TEXTE
20/2021

Widening the European Green Deal's perspective towards a sustainable Europe

Aiming higher - with the right levers of change

by:

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Abstract: Widening the European Green Deal's perspective towards a sustainable Europe

The European Green Deal, published as one major work stream of the new European Commission at the end of 2019, represents a new and ambitious approach to put environment and sustainability more at the heart of European policy. The announcements there must now be brought to life through various strategies and implementation measures.

This study analyses the European Green Deal from the perspective of the German Environment Agency and places it in the context of the global challenge of achieving the United Nations' sustainable development goals. To this end, the individual thematic areas of the European Green Deal and their measures are analysed and we discuss what further measures may be necessary to achieve the self-imposed EU goals, but also the United Nations goals and other long-term goals such as the Paris Climate Agreement.

In addition to necessary measures in the fields of human well-being, sustainable economic activity, sustainable food systems, climate and energy, urban development and digitalization, the paper also clearly states that structural adjustments are needed as key levers to achieve the desired goals. New approaches are needed in the governance of sustainability policy, in the economic and financial sector, in civil society involvement, and in science and innovation.

The study concludes that the European Green Deal is an important step forward, but that further efforts beyond those described there are still needed in order to achieve a sustainable Europe.

Kurzbeschreibung: Erweiterung der Perspektive des European Green Deal für ein nachhaltiges Europa

Der European Green Deal, veröffentlicht als ein wesentlicher Teil des Arbeitsprogramms der neuen Europäischen Kommission Ende 2019, stellt einen neuen, ambitionierten Ansatz dar, um Umwelt und Nachhaltigkeit stärker in den Mittelpunkt der europäischen Politik zu stellen. Die dortigen Ankündigungen müssen nun durch verschiedene Strategien und Umsetzungsmaßnahmen mit Leben gefüllt werden.

Die vorliegende Studie analysiert den European Green Deal aus Sicht des Umweltbundesamtes und setzt ihn in den Kontext der globalen Herausforderung zur Erreichung der Ziele für nachhaltige Entwicklung der Vereinten Nationen. Hierzu werden die einzelnen Themenfelder des European Green Deal und deren Maßnahmen analysiert und es wird diskutiert welche weiteren Maßnahmen ggf. notwendig sind, um die selbstgesteckten Ziele der EU, aber auch die Ziele der Vereinten Nationen sowie weitere Langfristziele, wie beispielsweise das Pariser Klimaabkommen, zu erreichen.

Neben notwendigen Maßnahmen in den Aktionsfeldern menschliches Wohlergehen, nachhaltiges Wirtschaften, nachhaltige Ernährungssysteme, Klima und Energie, städtische Entwicklung sowie Digitalisierung macht die Studie auch deutlich, dass es struktureller Anpassungen bei wichtigen Hebeln bedarf, um die gewünschten Ziele zu erreichen. Hier sind neue Ansätze in der Governance der Nachhaltigkeitspolitik, im Ökonomie- und Finanzsektor, beim zivilgesellschaftlichen Engagement sowie bei Wissenschaft und Innovation nötig.

Die Studie kommt zu dem Schluss, dass der European Green Deal ein wichtiger Schritt nach vorne ist, dass aber noch weitere Anstrengungen über die dort beschriebenen hinaus notwendig sind, um ein nachhaltiges Europa zu erreichen.

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Abbreviation	Term
CO_2	Carbon dioxide
CAP	Common Agricultural Policy
CCS	Carbon Capture and Storage
COM	Communication of the European Commission
DIN	Deutsches Institut für Normung, German Institute for Standardization
EAP	Environment Action Programme
EBD	European Blue Deal
EC	European Commission
ECA	European Court of Auditors
ECHA	European Chemicals Agency
EESC	European Economic and Social Committee
EGD	European Green Deal
EGDIP	European Green Deal Investment Plan
EP	European Parliament
EU	European Union
Eurostat	European Central Statistical Office
G20	Group of Twenty
G7	Group of Seven
GHG	Greenhouse gas
GSDR	Global Sustainable Development Report (see Independent Group of Scientists, 2019)
HELCOM	Baltic Marine Environment Protection Commission (Helsinki Convention)
ICT	Information and Communication Technology
IED	Industrial Emission Directive
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change

Abbreviation	Term
IPM	Integrated Pest Management
ISO-Norm	International Organization for Standardization-Norm
LDN	Land Degradation Neutrality
MEDPOL	Marine pollution assessment and control component of the Mediterranean Action Plan
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic (Oslo-Paris Convention)
PFAS	Per- and polyfluoroalkyl substances
PFC	Per- and polyfluorinated chemicals
REACH	European Regulation on Registration, Evaluation, Authorization and restriction of Chemicals
REFIT	Regulatory Fitness and Performance Programme
RMC	Raw Material Consumption
SCIP	Substances of Concern In articles as such or in complex objects (Products)
SDGs	Sustainable Development Goals
UBA	Umweltbundesamt, German Environment Agency
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
WHO	World Health Organization

Executive Summary

A crisis like the current Sars-CoV-2 pandemic does not make existing challenges disappear. On the contrary, unsustainable developments become even more visible. It was only in September 2019 that United Nations (UN) Member States concluded the coming decade must be a decade of action and implementation to achieve the United Nations Sustainable Development Goals (SDGs) in 2030. The needed actions will require investments – and most of all, clear dedication in policy and all areas of society. The European Commission (EC) reacted to this need with the publication of the European Green Deal (EGD) (European Commission 2019a, 2019b) as the main framework for implementing the SDGs in Europe and the United Nations Paris Climate Agreement. It is thus of major importance that the realisation of the actions described in the EGD is brought forward ambitiously enough to match the challenges of both agendas.

The Sars-CoV-2 pandemic triggered a combined health, social and economic crisis. In a short term, the main aim of swift recovery after the pandemic is bringing people back into jobs and ensuring that the economic downturn is stopped. Many investments are already planned and on their way for this short-term goal. From a long-term and sustainability perspective the crisis has additional challenges: Most urgently, the necessity to draw lessons in order to make subsystems of our societies more resilient to shocks. Using the investment decisions of current recovery measures for triggering urgently needed transformations for the long term is also important. The EGD's action fields offer many opportunities here. Such a transformative recovery has a clear fiscal but also a strong intergenerational justice perspective: The investments of the Member States entail a corresponding level of future debt, which in the long term will make additional investment programmes more difficult - it is, therefore, necessary to make these investments sustainable for a positive long-term impact in terms of the objectives of the EGD. What was urgent and needed before the pandemic, is still urgent and needed afterwards.

In conclusion, the policy actions proposed in the EGD remain complex and urgent beyond the pandemic crisis and need to be implemented with the same high ambition as the recovery measures in order to prepare societies for future shocks.

This study aims at supporting the discussions that promote the implementation of the EGD and already looks beyond the measures proposed in the Deal with a long-term perspective towards 2030 and beyond (status end of September 2020). The basis of all our considerations is the fact that an intact environment is the foundation for a just and viable Europe and thus a priority cornerstone for Europe's approach to gain sustainable development.

Our analysis puts special emphasis on the broad thematic scope of the EGD. At the same time, we link them with the overall scope of the SDGs by making strong reference to the Global Sustainability Development Report (GSDR) 2019 (Independent Group of Scientists 2019), linking different fields of action in the Deal's implementation (chapter 4) and outlining the importance of overall levers of change (chapter 5).

Challenges of European Green Deal implementation in different sectors of environmental policy

While the European Union (EU) has many policies in place towards achieving the SDGs, the current ambition and proposed policies are still likely to be insufficient to actually reach them (e.g., Eurostat 2020a, b; European Court of Auditors, 2019; IEEP &SDSN 2019). The German Environment Agency (UBA) considers all planned measures of the EGD as relevant and timely. Yet, according to our findings, the measures formulated in the Deal are insufficient to meet the challenges of a long-term perspective. In order to foster such developments, we recommend to enhance policy integration in proposed action fields based on entry points, as they are outlined

in the GSDR and to use the general levers of change across these fields systematically (Independent Group of Scientists, 2019; for details see chapter 3).

In the action field of **human well-being,** the main focus of the EGD is on the challenge to achieve the Zero Pollution ambition. From an UBA point of view, this will need a wide range of actions in different areas (eutrophication, chemical safety, litter, energy and noise and others). This includes strengthening existing policies, but also to consider new pathways, for example a policy for a sustainable chemistry. Also, in the context of human well-being, the field of sustainable consumption and production in Europe and the global effects of European policies, need to be addressed (chapter 4.1).

In the action field of **sustainable economies,** UBA welcomes the EGD's clear focus on developing the circular economy further. Yet, some aspects fall short in the Circular Economy Action Plan (European Commission 2020b), which inter alia include the application of a lifecycle perspective for all products, enhanced waste prevention, recycling and preparation for re-use of products. With respect to resource efficiency, the European economy has to decouple resource consumption from economic development, which will include developing a sufficiency perspective for society in general, and enhancing integrated policy approaches by linking resource and environmental policies more explicitly. Additional key fields of action are the reduction of industrial emissions and the development of a supply chain directive (chapter 4.2).

The action field of **sustainable food systems (including land, water, oceans and biodiversity)** comprises strong commitments with the already published Farm to Fork Strategy and Biodiversity Strategy (European Commission 2020c, 2020d). In order to reach the goals of these strategies, especially the future Common Agricultural Policy will need to be redirected beyond current plans so that its subsidies are linked to additional actions for climate action only and that the foreseen national strategic plans are aligned with the EGD's and the strategies' targets. Addressing land degradation neutrality and establishing protection goals for biodiversity and concrete, ambitious and effective measures to establish a modern and "sustainable" use of pesticides will be key as well. As the Farm to Fork Strategy rightly states, the areas of food production and current consumption patterns, especially on meat and dairy products, need to be addressed as well. For the water sector, policies need to be better linked with closely connected policies (e.g., industrial water use) and UBA recommends to complement the EGD with a European Blue Deal (EBD) that focusses on strengthening the resilience of coastal and marine waters (chapter 4.3).

In the action field of **climate, energy and decarbonisation,** the EGD has a clear goal by aiming for a climate neutral Europe by 2050. For this, a strong climate law will be key which develops a clear framework for the decarbonisation of industries. Also, the area of climate adaptation needs attention by strengthening investments and mainstreaming measures across sectors (chapter 4.4).

The **action field of urban and peri-urban development** focusses on the main areas of mobility and building. UBA welcomes that the EGD formulates ambitions here, especially related to the mitigation of climate impacts of these sectors. In the mobility sector, it will nonetheless be crucial to act beyond technological fixes and address traffic avoidance as a key element. In the building sector, the programmes planned should include healthy indoor air quality and strengthen the binding requirements of building materials at the product level in order to ensure resource efficiency and human health (chapter 4.5).

An additional action field is the challenge of a much better integration of **sustainability and digitalization**. It will be crucial to bring together these two transformative forces. First of all, it needs to be ensured that the environmental impacts of digitalization are minimized. Therefore, a strengthened links between sustainability and digitalization across the EGD's strategies and action fields are required. Also, the socio-cultural dimensions of digitalization need to be addressed more explicitly. Programmes that allow civil society to reflect on the implications of digitalization, and to feed the results back into policy processes (chapter 4.6) could be one way to achieve this.

Levers of change

While all the actions proposed in the different action fields, as outlined above, are relevant and can be strengthened with the recommendations given in chapter 4, additionally, cross working levers need to be addressed. In order to reach sustainability, an effective implementation of the EGD will need to build on the levers of change proposed in the GSDR that work across the above-mentioned action fields.

Improved **governance**, in the EU as well as in the interactions with the Member States is one crucial element here (chapter 5.1). The actions needed start with the further development of the strategic portfolio, e.g. using the 8th Environment Action Programme as a key element for the EGD's implementation, and also move on further with a renewed European Sustainability Strategy. Strengthening cross-sectoral policy integration, as described for several action fields in chapter 4, is key as well. In this regard, the European Semester as well as the further development of reporting and monitoring of the environment in Europe are relevant tools. Last but not least, all of this must be supported by a change of culture and guidelines in the EC and other institutions towards (even more) cooperation that promotes a systemic perspective and approach for today's complex problems.

Another key lever of change is the **economy and finance sector.** It is crucial that the goals for using a substantial share of the EU budget of the coming period for climate and sustainability action are implemented. The taxonomy for sustainable finance has to be applied swiftly and gain relevance for the whole finance sector (chapter 5.2).

Although, the dedication of governance bodies and the level of ambition of their approaches are key to make changes happen, the role of **civil society engagement** and education cannot be overrated and should be supported accordingly. Here, the process of the "Conference on the Future of Europe" of the EC could be used actively (chapter 5.3).

Finally, **science and innovation**, and its funding via the Horizon Europe research programme, is a key lever and supporting element, and the mission-oriented programmes of Horizon Europe are a promising starting point in this respect. It should be ensured though that innovation in the programme is understood and funded in a broader sense beyond technological solutions, including sufficiently social innovation and transdisciplinary approaches in funded projects (chapter 5.4).

Conclusions

In conclusion, UBA generally welcomes the EGD and its individual actions as steps in the right direction. Yet, these actions are unlikely to be sufficient to reach sustainability in the long-term. The first strategies published in its follow-up, e.g. the revised Circular Economy Strategy and the Farm to Fork Strategy point in the right direction, but they also show some weaknesses. In the EGD and the accompanying strategies, familiar trade-offs between environment and other sectoral targets, especially those linked to economic interests, remain unsolved. These trade-offs must, however, be analysed, addressed and resolved if the long-term ambition of the EGD is to

be realized. Such an approach could serve the joint implementation of the SDGs and the Paris Climate Agreement. Concrete approaches to achieve these ambitious goals are given in this study (see chapters 4 and 5).

In addition to, the following overarching challenges remain if the goals of the EGD are to be reached:

Strengthen the implementation of existing environmental policies:
The recent Environment Implementation Review (European Commission 2019c) makes existing deficits in the implementation of existing environmental legislation in the Member States obvious. Some of these problems (e.g., the implementation of the Flora-Fauna-Habitats Directive) are persisting for many years and need to be addressed urgently.

Long-term thinking and commitments - not only on climate goals:
The planned climate law aiming to ensure that Europe reaches the goal of climate neutrality by 2050 is a major step in acknowledging that politics need to consider long-term targets. Accordingly, long-term binding targets, e.g. on resource use, biodiversity and sustainable land use and the Zero Pollution ambition have to be developed in more concrete terms as well.

Solutions via joint levers - establish new modes of action crossing sectoral boundaries:
As one means, new integrated policy settings will be needed to reach long-term targets to think otherwise separated policies together and thus allow to design new policy mixes and identify even new policy approaches. For the EGD implementation, this means that first of all, different fields of environmental policies need to be integrated more strongly, as outlined in several fields in chapter 4. The integrated focus goes beyond current policy measures, which are often limited to incremental improvements to existing measures alone, and rarely look at the link to other sectors. Last but not least, there is a need for a change in the nature of cooperation and the common set of values in the EU institutions, which implements sustainability and climate neutrality as core element and as overarching policy objectives and which acknowledges that economic development needs to fit within this framework (see Chapter 6).

Acting together - new modes of cooperation across actors:
The integrated and complex nature of the challenges that the EGD addresses makes it also crucial to revisit the modes of cooperation of all societal actors in order to support common goals (see also 5.3). This includes concrete challenges like the redesign of the Better Regulation approach to include effects of a regulation across sectors and joint efforts of all actors in the harmonization of legal requirements and definitions across legislation within a sector (see e.g. chemicals sector, waste sector) and between different sectors (chemicals and waste).

As of now, in summer 2020, the full consequences of the Sars-CoV-2 pandemic can hardly be foreseen. However, the crisis already shows that society in Europe has paid too little attention to the resilience of its subsystems, such as the health care system, but also the economy and its dependence on natural capital. A more systemic perspective is urgently needed, where the EGD can serve as first blueprint. This also means to tackle the necessary transformations for a sustainable Europe in an integrated manner and, above all, to take human well-being and the relationship between societies and the natural foundations of life as the basis for all actions. The measures to overcome the current crisis should, therefore, also support these long-term needs.

Zusammenfassung

Eine Krise wie die aktuelle Sars-CoV-2-Pandemie lässt bestehende Herausforderungen nicht verschwinden. Erst im September 2019 kamen die Mitgliedsstaaten der Vereinten Nationen zu dem Schluss, dass das kommende Jahrzehnt ein Jahrzehnt des Handelns und der Umsetzung sein muss, um die Ziele der Vereinten Nationen für nachhaltige Entwicklung (SDGs) bis 2030 zu erreichen. Die erforderlichen Maßnahmen erfordern Investitionen und Engagement in der Politik sowie in allen Bereichen der Gesellschaft. Die Europäische Kommission reagierte auf einige dieser Herausforderungen mit der Veröffentlichung des European Green Deal (EGD) (European Commission 2019a, 2019b), der den Hauptrahmen für die Umsetzung der SDGs in Europa und des Pariser Klimaabkommens der Vereinten Nationen in Europa bilden soll. Es ist daher von großer Bedeutung, dass die Umsetzung der im EGD beschriebenen Maßnahmen ehrgeizig vorangetrieben wird.

Die Sars-CoV-2-Pandemie hat eine kombinierte gesundheitliche, soziale und wirtschaftliche Krise ausgelöst. Das Ziel einer raschen Erholung nach der Pandemie besteht darin, die Menschen wieder in Arbeit zu bringen und sicherzustellen, dass der wirtschaftliche Abschwung gestoppt wird. Für dieses kurzfristige Ziel sind bereits umfangreiche Investitionen geplant und auf dem Weg. Aber die Krise hat in Bezug auf Langfristigkeit und aus Perspektive der Nachhaltigkeit zusätzliche Herausforderungen: Aus ihr zu lernen, dass die Subsysteme unserer Gesellschaften widerstandsfähiger gegen Schocks zu machen sind. Darüber hinaus sind die Investitionsentscheidungen der gegenwärtigen Situation zu nutzen, um die dringend notwendige Transformation hin zu einer nachhaltigen Gesellschaft langfristig anzustoßen (Burger et al. 2020b). Die Handlungsfelder des EGD bieten hierfür viele Chancen. Ein solcher transformativer Aufschwung hat auch eine fiskalische und intergenerationelle Gerechtigkeitsperspektive: Die Investitionen der Mitgliedstaaten sind mit einer entsprechenden zukünftigen Verschuldung verbunden, die langfristig zusätzliche Investitionsprogramme erschweren - es ist daher notwendig, diese Investitionen nachhaltig zu gestalten, um langfristig positive Wirkungen im Sinne der Ziele des EGD zu erzielen. Was vor der Pandemie dringend und notwendig war, ist auch nach der Pandemie dringend und notwendig.

Dies gilt für die im EGD vorgeschlagenen politischen Maßnahmen: sie bleiben komplex und dringend - und müssen mit dem gleichen Ehrgeiz umgesetzt werden wie die Wiederaufbaumaßnahmen nach der Pandemie.

Dieses Papier zielt darauf ab, die Diskussionen zu unterstützen, die die Umsetzung des EGD vorantreiben. Es blickt bereits über die im Deal vorgeschlagenen Maßnahmen hinaus, mit einer langfristigen Perspektive bis 2030 und darüber hinaus (Stand Ende September 2020). Wir gehen von dem Standpunkt aus, dass eine intakte Umwelt die Grundlage für ein gerechtes und lebensfähiges Europa und damit ein vorrangiger Eckpfeiler für die nachhaltige Entwicklung Europas ist.

