industrial policy for the green economy will be to open up new perspectives for businesses operating in the latter category, for which there is only limited space in a green economy. Just as importantly, industrial policies can assist companies in those sectors that are neither clear winners or clear losers to recognize and embrace the opportunities brought with the transition to a green economy.

To manage the transformation to a green economy, one key challenge will be to mobilise the necessary investments and guide them in the right direction, i.e. towards resource-efficient technologies. Using market-based instruments to change relative prices will help to make "green investments" more attractive (see section 4.1). Beyond that, other tools for investment support will also be needed to create an environment that induces private investment, such as investment subsidies, long-term guarantees and risk-sharing arrangements. Revenue from market-based instruments – such as taxes and permit trading schemes – can help to provide the funding for such measures.[147] Lastly, the government also has an exemplary function: through public procurement, public work schemes and public-private partnerships, it directly controls a considerable share of investments, and can use this market power to build up the market for green economy technologies and services. It should be borne in mind that green economy technologies will often be new technologies, provided by new companies that have to compete with incumbents – even though the technologies may be more efficient, the incumbents will inevitably have a better starting position. By using their market power as consumers of goods and services, governments can support such novel technologies and allow them to mature sufficiently to become competitive with the established technologies.

Apart from mobilising investments, the labour force represents another potential constraint: here, the transformation to a green economy will require some flexibility and mobility. Yet in absolute terms, the challenge seems manageable: UNEP and the ILO estimate that, even in industrialised countries, where the impact of the transformation on labour markets will be most pronounced, only about one percent of the labour force will need to transfer between sectors. The transfers between companies are expected to be ten times larger.[148] In a similar fashion, the OECD points out that the most polluting sectors in the OECD countries account for more than 80% of emissions, but only for 8% of all employment.[149] UNEP and the ILO therefore conclude that the effects of the green economy transition would be small in comparison to the effects that globalisation has had on the labour markets in recent decades. The social impacts on the labour force can be mitigated through strengthened social protection and active

[145] UN Environment Management Group, *Working towards a Balanced and Inclusive Green Economy: A United Nations System-Wide Perspective*, 13.

[146] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, ix.

[147] Fisher, "The Private Sector's Role in Low Carbon Resilient Development."

[148] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, viii.

[149] OECD, *Towards green growth*, 90.

labour market policies – and through dedicated training and education, as discussed in the following. [150]

5.4 Training and education

Structural policies for a green economy are tightly linked to training and education. There are two dimensions to this process: for those sectors and companies where the move to a green economy entails a fundamental change in business models and production processes, there is a need for workplace training to acquire the necessary new skills. But as the green economy transition also entails structural change in the economy, there is also a need for skills development and education policies to facilitate job transition between sectors.[151] As explained in section 2.1, the transition process to a green economy offers considerable potential to generate new employment, but it also entails significant labour market restructuring: employment in sustainable sectors will grow, and employment in resource-intensive and polluting sectors will decrease as the share of these sectors in the economy declines. Yet the labour force cannot simply be shifted from the "brown" to the "green" sectors and enterprises: to avoid skill gaps and to minimise transitional unemployment, adequate training and education measures are necessary. The existence of an appropriately trained workforce with the capacity for further learning also inspires confidence in the success of a green economy transition, encouraging sustainable investment, innovation, job creation, and economic diversification.[152] In relation to the latter, the ILO strongly argues for monitoring of job quality and labour legislation to ensure that the green economy indeed creates high-quality, decent jobs, in order to be truly inclusive.

To support the redeployment of the workforce from contracting to expanding sectors during the transition, the OECD argues for a three-legged strategy to enable a smooth and just transition. [153] This would include:

4. Skill development and active labour market policies to support the adaptive capacity of labour markets;
5. Moderate employment protection and strong product market competition to promote employment growth in new green competitive niches; and
6. Flanking measures like unemployment benefits and in-work benefits to ensure that a dynamic labour market is not achieved at the cost of job insecurity or inequality.

So far, compulsory and tertiary educations have been catching up to changing needs rather well, but technical and vocational education and training have not been adapting efficiently.[154] Evidence suggests that skills gaps already exist in many countries for green jobs, especially in sustainable construction and retrofitting, environmental services, renewable energy, and energy and resource efficiency. Training is needed to develop new skills or new combinations of familiar skills.[155]

[150] International Labour Organization and UNEP, *Working towards Sustainable Development: Opportunities for Decent Work and Social Inclusion in a Green Economy*, ix–xii.

