



Brussels, **XXX**
[...](2020) **XXX** draft

COMMISSION STAFF WORKING DOCUMENT

Leading the way to a global circular economy: state of play and outlook

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Table of Contents

1.	INTRODUCTION	3
2.	TRENDS, CHALLENGES AND OPPORTUNITIES	3
2.1.	Unsustainable trends in global resource use	3
2.2.	Global challenges and opportunities in selected sectors	7
2.2.1.	Global value chains	7
2.2.2.	Material resources	8
2.2.3.	Construction and urbanisation	10
2.2.4.	Waste	11
2.2.5.	Water	13
2.3.	Opportunities for different actors	15
2.3.1.	Global opportunities	15
2.3.2.	Opportunities for the EU	16
2.3.3.	Opportunities for developing countries	18
2.3.4.	Opportunities for raw materials exporting countries	19
3.	DESCRIPTION OF ACTIONS AT MULTILATERAL LEVEL	20
3.1.	Global agreement on plastics	20
3.1.1.	The plastics challenge	20
3.1.2.	Moving towards a global agreement on plastics	21
3.2.	Global Circular Economy Alliance	22
3.3.	Defining a ‘Safe Operating Space’ and initiating discussions on an international agreement on the management of natural resources	23
3.3.1.	Defining a ‘Safe Operating Space’	23
3.3.2.	Considering initiating discussions on an international agreement on the management of natural resources	23
3.4.	United Nations (UN)	24
3.5.	G7/G20	25
3.6.	Selected multilateral initiatives	25
3.7.	Selected multilateral environmental agreements and other international agreements	27
4.	DESCRIPTION OF BILATERAL AND REGIONAL ACTIONS	29
4.1.	Policy dialogues	30
4.1.1.	General aspects	30
4.1.2.	Enabling policy and institutional frameworks for circularity	30
4.1.3.	Selected countries	31
4.1.4.	Selected regions	33
4.2.	Africa	34

5.	TRADE AND THE CIRCULAR ECONOMY	34
6.	DESCRIPTION OF OUTREACH ACTIVITIES	35
6.1.	European Green Diplomacy and the circular economy	35
6.2.	Working with EU Member States	36
6.3.	Promoting stakeholder participation: working with civil society and the private sector	36
6.3.1.	Civil society	36
6.3.2.	Businesses and SMEs.....	37
6.3.3.	Supporting green business development in key value chains	38
6.3.4.	Circular economy missions	38
7.	FINANCING FOR THE GLOBAL CIRCULAR ECONOMY TRANSITION	39
7.1.	General aspects	39
7.1.	Mobilising investments	40
7.1.1.	EU external financial instruments	40
7.1.2.	EU projects.....	41
7.1.3.	Sustainable finance and the private sector	44
8.	KNOWLEDGE GAPS	45

1. INTRODUCTION

The new Circular Economy Action Plan ‘For a cleaner and more competitive Europe’¹ (‘the Action Plan’) emphasises that the EU cannot deliver alone the ambition of the European Green Deal² for a climate-neutral, resource-efficient and circular economy. The Action Plan also confirms that the EU will continue to lead the way to a circular economy at the global level and use its influence, expertise and financial resources to implement the 2030 Agenda for Sustainable Development and its Sustainable Development Goals³, in the EU and beyond.

This staff working document provides a comprehensive account of the state of play as regards on-going and forthcoming actions related to the international dimension of circular economy, which are placed in the context of key trends in resource use and the challenges and opportunities for various actors across the globe.

2. TRENDS, CHALLENGES AND OPPORTUNITIES

The worldwide transformation to a circular economy entails moving from linear, highly resource depleting systems with high emissions, waste generation, and high impacts on ecosystems and natural capital, towards circular, less wasteful systems that use resources more efficiently and sustainably, while providing work opportunities and a high quality of life. This is a key contribution to the 2030 Agenda for Sustainable Development and its Sustainable Development Goals, and other commonly agreed international targets under e.g. the Paris Agreement, the Convention on Biological Diversity, and the United Nations Convention to Combat Desertification.

Reducing the consumption footprint and increasing the circular material use rate is a particular priority, which should also be seen in the context of the European Green Deal recognition that access to resources is a strategic security consideration for the EU. Natural resources underpin national economies, provide crucial raw materials for everyday life, and are necessary to almost every sector of the global economy. In particular, given the size of the demand, raw materials (including both primary and secondary raw materials obtained through recycling) will continue to play a key role in the global economy⁴.