In unserer Analyse legen wir besonderen Wert auf die thematische Breite des EGD. Gleichzeitig verknüpfen wir sie mit dem Gesamtumfang der SDGs, indem wir einen starken Bezug zum Bericht über die globale Nachhaltigkeitsentwicklung (GSDR) 2019 (Group of Independent Scientists 2019) herstellen, verschiedene Handlungsfelder bei der Umsetzung des Deals miteinander verknüpfen (Kapitel 4) und die Bedeutung von übergreifenden Veränderungshebeln skizzieren (Kapitel 5).

Herausforderungen der European Green Deal-Umsetzung in einzelnen umweltpolitischen Bereichen

Obwohl die EU viele politische Maßnahmen zur Erreichung der SDGs ergriffen hat, dürften das derzeitige Ambitionsniveau und die vorgeschlagenen Maßnahmen des EGD nicht ausreichen, um diese auch tatsächlich zu erreichen. Unsere Analyse wird durch ähnliche Einschätzungen weiterer Akteure gestützt (z.B. Eurostat 2020a, b; Europäischer Rechnungshof, 2019; IEEP &SDSN 2019). Das UBA begrüßt alle geplanten Maßnahmen des EGD als relevant und zeitgemäß, dennoch sind die im Deal formulierten Maßnahmen voraussichtlich nicht ausreichend und müssen für eine längerfristige Perspektive deutlich erhöht werden. Um solche Entwicklungen zu fördern, empfehlen wir eine stärkere Integration von Maßnahmen über Handlungsfelder hinweg und die Nutzung allgemeiner Hebel des Wandels in diesen Bereichen (Details siehe Kapitel 3).

Im **Aktionsfeld des menschlichen Wohlergehens** liegt der Hauptfokus des EGD auf der Herausforderung, das Ziel „Zero pollution" zu erreichen. Aus Sicht des UBA wird dazu ein breites Spektrum von Maßnahmen in verschiedenen Bereichen (Eutrophierung, Chemikaliensicherheit, Abfall, Energie, Lärm und andere) erforderlich sein, das die Stärkung bestehender Politiken einschließt, aber auch neue Wege für eine Politik für eine nachhaltige Chemie in Betracht zieht. Auch der Bereich des Überkonsums in Europa und die globalen Auswirkungen der europäischen Politik, Produktion und Konsum müssen für eine Verbesserung des Wohlergehens stärker adressiert werden als im EGD bisher geschehen (Kapitel 4.1).

Im **Aktionsfeld nachhaltiges Wirtschaften** begrüßt UBA die klare Fokussierung auf die Weiterentwicklung der Kreislaufwirtschaft. Dennoch bleiben einige Aspekte des Circular Economy Action Plan hinter den Zielen zurück, zu denen unter anderem die Anwendung einer Lebenszyklusperspektive für alle Produkte, eine verbesserte Abfallvermeidung, das Recycling und die Vorbereitung der Wiederverwendung von Produkten gehören. Im Hinblick auf die Ressourceneffizienz muss die europäische Wirtschaft den Ressourcenverbrauch von der wirtschaftlichen Entwicklung abkoppeln, wozu auch die Entwicklung einer Suffizienzperspektive für die Gesellschaft im Allgemeinen und die Förderung integrierter politischer Ansätze durch eine explizitere Verknüpfung von Ressourcen- und Umweltpolitik gehören. Weitere zentrale Handlungsfelder sind die Reduzierung von Industrieemissionen und die Entwicklung einer Lieferkettenrichtlinie (Kapitel 4.2).

Im **Aktionsfeld nachhaltige Ernährungssysteme (einschließlich Land, Wasser, Ozeane und Biodiversität**) bestehen starke Verpflichtungen mit der bereits veröffentlichten Farm to Fork Strategie und der Biodiversitätsstrategie (European Commission 2020c, 2020d). Um die Ziele dieser Strategien zu erreichen, muss insbesondere die künftige Gemeinsame Agrarpolitik über die derzeitigen Pläne hinaus weiterentwickelt werden, so dass ihre Subventionen nur mit zusätzlichen Maßnahmen für den Klimaschutz verknüpft werden und dass die vorgesehenen nationalen Strategiepläne mit den Zielen des EGD und der Strategien in Einklang stehen. Auch die Neutralität der Bodendegradation und die Festlegung ambitionierter Schutzziele für Biodiversität und konkreter, ehrgeiziger und wirksamer Maßnahmen zur Einführung eines modernen und "nachhaltigen" Einsatzes von Pestiziden werden von entscheidender Bedeutung sein. Wie in der Farm to Fork Strategie zu Recht feststellt, wird sich das Gebiet auch mit allen anderen Bereichen der Nahrungsmittelproduktion und den derzeitigen Konsummustern befassen müssen. Für den Wassersektor muss die Politik besser mit anderen Politikbereichen (z.B. der industriellen Wassernutzung) verknüpft werden, und es sollte erwogen werden, den

EGD durch einen European Blue Deal (EBD) zu ergänzen, der sich auf die Stärkung der Widerstandsfähigkeit von Küsten- und Meeresgewässern konzentriert (Kapitel 4.3).

Im **Aktionsfeld Klima, Energie und Dekarbonisierung** hat der EGD eines seiner klarsten Ziele, indem er ein klimaneutrales Europa bis 2050 anstrebt. Dafür wird ein starkes Klimagesetz von zentraler Bedeutung sein, welches einen klaren Rahmen für die Dekarbonisierung der Industrien entwickelt. Auch dem Bereich der Klimaanpassung muss verstärkt Aufmerksamkeit geschenkt werden, indem Investitionen verstärkt und Maßnahmen sektorübergreifend integriert werden (Kapitel 4.4).

Das **Aktionsfeld der städtischen und Stadt-Umland** Entwicklung muss sich aus Sicht des UBA auf die Hauptbereiche Mobilität und Bauen konzentrieren. Es ist sehr zu begrüßen, dass der EGD hier Ambitionen formuliert, insbesondere in Bezug auf die Minderung der Klimaauswirkungen dieser Sektoren. Im Mobilitätssektor wird es jedoch entscheidend sein, auch jenseits von technologischen Lösungen zu handeln und die Verkehrsvermeidung als Schlüsselelement anzugehen. Im Bausektor sollten sich die geplanten Programme neben dem Klimaschutz auch mit gesunder Innenraumluft befassen und die verbindlichen Anforderungen an Baumaterialien auf Produktebene im Hinblick auf Ressourceneffizienz und Gesundheitsschutz stärken (Kapitel 4.5).

Ein zusätzliches Aktionsfeld ist die Herausforderung einer wesentlich besseren Integration von **Nachhaltigkeit und Digitalisierung**. Es wird entscheidend sein, diese beiden treibenden Kräfte des heutigen Wandels weiter zusammenzuführen und sicherzustellen, dass zunächst die Umweltauswirkungen der Digitalisierung minimiert werden, wobei Nachhaltigkeit und Digitalisierung über die Strategien und Handlungsfelder des EGD miteinander verknüpft werden müssen. Auch die soziokulturellen Dimensionen der Digitalisierung müssen expliziter angegangen werden, z.B. durch Programme, die es der Zivilgesellschaft ermöglichen, über die Auswirkungen der Digitalisierung nachzudenken und die Ergebnisse wieder an die Politik zurück zu kommunizieren.

Hebel der Veränderung

Zwar sind alle in den verschiedenen Aktionsfeldern vorgeschlagenen Maßnahmen, wie sie oben skizziert wurden, relevant und können mit den Empfehlungen in Kapitel 4 verstärkt werden, doch eine wirksame Umsetzung des EGD wird auch auf strukturellen Veränderungen (Veränderungshebeln) aufbauen müssen, die in allen Aktionsbereichen Wirkung entfalten.

Die **Governance**, sowohl in der EU als auch in den Interaktionen mit und in den Mitgliedstaaten, ist dabei ein entscheidendes Element (Kapitel 5.1). Die erforderlichen Maßnahmen beginnen mit der Weiterentwicklung des strategischen Portfolios, z.B. unter Nutzung des 8. Umweltaktionsprogramms als Schlüsselelement für die Umsetzung des EGD, und gehen weiter mit einer erneuerten europäischen Nachhaltigkeitsstrategie. Die Stärkung der sektorübergreifenden Politikintegration, wie sie in Kapitel 4 für mehrere Handlungsfelder beschrieben wird, ist ebenfalls von zentraler Bedeutung. Das Europäische Semester sowie die Weiterentwicklung der Berichterstattung und des Umweltmonitorings in Europa sind ebenfalls relevante Instrumente. Nicht zuletzt muss dies alles unterstützt werden durch einen Kulturwandel in der Europäischen Kommission und anderen Institutionen hin zu (noch mehr) Kooperation über Politiksektoren hinweg.

Ein weiterer wichtiger Hebel des Wandels sind **Wirtschaft und Finanzsektor**, wo sichergestellt werden muss, dass die Ziele für die Verwendung des EU-Haushalts der kommenden Periode für Klima- und Nachhaltigkeitsmaßnahmen umgesetzt werden und dass die Taxonomie für nachhaltige Finanzen zügig wirksam und für den gesamten Finanzsektor relevant wird (Kapitel 5.2).

Obwohl politische Institutionen der Schlüssel sind, um Veränderungen herbeizuführen, sollte die **Rolle des zivilgesellschaftlichen Engagements und der Bildung** nicht unterschätzt und entsprechend unterstützt werden (Kapitel 5.3). Schließlich sind **Wissenschaft und Innovation** und ihre Finanzierung über das Forschungsprogramm Horizon Europe ein wichtiges unterstützendes Element, und die missionsorientierten Programme sind in dieser Hinsicht ein guter Ausgangspunkt. Es sollte jedoch sichergestellt werden, dass Innovation im Programm im weitesten Sinne verstanden und gefördert wird, einschließlich der stärkeren Förderung sozialer Innovationen und transdisziplinärer Ansätze (Kapitel 5.4).

Schlussfolgerungen

Das UBA begrüßt den EGD mit seinem grundsätzlichen Anspruch und seinen Einzelmaßnahmen. Die ersten in der Folge veröffentlichten Strategien und Aktionspläne, z.B. der Circular Economy Action Plan und die Farm to Fork Strategie, setzen diesen Anspruch fort, zeigen aber auch einige Schwächen: Beim EGD und diesen Strategien zeigt sich, dass die bekannten Zielkonflikte zwischen Umwelt und anderen sektoralen Zielen, insbesondere solchen, die mit wirtschaftlichen Interessen im Status quo verbunden sind, fortbestehen. Diese Zielkonflikte müssen jedoch angegangen und gelöst werden, wenn die langfristigen Ambitionen des EGD verwirklicht werden sollen und der Umsetzung der Ziele für nachhaltige Entwicklung und des Pariser Klimaabkommens dienen sollen. Dazu sind weitere Anstrengungen in den oben beschriebenen Aktionsfeldern erforderlich. Darüber hinaus bleiben die folgenden übergreifenden Herausforderungen bestehen, wenn die Ziele des EGD erreicht werden sollen:

Stärkung der Umsetzung der bestehenden Politiken: Der jüngste "Environment Implementation Review" (European Commission 2019c) macht Defizite bei der Umsetzung der bestehenden Umweltgesetzgebung in den Mitgliedsstaaten deutlich. Einige von ihnen bestehen seit vielen Jahren, müssen aber dringend angegangen werden.

Langfristiges Denken und Verpflichtungen - nicht nur bei den Klimazielen: Das geplante Klimagesetz, das sicherstellen soll, dass Europa das Ziel der Klimaneutralität bis 2050 erreicht, ist ein wichtiger Schritt in Richtung der Erkenntnis, dass die Politik langfristige Ziele stärker berücksichtigen muss. Dementsprechend müssen auch langfristige verbindliche Ziele, z.B. zur biologischen Vielfalt und zur nachhaltigen Landnutzung sowie das Ziel der Schadstofffreiheit konkretisiert und festgeschrieben werden.

Lösungen über gemeinsame Hebel - neue Handlungsweisen über Sektorgrenzen hinweg etablieren: Als ein Mittel werden neue integrierte politische Rahmenbedingungen erforderlich sein, um langfristige Ziele zu erreichen, um anderweitig getrennte Politiken zusammen zu denken und so die Gestaltung neuer Policy-Mixe und sogar neuer Politikansätze zu ermöglichen. Für die Umsetzung des EGD bedeutet dies, dass zunächst einmal verschiedene Bereiche der Umweltpolitik stärker integriert werden müssen, wie in Kapitel 5 in mehreren Bereichen skizziert wird. Der integrierte Fokus geht über die derzeitigen politischen Maßnahmen hinaus, die sich oft nur auf inkrementelle Verbesserungen bestehender Maßnahmen beschränken, und

bezieht sich vielmehr auf die Verbindung zu anderen Sektoren. Nicht zuletzt bedarf es eines Wandels der Art der Zusammenarbeit und des gemeinsamen Wertekanons in den EU-Institutionen, der Nachhaltigkeit und Klimaneutralität als ein Kernelement und als übergeordnete politische Ziele umsetzt und der anerkennt, dass die wirtschaftliche Entwicklung in diesen Rahmen passen muss (siehe Kapitel 6).

Gemeinsam handeln - neue Formen der Zusammenarbeit zwischen den Akteuren: Die integrierte und komplexe Natur der Herausforderungen, die die EGD anspricht, macht es auch entscheidend, die Formen der Zusammenarbeit aller gesellschaftlichen Akteure zu überdenken, um die Zusammenarbeit zwischen den Akteuren zu unterstützen (siehe auch 5.3). Dazu gehören konkrete Herausforderungen wie die Nutzung des Konzepts der besseren Rechtsetzung (better regulation) mit Blick auf Effekte in verschiedenen Politiksektoren und gemeinsame Anstrengungen aller Akteure bei der Harmonisierung von rechtlichen Anforderungen und Definitionen über die Gesetzgebung innerhalb eines Sektors (siehe z.B. Chemiesektor, Abfallsektor) und zwischen verschiedenen Sektoren (Chemikalien und Abfall).

Zum jetzigen Zeitpunkt, im Herbst 2020, sind die langfristigen Folgen der Sars-CoV-2 Krise kaum absehbar. Die Krise zeigt aber bereits jetzt, dass die Gesellschaft in Europa der Resilienz ihrer Subsysteme, wie z.B. des Gesundheitswesens, aber auch der Wirtschaft und ihrer Abhängigkeit vom Naturkapital, zu wenig Aufmerksamkeit geschenkt hat. Eine systemische Perspektive ist notwendig. Der EGD kam hier als erste Blaupause dienen. Dies bedeutet auch, die notwendigen Transformationen für ein nachhaltiges Europa integriert anzugehen und vor allem das menschliche Wohlbefinden und die Beziehung zwischen den Gesellschaften und den natürlichen Lebensgrundlagen zur Grundlage allen Handelns zu machen.

1 Introduction

1.1 The Sustainable Development Goals and the European Green Deal

The livelihoods of the people in Europe and globally are at risk because of the still increasing deterioration of our environment. As the recent Global Sustainable Development Report (GSDR)[1] outlines, most of the UN Sustainable Development Goals (SDGs) and their detailed targets of the 2030 Agenda for Sustainable Development[2] are in danger of being missed, including the targets of the Paris Agreement on climate change[3]. Some of them even show negative long-term trends including some closely connected to environmental themes, e.g. the goals on water (SDG 6), sustainable consumption and production (SDG 12), climate (SDG 13) and life on land (SDG 14) and below water (SDG 15). Also, many SDGs addressing the social dimension of sustainability show no significant positive trends. The GSDR thus stresses the need to jointly address these challenges across the SDGs, and not handle them separately in sectoral approaches.

The European Union (EU), although in an excellent position to become a front-runner with respect to SDG implementation, also lacks behind in the implementation of many SDGs to reach the 2030 targets[4]. The report of Eurostat on the SDGs in Europe[5], a report by the European Court of Auditors[6], the comment of the European Economic and Social Committee (EESC)[7] and the State of the Environment Report 2019 of the European Environment Agency[8] showcase the needs for further actions – in implementing activities to reach the SDGs in general, but also in the ways this implementation is mainstreamed across policy sectors and the financing of the EU.

Adding to the above-mentioned messages and as summarized in numerous assessments and reports, the rising awareness of these challenges in societies across Europe also shows that the willingness to act, individually as well as politically, is raising. The Eurobarometer[9], and also the recent Environmental Awareness Report for Germany[10] clearly emphasize this call by citizens for more decisive action.

Based on these developments and earlier work like the communication "A clean planet for all"[11], the new European Commission (EC) has reacted, and has launched the European Green Deal (EGD)[12] as one out of six main pillars of its work programme for the coming years. The SDGs are the main compass in this work programme. With the 47 actions foreseen in the EGD and the plan to implement them ambitiously in the coming years, the EC aims to improve addressing environmental and social challenges. Yet, for the mid-term perspective towards 2030, the target

[1] Group of Independent Scientists (2019)
[2] United Nations General Assembly (2015)
[3] IPCC (2018)
[4] IEEP/ & SDSN Report (2019); Kabel et al. (2016)
[5] Eurostat (2019)
[6] European Court of Auditors (2019)
[7] European Economic and Social Committee (2019)
[8] EEA (2020)
[9] European Union (2017)
[10] Rubik et al. (2019)
[11] European Commission (2018a)
[12] European Commission (2019a)

year of the 2030 Agenda, as well as for the long-term sustainability perspective towards 2050, further ambitious actions will be needed[13].

1.2 The Sars-CoV-2 crisis as additional dimension of sustainability challenges

The Sars-CoV-2 pandemic triggered a combined health, social and economic crisis. The main aim of swift recovery measures after the pandemic is bringing people back into jobs and stopping the economic downturn. Many investments are already planned and on their way for this short-term goal. But the crisis has additional challenges: Learning from it and making subsystems of our societies more resilient to shocks is one element. Using the investment options of the current situation for triggering urgently needed transformation for the long term is another.[14] Such a transformative recovery also has a financial perspective: The investments of the Member States entail a corresponding level of future debt, which in the long term will make additional programmes more difficult - it is, therefore, necessary already now from a fiscal point of view and in terms of generational equity, to align these investments with sustainability and that they have a positive long-term effect. The EGD can serve as a first blueprint for such actions.

Accordingly, recovery investments should seek the triad: Accomplishing short-term targets with a long-term perspective while avoiding negative aspects. This means short-term targets for employment and support for businesses in difficulty need to be combined with a clear future perspective for decarbonisation and resource-efficient transformation of the economy while at the same time activities harmful to the environment need to be avoided. By meeting this triad challenge the aim of a fiscal double dividend for short-term and long-term effects can be reached. For the implementation of the EGD, this means a set of integrated activities in a green recovery programme.[15]

Although such investments are the current focus of policy, a lot of urgent actions remain in the EGD that are not directly linked to them. e.g. with regard to the chemicals and food sectors. Nonetheless, these actions need to be followed with the same commitment in order to contribute to achieving the SDGs. It needs to be avoided that today's investments hinder or slow down the implementation of SDGs. The EGD outlines several new or renewed strategies, some of them already published, which will need to aim for high ambition and integrate actions across sectors (see chapter 5.1.1 in general and sub-chapters 4 for thematic strategies). In addition, concrete revisions of existing legislation as planned in the EGD shouldn't be postponed to ensure improvement for the environment and to provide for planning security for businesses for sustainable pathways. Moreover, UBA sees an additional need to complement them with stronger or new legislative approaches in the long term (see chapter 4). Finally, administrations and societal actors (firms, NGOs and others) need to renew some modes of their work and cooperation in order to be fit for the purpose of implementing the EGD (see chapter 5).