[151] Ibid.

[152] Strietska-Ilina et al., *Skills for Green Jobs: A Global View*.

[153] OECD, *Towards green growth*, 95.

[154] Strietska-Ilina et al., *Skills for Green Jobs: A Global View*.

[155] OECD, *Towards green growth*.

Curricula standards and training programs (for vocational, higher education, and on-the-job enterprise training) need to be established for new green jobs and sectors.[156] The literature includes emphasis on not just technical skills but also developing "core portable skills", such as leadership, resource efficient management, environmental awareness, team work, and systemic thinking. These are useful in both green and brown sectors, making them crucial especially in transition periods and sectors.[157] These skills are also important for policy- and decision-makers. [158]

Reliable information about employment and skill needs help identify areas where training focus should be put.[159] There is currently no standard approach to identify and monitor green occupations and related skills; establishing rigorous standards could give sectors and policy-makers a more reliable and effective tool to inform decisions.[160] Many developed countries already have sophisticated data collection and monitoring systems for labour markets. Where mechanisms to assess employment needs exist, these can inform training decision making. Where these do not exist, as in many developing countries, establishing mechanisms for social dialogue needs to be given a high priority to incorporate labour market signals into training programs and priorities.[161] In addition, training and education also has to facilitate social inclusion. The ILO warns that "the growth dividend from greening the economy will be attained only if access to new training provided as part of green measures is made accessible to disadvantaged youth, persons with disabilities, rural communities and other vulnerable groups." [162] Women need to be especially targeted by education policy measures.

Finally, the UN Environmental Management Group reminds us that greening the economy is not only a matter of training the workforce to ensure a smooth transition – it is also a cultural challenge. Unlocking the necessary innovation, fostering creativity and stimulating local development goes beyond mere technological innovations, but will also require organizational and social innovation, which may in particular draw on local and indigenous knowledge systems and environmental practices.[163] In a similar fashion, the ILO highlights that a holistic approach to education for a green economy should not only focus on individuals as part of the labour force, but also as consumers: thus, it advocates "coherent multi-level skills development responses" that both raise environmental awareness among consumers through general schooling or mass media, and which also nudge production towards more environmentally conscious practices through training programmes, vocational, technical and higher education and training, and lifelong learning at the enterprise level.[164]

5.5 Managing the Transformation: Towards a Coherent Policy Mix

As argued above, the transformation to a green economy is an economy-wide task, which therefore requires an integrated approach. Greening the economy is not (only) about fostering a particular set of green sectors or industries, but about transforming the entire economy,

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[156] International Labour Organisation, *Employment and Social Inclusion in a Green Economy: Assessing Policies and Practices - Workshop Report*.

[157] Ibid.

[158] Strietska-Ilina et al., *Skills for Green Jobs: A Global View*.

[159] International Labour Organisation, *Employment and Social Inclusion in a Green Economy: Assessing Policies and Practices - Workshop Report*.

[160] Strietska-Ilina et al., *Skills for Green Jobs: A Global View*.

[161] Ibid.

[162] Ibid.

[163] UN Environment Management Group, *Working towards a Balanced and Inclusive Green Economy: A United Nations System-Wide Perspective*, 13.

[164] Strietska-Ilina et al., *Skills for Green Jobs: A Global View*.

which involves changing innovation patterns, redirecting investment, providing adequate skills and ensuring mobility of the labour force, and creating the right institutional framework conditions. For the transformation to succeed, it is necessary to balance the efforts across sectors – including energy, industry, transport, housing, food and agriculture. An integrated, cross-sectoral approach is also a matter of efficiency – distributing the efforts will help to lower the overall cost of the transformation.