[13] Group of Independent Scientists (2019), p.21; Sachs et al. (2019); United Nations General Assembly (2019)
[14] For an overview of studies worldwide that discuss the options of green recovery programmes, see Burger et al. (2020b)
[15] Burger et al. (2020b)

1.3 Rationale for the study

As outlined in several global policy reports[16] and scientific publications[17], the coming decade is a key one for societies to set a course to a sustainable future (*'Decade of action and delivery'*[18]). Achieving it at reasonable economic, social and environmental costs[19] is a prerequisite for a successful implementation. A recent modelling study by UBA outlined the need to start acting early in order to reach a carbon-neutral and resource-efficient Germany in 2050[20]. Such models help to develop a clearer vision on how sustainability targets can be achieved, and which challenges need to be addressed as priorities. Thus, the strategic policy pathways to achieve sustainability in a mid-term as well as a long-term time perspective beyond 2030 must be decided today, not only for the next 2-5 years or a Commission's term, but for the coming decades. The measures to achieve them will nonetheless be subject to a continuous, adaptive development process that allows new lessons learned to be considered in future revisions of policies.

The EGD is a major step in this respect, outlining clearly that very ambitious policies are needed in the coming years, to reach European and global goals aiming to reach sustainable development. With such an agenda, the EU can become a front-runner in sustainability policies globally. From the perspective of UBA, the concrete measures proposed in the EGD so far are only a part of the answer to reach these goals (see chapters 4 and 5 for details).

With this paper, UBA aims at supporting the discussions that analyse and already look beyond the measures proposed in the EGD. The basis for our considerations is, that the environment is indispensable and intertwined with the foundation for claims for a just and viable Europe and thus a priority cornerstone for Europe's sustainable development. While the EU has many policies in place, or is further shaping them with the EGD, the current ambition and proposed policies are still likely to be insufficient to actually reach the SDGs [21]. In view of the current governance mode, linking clear environmental objectives with just transition and a pathway for sound economic development appears complex and as a challenge. Yet, addressing them jointly is also the key to solve them with adaptive policy measures and new social, legislative and technological innovations. This study analyses the current status of planning and implementation of the EGD in terms of reaching the SDGs in Europe, and recommends actions that need to be taken in addition for Europe to become the "*first carbon-neutral and sustainable continent by 2050"*[22].

[16] Diaz et al. 2019, Group of Independent Scientists (2019), United Nations Environment Programme (2019)
[17] The World in 2050 (2018), Nakicenovic et al. (2019), Sachs et al. (2019)
[18] UNGA (2019)
[19] E.g., Group of Independent Scientists (2019)
[20] Günther et al. (2019)
[21] See for example European Environment Agency (2020)
[22] European Commission (2019a)

2 Ambition of the European Green Deal - and the transformation towards a sustainable Europe 2030/50

The EGD is one of six programmatic pillars of the EC's work programme for the coming years. The pillars aim at jointly addressing the SDGs as overarching orientation, "putting the SDGs at the heart of policymaking" [23]. While all pillars should contribute to reach the SDGs, the EGD has the strongest role in this respect. The Communication on the EGD[24] further specifies this ambition with major action and initiatives in the following areas: climate, consumption & production, environmental pollution, energy, mobility, and financing. The formulated ambition is a significant shift away from a mainly economically driven agenda to a broader set of priorities, emphasizing social and environmental goals. As one main element, the EGD includes measures to ensure that the transformative actions it triggers 'leave no one behind'"[25], thus explicitly adopting the major principle of the SDGs.

In its details, the EGD builds on existing legislation and strategies of the EU and aims at strengthening their ambition. This includes a first European Climate Law that aims to ensure climate neutrality of Europe by 2050 (see 4.4.1). The circular economy should be strengthened in Europe (see 4.2.1) and a fair, healthy and environmentally friendly food system should be developed (via a Farm to Fork Strategy, see 4.3.1). As a major element, the EC also presents a major finance and investment plan to back the actions (see 5.2) - an element of central importance to avoid that support to the economy after the Sars-CoV-2 crisis backfires at the aims of the EGD.

The ambition formulated in the EGD is high, compared to similar targets and ambitions in the last decade. It clearly states that transformative policies[26] are needed to achieve it. Given the challenges outlined in the EGD – in terms of environmental degradation as well as the social implications of current global dynamics – a number of transformations must be addressed in parallel. These transformations will change the way humans interact and make use of the natural environment, the way economy generates societal welfare, and so far accepted lifestyles so that the well-being and health of all citizens can be ensured. In this context, the EGD is timely and welcomed, but given the scale of the challenges it addresses, its ambitions are likely to be insufficient for the necessary transformations. And, it has yet to be proven whether the approach and actions proposed are in fact sufficient for reaching the current ambition – and thus help the EU to make a major step in contributing to achieve the SDGs by 2030.

This starting point for our analysis is based on a number of scientific observations of sustainability policies in the past. All too often, these policies hardly address deep-rooted challenges for a shift towards sustainability. Here, we just want to highlight two of these

[23] The Programme „*A Union that strives for more*" includes, besides the European Green Deal the following pillars: A Europe fit for the digital age; An economy that works for people, A stronger Europe in the world, Promoting our European way of life; and A new push for European democracy", von der Leyen (2019)
[24] European Commission (2019a)
[25] European Commission (2019a)
[26] We understand transformative policies as a term describing the policies needed to foster a change towards a pathway to sustainability. These policies will need to accelerate changes in economy and society, in the way we live, work and consume, in technologies, institutions and practices. Transformative policies will likely result in policy mixes from different sectors and different measures that are developed together.

challenges shortly as they are frequently reappearing across the action fields of sustainability, and especially on environmental topics.

Sustainability as a true guiding principle: How sustainability, and since 2015 especially the SDGs, are addressed in policy and governance has been debated for a very long time[27]. In the beginning, the standard approach has been to address specific sustainability aspects in their respective policy fields. This was generally done by a specific ministry or Directorate General, separately. But, sustainability needs a much more integrative approach across all policy fields**,** and SDG-orientated integration should be a guiding principle of public policy in all sectors. Such an approach has often been called for, but rarely implemented. The EC's work programme and the EGD make strong statements in this respect, yet, the divided responsibility for SDGs across Directorate Generals keeps existing weaknesses of this classic 'mainstreaming' approach alive, as within Directorates, sustainability goals often have to stand back behind classic sectoral goals [28]. A stronger oversight in this respect across DGs might help[29]. Here, a critical discussion is needed how these weaknesses can be overcome via institutional reforms (see chapter 5.1). The approach for the European Research framework programme Horizon Europe, where funds are planned to be aligned along missions, and not towards topics of Directorate Generals, is a promising example here (see chapter 5.4).

Green economic growth within planetary boundaries: Like other political strategies, the EGD attempts to bring forward sustainability without questioning today's leading economic paradigm of economic growth. The limits of such a growth agenda are more visible than ever these days in the light of the Sars-CoV-2 crisis as concrete challenge, and within the context of the planetary boundaries[30], yet this dilemma is not addressed in most policy strategies.

The EGD has been presented as a strategy for "*sustainable and inclusive growth*"[31]. However, sustainability does not avoid all environmental costs of economic activities in- and outside Europe. They will not be prevented by simply stating in the EGD that within the Commissions work programme, "*all [non-EGD] EU initiatives live up to the green oath to 'do no harm'*" [32]. Nevertheless, to explain how initiatives uphold this principle, e.g. in the Better Regulation procedure as announced in the EGD, at least raises awareness of ecological consequences and can promote their better consideration.

But e.g. the unambitious way the principle is used in the Taxonomy Regulation shows also its possible weakness. In the Taxonomy Regulation the "do no harm principle" is part of a two-step procedure. First, activities need to make a significant contribution to one of the six environmental objectives (Climate change mitigation and adaptation, protection of water and marine resources, healthy ecosystems, circular economy and prevention of pollution). Identified activities are then checked for their possible harm to the other environmental objectives. As long as the field is already regulated, the application of the principle means nothing but the application of existing European environmental law. Applying the "do no harm principle" like that, the oath is a matter of course and does neither serve as an additional overarching criterion

[27] See for example Sachverständigenrat für Umweltfragen (2008), chapter 1
[28] Von der Leyen (2019a, b)
[29] A strong oversight is only helpful though, if it goes beyond a formal role and allows for a certain level of control of achievements on the SGDs in specific DGs or ministries (see for example SRU 2019).
[30] Steffen, W. et al. (2015); GSDR 2019
[31] European Commission (2019a)
[32] European Commission (2019a)

for the evaluation or a progressive development of EU-policies nor is suitable for this purpose.[33] The law can be regarded as minimum value. However, not all eligible activities make a sufficient contribution to the overarching environmental and sustainability objectives (e.g. SDGs) of the Union.

Thus, the "do no harm principle" should also be interpreted beyond environmental legislation: To reach sustainability, it is necessary to reassess the environmental damage of all activities in the light of the achievement of environmental objectives and to develop criteria that are significantly higher than the minimum legal requirements. This is especially true for activities in sectors with high ecological impact. Checking the harm that one activity has on all other environmental objectives helps to take on a wholistic approach and reveals conflicts of objectives that are not resolved at the legal level, but are addressed in political programs. In the end the key issue to green economy would be to strive for higher environmental quality objectives in all the fields listed in Art. 9 and 17 Taxonomy Regulation and to enforce them effectively in collaboration with the Member States. Some of these fields are described in detail in the following sections.

In the following section, we analyse different action fields of the EGD in an integrated perspective, formulate recommendations for implementing EGD measures and propose additional actions on how to develop European policies, which may help to overcome shortcomings in the current path of the EGD (Chapter 4). The intention of this paper is not to address all potential measures that might be needed, but rather take an integrated view from the different entry points where environmental policy and its integration in other areas is crucial.

[33] As any human activity to secure survival has a (negative) impact on the environment the oath (no harm to the environment) is virtually impossible to fulfill. Conceptually, in order bring the oath on a realistic level one has to to restrict the concept of the environment or the concept of harm, e.g. the fishing of one salmon does harm to the salmon, but not to the *environment* and industrial fishing impairs the fish stock (and the individual fish), but does no *harm* to the stock (nor the individual fish) and hence no harm to the environment, if reproduction capability of the fish stock is not impaired. As the impact assessment to the proposal for a Taxonomy Regulation (EU Commission, SWD(2018) 264 final) identifies „harm" with „significant harm" the option to revise the concept of "harm" seems to have been taken. However, the meaning of "significant" remains vague. A consistent wording would be: "no harm to an environmental objective of EU legislation" designates "no significant harm to the environment (in all its components)", suggesting that the environmental objective of the EU legislation is "no significant harm to the environment". Then the questions remain, whether EU legislation lives up to this claim and whether EU legislation is enforced properly.

3 Beyond the European Green Deal: a global sustainability perspective

For taking a closer look at the EGD and its ambition, we choose a perspective based on the GSDR[34]. The GSDR emphasizes that accelerated and coherent progress is needed in many areas to reach the SDGs globally. With the consequences of the Sars-CoV-2 crisis emerging, it appears even more pressing to identify actions that support different goals simultaneously. The GSDR outlines six entry points, or key transformation areas, for this progress (Table 1).

Table 1: Overview of entry points of the Global Sustainability Report (GSDR) and their relation to the areas of the European Green Deal (EGD) and the topics addressed in this study

GSDR entry point	Corresponding EGD areas	Cross-reference to chapters in this study
Human well-being and capabilities	(Social pillar, including health issues is mainly addressed in other EU programmes)	4.1 Human-wellbeing with focus on health (Zero Pollution ambition) and consumption
Sustainable and just economies	Clean and circular economy	4.2 Sustainable economies with focus on sustainability aspects
Food system and nutrition patterns	Mainly via the Farm to Fork Strategy	4.3 Sustainable food systems - land, water, oceans and biodiversity,
Energy decarbonisation and universal access	Climate neutrality; clean energy transition	4.4 Climate, energy and decarbonisation
Urban and peri-urban development	Building and renovation; sustainable and smart mobility	4.5 Urban and peri-urban development
Global environmental commons	Global responsibility of Europe	Not in focus of this study, partly addressed in 4.1.3 (global responsibility), 4.2.2 (resource efficiency) and 4.3.2 (water and oceans)

Table inspired by Sustainable Development Solutions Network Germany (2020), Annex I

In order to tackle the SDGs, all the entry points need to be addressed in an integrated, and not separated manner. Many of the actions identified in the EGD align with these entry points (see Table 1). But the comparison of entry points and EGD actions also shows that the EGD does not cover all of these entry points completely. To highlight some actions that are not covered by the EGD, but are important according to our analysis, we use the entry points for the analysis in the following chapters (see cross-references in Table 1) while being aware that that this approach does not cover all dimensions of the entry points.

We also acknowledge that the EU plays a significant role for the global environmental commons (see chapter 4.1.3), we do not address the environmental commons here separately, though, as

[34] Group of Independent Scientists (2019)

within the EU policy framework, these challenges are addressed to a large extent in other entry points (e.g., resource efficiency in chapter 4.2.2, water in chapter 4.3.2).

Also, we do not cover the social dimensions of the entry points (e.g., regarding a 'just transition' and just economies) in depth in this study. Nevertheless, we do fully recognize that these dimensions need to get acknowledged and analysed when developing concrete actions further, like the one we propose in chapter 4. Accordingly, we do not cover all aspects included in the entry point of human well-being, but in this context, rather focus on elements of this entry point that directly relate to environmental issues, e.g. the Zero Pollution ambition as the only health aspect in the EGD and the topic of food consumption.

Differing from our starting point of the GSDR, we highlight digitalization in an additional chapter, as it is often discussed as key transformation challenge[35]. To add a supplementary angle to the entry points of the GSDR, we therefore discuss digitalization as additional key entry point in the European context (chapter 4.6).

In addition to the entry points, the GSDR also discusses complementary levers of change that act across all entry points. These levers can be coherently deployed through each of the entry points to bring about the necessary transformations, addressing the different actors that need to get engaged to achieve the SDGs[36]:

- Chapter 5.1: Governance
- Chapter 5.2: Economy and finance - Budget and investments for transformations"
- Chapter 5.3: Individual and collective action
- Chapter 5.4: Science and technology

As the GSDR emphasizes the importance of the levers of change and the EGD also discusses a number of actions related to these levers, especially on the governance of environmental policy, chapter 5 specifically highlights actions related to these levers. From the current Sars-CoV-2 crisis perspective, they appear to be even more urgent in order to allow for more integrated perspectives across the different action fields discussed in chapter 4.

[35] German Advisory Council on Global Change (2019), Sachs et al. (2019)
[36] Group of Independent Scientists (2019)

4 Complementary actions to the European Green Deal for a sustainable development in Europe

As shown above, the EGD does not encompass all thematic areas of environmental policy that need to be subject to substantive changes in order to reach a sustainable Europe. For example, the link between environment and health, now becoming a specific focus in the Sars-CoV-2 pandemic, is not addressed systematically. Yet, the integrated view taken in this paper brings together specific fields of action, which we see as relevant, following the GSDR approach of key entry points (see chapter 3) to implement the ambitions of the EGD. As the EGD does not cover the complete spectrum of the SDGs and its sub-targets, we also do not address the full complexity of the 2030 Agenda and each entry point as discussed in the GSDR. Likewise, we focus on key elements from an environmental policy perspective here.

4.1 Human well-being

Besides preserving our livelihoods against the negative effects of the current economic pathway, environmental policy in the EU increasingly considers risks to well-being (e.g., economic consequences of climate change), human health (e.g. with respect to air pollution), as well as societal justice. Yet, health issues are not an explicit focus of the EGD in an integrated perspective.

Some environmental problems addressed affect the health of rural as well as urban citizens (e.g. water pollution and spread of toxic substances). Urban dwellers are increasingly affected, due to the strong population growth in most cities in Europe. On the one hand, they are specifically affected by environmental pollution due to particulate matter, nitrogen dioxide or noise, on the other hand, their resource consumption, for example for mobility and housing, is triggering a number of environmental and health problems, e.g. via high energy and resource consumption and the emissions caused from it.

Another pressure on human health and well-being is given by the increasing effects of the changing climate. It affects health and well-being of European citizens e.g. due to extreme weather events (e.g. heat waves and flooding) as well as gradual changes (e.g. see level rise) and second level impacts such as vector borne diseases. The EGD is setting priorities in this area, but from UBA's point of view the planned measures must be extended in a substantial way in order to achieve the SDGs (see sections below).

4.1.1 Zero Pollution ambition

To reach the SDGs for the environmental media water (SDG 6), oceans (SDG 14), soil (and land in general, SDG 15), and air (part of SDG 3) as well as the action field sustainable consumption and production (SDG 12, see target 12.4 on chemicals), the EGD element of a Zero Pollution ambition for a toxic-free environment is of high relevance. The EGD mentions measures against pollution from excess nutrients, from combustion-engine vehicles, from urban runoff and from harmful sources, (micro) plastics and chemicals, including pharmaceuticals and pesticides. All these pollutants are relevant for environmental as well as human health[37]. The actions proposed are welcomed and most of these measures can and should be regulated at the European level, since product legislation and harmonized standards for industrial installations are in the competence of the EU. To address all relevant sources of pollution, Member States need to amend the EU-

[37] On the link between environment and human health in the SDGs, see Doyle et al. (2020)

regulations by national and local measures, e.g. improving waste water treatment or agricultural practices.

Include regulations on extended producer responsibility in the Zero Pollution action plan: The "*zero pollution action plan for land, air, water and soil*"[38] proposed in the EGD should address all forms of pollution, that are relevant for environmental as well as human health. This encompasses the excess nutrients (including eutrophication), chemicals, marine litter, and noise – especially the latter is not mentioned explicitly in the EGD. The following proposed areas for EU policy action should be included in this action plan:

- "Zero anthropogenic eutrophication environment": to tackle all responsible sectors such as agriculture, industries, transportation (including shipping), waste water treatment including sewage sludge management, etc. in an adequate way and to complement major implementation deficits across Europe.
- "Zero (marine) litter environment": This goal can be achieved by the various action plans against marine litter (e.g. on a regional scale: OSPAR, HELCOM, MEDPOL & Black Sea, G7, G20, IMO, Basel convention) where the EU and the Member States are signatories. The Strategic Environmental Assessment Directive, the EU Plastics Strategy and various other European instruments are supporting the implementation of these action plans. The Marine Strategy Framework Directive (MSFD) supports this work by setting thresholds for the achievement of good environmental status of coastal and marine waters.
- "Zero energy/noise pollution environment": noise is a longstanding concern for the environment including human health. Respective EU instruments (e.g., the Environmental Noise Directive, the Marine Strategy Framework Directive, descriptor 11) need further development. In the marine context, the respective HELCOM Regional Action Plan under development and comparable activities by OSPAR are promising steps into the right direction. It should be aimed at comparable action for all European Seas. The EC should support this work substantially. An ambitious "European Union Strategic Approach to Noise in the Environment" could be the final result.
- "Chemicals strategy for sustainability": Chemicals can support the achievement of SDGs while at the same time being a risk for SDG achievement (see chapter 4.2.3 for more details).
- Develop an ambitious "European Union Strategic Approach to Pharmaceuticals in the Environment"[39] which contains measures at the source, for the application and downstream.