Thus, the policy mix for greening the economy needs to include sectoral policies and strategies as well as cross-cutting instruments that distribute efforts among sectors. The previous sections have discussed several types of instruments that can play a role in the process, including pricing tools. Yet, to raise the public and political acceptability, a smart policy mix should include flanking measures – which reallocate the cost burden of the transition according to the carrying capacity of economic sectors, or segments of society. Where necessary, flanking measures may provide targeted assistance and temporary relief to the most affected groups. To preserve the efficiency of pricing tools, such support should take the form of targeted and temporary financial aid, or, even better, assist households and businesses to reduce their exposure and cut back their consumption of energy and resources, rather than exempting particular groups from the price signal.

But beyond environmental policy instruments and flanking measures, a policy mix for the green economy is also about creating the necessary enabling conditions for the transformation. This may include educational policies, efforts to connect actors, forming networks and alliances, generating social momentum, and also cultural change. But creating these enabling conditions may also involve institutional and governance reform, e.g. where existing institutions lock the economy into a resource- and energy-intensive growth pattern – such as state monopolies on resource extraction, lacking or heavily distorted domestic markets for energy resources, etc.

On another level, managing the transformation to a low-carbon economy successfully also requires attention for the procedural aspect of governance: success does not only depend on the choice of policy instruments or their design, it also matters how these policies are implemented, and how they fit into the wider political, institutional and legal context in which they operate. In this regard, some lessons can be learned from previous efforts to integrate or mainstream environmental aspects into other sectoral policies:[165] this includes the need for clear priorities, targets and timetables, ongoing monitoring and evaluation of policy performance, provisions for a periodic revision of policies, a strong legal and political mandate for the greening of policies, and possibly the establishment of a high-ranking coordination body to coordinate the efforts of different ministries and departments. Research has also shown that such policy integration is more compatible with communicative, participatory, and learning types of governance.[166]

And finally, as pointed out before, the success of a transformative set of policies hinges on the credibility of the political commitment to the green economy agenda, now and in the longer term – not least to trigger the necessary investments from private investors. There are different institutional and legal ways to give more credibility to a long-term commitment - such as backing at highest political level, installation of independent high-profile bodies tasked with monitoring and evaluation, provision of long-term investment guarantees, etc.. But perhaps most importantly, the different policy instruments for a green economy need to be aligned around a consistent, convincing and compelling narrative.

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[165] Jordan and Lenschow, "Environmental Policy Integration: A State of the Art Review"; European Environment Agency, *Environmental Policy Integration in Europe - State of Play and an Evaluation Framework*.

[166] Homeyer, *Environmental Policy Integration and Multi-Level Governance*.

6 Conclusions

At first sight, one would be forgiven to think that the green economy shares the fate of many other abstract concepts: nobody quite knows what it is, but everyone supports it. The same was often said about sustainable development – a concept that has been widely criticised as being too vague, lacking clarity, and accommodating all sorts of interpretations. Yet, in the case of sustainable development, that has not kept the concept from having noticeable impact on policies around the world during the last two decades. And arguably, the same can be said of many political concepts, such as "social justice" or even "democracy": there is no exact, universal definition, and they might never be fully implemented in any country – but that does not take away that they continue to have profound impact on people all over the world. In this sense, it is not so much the exact definition of the green economy that matters, but rather the vision that the term embodies, and the aspirations it kindles.

One of the points where there seems to be wide agreement is that the green economy should establish as a new paradigm, a new model for economic development that is fit for the 21st century. The call for a new paradigm has grown out of frustration with the existing economic development model, the limitations of which becoming increasingly apparent. Despite many positive achievements, it also results in widespread and often irreversible environmental degradation, health impacts, rising inequality and social unrest. It is therefore clear that the existing model of resource-intensive growth is not sustainable in the long run, certainly not if it is extrapolated to a world population that may reach more than nine billion people within this century. It is also becoming clearer that the existing model is less and less capable of delivering a good life for all, and that a new model – the green economy – would actually increase human welfare and well-being, while respecting the ecological boundaries of the planet.

Yet, important though it may be, a narrative itself may not necessarily have much impact, unless it is substantiated with concrete targets and indicators, and implemented through policy measures. What should these indicators measure – given that there is no exact and universally agreed definition of the green economy? First, it should acknowledge that, ultimately, the overuse of global ecosystems is a problem of absolute quantities. Therefore, while green growth and green investments can be tools for greening the economy, the yardstick is ultimately whether absolute levels of resource consumption and environmental degradation decline, while achieving social inclusion. One role of indicators is therefore to define and measure (ecological and social) boundaries. Optimisation should take place within these boundaries, but is not a goal in and of itself. Second, the indicators should measure what matters – above all the well-being of individuals, rather than the overall monetary value of production and consumption in an economy, as measured by GDP. While it is questionable whether unlimited growth of material consumption can be accommodated within finite ecological boundaries, the case is less clear-cut for the growth of well-being – which, in addition to the material basis, also includes social, cultural and spiritual aspects.