Existing legislations and strategies should be further developed in line with these action fields, for example the principles of the European Regulation on Registration, Evaluation, Authorization and restriction of Chemicals (REACH) identifying and managing substances of very high concern (SVHC) should be introduced in all European legislations with interfaces to chemicals. Additionally, the "Soil thematic strategy" of the EU, regarding soil degradation and sustainable land use should be improved with respect to pollution aspects that endanger environmental and human health.

Monitoring of (micro) plastics across matrices: The EGD already addresses pollution by (micro) plastics generally and the EC announced to propose measures to tackle new sources of pollution with micro plastics, chemicals or pharmaceuticals. After 50 years of unbridled plastic

[38] See https://ec.europa.eu/environment/strategy/zero-pollution-action-plan_en for its current status (accessed 16th of October, 2020)
[39] European Commission (2019e)

consumption, addressing the problem of micro plastics in the environment is important to learn about its possible environmental impacts. For this purpose, it is necessary in a first step to determine the total amounts of (micro) plastics in the various environmental media. This activity should include plastics in general because plastics are one important source for micro plastics as e.g. tyre abrasion where the methods of measurements need to be scientifically discussed and specified.

Improving air quality: The main driver to further improve air quality will be the proposed closer alignment of air quality standards with WHO recommendations, especially with respect to reduce airborne particle pollution. Here, strong linkages to decarbonisation and the rapid phasing out of coal as well as the reduction of pollution from excess nutrients exist.

Implement existing regulations: Although additional ambition is welcomed, it has to be stated that many separated strategies and regulations in these areas already exist, but that poor implementation in Member States remains a key stumbling block to reach these goals[40], e.g. as regards the Urban Waste Water Treatment Directive. In order to further develop regulations, UBA recommends to set ambitious European minimum requirements and not delegating this task to the Member States via national risk assessments. This could be done on the European level by setting additional emission standards for various waste water streams (e.g., in Best Available Techniques Reference Notes, BREFs), by operationalization of the phasing-out-obligation for priority hazardous substances in the Water Framework Directive and by stricter licensing conditions for pharmaceuticals and pesticides.

4.1.2 Sustainable consumption including food consumption

Consumption is a key element with respect Europe's transition towards a circular, resource-efficient and greenhouse gas-neutral economy and society requires a drastic change in imports and our consumption patterns. This is key to support SDG 12 in general, and the target 8.4 on resource efficiency in consumption, among others. Via its environmental consequences, but also directly via overconsumption especially of food, today's consumption pattern also have a direct effect on human well-being and especially human health.

Like the emissions of greenhouse gases, the material demand of consumer goods should, as far as possible, be made visible and be reflected in product prices. While existing efficiency strategies and the eco-design and consumer information strategies proposed in the EGD are very important, they are not sufficient to ensure a substantial shift in consumption patterns towards more sustainability.

Green priorities in taxation - Make use of taxation and other measures to internalize external costs: A crucial approach to a more sustainable consumption including food consumption is the internalization of external costs, i.e. reducing harmful subsidies and shifting towards green priorities in taxation, which is already present as an idea in the EGD (see also chapters 4.2 and 5.2). Should this policy instrument be implemented systematically, distributional effects have to be considered and negative social effects need to be corrected. This should be embedded in a public discussion about sustainable consumption patterns, within which the positive impacts and narratives that derive from a 'culture of less' should be highlighted. It is also recommended to implement indicators for the monitoring of sustainable

[40] European Commission (2019c)

consumption in the EU Sustainable Development Strategy (e.g. similar to the two indicators contained in the German National Sustainable Development Strategy[41]).

Plant-based food Systems - set targets with respect to healthy and climate friendly food consumption: One of the major fields where significant changes in the consumption culture are needed in Europe is food consumption, especially with respect to overnutrition[42], food waste and losses and the share of animal products in diets. Less animal products is a major leverage within the food system for several of the problems that the EGD aims to tackle, first and foremost the GHG intensity of diets across the EU. Meat, eggs and dairy are estimated to contribute on average 85% of the GHG emissions of diets in the EU[43]. Secondly, they can reduce land use requirements of high-income countries substantially[44], which is a prerequisite for some effective land-based climate change mitigation options[45], measures against biodiversity loss etc. Moreover, the positive health effects of reduced consumption of red and processed meat or plant-based flexitarian diet[46] and associated public benefits, like cost reduction in the health system, is another strong argument for effective political action towards more plant-based food systems.

As a consequence, a reduction of both production and consumption of animal-based foodstuffs should be a relevant area of action within the EGD and the Farm to Fork Strategy (see also chapter 4.3.1.4), including the potential effects on businesses and employment in the agricultural sector, in order to also address the aim of a 'just transition' in this field.

UBA suggests to establish an EU-wide quantified target for the minimum proportion of plant-based foodstuff in a Member State's average food consumption as part of the Farm to Fork Strategy or targets to lower meat and dairy consumption. Such targets would provide long term orientation for innovations in the research for alternative proteins and help to avoid sunk investments in the meat and dairy industry. It could be combined with an obligation to report on progress regularly like in the EU directive for renewable energy sources. That would allow the Member States to decide about appropriate measures on their own.

4.1.3 Addressing global effects of European policies, production and consumption on Sustainable Development Goals implementation outside Europe

An increasing share of the industrial and agricultural production for the European market takes place in emerging economies and developing countries. This is connected with high environmental, social and human health impacts because of difficulties in implementation of environmental and human rights standards for industrial activities in those countries (see also chapter 4.2.2). It is in the interest of the EU Member States in terms of their global responsibility for their consumption to reduce this environmental footprint. In this context, UBA welcomes the

[41] see indicators 12.1.a and 12.1.b in: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Nachhaltigkeitsindikatoren/Publikationen/Downloads-Nachhaltigkeit/indikatoren-0230001189004.pdf?__blob=publicationFile (assessed 24th of September, 2020)
[42] Over half of the adult population in Europe is now overweight (Farm to Fork Strategy, https://eur-lex.europa.eu/resource.html?uri=cellar:ea0f9f73-9ab2-11ea-9d2d-01aa75ed71a1.0001.02/DOC_1&format=PDF p.3).
[43] https://ourworldindata.org/environmental-impacts-of-food - the-carbon-footprint-of-eu-diets-where-do-emissions-come-from (assessed 24th of September, 2020)
[44] Hallström et al. (2015), Westhoek et al. (2014)
[45] Harwatt et al. (2019), Günther et al. (2019)
[46] Springmann et al. (2018)

commitment stated in the EGD to more strongly monitor and consider these effects, including in trade agreements and via setting standards for environmental and climate friendly production[47].

Improve knowledge transfer on strategic environmental policies: For decreasing the environmental footprint of different sectors, such as reducing the climate footprint of Information and Communications Technology (ICT), the knowledge transfer of strategic policies is an important tool. This is needed to support a baseline of institutional and personal capacities in partner countries that ensures that EU legislation is backed by actions in these countries. Germany, therefore, supports for example the dissemination of policies to apply Best Available Techniques (BAT) in countries outside the EU.

It would be beneficial if the EC takes a more active role in supporting, coordinating and channeling bilateral activities in this field. The capacities in the individual Member States for such activities are very limited and should be used purposefully. Duplication of efforts from different Member States should be avoided. The positive effect for the global environment, human health and for the achievement of the mentioned SDGs would be substantial. Measures could include the extension of the European Union Network for the Implementation and Enforcement of Environmental Law to a worldwide network and the strengthening and focusing of the Technical Assistance and Information Exchange (TAIEX) instrument of the EC on environmental issues.

Use new regulation for supply chains to merge and align other regulations: Besides such state-based cooperation efforts, other measures are needed to reduce the global environmental footprints of the EU. Especially the industry itself needs to adopt a more proactive approach to avoid and reduce adverse environmental and human rights impacts in its global value chains. In this regard, the EC announced a regulatory initiative on corporate governance and supply chain due diligence in its Biodiversity Strategy for 2030. It aims to establish a duty of care for enterprises regarding their adverse impacts on human rights and the environment. Enterprises will have to establish adequate due diligence processes that include a risk assessment, appropriate actions to address the risks, public reporting and access to remedy. This will not only benefit people, the environment and the climate but also the resilience of the enterprises themselves, because environmental and reputational risks are becoming increasingly relevant for long-term business success. Also, financial institutions demand the disclosure of those risks to a greater extent – but often still lack the necessary information.

A European regulatory initiative for corporate governance and supply chain due diligence is a meaningful way to improve responsible business conduct, increase transparency in global supply chains and support several SDGs and objectives of the EGD. It would also make it possible to merge and align the due diligence provisions currently discussed, planned or already implemented in the Member States[48] as well as the requirements of the European Timber Regulation and the European Conflict Mineral Regulation, the planned requirements under the European Battery Directive and the European Parliament's initiative for deforestation free supply chains. When considering policy options, the EC should maintain its intention to establish a duty of care for enterprises on human rights and the environment. Otherwise, the initiative would disregard urgent environmental problems and central aims of the EGD like climate change, biodiversity loss and plastic pollution.

[47] European Commission (2019a), chapter 3
[48] Namely Austria, Belgium, Denmark, Finland, France, Germany, Italy, Ireland, Luxembourg, Netherlands and Sweden

4.2 Sustainable economies

The ambition of the EGD makes it clear, that a sustainable economy serving people and ensuring a sustainable resource use must be reshaped along a circular economy approach. With the investments foreseeable after the widespread lockdown of industries during the Sars-CoV-2 crisis there is a chance to give this approach the kick-start that is needed and thus serve SDG 8, SDG 9 and SDG 12. As explained in chapter 3, within this analysis, the focus is mainly on environmental aspects with references to affiliated social challenges that need to be considered when developing concrete measures.

4.2.1 Circular economy

As one of its core elements, the EGD uses the circular economy approach. While the EU's circular economy approach goes beyond approaches implied within the 2030 Agenda, it includes several aspects that implement SDG 12 (and its targets, especially target 12.4 of the 2030 Agenda, environmentally sound management of chemicals and waste and 12.5 on reducing waste generation). The EC's work on the Circular Economy Action Plan is ongoing since 2015, including 54 actions which have been delivered since then[49]. On March 11th 2020, a new Circular Economy Action Plan has been adopted by the EC[50], aiming to achieve a more sustainable use of natural resources in Europe. The plan sets on a variety of measures in order to reach that goal, thereby applying a holistic understanding of a circular economy: Starting from the resource-efficient design of products over sustainable production processes and empowering consumers and public buyers, up to improved waste management, including strengthening producer responsibility in order to close the material cycle. A recent study[51] by UBA on resource-efficient decarbonisation pathways shows, that even the most ambitious scenarios are far away from circularity, as recycling and measures for closing the material flows can reduce the raw material consumption only by about a maximum of 40%.

Nevertheless, the circular economy needs an immediate strengthening of active and effective removal of critical pollutants, e.g. per- and polyfluoroalkyl substances (PFAS), otherwise even with an intended circularity in the long-term, today's production will lead to a permanent increase of concentration of harmful substances in soil and groundwater as well as human bodies.

However, increased circularity is not enough since recycling processes require large amounts of energy and many resources and are technically and/or economically often limited. While high recycling rates are already reachable for single materials such as copper, aluminum or steel, for other materials such as the so-called "*critical raw materials*"[52] recycling rates are still low and need to be improved. Furthermore, the continued growth and diversification of anthropogenic material stocks, together with increasing overall demands for materials, still limits for the time being the potential of secondary materials to displace large fractions of primary material input.

[49] See European Commission: Circular Economy. https://ec.europa.eu/environment/circular-economy/ (accessed 24th of September, 2020)
[50] European Commission (2020b)
[51] Günther, J. et al. (2019)
[52] Critical raw materials are a number of materials, mainly rare metals, that are considered of critical importance for some industries and often more sustainable, environmentally friendly products. A reliable access is thus of primary importance for the EU, indicated by a regular update list of critical raw materials developed by the European Commission (see: https://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en, accessed 16th of March, 2020)

Next to this, huge amounts of material inputs are associated with the production of goods and services, especially in the early stages of the value chain (mining and concentration) and most of them occur outside the EU (see chapter 4.1.3). These material footprints are not always covered by policy measures aiming at a circular economy in Europe.

While the circular economy approach is a key element of a more sustainable economy that has been argued for a long time, the following aspects fall short in the action plan and should be further developed for its implementation to reach sustainable economies:

Apply a life-cycle perspective: Circular economy requires improved lifecycle assessment rules to adjust the right screws by representing the benefits of 'second lives' of products and materials. Care has to be taken that chemical hazards and safety, energy needs and resource consumption do not go at the detriment of each other when favoring second-life towards first-life products or materials. Generally, a circular economy will profit from a greatly improved material knowledge base in the EU comprising models and assessment schemes, such as digital cadasters, databases, material passports for buildings and goods, which should be incentivized by the EC.

Enhance waste prevention and preparing for re-use: In order to draw more attention to increasing consumption, and thus resource use and increasing amounts of waste, a Europe-wide awareness campaign for waste prevention seems necessary. This includes quantitative requirements and measurable indicators for waste prevention. Similarly, it is important to tap into potentials for preparing products for re-use, as it can also have significant ecological benefits compared to recycling options.

Use waste water management as driver for circularity: Treatment of waste water contributes both to improving water quality and to resource protection. Based on the EGD, the EC should propose concrete measures in the field of waste water management. Particular attention should be paid here to the recovery of nutrients from waste water and the increase in energy efficiency of the treatment process and use of the energetic resources of the waste water treatment to conserve resources, while hazardous substances have to be effectively removed from the circles.

Improve product information: UBA supports obligatory environmental information for businesses and consumers for more products. For voluntary product information and claims, rules should be defined that guarantee their credibility, appropriateness and relevance, by using the Product Environmental Footprint (PEF) but also other methods which support further environmental criteria.

Set minimum social and ecological requirements for product design: Minimum requirements for the entry to the European market should be set for further product groups, e.g. under the eco-design directive or a separate new 'sustainable product directive' Further environmental aspects could be addressed like responsible material sourcing, biodiversity etc.

Enhance recycling and recyclates: It is important to determine recyclability of products/packaging by referencing a high-quality mechanical recycling and considering the current sorting and recycling paths available on the market[53]. Otherwise the real ecological

[53] See also European Commission (2018), section 3.2.2

effects of products/packaging are likely to be generally underestimated. The EC should address the quality of recyclates by fostering common technical standards for secondary materials, which are to be set in collaboration with producers as recycling needs to be increased by quantity but also quality to close the loop. Incentives need to be developed for the use of recyclable products as well as the use of recyclates. UBA welcomes that the EC plans to assess rules on safe and high-quality recycled material content for several product groups like packaging, construction materials, batteries and vehicles.

Make extended producer responsibility fit for e-commerce: In times of global e-commerce, products from third countries enter the EU market which are often found to rarely comply with EU legislation (e.g. without fulfilling extended producer responsibility requirements, products containing substances restricted or banned in the EU). The enforcement authorities are unable to prevent this under current law. To prevent third-country free-riders it is suggested that operators of electronic marketplaces/fulfillment service providers in the EU shall be obliged to check if producers of electrical and electronic equipment, batteries and packaging using their service are properly registered with their products in national producer responsibility registers.[54]

Improving the Industrial Emission Directive (IED): UBA considers the Industrial Emission Directive (IED)[55] as one central instrument to address the strategic objectives of the EGD to mobilize industry for a clean and circular economy, and for the Zero Pollution ambition of the EGD (see chapter 4.1.1). In our opinion, the IED is factually effective and positive in its balance sheet. It is already contributing to the achievement of the SDGs 9, 10, 12 and others. UBA therefore supports improvements in the design and implementation of the IED as e.g. suggested by the evaluation of the IED in 2019, to be considered in the revision of the IED[56].

The IED is also effective in soil and groundwater protection. The precautionary avoidance of soil and groundwater pollution from industrial sites is an effective step towards a sustainable solution to the problem of contaminated sites. Germany has developed a comprehensive methodological toolbox for this purpose and will contribute the criteria and approach into the European process.

In the context of industrial production, it is also key to consider the impacts of European activities outside Europe (see chapter 4.1.3).

Strengthen the interface between chemicals management and circular economy: The Circular Economy action plan addresses the important interface between chemicals management and the circular economy (chemical, product and waste legislation). This concerns solutions for the discharge of pollutants from material cycles and in particular the exclusion of harmful substances from products to avoid contamination of material cycles in order to ensure the achievement of circular economy goals with a high level of protection for human and environment. As stated above, life-cycle assessment approaches taking account of chemical hazards to avoid regrettable substitution should be fostered to replace hazardous substances in products and uses. Further to this, the debate around non-essential uses should be promoted,

[54] See Hermann et al. (2020)
[55] See for details: https://ec.europa.eu/environment/industry/stationary/ied/legislation.htm (accessed 24th of September, 2020)
[56] For the evaluation and a current status of the revision, see: https://ec.europa.eu/environment/industry/stationary/ied/evaluation.htm (accessed 24th of September, 2020)

not at least to implement the necessary sufficiency for the purposes of transformation to a sustainable economy.

4.2.2 Resource efficiency

An absolute decoupling of resource consumption from economic growth and negative environmental impacts is another core element for Europe´s transition until 2050. This implies a reduction of resource use in absolute terms. According to data from the European Central Statistical Office (Eurostat), the raw material consumption (RMC) in the EU has been reduced from 17.5 to 14.0 tons per capita in the period 2009-2017, which corresponds to a reduction of 20 %. In a long-term view, further reductions in RMC are necessary in order to reach a globally just and ecologically more sustainable level of resource use (see also chapter 4.1.3).

The EGD is covering this topic, but without formulating an ambitious and necessary target. Details are only discussed in in the context of building explicitly (see chapter 4.5.2 on this topic). As an example for an ambitious target, the European Resource Efficiency Platform published a manifesto in 2012, in which the platform called on EU to double its resource productivity by 2030 – at least – in order to boost competitiveness of the European industry and maintain a high quality of life for citizens[57].

Besides an absolute reduction of resource use, resource efficiency is a further core element in Europe's transition. In particular material efficiency is essential for a greenhouse-gas neutral economy, as currently demonstrated[58]. The transformation towards greenhouse-gas neutrality will need a considerable investment in infrastructure, which will need a large amount of raw materials, especially metals[59]. Therefore, further development of the highly interlinked policies of climate protection and circular economy should be done using an integrated approach. At least, green technologies should not be evaluated only by their CO_2-reduction potential, but also by the material requirements and further environmental impacts (e.g. land use and emission of pollutants). From our point of view, the following aspects are of importance towards a more sustainable resource use in addition to the current EGD proposals:

Develop a sufficiency perspective for society: The policies based on the EGD should strengthen sufficiency approaches such as remanufacturing, repair, refurbishment and direct reuse[60] among others to foster alternative styles of consumption. In order to raise public awareness and create a culture, which promotes resource competencies in the economy, in public policy, and society in general, these topics need to be embedded in all areas of education.

Further enhance integrated policy approaches: Resource use, and therefore resource policy, is manifold interlinked with several environmental policies but also shows interfaces with various other policy areas. Hence, there is a need for an integrated approach for the individual environmental policies, as defined by nexus approaches[61], as well as a necessity for cooperation across the different policy areas (e.g. education, health, digitalization) to use synergies and

[57] European Resource Efficiency Platform (2012)
[58] Hertwich et al. (2020); Günther, J. et al. (2019)
[59] E.g., Suh et al. (2017)
[60] European Commission (2017b)
[61] A nexus approach assesses interlinkages (synergies and tradeoffs) across sectors and policies and - based on that evidence – promotes integrated management and governance across sectors and scales, see Hoff (2011)

potentials. In this respect, the research agendas and funding within the different policy areas should be aligned to integrated approaches (see also chapter 5.4).

Analyse the integration of resource efficiency across policy levels: For a better integration, e.g. for a consistent and mutually reinforcing resource efficiency policy that builds on each other, there is urgent need to better identify and analyse responsibilities and possible fields of action of the Member States, of the regional authorities and the municipalities with a focus on resource efficiency, need to be better identified and analysed. Thus, policies of the different levels can be better aligned.

4.2.3 Chemicals

The EGD shows how a sustainable use of chemicals is relevant for many areas of environmental und human health, in particular for reaching the Zero Pollution ambition towards a "toxic-free environment" (see chapter 4.1.1) or a circular economy (see chapter 4.2.1). Reaping the full potential of the chemicals sector in a strategy for sustainability will require more than the safety-focused chemicals management as depicted in the EGD so far. In essence, some basic principles deserve more thorough consideration where the required function drives the choice and use of a chemical [62]. It should ensure to minimize the spatial and timely spread of any negative impact from a chemical and it should include finding "non-chemical" alternative solutions wherever they serve the same societal purpose. The EU Chemicals Strategy for Sustainability[63] introduces a toxic-free hierarchy with equal consideration of principles for health and environment protection as well as complementary innovation encouragement on each hierarchy level.

Although there are more sustainability aspects listed in other policy areas of the EGD requiring a sustainable use of chemicals, this is not mentioned explicitly. During the development of future activities, it has to be considered that a sustainable use of chemicals cannot be achieved within the chemicals sector but only by a holistic integration into all relevant sectors. In the context of the EGD, this requires life-cycle based assessment approaches taking account of toxicity, energy needs and resource consumption to be implemented in regulations across sectors (see also chapter 4.2.1).

In general, the EU achieved significant progress in effective regulation of chemicals in the past. However, as shown by the Global Chemicals Outlook II[64] and currently discussed in the Strategic Approach to International Chemicals Management (SAICM) Intersessional Process on a global level, more ambition is needed to achieve the 2020 goal of sound chemicals management (SDG target 12.4). If this goal is not reached, achievement of other chemical-related SDGs is in danger as well (SDGs 3, 6, 11, 13, 14, 15). The same applies to the area of pesticides as indicated by the recent criticism in the EU pesticide policy by the EP resolution of 16 January 2019[65] and the Special Report by the European Court of Auditors[66].

At the same time of being a risk for SDG achievement, reaching many if not most of the SDGs will not be possible without the deliberate use of chemicals, and is affected by the way how we use

[62] Note difference to "desired": required would be any function delivering solutions for "added net sustainability" e.g. by saving resources; ensuring sustainable health; providing clean and renewable energy; sustainable housing, mobility, and transport; minimizing waste; maximizing circularity; etc.
[63] See https://ec.europa.eu/environment/strategy/chemicals-strategy_en (accessed 19th of October, 2020)
[64] UNEP (2019b)
[65] European Parliament (2019)
[66] European Court of Auditors (2020)

chemicals[67]. The EGD announces to improve the situation but remains imprecise. The recommendations below indicate measures to ambitiously underpin the vague propositions of the EGD:

Consistently consider overlaps with other policies: The foreseen activities of the EGD contain important aspects of managing chemicals. It is important to consider overlaps and synergies when developing those different strategies and following action plans of the EC (e.g. Biodiversity, Farm to Fork and Chemicals Strategy, Strategic Approach to Pharmaceuticals in the Environment[68], Pharmaceutical strategy – Timely patient access to affordable medicines[69], building and renovation). Concrete proposals for action plans, partnerships, roadmaps and legislative actions are needed. They should take on board the council conclusion[70], the results from the REFITs and fitness checks of different substance and environmental media related regulations and other relevant documents [71]. It should be noted though, that the fitness checks often only work sector-specific or legislation-specific[72]. Such 'silo checks' do not cross boundaries across sectors, unfortunately, and thus miss out important side-effects or important synergies. So, the development of checks and other documents addressing more than one sector and legislation should be promoted.

For example, the EGD does not explicitly address that the aims of media-oriented frameworks like Water Framework, Birds and Habitats Directives are partly violated by the impact of chemicals in the environment. A better alignment of chemicals legislation with the goals of nature conservation and water and soil legislation, and vice versa, needs to be established.

Orient design, production, and use of chemicals consistently towards sustainability: The regulation of chemicals to minimize risks from the use of chemicals should be supplemented by a framework of legal measures and complementing incentives, promoting sustainable chemistry and a circular economy. One example towards that direction is the framework for community action to achieve the sustainable use of pesticides[73] but this merely covers plant protection products as only one of many chemical applications. More of such a holistic framework is needed for other chemical applications as well. As a basis, science-based, participatory processes like the one currently driven by the International Sustainable Chemistry Collaborative Centre ISC_3[74] should develop principles for a future chemistry and chemicals management ensuring global sustainability with a long-term perspective. As initially sketched out at the outset of this section 4.2.3, such principles should include, for example, identifying required functions of chemicals from a societal perspective, aspects of risk and sustainability management throughout the life-cycle, the interconnection between chemical and environmental legislation and many more.

Strengthen the implementation of Multilateral Environmental Agreements (MEA) in countries outside the EU, by providing and facilitating access to capacity building and targeted funds and by leveraging further sources of financing.

[67] Inter-Organization Programme for the sound Management of Chemicals (2018); UNEP (2019a,b)
[68] European Commission (2019e)
[69] A roadmap of the process can be found at: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12421-Pharmaceutical-Strategy-Timely-patient-access-to-affordable-medicines (Accessed 15th of September, 2020)
[70] Council of the European Union (2019)
[71] European Court of Auditors (2020)
[72] The fitness check of the chemicals legislation is a positive exception in this respect
[73] European Commission (2009/128/EC)
[74] https://www.isc3.org/en/about-isc3/sustainable-chemistry.html

4.3 Sustainable food systems - land, water, oceans and biodiversity

The EGD tackles a set of deeply transformative policies. One of the areas that needs such a deep transformation is agriculture and the way we use our land, water and oceans for food and other productions and how this affects air, water, soil and human health. It is one of the main drivers of biodiversity loss, and thus relevant for SDG 15 (specifically target 15.3 on land degradation). Sustainable agricultural practices are a key element to achieve SDG target 2.4. In addition, unsustainable agriculture, as it is still widely performed across Europe is an important emitter of greenhouse gases (SDG 13). Although agricultural land use and also fisheries are heavily subsidized production activities in Europe, jobs in these areas are getting continuously lost and livelihoods of the rural population across Europe are declining. Thus, activities in this action field must include social and employment aspects. The EU is a central actor in these areas – via the Common Agricultural and Fisheries Policies, but also via a number of highly ambitious, yet still poorly implemented directives, e.g. the water framework directive.

4.3.1 Food and agriculture

The EGD proposed the Farm to Fork Strategy as a means to reach the ambitious transformation goals towards sustainable agricultural land use. UBA appreciates the fact that this strategy is designed as a food system approach and, therefore, addresses production as well as consumption (relevant for SDG targets 2.4 and 12.3, see also chapter 4.1.1) among other components. The strategy adequately states environmental problems related to the food system's activities and encompasses a range of political targets and actions, which are reasonable and ambitious and is therefore overall gratifying.

The Farm to Fork Strategy includes a set of precise environmental targets for 2030, including the reduction of the overall use and risk of chemical pesticides, the reduction of nutrient losses and use of fertilizers, the reduction of antimicrobials for farmed animals and support of rising the share of land under organic farming and increase in organic aquaculture[75].

From an UBA point of view there is no reasonable justification for not including a quantified target for the GHG reduction in the food system. A concrete reduction target helps to assess the adequacy of measures.

However, the definition of precise targets is only the first step. As a next step, the Farm to Fork Strategy includes several measures to reach those targets, such as new legislations resp. revision of existing legislation. The EC will for example revise the Sustainable Use of Pesticides Directive. After that, the Directive still has to be implemented in the different Member States. It is therefore an ambitious schedule to reach the environmental targets in 2030.

4.3.1.1 Common Agricultural Policy

The Common Agricultural Policy (CAP) is a key element in European land use policy and a major driver of environmental degradation in Europe[76]. The EC will adopt recommendations to each Member State addressing the nine specific objectives of the CAP 2020 (three of them concerning the environment) and is responsible for approving the national CAP strategic plans. However due to the extended options of Member States to design the national CAP measures, the final outcome is not predictable at the moment and it is unsure whether the implementation in the Member States sufficiently contribute to the European environmental targets.

[75] European Commission (2020c)
[76] See for example Pe'er et al. (2014, 2019) and Scown et al. (2020)

CAP money for climate action only for additional measures: The plans of the EC regarding the reform of the CAP foresee that the CAP is supposed to contribute with 40% of the money to climate action. This assumption includes a flat rate of 40% of pillar one direct payments without providing any specific measures for climate action. The money will, therefore, not support any additional measures and not even already existing measures. UBA recommends not to use any flat rate regulations but only to concede financially the additional efforts for climate action measures that also do not counteract other SDGs.

Heat waves, heavy rain or water shortage have a rising impact on agriculture and forestry systems throughout Europe. Because of this high dependence on weather and climate, it is particularly important for the area of agriculture to know the consequences of climate change and prepare for them in a timely manner. Therefore, the CAP needs to strengthen the resilience of the agriculture sector against climate change. This should include primarily prevention measures (e.g. climate adapted crops, adapted management methods). Besides, it is necessary that Member States are prepared to cope with extreme weather events (e.g. drouths, heavy rainfall).

Align CAP national strategic plan reviews with EGD ambition and set ambitious minimum standards (for conditionality and eco-schemes): The EU wants to make sure that the national strategic plans as part of the CAP 2020 will be in line with the EGD and the Farm to Fork Strategy. So far, it is not clear at all how the review process of the national strategic plans will work and which criteria are necessary in order to pass the review. There is a risk that the EU will not have the capacity and time to go into the details of each strategic plan and enforce an ambitious implementation. UBA suggests putting into place a transparent process and a strict review process that covers all aspects of the EGD (e.g. reductions in greenhouse gas emissions, nutrients in water bodies and pesticide use) to meet the formulated increased level of ambition concerning environmental performance. Unfortunately, it is not foreseen to define this increased level of ambition at the European level. It is, therefore, up to the Member States to define their own ambitions. In the past, situations like this did not encourage ambitious environmental measures. There is a major risk that it will lead to a race to the bottom. We encourage to set ambitious environmental minimum standards (for conditionality and eco-schemes) at the European level.

Earmark an increasing budget for eco-schemes: The Farm to Fork Strategy suggests to use eco-schemes as a measure in the first pillar for a better environmental performance: The eco-schemes have indeed the potential to reward a more environmentally friendly management. The Member States will have to offer them and the farmers can volunteer to participate. We recommend to earmark an increasing budget of the first pillar for the eco-schemes.

4.3.1.2 Soil and land degradation

Include land degradation neutrality in all land-use measures: The SDG target 15.3 on land degradation neutrality (LDN) is also not properly reflected in the EGD. Soil is going to be a crucial topic, given the pressure lying on it already as resource to produce food, fodder and fiber and the additional pressure that will be lying on it until 2030 and 2050 (e.g. due to urban sprawl and its increasing role in storing carbon). This includes in particular the review and enlargement of the Soil Thematic Strategy with new challenges since there inauguration as climate change impacts on soil and land. Diverse measures can support the target and need to be reflected in future land use policies, and thus in further shaping the EGD:

- Establish the narrative 'sustainable use of soil' that includes e.g. less plastics used in agriculture, less or none pesticides and raise awareness that soil is one of the most crucial resources in Europe.
- Reflect the importance of soil for climate policy in soil policy and sustainable soil management. Especially, soil carbon sequestration[77] is of central interest in this regard. Collateral adverse effects like nutrient surplus should be avoided, so primarily the focus should be on humus stability in soils. Strengthening the use of erosion prevention measures, the implementation of an erosion event registry and other measures that prevent harmful changes to the soil are needed to achieve site-specific appropriate humus contents (including the implementation of a humus balance until 2030 or if possible, earlier). A climate smart agriculture that supports carbon sequestration in soils are important measures in this context.
- Using digitalization for a better soil use, soil state, soil monitoring: Focusing on data harmonization, or if not possible, use Big Data standards, cloud and cube computing[78],
- Other measurements would be payments for measurements for a better environmental and climate protection in agriculture like paludiculture on peat soils, or CO_2 sequestration in general, and creating/expanding markets for legumes and grass-clover leys. It seems not clear if the 'Just Transition Fund' will be an effective means to help LDN target implementation. Anyway, it seems to be a very good idea to pushing forward the concept of 'profits with purpose' and to mainstream it.

To foster soil regeneration, all in all, we judge the recommendations of the European Court of Auditors (ECA) as a reasonable step to take immediate action (measures). The ECA has recommended to the EC to develop data sets for desertification and land degradation, at best, as easy-to-handle interactive maps until the end of 12/2021 (recommendation 1b), and to judge the necessity of better EU-wide regulations for sustainable soil use until the end of 06/2021 (recommendation 2)[79].

4.3.1.3 Sustainable use of pesticides and medicinal products

Another, highly relevant issue is to end the unsustainable and harmful use of pesticides in agriculture, as well as of biocides and of medicinal products. This is also relevant in the context of the Zero Pollution ambition (see 4.2.2), the Biodiversity Strategy (see 4.3.3) and the sustainable use of chemicals in general (see 4.2.3), yet as it is also a major topic in the Farm to Fork Strategy, we address the topic here separately to add the specific perspectives on these substances.

Need to define appropriate protection goals for non-target species, biodiversity and the ecosystems in order to correctly assess the risks of pesticide use: The definition of specific protection goals for non-target species, biodiversity and the ecosystems sets the baseline against which we assess the impact of pesticides on the environment. The first step to tackle the dramatic loss of biodiversity is to target in the risk assessment of pesticides the long-term persistence of species in agricultural landscapes and to mitigate direct and indirect effects of pesticides on biodiversity. The support of diverse species communities in agricultural fields will also enable the provision of precious ecosystem services in the long term and ensure a

[77] The storage of carbon by the accumulation of organic matter in soils
[78] For example, the decision support system platform LANDSUPPORT (https://www.landsupport.eu/dss-platform/) is a suitable tool (Accessed 21st of September, 2020)
[79] European Court of Auditors (2018)

sustainable agriculture. It is therefore essential that the definition of Specific Protection Goals in the risk regulation of pesticides will not only cover the short-term provision of ecosystem services for mankind, since this would hinder the goals of overarching transformation strategies under the umbrella of the EGD. We strongly support the view in the EGD that all EU policies should contribute to preserving and restoring Europe's natural capital in a streamlined approach.

Need to install concrete, ambitious and effective measures to establish a modern, "sustainable" use of pesticides: One of the key actions of the EGD under the Farm to Fork Strategy are "*measures, including legislative, to significantly reduce the use and risk of chemical pesticides*, …"[80]. This is, indeed, one of the crucial elements in designing a modern and sustainable food system for Europe. The trade-off to be solved in this respect is obvious, but political action urgently needed. The intense use of chemical pesticides as established during the past decades contributed to enable the high and stable yields of good quality yet affordable agricultural products that consumers are taking for granted today. However, the detrimental ecological consequences (e.g. loss of biodiversity in the agricultural landscapes observable as declining bird and insect populations, contamination of ground and surface waters by pesticide residues) of this chemical-dependent agriculture all across Europe became a matter of concern and debate only in recent years since the scientific evidence was no longer neglectable. Therefore, the Farm to Fork Strategy is expected to install concrete, ambitious and effective measures to establish a modern, "sustainable" use of pesticides which is indeed worth this phrase. In designing such measures, the EC is asked to explicitly assure coherence with the aims and measures already introduced by the "Sustainable use directive".[81] Article 14 of this directive is sufficiently explicit here in stating: "*Member States shall take all necessary measures to promote low pesticide-input pest management, giving wherever possible priority to non-chemical methods… Low pesticide-input pest management includes integrated pest management as well as organic farming*…". However, implementation of the "Sustainable use directive" in EU Member States is still largely deficient. This was concluded by a report of the EC already in 2017[82] as well as recently by the European Court of Auditors[83]. The Farm to Fork Strategy is, therefore, expected to effectively bring forward the expansion of organic farming as well as the implementation of an ambitious integrated pest management (IPM) in all Member States. It is, however, of uppermost importance that the principal measures are largely harmonized and equally applicable in all Member States in order to assure a fair competitive situation for farmers across Europe. As announced by the EC in the EGD, *"the Common Agricultural Policy (…) will be instrumental in implementing the Farm to Fork strategy*". Hence, in designing the new CAP period 2021-2027, the EC is asked to implement existing legal requirements laid down in the "Sustainable use directive", and especially considering recital 35 of regulation 1107/2009/EC[84]. The latter explicitly requires to consider "*the principles of integrated pest management, including good plant protection practice and non-chemical methods of plant protection and pest and crop management*" under the CAP payment schemes.

Increase research and development to support the sustainable use of pesticides: The necessary transformative process to achieve a "sustainable" use of pesticides will need profound

[80] European Commission (2019a)
[81] European Parliament & Council of the European Union (2009a)
[82] European Commission (2009)
[83] European Court of Auditors (2020)
[84] European Parliament & Council of the European Union (2009b)

public support for research and development which has to be fostered by the Farm to Fork Strategy, too. Relevant research and development topics include amongst others: non-chemical alternatives, low-risk pesticides, digital farming tools and breeding of resistant/robust crop varieties. Finally, robust indicators have to be established to tightly observe the implementation success of the pesticide-related measures under the Farm to Fork Strategy. These indicators should be harmonized across Member States and should go beyond basic statistics (e.g. overall selling volumes of pesticides per country) but include scientifically robust indicators for the "toxic pressure" on the environment, too. In this respect, the definition of strict (however, realistic) "*risk related emission reduction targets"* for chemical pesticides in Europe is welcomed, in order to stimulate the necessary transformative changes and thus address the Zero Pollution ambition in this field (see chapter 4.2.1). The overall reduction in the amount of pesticide use has however to be accompanied by specific measures, e.g. verifiable definition of "necessary minimum" pesticide amount in culture. More detailed recommendations on this topic can be found in the UBA position paper "5-point program for sustainable plant protection"[85].

Prudent and sustainable use of medicinal products for veterinary use: Not only the use of pesticides in agriculture, but also the use of medicinal products contributes to pollution of soil, surface water, groundwater and to biodiversity loss. The release of veterinary medicines to the environment results from various sources such as spreading of manure on soil, grazing livestock and aquaculture. Besides antimicrobials, which are outlined in the Farm to Fork Strategy, also parasiticides, hormones etc. are substances of potential environmental concern. Solely the intense use of medicinal products enables the industrial livestock production which dominates animal farming in Europe. A consequent transformation towards a sustainable agricultural practice will contribute to better animal health and will therefore reduce the need for medication.