A second, related question is how to measure the progress towards the green economy. In particular, it is debatable whether there should be a separate global set of "green economy indicators" – given that, with the future Sustainable Development Goals (SDGs) and the review of the Millennium Development Goals (MDGs), there are already two parallel target-setting processes at work at UN level, both of which represent a long-term, transformative and visionary approach. While the SDG and MDG processes both are broader in scope than the green economy debate, there is nonetheless considerable overlap between the processes. Therefore, if there should be a separate set of green economy indicators, its consistency with SDGs and MDGs has to be ensured. While the added value of green economy indicators at the global level may be debatable, that does not preclude the possibility that individual countries

may decide to adopt their own set of green economy indicators, in order to monitor the progress towards their national strategy, concept or roadmap of a green economy.

In terms of policies to bring about the green economy, one important starting point is that the green economy will build on private initiative and inventiveness, coordinated through markets. Yet in the current situation, markets fail to deliver optimal results, since the prices of goods and services do not reflect the environmental and social impacts they cause. Thus, neither consumers nor investors have an adequate incentive to reflect these external costs in their decisions. The consequence is a substantial misallocation of resources towards uses that generate too little welfare and cause too many external costs. One obvious way of correcting this waste is to get the prices right, so that they reflect the true environmental and social costs. This can be done in different ways – by raising taxes, installing cap-and-trade-schemes, or phasing out environmentally harmful subsidies. All of which – if done well – creates additional revenue, which can be used to compensate and support particularly vulnerable groups.

Building a green economy will require a transformation of economies worldwide, diverting them from their current path. This involves some element of structural change, promoting new business models and challenging old ones. Such structural change will inevitably create winners and losers: many sectors will clearly benefit from the green economy – beyond the obvious candidates like waste and water management or efficiency technologies, these also include many services, IT and telecommunications, tourism, as well as cultural and creative industries. For most sectors, there will be both challenges and opportunities – e.g. the energy sector, manufacturing, chemicals, transport and construction but also in agriculture, forestry and fishing. It will be up to each company in these sectors to make the most of the new opportunities – or to resist the change, at the risk of perishing. There are only very few sectors for which the green economy presents a major challenge – in particular the fossil fuel industry (mining, refining). They may not disappear entirely, but will see the size of their market diminish considerably. Yet, experience has shown that these sectors have considerably political clout – certainly in the resource-abundant parts of the world: the status quo also has its proponents, who have invested massively in the current development path, and who are understandably concerned to lose the return on their investments if the current path changes. If the green economy is to address and, possibly, reverse some of the unsustainable trends that we see in the current economic system, this will not be possible without upsetting some vested interests.

While the affected sectors will voice their concerns, it is important to bear in mind that the costs of economic restructuring are transitional. In the medium run, the available empirical studies suggest that the green economy will deliver more welfare and a better life – though perhaps not necessarily a higher GDP. Yet transitional or not – the affected sectors and groups will still need to pay the costs imposed on them in the short term. To avoid undue hardships and to enhance the political feasibility of a green economy transition, there may be a case for supporting the most affected sectors and groups (such as companies that faced stranded assets, or particularly vulnerable parts of society). However, such support should take the form of a lump-sum compensation or transfer payment, rather than a continued exemption. Better still are compensation or support measures that help vulnerable groups or sectors to reduce their exposure – e.g. helping poor households to reduce their energy consumption, rather than providing access to cheap energy.

Thus: the concept of a green economy is needed, as a new narrative how the economy should work to enhance the well-being of people around the world. The benefits of a green economy are obvious, and have been documented in a number of investigations, from local case studies to global economic models. And the time is right for a green economy, as the dissatisfaction

with the current economic system is growing, and as its limits are becoming apparent. But – despite all these factors, that does not mean the green economy is going to happen by itself.

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