Therefore, the Farm to Fork Strategy should not only focus on the risk of antimicrobial resistance due to the excessive use of antimicrobials. The strategy's implementation should also consider measures to reduce the total use of pharmaceuticals by promoting a prudent use of medicinal products in general and by improving animal health due to transition of livestock production, as e.g. organic farming. This will also help to achieve the Zero Pollution ambition (see chapter 4.1.1).

4.3.1.4 Food system and consumption

Finally, additional actions will be needed in order to achieve the goals stated in the EGD in the area of the food system and consumption patterns. The share of animal-based food in global food systems is most likely a key issue in achieving several SDGs. In view of the upcoming increase in world population, a worldwide adoption of diets rich in plant-based foodstuffs is from our point of view a prerequisite for achieving zero hunger (SDG 2) and good health (SDG 3) within Planetary Boundaries[86], combat climate change (SDG 13), and a way of global land use that leaves space for intact habitats and life on Earth (SDG 15). This is a transformation process, which includes a stepwise reduction of livestock and a shift in consumption patterns that needs political commitment and clarity. The EGD and the Farm to Fork Strategy mentions briefly that a move towards more plant-based diets would improve health and environmental footprints, but is very reluctant regarding a clear announcement of the necessity and of an existing political will

[85] Frische et al. (2016)
[86] See for example Campbell et al. (2017)

to reduce the consumption and production of meat and dairy. Thus, it omits concrete targets and measurements to achieve this specific aspect of sustainable and healthy diets (see recommendation in chapter 4.1.2). Instead, according to the strategy, on the productions side the most sustainable, carbon-efficient methods of livestock production shall be supported within the EU promotion programme for agricultural products. In our view, this is not enough to expedite the needed profound change.

A central finding of our research on the transformation of food systems is the necessity of a supportive environment for niches that create new sustainable products. Niches develop and improve sustainable innovations, which are needed to build sustainable systems. Secondly, it is equally important to organize a so called "exnovation" process that ensures the phasing out of non-sustainable practices, products, technologies, etc. Otherwise, it is likely that sustainable innovations only complement the existing non-sustainable entities and, consequentially, the problem subsists.

Strengthen the role of politics in introducing sustainable alternatives: In deviation from established innovation-oriented politics, UBA proposes to distinguish between innovations that stabilize the current food system while only insufficiently improving the system on the one hand, and innovations that have the potential to make a substantial difference on the other hand. Reducing the carbon footprint of meat slightly should not be treated as equally transformative as, for instance, replacement by plant-based protein sources. However, further research is needed to put this distinction into practice.

One important remark here is, that innovations are to be understood in a broad sense, encompassing (*social) practices* like plant-based diets, new *forms of organization* like food policy councils, *business initiatives*, *products* like insect-based foodstuffs, *knowledge and capabilities* like preparing tasty plant-based meals for canteens and so on. The Farm to Fork Strategy focusses much on scientific and technological innovations. According to our state of knowledge, this is not enough to initiate the needed transition in the society at whole. Politics should improve the conditions for the formation of such niches, select those with great sustainability potential and support their mainstreaming.

Take ambitious steps in phasing out non-sustainable entities: Transformation processes entail an end for some formerly prevalent entities (practices, products, processes, values etc.). The food system's transition has to end several common practices, e.g. lose-lose diets, which are unhealthy and have a great negative impact on the environment; ways of livestock farming that are not species-appropriate and the sheer volume of the production; nutrient overloads, narrow rotations in cropping systems, pesticide application schemes that unduly deplete biodiversity and some more.

The elaboration of specific exnovation strategies should allow the participation of a wide range of actors in high quality participation processes. This seems promising with regard to minimizing resistance from the public and livestock sector and address the changes in employment in the transition. Since a prior change in public discourses can improve the conditions for such politics considerably, political commitment and a clear communication about issues that are to be phased out is important. The Farm to Fork Strategy is an excellent chance to do that.

To conclude, the Farm to Fork Strategy as one main strategy of the EGD addresses sensible aims – but many aims stay very vague. There is also a lack of concrete measures to achieve these aims, although these measures are well known. This is especially true for the CAP, which could potentially help to transform the agricultural sector, if the conditionalities for subsidies towards reducing threads to the environment are strengthened (see above). A pathway to transition of land-use, that has to de-carbonize, to de-meat, to de-dairy, to de-pesticide and de-seal soils will not be started then until further reform of the CAP in the future. On the other hand, the Farm to Fork Strategy offers chances to initiate the needed transformation process of the food system.

4.3.2 Water (and oceans)

The EGD does not expressively enough emphasize ecological boundaries for human activities which are already described or demanded within existent European legislation (Acquis Communautaire). This is particularly obvious for the Water Framework Directive, the Marine Strategy Framework Directive and Directives on Nature Protection. These should also build the frame for additional environmental protection measures based on the EGD in order to reach the targets of life in and below water (SDG 6 and 14). For the oceans the GSDR explicitly outlines the importance the seas should have as climate change, in combination with already ongoing unsustainable activities (e.g., fisheries, resource extraction, transport) will have further impacts on them and on the services they provide.

Consider the effects of other EGD measures on water quality: Some EGD measures in other areas might have opposing effects on water bodies and the quality of water. For example, it needs to be avoided that the increase of capacity of inland waterways leads to the more destruction of natural structures of rivers. Carbon capture and storage (CCS), may lead to the wide spread of pollutants on soil, water and oceans or unintended release of CO_2 and hazardous substances from the storage back to the atmosphere. Ambitious environmental standards for CCS, a comprehensive underlying concept for storage safety and an adequate long-term monitoring is needed for CCS activities such those developed within OSPAR and the London Protocol. A negative example of a so-called circular economy measure from the near past is the Water-Reuse-Regulation which only sets very low common minimum requirements and delegates the risk management to the Member States. For any circular economy, it is very important to find solutions to avoid that pollutants concentrate in the circle. There must be pathways to remove unwanted substances in order to eliminate and control them. As a consequence, such measures need to ensure integrative approaches that consider all aspects of the environment.

Improve waste water management: Treatment of waste water is essential for SDG 6 ("Clean Water"). The EGD should specify measures in the field of waste water management. Particular attention should be paid to more extensive waste water treatment to reduce micropollutants, micro plastics and pathogens and the reduction of inadequately treated precipitation water from separated sewer systems rainwater as well as overflows and from mixed waste water deductions to improve water quality.

Complement the EGD with a European Blue Deal: The EGD is still focused in major parts on the green and blue economy. This is especially true for the biggest part of Europe, the coastal and marine waters, which are not addressed adequately. For example, Deep Sea Mining is an upcoming topic where various Member States are involved. It is of utmost importance to ensure that we get agreed ambitious environmental standards before such activities start. Otherwise, there is a great risk to loose biodiversity, especially in the sensitive deep sea environment at large scale.

UBA proposes to complement the current plans of the EGD with measures on strengthening the resilience of these waters because protection of the seas is also needed to protect them, and maintain their buffer function to climate change. Protection of the seas should be seen broader than nature protection. In addition, inputs of nutrients, hazardous substances and marine litter via all relevant pathways have to be reduced substantially. To achieve this, ambitious reduction goals should be part of the measures developed from the EGD. Consequently, the EGD implementation should be supported by a European Blue Deal (EBD) or should contain it.

4.3.3 Biodiversity

As safeguarding biodiversity in terms of endangered species and habitat conservation is not a main action field of UBA itself, we will not go into detail on the ambitions of the EGD on biodiversity. But given the alarming loss of biodiversity and its services and the continuous loss of natural capital as one consequence[87], it is obvious that a sound EGD needs to have a strong biodiversity component. The recently released new European Biodiversity Strategy for 2030[88], complementing the Farm to Fork Strategy, is thus of major importance. It acknowledges that it is not sufficient to halt biodiversity loss, but rather to take active steps in restoring it – its link to current land and sea use (see before) is therefore crucial and welcomed. A focus accompanying its implementation must be, as outlined in 4.3, on defining specific protection goals for the environment talking biodiversity into account and on changing the CAP, as intensive agriculture is one main current driver of biodiversity loss in Europe[89]. We strongly support the view in the EGD that all EU policies should contribute to preserving and restoring Europe's natural capital in a streamlined approach. Also, the impacts of chemicals in general and pesticides in particular on biodiversity have to be decidedly minimized. In addition, Europe has a special international responsibility due its ecological footprint outside Europe and should therefore support an ambitious new Global Biodiversity Framework of the Convention on Biological Diversity – supposed to be adopted at its Conference of the Parties in May 2021.

4.4 Climate, energy and decarbonisation

With the EGD, the EC is clearly committed to ambitious climate protection via mitigation measures. The pathway towards climate neutrality in 2050 has to be taken with resolute steps though, using the dynamics possible that come from the restart of the European economy after the Sars-CoV-2 crisis.

It is also necessary to protect Europe from the risks of climate change and to strengthen the resilience of natural, social and economic systems. This contributes directly to SDG target 13.1. In particular, the EC needs to strengthen the dimensions of ensuring climate compatibility, building resilience, prevention and precaution. This also addresses SDG target 13.2 and 13.3.

4.4.1 Decarbonisation and energy

Decarbonisation and energy supply are key areas of the EGD with the central element of the whole EGD to reach climate neutrality in Europe by 2050 and to strengthen the EU greenhouse gas reduction target (nationally determined contribution, NDC) under the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC)[90] to at least 50% and

[87] See for example Diaz et al. (2019, 2020), EEA (2020)
[88] European Commission (2020d)
[89] European Environment Agency (2020)
[90] Document FCCC/CP/2015/10/Add.1: Dec 1/CP.21 – Adoption of the Paris Agreement

towards 55% compared to 1990 levels[91]. While for determining the climate neutrality objective, a draft 'climate law' is currently under review, the revised NDC target is planned to be adopted in December 2020, as committed by the EU under the UNFCCC. Now, whereas the process of setting more stringent guardrails for European climate action is welcome, the evaluation of the 2030 NDC appears rather cumbersome. By contrast, in the light of IPCC and other scientific analyses[92], and considering the economic implications of the Sars-CoV-2 pandemic, the urgency of meaningful climate action and the EU's global leadership role, a reasonable greenhouse-gas emission reduction target for the EU in 2030 should be at least minus 60 percent[93].

In order to feed in an up-dated 2030 climate target and to set a path towards climate neutrality in 2050, aiming at a reasonable contribution to the Paris Agreement and the SDG 12, the Commission proposes to revise a set of regulations and new legislation, respectively. These policies need to be carefully developed in a complementary way to serve the overarching climate objectives, but also not to harm other targets of the EGD in other areas, e.g. by ensuring a just transition, and by not harming biodiversity via unsustainable changes in land-use practices. While UBA welcomes the draft European Climate Law, we also see room for further improvement and subsequent actions[94].

Provide a clear definition of climate neutrality and legal preconditions to achieve it: First of all, European legislation should provide a plain definition for climate and for greenhouse gas neutrality (net-zero emissions) as a balance of emissions and sinks. Secondly European legislation should determine the EUs commitment to achieve climate neutrality by 2050 on EU territory at the latest, and additionally net negative emissions in the second half of the century. Finally, European legislation should include the objective of a fully decarbonised energy system grounded on 100% energy supply of renewable energies by 2050.

Emphasize European leadership in climate protection globally: In order to back the ambition of the EGD for Europe to be a frontrunner in climate protection globally, the climate law should – in addition - highlight the EUs commitment to minimize cumulative emissions in order to reduce the risk of overshooting the warming limit as defined in the Paris Agreement. In this context, the EU should ensure that it will use the market mechanisms of Article 6 Paris Agreement only to support an increase in global climate ambition, but not to help achieving domestic European climate targets.

Strengthen the interlinkages between climate and other policies: All sectors addressed in the EGD need to deliver their share in emission reductions in the coming decades. Accordingly, the EC will need to initiate revisions of related sectoral legislation, e.g. emissions trading, effort sharing, rules for buildings and traffic (see chapter 4.5), cross-border development of energy and railway infrastructure and land use (incl. the CAP and the management of forest and peatlands as carbon sinks, see chapter 4.3.1), in order to bring it in line with the aforementioned targets.

Carbon border adjustment measure: With the prospect of rising CO_2 prices as a result of a tightening of the cap in the European Emissions Trading Scheme (EU ETS) as part of the EGD, the issue of so called "carbon leakage" is once again gaining increasing political importance for

[91] In her speech on the State of the Union on the 16th of September, 2020, President of the Commission Ursula von der Leyen proposed a target of 55%.
[92] See for example: Intergovernmental Panel on Climate Change (2018), United Nations Environment Programme (2019c), Hainsch et al. (2020). Wachsmuth et al (2019)
[93] Burger et al. (2020a)
[94] For the official UBA submission in the consultation on the Climate Law, see: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12108-Climate-Law/feedback?p_id=6229246&page=21 (Feedback no 217)

European energy-intensive industries. Since the national climate protection commitments (NDCs) of relevant trading partners pursue very different levels of ambition and many large economies have no or only very low CO_2 prices, it is likely that competing products from abroad will potentially be subject to a significantly lower CO_2 cost burden than in the EU in the coming decade. In order to enable effective CO_2 pricing in the European industry as part of a decarbonisation strategy while protecting against carbon leakage, the European Commission plans to introduce a Carbon border adjustment measure (CBAM) as part of the EGD. Even if, only few details are available about the upcoming Commission proposal, UBA welcomes this initiative as an integral part of a European decarbonisation strategy.

Clear roadmap for decarbonisation of industries needed: From our perspective, EU should focus centrally on the conversion of industrial processes to renewable energy sources as well as fundamental conversions to GHG-free processes. In this context, not only CO_2 emissions should be considered, but also other GHG (methane, PFC), cross-media aspects, plant safety and the effects of decarbonisation on the upstream chains of raw materials and energy sources used. Steel production is one essential branch of industries in Europe to address[95], but there is a need to promote the conversion to CO_2-free or low CO_2 production processes also in other industries, e.g. the cement industry.

In this context, the EGD explicitly refers to the recommendations published by the High-Level Group on Energy Intensive Industries. In addition to electrification with renewable energy and process conversions, this Group strongly focuses on biomass use, carbon capture and use (CCU) and carbon capture and storage (CCS). In our view, these latter measures should be secondary options at best due to sustainability considerations (competition for space, limited capacities, long-term security).

Promote climate-neutral products: Initiatives to promote lead markets for climate-neutral and recycling-oriented products in energy-intensive industries will be announced from 2020 onwards. From an UBA perspective, this is necessary so that low-carbon products, which may have higher production costs in the foreseeable future, can establish themselves on the market.

4.4.2 Climate adaptation

UBA generally welcomes the EGD's approach to adaptation to the impacts of climate change. There is now a clear commitment to update the 2013's EU strategy on adaptation to climate change[96]. In particular, the EC should strengthen now the areas of climate change adaptation measures, resilience building, disaster prevention and preparedness. Key levers of the EC as presented in the EGD are a) better availability of data and risk assessment tools, especially for investors, insurance companies, cities and municipalities as well as citizens and b) increased mobilization of public and private funds for adaptation measures. In further developing the measures, the following points should be considered.

Strengthen climate adaptation investments: The commitment to spend at least 25% of the future EU budget on climate-related measures is a good sign. But it should urgently be accompanied with hard targets and specific earmarking on adaptation and resilience. A good model could be the new sustainable finance taxonomy[97]. The taxonomy sets clear specifications for climate-related investments by the private sector, but needs to be developed further (see

[95] Cf. announcement of a proposal "CO_2-free steel industry 2030" in the Annex of EGD, (European Commission 2019b)
[96] see for details https://ec.europa.eu/clima/policies/adaptation/what_en (accessed 18th August, 2020)
[97] See https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en (accessed 18th of August, 2020)

5.2). Now, there is a need to learn from that approach and apply a similar taxonomy on the use of the EU budget. This was already announced, but needs to be fulfilled with clear specifications. With a good taxonomy for the public sector, it will be possible to explicitly track EU spending and make clear, how public money is used to raise Europe's resilience and foster adaptation measure. This would support to fulfill investments in adaptation measures (esp. SDG target 13.3).

Mainstreaming adaptation measures across sectors: Concerning climate change adaptation, the focus of the EC and the updated EU adaptation strategy should be on ambitious mainstreaming in key policies on the European level. This means integration of adaptation and climate resilience into ongoing European policy processes (especially agriculture, marine protection, infrastructure, disaster risk reduction, trade relations as well as migration prevention). Here, the EGD could open up more opportunities for the cross-policy integration of climate resilience and sustainable practices (technical and behavioral changes). For example, climate proofing schemes need to be obligatory in infrastructure investments, the further development of the CAP needs to foster climate resilience (see chapter 4.3.1) and the announced framework for national tax reforms needs to address physical climate risks as well (see chapter 5.2).

4.5 Urban and peri-urban development

Urban and peri-urban development play an important role as a key area towards a sustainable transition[98]. In the SDGs, this is mainly addressed in SDG 11, but of course it is cross-linked to many other goals. The EGD also addresses the field, putting the focus on the economically important sectors of mobility and building.

4.5.1 Mobility

In principle, the EGD is a positive development from a sustainable transport perspective. Many aspects important for sustainable mobility and the achievement of climate protection goals in transport have been identified. For example, the abolition of environmentally harmful transport subsidies or the introduction of effective road pricing are key elements in this respect. The earlier review of the CO_2-standards for light vehicles as proposed in the EGD is also important to reduce the climate impact of transport and to align measures with climate targets for the EU or its Member States. Thinking further though, sustainable transport systems should be based on four fields of action:

- Avoidance of unnecessary traffic: The primary goal is not to stop traffic entirely, but rather to shorten transport routes, e.g. by changing settlement and production structures, or to increase occupation rate per vehicle.
- Shifting traffic as far as possible to more environmentally friendly modes of transport: Cars, trucks and airplanes should be used less; rail, bus and ship should be used more; walking, cycling and public transport should be promoted more strongly and linked better (SDG target 11.2).
- Increasing energy efficiency in transport.
- Use of post-fossil, greenhouse gas-neutral fuels and electricity produced from renewable energies: For reasons of resource and cost-efficient transport design using alternative fuels

[98] Group of Independent Scientists (2019)

and propulsion systems, it is necessary to reduce the energy demand of the entire sector (support of SDG target 11.6).

Based on these fields, the EGD measures need further development in the following points:

Acting beyond technological fixes – address traffic avoidance: The EGD, on the contrary to these fields, is seeking the main solution in technology: e.g. smart mobility and alternative fuels. Especially in the transport sector, however, the strategy of sufficiency must also be named and strengthened. Only with less traffic, will we achieve the greenhouse gas reduction targets in air traffic, for example. Traffic avoidance should, therefore, be added to the EGD.

The EGD mentions the role of alternative fuels, but details are currently lacking. When developing them, they should look carefully into meeting the criteria of sustainability in order to avoid bad outcomes of good intentions, like in earlier attempts to foster biofuel use[99].

Similarly, automation and digitalization are named which can certainly contribute to sustainable mobility (especially if they help to avoid traffic), but they are not universal healers. For example, automated/autonomous driving in cars can lead to more traffic. These risks must be clearly identified and framework conditions must be designed in such a way that the opportunities can be exploited.

Inclusion of car traffic into emissions trading is no silver bullet: The introduction of emissions trading for small emitters from the transport or household sector has been proposed by the European Commission recently[100]. However, the incentive effect of a carbon price in these sectors is limited, so it cannot be a substitute for ambitious sector specific instruments such as fuel efficiency standards for cars and vans. Instead of including the transport and building sectors into the existing EU ETS, a separate emissions trading system for fuels seems favourable and less risky at least for the beginning. In the long term, the two systems could be linked[101].

4.5.2 Building

Under the heading "Building and renovating in an energy and resource efficient way", the EGD aims to at least double the current annual renovation rate of the building stock. This goal is absolutely necessary. So far, the right incentives have been missing. The EGD suggests to improve the enforcement of existing instruments, to scrutinize the possibilities of adapting current instruments and to create new incentives. The plan includes social fairness as an equal goal to energy saving. UBA recommends also to address the following aspects to ensure a successful implementation.

Aim for healthy buildings – new directive for indoor air: Building and renovating with high energy standards leads to tight building envelopes that require both adequate ventilation and low-emission building materials. UBA thinks that the legislation related to the energy performance of buildings needs to be supported by (or updated to cover also) binding minimum standards for healthy indoor air. Recently, comparable standards have been successfully put up for drinking water under the Drinking Water Directive. Without adequate minimum standards for ventilation and low-emission products, tight building envelopes can lead to both severe

[99] For more details, see Purr et al. (2016), and Kasten et al. (2019)
[100] European Commission 2020i
[101] For more detail, see Burger et al. (2020a)

health problems, as well as lacking acceptance by the citizens. Suitable harmonized test methods[102] have become available under the Construction Products Regulation[103]. A good way to make the needed benchmarks available would be to draft a new directive for indoor air.

Address the building product level: The EGD aims at ensuring that the Construction Products Regulation provides for new and renovated buildings at all stages in line with the needs of the circular economy, resource efficiency, and sustainable chemistry (see sections 4.2.1, 4.2.2 and 4.2.3). This goal can only be reached, when there are binding requirements at product level across the EU (provided by the Construction Products Regulation or elsewhere), which should be developed accordingly. In practice, it has so far turned out to be very cumbersome to address circular economy aspects at the building level, when adequate product information is not available on the market. So far, the Construction Products Regulation has not been a helpful tool for providing any of the environmental product information requested by the Member States.[104]

4.6 Digitalization and sustainability

The growing role of digitalization for sustainable development needs to be considered urgently. Making the ongoing digital transformation work for the transformation towards sustainability is crucial in the coming decade, and thus the digital agenda of the EU ("A Europe fit for the digital Age") needs to be aligned with the needs of the EGD - and the SDGs in general.

In the EGD, the role of digitalization is pronounced as "meta-enabler" of transformation, while the EU will further promote and invest in the necessary digital transformation and tools. Therefore, the EGD needs to be highly intertwined with the renewed EU Digital Strategy, launched in February 2020, including a strategy on artificial intelligence and an EU Data strategy.

The ambition of the EGD is to highlight the deep inter-connectivity of the ongoing digital transformation with the need to further shape the EU policy design and innovation agenda to create better opportunities for sustainable solutions. There are a number of fields where such a connection is needed, e.g. in reducing the climate footprint of Information and Communications Technology (ICT), the use of digital technologies in reaching the objectives of the EGD (e.g., in energy systems, precision farming, smart mobility and transport), and boosting the EU's ability to predict and manage environmental disasters.

Yet, the EGD and associated strategic frameworks on digitalization focus primarily on its economic and technological potentials to solve complex, systemic challenges of the needed transformation. While actions in these areas are needed in all action fields addressed in this chapter (e.g., for efficiency gains in industry, or a reduction of use of chemicals in agriculture via precision farming applications), additional challenges that should be tackled focus on the integration across the strategies related to the EGD, and the socio-cultural dimension of digitalization and transition.

Linking digitalization and sustainability across EGD related strategies: The EGD announces a number of additional strategies and policy frameworks as discussed in this chapter (e.g., the Industry Strategy and the Farm to Fork Strategy). It will be important to further integrate the transformative power of digitalization in them, without neglecting the potential trade-offs that come with it (e.g., rebound effects in energy use and mobility, see for example chapter 5.5.1).

[102] e.g. Deutsches Institut für Normung (2018)
[103] European Commission (2011)
[104] See for example General Court of the European Union (2019)

Create spaces to reflect on the environmental impacts and socio-cultural dimensions of digitalization: Beside the positive vision based on technological optimism, the already ongoing digital transformation with its many impacts and risks to human well-being and the environment is not well pronounced in the EGD yet. The ongoing digital transformation is already reshaping the economic, social, and political fabrics of the EU in such a way, that a successful policy strategy needs to be more anticipative of such deep-rooted changes. The disruptive nature of digitalization lies not in its technological purpose but in its social-cultural-institutional dimensions of societal modernization. Therefore, the EGD accompanied with the new EU Digital Strategy should address digitalization much more as institutional and cultural challenges, especially when it comes to the changing nature of markets and political institutions itself. Therefore, activities should be accompanied by programmes that allow citizens and civil society organizations to reflect the chances and consequences of digitalization, and feed their results back into policy processes - as will be needed for all EGD related transformations (see chapter 6.3).

The "digital metamorphosis of the EU" calls for a new "culture of digitality" that is characterized by new modes of innovation, governance and institutional capacity building, including the re-adjustment of the normative and ethical foundation of society, together with a new approach to improve the digital literacy and fitness for sustainability within EU institution, markets, and civil society (going beyond E-Government). In this context, digitalization is a more widespread and multi-dimensional innovation process, and needs, therefore, new governance structures to deal with the many unexpected system challenges associated with digitalization and sustainability. This will also include the involvement of civil society as a standard in research projects on digitalization in Horizon Europe (see also chapter 6.4).

5 Levers for change

Although the focus of the planned activities of the EGD is on concrete actions at the sectoral level, successful implementation also requires the use of levers that address the governance of the EU itself, the financing of transformation, social inclusion and the role of research and innovation – the four levers also discussed in the GSDR[105]. It is in these areas where there are considerable obstacles for ambitious implementation. For example, the gaps in implementing environmental policies in Member States is well known[106], and financing gaps for policies are also well documented[107]. Fundamental changes as formulated in the EGD can only be taken forward with the courage to use these levers.

5.1 Governance – making governments and society responsive to transformational needs

Changes in governance structure in the EU and its Member States are of particular importance in order to advance the transformations beyond the activities already decided upon in existing legislation. In addition to integrative policy-making via broadly mandated strategies, policy mixes and by rethinking the way better regulation is done, UBA sees important levers in the further development of the European Semester and in reporting and monitoring on the environment and the SDGs, e.g. including more linkages between environmental and social data. The role model function of European institutions also has an important role to play.

5.1.1 Developing the overarching strategy portfolio – renewing the Environment Action Programme and the European Sustainability Strategy

Already before the EGD was announced, the EU has developed a number of strategies and action plans that addressed important environmental and sustainability challenges. Some of these strategies should be revisited and revised in order to complement, and get closely linked to, the EGD.

Renewing the Environment Action Programme (EAP) to monitor the implementation of the EGD: The 7th EAP (2014-2020)[108], with the headline of "*Living well within the limits of our planet*", already outlined the need for more integrated environmental policies. While it gained some positive results, e.g. in strengthening the overall coherence between environmental issues and the sustainability agenda, the mainstreaming of environmental issues into other sectoral policies remained weak[109] and the goals of the 7th EAP are likely not to be reached by the end of 2020. Therefore, strengthening the instrument of the EAP is needed and can be used to back the thematic actions (see chapter 5) of the EGD with a formal strategy that is adopted by the EC, the Council and the European Parliament[110].

In terms of content, this means with a renewing of the EAP, the 8th EAP should continue the themes of its predecessor, and thus also take up many of the themes of the EGD. The main focus should be to fill gaps resulting from the EGD (e.g., soils, noise and oceans, see chapter 4) and to improve the monitoring of environmental objectives including those stated in the EGD. This

[105] Group of Independent Scientists (2019)
[106] European Commission (2019)
[107] See for example the discussion on financing nature conservation in Europe, e.g. Sachverständigenrat für Umweltfragen & Wissenschaftlicher Beirat für Waldpolitik (2017)
[108] European Parliament & Council of the European Union (2013)
[109] See official evaluation of the7th EAP: European Commission (2019d)
[110] See for example Sachverständigenrat für Umweltfragen (2020), chapter 8.3.2

monitoring should also include the processes of integrating environmental issues into all policy sectors. The recently published proposal of the EC for the 8th EAP appears to be very unspecific compared to these concrete needs[111].

Complement the EGD with a systemic implementation Strategy for the SGDs in Europe: The current EU Sustainable Development Strategy (EU SDS) was adopted in 2001 and renewed in 2006. It has not been updated since the adoption of the 2030 Agenda for Sustainable Development in 2015, and thus misses to address the SDGs directly. The EC published a communication in 2016 to outline possible pathways for sustainability in Europe[112]. This paper was perceived as having low ambition and does not take the full action needed to address the SDGs into account[113], for example making clear that sustainability must become the guiding principles for policy in order to reach the SDGs in Europe. Correspondingly, the European Parliament, the Environment Council, the European Economic and Social Committee and other actors have repeatedly called on the EC to develop an explicit implementation strategy for the SDGs in Europe. Yet, this is currently not planned within the EC's work programme. Although many activities that contribute to achieving SDGs are laid out in the EGD, and the ambitions of the EGD partly address the need for putting sustainability at the heart of policy, other parts of the EC's work programme miss out such am ambition. There is no strategy or other instrument that would integrate them explicitly so far in a sustainability context. Such an instrument would support a further integration of policies across thematic areas and help identify tools and instruments to implement the transformative changes needed[114]. Similarly, an implementation strategy could ensure a more complete monitoring and reporting of SDGs in Europe, which could address the gaps identified in the current reporting of the SDGs[115].

5.1.2 Strengthening cross-sectoral policy integration

The action fields discussed in chapter 4 show in an exemplary way that in environmental policy, policies can hardly be developed separately anymore. While in former times European politics has been a frontrunner in integrated approaches to environmental policies, for instance with the Water Framework Directive and REACH framework, policy mixes today will need to go beyond such approaches and ensure that they are developed in a nexus context, e.g. linking water, soil, nutrients and chemicals policies much more explicitly to each other and recognizing their existing incoherencies. One of the most obvious negative examples in this respect is the deep-rooted ignorance of biodiversity and other environmental threats produced by the Common Agricultural Policy (CAP) for many years now[116] . Unfortunately, also the current developments indicate that decisions on the future CAP might result in measures impairing the aims of the EGD and of the Biodiversity Strategy for 2030.

While there are good examples of integration, still many Member States and also the EC build their governance of sustainability primarily on a sectoral approach[117]. With this, the departmental principle applies, according to which separate ministries are responsible for the implementation of individual aspects of sustainability or individual SDGs. An integrated

[111] Proposal published on the 14th of October, 2020: https://ec.europa.eu/environment/strategy/environment-action-programme-2030_en (accessed 16th of October, 2020)
[112] European Commission (2016)
[113] E.g., EESC (2017)
[114] For the thematic fields, UBA has summarized a number of recommendations: Kabel et al. (2016)
[115] European Court of Auditors (2019)
[116] Pe'er et al. (2014, 2019)
[117] See for example for Germany: Rat für nachhaltige Entwicklung (2018)

approach, as recommended for example by the GSDR[118], is rarely taken. Although a policy integration is foreseen in the EU via Article 11 TFEU (Treaty of the Functioning of the European Union), at best, a mainstreaming approach may take place in individual sectors, where for example environmental issues are asked to be taken on board when policies in other sectors are developed, yet they remain secondary as the main focus of the other sector's policy goals, mostly related to economic interests, prevails in the decision making[119]. Distributed responsibility does not automatically lead to convergence towards overall sustainability and acceptance of sustainability as a guiding principle of policies. The EGD, and the EC's work programme in general do not overcome this weakness as the distributive principle is maintained, with a yet unclear oversight role for the President of the EC. Here, cross-sectoral integration across Directorate Generals for major entry points towards a sustainable future are needed, so that not only single policies are developed, but policy mixes that cut across policy sectors. For example, the entry points of the GSDR, like sustainable and just economies (see chapter 4.2 for some aspects), or a sustainable food system (see chapter 4.3), could serve as a guide to organize coordinated work across Directorate Generals.

In addition, the role of adaptability of policies, making them to some extent flexible to react to new knowledge and lessons learned from practical implementation should be considered more frequently. This goes beyond the classical, more economically driven view of better regulation and focusses on goals' achievement of policies in the first place, a focus often neglected in European environmental policies in the last decade[120].

Another key element to strengthen cross-sectoral integration is to develop and set up a cross-stakeholder institution that critically evaluates European polices with respect to its sustainability performance on a regular basis. The positive experiences with the multi-stakeholder platform on the SGDs[121], which has ended with the former EC's term, have shown that exchange with all relevant actors is valuable. In order to increase the input from such committees into policies, they should be able to work on a more permanent and inclusive basis, based on clear mandates[122].

5.1.3 European Semester

As announced in the EGD, and already partly implemented in this year's country reports, the EC aims at using the European Semester as one tool of assessing the progress of Members States in reaching the SDGs. UBA welcomes this aim. So far, the European Semester is in the first place a tool for assessing macroeconomic developments as well as economic and employment policies. While UBA sees the enrichment of this process with sustainability aspects as a positive turn to put "*sustainable development at the heart of our economic policy and actions*"[123] the plans described so far will not be sufficient to do so. Adding further assessment elements to the Semester will not lead to an integration of sustainability into economic policies, first of all because a clear framework for this, e.g. an SDG implementation strategy for Europe (see chapter 5.1.1) is currently missing. Secondly, a reframing of the currently dominating understanding of

[118] Group of Independent Scientists (2019)
[119] See for example Sachverständigenrat für Umweltfragen (2019), chapter 3.2.4 for Germany, or Sachverständigenrat für Umweltfragen (2020), chapter 8.2.2 on the European perspective
[120] Sachverständigenrat für Umweltfragen (2020). Page 588
[121] See https://ec.europa.eu/info/strategy/international-strategies/sustainable-development-goals/multi-stakeholder-platform-sdgs_en (accessed 12.3.20120)
[122] There are different proposals how such a stronger role of external stakeholders could be implemented, e.g. via a revision of the role of EESC (Sachverständigenrat für Umweltfragen,2020), chapter 8.3.6), or an Environmental Justice Commission (The Green New Deal for Europe ,2019)
[123] European Commission (2020e), page 1

economic activity with its strong focus on growth will be needed for a further path towards sustainability and climate neutrality.

Yet to stir this discussion, the European Semester with its regular assessment on a yearly basis can be very helpful. First of all, including climate and sustainability policies will raise the awareness in Member States that the environmental risks are a potential threat for their economies. Secondly, it will allow for better informed discussions about the synergies and trade-offs between the economic and social dimensions of growth, and their implication on the environment in the EU[124]. To achieve this, a number of environmental indicators should be included in the scoreboard of the Semester (see chapter 5.1.4 below). For an integrated view, it will also be needed to foster whole-of-government approaches to address recommendations for more sustainability in the Member States, which also means a whole-of-Commission approach for developing these recommendations (see also chapter 5.1.2 and 5.1.5).

5.1.4 Reporting and Monitoring

As outlined before, reporting and monitoring are an important element to control that the actions taken are actually supporting the ambitions stated in the EGD. The complexity of the issues and their links means that reporting and monitoring for the EGD must be further developed at various levels - firstly for environmental reporting itself, secondly for its links with social factors in the sense of the 'just transition' and in support of the SDGs, and thirdly for its links with economic factors (see also chapter 5.2).

Fostering environmental reporting to serve the EGD: Efforts are still needed to provide data in a transparent form and to improve data access. In the EGD, the importance of data, and the necessary measures associated with it, is pointed out at various places.

The EC e. g. plans to present its impact assessed plan to further reduce greenhouse gas emissions[125]. This includes a review and potential refinement of policy instruments currently in place, such as the regulation on land use, land use change and forestry[126]. In this regulation, the EC for example proposes that the land inventory shall make use of data from space programmes such as the satellite navigation system Galileo or Copernicus. Linked to this, efforts are underway to adapt the data to best support the implementation of the regulation. In the field of climate adaptation, a new and more ambitious strategy will be adopted including a comprehensive data access to climate and other data. This should encourage investors, insurance companies, cities and citizens to develop instruments for better integrating climate change into their risk management practices[127]. To tackle environmental challenges, data should be processed using the digital infrastructure such as supercomputers in combination with artificial intelligence approaches to "*facilitate evidence-based decisions and expand the capacity to understand and tackle environmental challenges*"[128]. Besides using the digital transformation as a vehicle to support the ecological transition (see also chapter 4.1.4) and better predict and respond to environmental disasters, a major objective is the refinement of a highly accurate digital model of the earth.

On the one hand, more emphasis should be placed on ensuring that public authorities implement and guarantee full and open access to environmental data, while on the other hand, further efforts are needed to ensure that data from the commercial sector are also made freely available

[124] See also Charveriat & Bodin (2020)
[125] European Commission (2019a), p. 4
[126] European Parliament (2018)
[127] European Commission (2019a), p. 5
[128] European Commission (2019a), p. 18

on a much larger degree than today. The demand to combine digitalization with ecological and environmental change and thereby strengthen the ability to predict and manage environmental disasters can only succeed if data is freely and interoperable available and easily accessible.

Develop reporting on the "just transition": With the objective to 'leave no one behind', the EGD strengthens the link between sustainable transitions and its social consequences. So far, a reasonable monitoring approach that looks at this link does not exist, as reporting is mainly separated between political sectors. Yet, the indicators set for reporting the SDGs in Europe[129] can be a starting point, but must be further developed with respect to those social groups, regions and sectors, that will most likely be (negatively) affected by the transition processes. Often discussed examples are coal mining regions, or groups in danger of energy poverty, but the challenge will be relevant across all sectors. Also gender aspects should be considered. Such indicators could also be used in the context of the European Semester, which currently focuses on employment in its social indicators (chapter 5.1.3). Subsequently, a further development of the underlying targets, e.g. regional differentiation, will be necessary in order to incorporate a reasonable monitoring and reporting approach.

5.1.5 Changing administrative processes towards climate neutrality

Besides changing the processes of policy making and developing the tools for it (e.g. in reporting and monitoring), engaged administrations like the European institutions themselves need to rethink their internal mode of working and shift it towards sustainability and climate neutrality on a daily basis. It is, therefore, welcomed, that the EC has committed itself to become climate neutral until 2030 (via reduction and compensation) in the context of the EGD. In addition, the EGD outlines, that public authorities should lead by example and ensure that their procurement is green. Thus, further guidance from the EC for all Member States is important.

To support such initiatives, UBA is currently developing a guide on climate neutral management, which will provide administrations and other organisations with technical recommendations and practical assistance on climate neutrality. As the number of companies and other organisations that commit themselves to climate neutrality is rapidly growing, such steps, including the developing of ISO-Norm 14068 on "carbon neutrality" are important, to avoid any "greenwashing" in this field.

5.2 Economy and finance – Budget and investments for transformations

At present, much of Europe's investment perpetuates unsustainable modes of producing and consuming, guided by market prices that do not reflect environmental and social harms.

While sustainable activities are lacking funding – about additional 260 billion Euro[130] are annually needed for implementing the EU climate and energy goals in the coming years - money still flows in non-sustainable directions in all investment fields. However, as soon as capital flows into the right direction, Europeans stand to gain hugely – both because of avoided harms to nature and society, and because of the economic and social opportunities that they create.

[129] European Commission (2020), EU SDG Indicator set 2020 - Result of the review in preparation of the 2020 edition of the EU SDG monitoring report - Final version of 16/01/2020.
European Commission (2019), Sustainable development in the European Union Monitoring report on progress towards the SDGs in an EU context 2019 edition, Luxembourg, Publications Office of the European Union. Eurostat (2020)
[130] HLEG Report (2018)

In order to harvest those benefits, public and private investors have to co-operate. Governments on the one hand need to make full use of public resources to support experimentation, invest in innovations and nature-based solutions, procure sustainably, and support impacted sectors and regions. Public investment is essential when returns on expenditure are highly uncertain (e.g. investments in innovation) or accrue to society generally (e.g. investments in public infrastructure or natural capital). However, private finance needs to be crowded in and the financial sector has to systemically engage in sustainable investment and to integrate sustainability into everyday decision making.

The EU Sustainable Finance Action Plan of 2018 is a first step on the road to transform the financial system[131]. It includes a unified classification system to better define what counts as sustainable finance, the development of related standards and labels for sustainable financial products, including green bonds and a strengthening disclosure system of sustainability risks. Increasing transparency helps to reveal risks and enables both, institutional and retail investors, to better integrate sustainability in their decision making.

Since the first step on the road to sustainability factors being systematically considered are data, regulation following the Action Plan also requires companies to inform investors about their sustainability performance and risks. Currently, the Non-financial Reporting Directive is under review. Regulators discuss that companies need not only to assess the impact of environmental degradation on their economic performance but also vice versa. That is, companies are required to identify and assess how their business model affects the environment and disclose such impacts if they are material (double materiality).

Part of the Action Plan is the so-called EU taxonomy, a unified classification system for environmentally sustainable economic activities that aims to provide the private sector with a common understanding on what is green investment. The Commission will prepare the climate taxonomy by the end of 2020 and will prepare the taxonomy for all other environmental objectives by the end 2021. Recently, the EU Platform on Sustainable Finance that advises the EU COM in this context, has been established. Members will develop technical screening criteria for all six environmental objectives (climate change mitigation and adaptation, protection of water and marine resources, healthy ecosystems, circular economy and prevention of pollution). Activities labeled as green need to significantly contribute to one of these environmental objectives without doing significant harm to any of the other objectives (the Do No Significant Harm Criteria). In order to facilitate the transformation, certain transforming and enabling activities have also been included in the catalogue of eligible activities. The selection is undergoing a revision.

Engaging the financial sector in sustainable investment is likely to require additional measures, for example developing robust and shared definitions of sustainable investment (including social aspects), increasing transparency and enhancing reporting requirements on environmental and sustainability risks. Besides accelerated implementation of the EU's sustainable finance action plan the goals set by the European Green Deal needs to be financed. Thus, the EGD goes along with a European Green Deal Investment Plan (EGDIP), also referred to as Sustainable Europe Investment Plan (SEIP), that is the investment pillar of the Green Deal.

[131] For an overview on its elements, see: https://ec.europa.eu/info/publications/sustainable-finance-renewed-strategy_en (accessed 18th of September, 2020)

The Plan aims altogether at mobilizing at least €1 trillion in sustainable investments over the next decade including €143 billion for a fair and just green transition. An important pillar is InvestEU that works as a financial tool (providing EU budget guarantees for risky projects) that triggers around €279 billion of private and public climate and environment related investments and a knowledge platform, providing support to public administrations and project promoters in identifying, structuring and executing sustainable projects. Besides, the Just Transition Mechanism will mobilize at least €100 billion of investments over 2021-2027 (€143 billion till 2030) with financing coming from the EU budget, co-financing from Member States as well as contributions from InvestEU and the European Investment Bank (EIB). Lastly, the Innovation and Modernisation funds will provide some €25 billion for the EU transition to climate neutrality, with a special focus on lower-income Member States in the case of the Modernisation Fund.

The road ahead - Scaling up investments. Scaling up investments is one pillar to spur the sustainable transformation of the financial system. Nevertheless, additional measurements as aligning regulation and policies with sustainability goals are essential complements of funding. In this context, the COM announced a Renewed Sustainable Finance Strategy and initiatives to align policies such as the EU programmes or the monetary policies within the Euro area (European Central Bank) and public budgets with sustainability goals. Green budgeting aims at making full use of public resources to invest in innovations and nature-based solutions, procure sustainably and support affected sectors and regions. The development and adoption of metrics is essential in order to measure the contribution of finance to sustainability. Private and public spending need to be redirected through environmental fiscal reform and removing harmful subsidies and by shaping alignment of investment and consumption choices.

Develop a truly single market for capital across the EU: Another, very important step is levelling the playing field for green and brown finance By, among other, the realization of the common capital market the so-called capital market union. A truly single market for capital across the EU will foster investment and savings flowing across all Member States. This is essential for delivering post-Sars-CoV-2 recovery that also requires massive investment that public money and traditional funding through bank lending alone cannot deliver. Only sustainably functioning, deep and integrated capital markets can provide the scale of support needed to recover from the crisis and power the transition. So far, public support and bank loans have helped households and businesses stay afloat by addressing the short-term liquidity squeeze caused by lock-downs. In order to stay solvent in the medium- and longer-term, however, businesses need a more stable structure of both, funding and sustainable investment environment. As long as the significant barriers to a sustainably-functioning financial system, including supervision, regulation, uncertainties, taxation etc. exist, the financial sector will not be able to deliver. Progress requires commitment and determination from all parties within the decade ahead. It is also due to the financial industry itself.

5.3 Individual and collective action – strengthening European democracy

5.3.1 Civil society engagement

To achieve the environmental ambition of the EGD and to put the EU on a more sustainable path according to the 2030 Agenda for Sustainable Development, specific governance mechanisms are needed that further the necessary transformation processes. To promote these processes, a modern understanding of administration and politics is required that, among others, enables innovative forms of civil participation. It is of outmost relevance that the EGD builds on the knowledge that broad public support from European citizens is needed for transformations towards sustainable development and that, thus, civil participation has to be designed in a way that it integrates European citizens' knowledge and ideas into policy-making.

The EGD acknowledges that the intended transition will bring substantial change. Thus, it emphasizes that "*active public participation and confidence in the transition is paramount if policies are to work and be accepted*"[132]. However, the EGD does not go into details. The German Sustainable Development Strategy[133] argues that sustainable development cannot be prescribed by the state; it can only be achieved if citizens feel committed to the principle of sustainable development. Likewise, the German Advisory Council on the Environment (SRU) highlights the importance of civil participation for the successful implementation of sustainable development strategies[134]. This is because transformations towards sustainable development "*cannot be designed and imposed from the top down – broad public support is needed as transformations can only succeed if they enjoy societal legitimacy*"[135].

Civil participation is relevant as ideas, experiences and knowledge of citizens are important sources for the further development and implementation of a modern environmental policy. Thus, civil participation, whether formal or informal, can increase its quality and acceptance. A modern structure of administration and politics enables and supports such processes of civil participation. Not least, it is characterized by making innovative ways of environmental policy-making as well as integrative and interdepartmental ways of problem-solving possible[136].

Give the European Green Deal a strong role in the "push for European democracy": With its Communication "Shaping the Conference on the Future of Europe", the EC acknowledges that the time is ripe for a "*new push for European democracy*"[137] and presents its ideas of a conference on the future of Europe that, among others, deals with the fight against climate change and environmental challenge and that relies on civil participation: "*Promoting new forms of citizens' participation will increase legitimacy and trust in our Union and complement its representative democracy*."[138] The Commission announces that it will also consider the Member States' experiences with civil participations, which seems to be a step in the right direction followed by concrete measures that lean on the Member States' experiences and go further beyond the EGD, as main element of future oriented policy in Europe should be a cornerstone in the content of the Conference for the Future or Europe. Thus, it can be emphasized that strengthening a green

[132] European Commission (2019a), p.2
[133] Bundesregierung (2018)
[134] Sachverständigenrat für Umweltfragen (2019), p.154
[135] Sachs et al. (2019), p. 812
[136] Sachverständigenrat für Umweltfragen (2019), p.165
[137] European Commission (2020h), p.2
[138] European Commission (2020h), p.4

perspective in the development of the EU is for the benefit of people. The Sars-CoV-2 crisis gives an additional urgency to this focus, as it has strengthened the awareness of citizens about the close link between health and the environment. The developing climate and biodiversity crises will probably have even stronger economic and social consequences compared to Sars-CoV-2.

5.3.2 Education

With the EGD, the EC aims to prepare a European competence framework to help develop and assess knowledge, skills and attitudes on climate change and sustainable development. It will also provide support materials and facilitate the exchange of good practices in EU networks of teacher-training programmes. In addition, the EC will provide Member States with new financial resources to make school buildings and operations more sustainable. The proposed European Social Fund will play an important role in helping Europe's workforce to acquire the skills they need to transfer from declining sectors to growing sectors and to adapt to new processes. The Skills Agenda and the Youth Guarantee will be updated to enhance employability in the green economy.

With these aims, the EGD directly addresses high quality education (SDG 4). Yet, the understanding of education in the SDG context is broader as in the EGD, it is understood as the most powerful element in preparing societies for the global challenges that climate change and other environmental threats bring. It equips individuals, communities and the wider world with the understanding, skills and attitudes to engage in shaping green, low emission and climate-resilient societies[139].

Aim for a broader understanding of education in the context of the EGD: Education for Sustainable Development (ESD), as broadly discussed on the global level, is not an 'extra' but rather an integral part of any strategy to combat the effects of climate change and achieve the Sustainable Development Goals (SDGs)[140]. It acts to raise awareness and change behaviour and attitudes and enables people to make informed decisions about their lives. Education provides the skills people need to thrive in the new sustainable economy, working in areas such as renewable energy, smart agriculture, forest rehabilitation, the design of resource-efficient cities, and sound management of healthy ecosystems. Thus, a broad understanding of education is key for implementing all areas of the EGD. So, activities on education by the EC and Member States should address such a broad understanding and link it with existing initiatives on ESD[141]. In the context of the Sars-CoV-2 crisis, such an approach becomes even more important to gain understanding and acceptance for the link between recovery after the crisis and investments into a sustainable future to "build back better" – not only for the economy, but also for our education systems[142].

5.4 Science and Innovation – A knowledge boost for transformation

Science and innovation support the achievement of many SDGs, e.g. innovations related to water supply and distribution can contribute to clean water and sanitation (SDG 6); innovation in the chemical sector can contribute to a range of SDGs, from good health and well-being (SDG 3) or decent work and economic growth (SDG 8) to climate action (SDG 13); innovation promoting a more sustainable mobility can contribute to (among others) sustainable cities and communities

[139] See for example: Otto et al. (2020)
[140] see United Nations General Assembly (2017)
[141] See for example the resources provided by UNESCO: https://en.unesco.org/themes/education-sustainable-development (accessed 30th of June, 2020)
[142] See for example: Giannini (2020)

(SDG 11) or climate action (SDG 13). UBA, therefore, welcomes the strong role that research and innovation are supposed to play to support the EGD topics, yet we consider some focus is needed that goes beyond a strong reliance on technological innovation.

Beyond technology - Balancing innovation systems: There is a direct link between industry, innovation and infrastructure (SDG 9) and the EGD. SDG 9 and EGD stress the importance of science and innovation for economic competitiveness as well as the achievement of environmental objectives. However, both seem to have a special focus on technological innovation. The EGD stresses the importance of bringing together a wide range of stakeholders to address the described challenges. But still, the understanding of innovation seems to be not as systemic as needed for the transformations the EGD wants to achieve, including social and institutional innovation [143]. A successful innovation system requires a balance between technology-specific and general measures with a broad innovation impact[144]. In addition to funding research and innovation, there has to be a change of economic framework conditions, like the removal of environmentally harmful subsidies and the reflection of environmental costs in prices, as well as using regulations proactively to support the uptake of innovations (see chapter 5.2). Also, the concept of "exnovations", intentionally ending unsustainable practices by changing framework conditions and support of new approaches should become an explicit part of the research agenda. Within such a framework, an "innovation principle", as discussed in the EU research context for some years, is not needed[145].

Similarly, (technological) innovation projects must address the question of their sustainability and climate neutrality as well as their responsibility according to the precautionary principle from the outset. Existing frameworks should be applied and the concept of Responsible Research and Innovation (RRI) from Horizon 2020 should be further developed and implemented in Horizon Europe.

Make sustainability research a strong focus of Horizon Europe: The forthcoming research and innovation framework programme Horizon Europe, with its four strategic missions, climate change, oceans, cities and soils, is a very important tool for fostering research in support of the SDGs and for further developing the ambitions of the EGD. Calls of the programme, including the one starting already in 2020, should be based on an integrated approach across and beyond disciplines, as outlined in the work of the Mission Boards for Horizon Europe[146]. For example, the Mission Board "Soil health and Food" is highly relevant for the EGD[147]. It develops new and integrated ideas to safeguard soil functions as well as their services. The results that are to date being produced (until the end of 2020 at the latest) might not only be a trigger for soil-related science, but in general support all Directorate Generals' and all Member States' actions in reaching a sustainable and carbon-neutral Europe. For this, it will be crucial to develop a common understanding that puts soils as a limited and multifunctional resource in a new perspective that goes beyond a simple production logic, which has fostered soil degradation for

[143] See for example: van den Hove, S., et al. (2012)
[144] Walz et al. (2019)
[145] See also Sachverständigenrat für Umweltfragen (2020), chapter 8.1.6.1
[146] The published interim reports of the Mission Boards (status 25th of June, 2020) outline the importance of integrated, systemic approaches, see reports at: https://ec.europa.eu/info/news/top-experts-propose-potential-eu-missions-further-consultation-europeans-2020-jun-25_en (accessed 6th of July, 2020)
[147] See its interim report at: "Caring for soil is caring for life", online: https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/32d5d312-b689-11ea-bb7a-01aa75ed71 (Accessed 18th of August, 2020)

decades[148]. Similarly, the other missions should be further developed in an integrated way, linking actors from science and beyond in transdisciplinary projects, and connected to policy and societal needs. For this, the current standards for transdisciplinary actions in projects need to be raised across programmes.

[148] Additionally, previous experiences from Horizon 2020 projects should be taken into account, i.e. the 'Strategic Research Agenda' (SRA) of the project INSPIRATION (Integrated spatial planning, and use and soil management research action, http://www.inspiration-h2020.eu/page/research-agenda), the results of the project LANDMARK (Land management assessment, research, knowledge base, http://landmark2020.eu/) and the intermediate results of the project iSQAPER (Interactive soil quality assessment in Europe and China for agricultural productivity and environmental resilience, http://www.isqaper-project.eu/)

6 Conclusions

In conclusion, UBA welcomes the EGD with its ambition as well as its individual actions. The first strategies published in its follow-up, e.g. the Biodiversity Strategy and the Farm to Fork Strategy carry on with this ambition. However, also in these strategies it becomes apparent that familiar conflicts between the protection of the environment and other sectoral targets, especially those linked to economic interests, persist. These conflicts must, however, be addressed and resolved in the medium term if the long-term ambitions of the EGD are to be realized and serve the SGDs and the Paris Agreement. In addition to the consistent implementation and further development of the activities of the EGD, as described in Chapter 4, the present study by UBA identifies a number of key tasks that the implementation of the EGD must address, leading into new modes on innovation and governance to tackle the challenges ahead:

Strengthen the implementation of existing policies: The recent Environment Implementation Review[149] makes existing deficits in the implementation of existing environmental legislation in the Member States obvious. Some of them are persisting for many years, although the legislations per se have been considered innovative and recent fitness checks have shown their suitability to reach their stated goal – if existing implementation gaps can be reduced significantly[150]. Some of the actions proposed in the EGD promise substantial improvements (see discussion in chapter 4), yet, the EC and the Member States have to find new ways to ensure a step up in implementation, otherwise the repeated failures to reach long-stated targets will further decrease the trust of citizens in the EU, as the importance of sound environmental action is increasingly important for them.

Long-term thinking and commitments - not only on climate goals: The planned climate law aiming to ensure that Europe reaches the goal of climate neutrality by 2050 is a major step in acknowledging that politics need to consider long-term targets, especially when major risks for citizens and the economy are to be avoided. Accordingly, long-term targets, e.g. on biodiversity and sustainable land use, and the Zero Pollution ambition have to be developed in more concrete terms as outlined so far and linked to suitable action programmes that not only rely on existing measures, but think about additional new approaches. This includes addressing these challenges also on the global scale in bilateral and multilateral activities in order to avoid that environmental problems are just relocated to other regions (see 4.1.3).

Solutions via joint levers - establish new modes of action crossing sectoral boundaries: As one means, new integrated policy settings will be needed to reach long-term targets to think otherwise separated policies together and thus allow to design new policy mixes, identify even new policy approaches (see also 5.1.2). UBA also supports the view on the SDGs in this respect, as discussed in the GSDR (2019), that a strong integrated perspective is crucial to address the main challenges in reaching the SDGs by 2030 and that carefully considerations of their linkages, as well as the balance between different transformational activities, are needed. For the EGD implementation, this means that, first of all, different fields of environmental policies need to be integrated more strongly, as outlined in several fields in chapter 4: water, soils, nutrients and chemicals need a more integrated view (see 4.1.1 and 4.3.1 for example); circular economy, resource use and climate change (see 4.2.1 and 4.2.2); and also, biodiversity and climate change.

The integrated focus goes beyond current policy measures, which are often limited to incremental improvements to existing measures alone, rather than looking at the trade-offs and

[149] European Commission (2019d)
[150] Sachverständigenrat für Umweltfragen (2020), chapter 8.2.4

synergies to other sectors. However, the transformations envisaged by the EGD require major steps that need to consider substantial structural changes in today's policies. It is, therefore, imperative that the link with other policy sectors, and thus the principle of integration enshrined in the Treaty of the Functioning of the European Union is raised to a new level. With the ambitions for the new financial framework, the possibilities offered by the Recovery Fund (see 5.2), and the strengthening of an integrative perspective in the European Semester (see 5.1.3), important measures are already developed - but they must also be implemented correspondingly ambitious.

Last but not least, there is a need for a change in the nature of cooperation in the EU institutions, which implement sustainability and have to acknowledge that economic development needs to fit within this framework. Both a change in the administrative processes (see 5.1.5) and an ambitious framework strategy (see 5.1.1), adopted by all actors of the EU, are of great importance here. This also means that a closer look has to be taken on ensuring coherence between the EGD and the other elements of the Commission's work programme, e.g., on digitalization (see 4.6).

Acting together - new modes of cooperation across actors: With the Future of Europe Conference, the EC acknowledges that a renewed dialogue between European institutions and its citizens is needed to identify European priority actions. The integrated and complex nature of the challenges that the EGD addresses makes it also crucial to revisit the modes of cooperation of all societal actors in order to support common goals – such as the EGD (see also 5.3). This includes concrete challenges like the redesign of the Better Regulation approach and joint efforts of all actors in the harmonization of legal requirements and definitions across legislation within a sector (see e.g. chemicals sector, waste sector) and between different sectors (chemicals and waste).

Make use of the changes that the Sars-CoV-2 crisis has triggered: As of now, in summer 2020, the overall consequences of the Sars-CoV-2 crisis can hardly be foreseen. However, the crisis already shows that society in Europe has paid too little attention to the resilience of its subsystems, such as the health care system, but also the economy. This also means to tackle the necessary transformations for a sustainable Europe in an integrated manner and, above all, to take human well-being and the relationship between societies and the natural foundations of life as the basis for all actions.

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