2.1. Unsustainable trends in global resource use

Current patterns of linear economic activity depend on a permanent output of materials that are extracted, traded and processed into goods, and finally disposed of as waste or emissions (see 1). Between 1970 and 2017, the annual global extraction of these materials more than tripled, rising from 27 billion tonnes to 92 billion tonnes. Since 2000, extraction rates have accelerated, growing by 3.2% per year. This is largely driven by major infrastructure investments and higher living standards in developing and transitioning countries, especially in Asia⁵.

¹ COM(2020) 98.

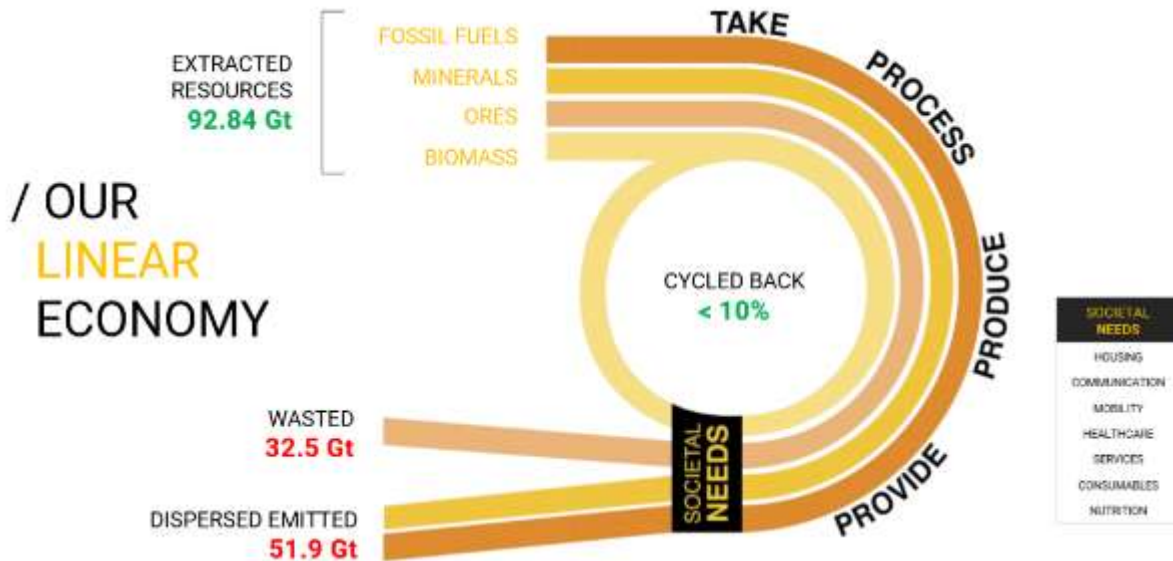
² COM(2019) 640.

³ In particular SDG 8.4 on resource efficiency and decoupling; SDG 12.2 on sustainable management and efficient use of natural resources; SDG 15.3 on land-degradation neutrality; and SDG 15.5 on halting biodiversity loss.

⁴ European Commission (2020), Critical materials for strategic technologies and sectors in the EU – A foresight study (in press); JRC (2017), Critical raw materials and circular economy – background report. doi: 10.2760/378123.

⁵ IRP (2019), Global Resources Outlook 2019. Summary for Policymakers, p. 12.

Figure 1: Current patterns of linear economic activity⁶



The global population is projected to grow from 7.5 billion people in 2017 to 10.2 billion people by 2060⁷. According to the Organisation for Economic Cooperation and Development (OECD), living standards will continue to increase in all countries, and gradually converge towards those in the most advanced countries. Between 2017 and 2060, the average gross domestic product (GDP) per capita in emerging and developing economies is projected to reach the current level of OECD members. The projected increase in population and global per capita income levels would translate into a more than tripling of global GDP⁸.

Figure 2: Materials use increase 2017-2060, according to the OECD⁹



The rise of the middle class in emerging economies and developing countries, together with rapid urbanisation, is expected to have a strong impact on the environment, exacerbate climate change, increase the exposure to climate change and disaster risks, and intensify competition for certain raw materials.

⁶ UNEP (2019), Advancing Sustainable Consumption & Production: Circularity in the Economy of Tomorrow, p. 7 (data from Circle Economy (2018), The Circularity Gap Report); see also Figure 6 for an illustration of the EU's situation.

⁷ UN (2017), World Population Prospects. The 2017 Revision. Key Findings and Advance Tables, p. 2.

⁸ OECD (2019), Global Material Resources Outlook to 2060, pp. 18-19.

⁹ OECD (2018), Global Material Resources Outlook to 2060. Highlights, p. 4.

If the material resource¹⁰ demands of a growing world economy and population are met with current patterns of production, consumption and associated policies and infrastructure, according to the International Resource Panel's (IRP)¹¹ projections, global material use would more than double between 2015 and 2060, reaching 190 billion tonnes. This means that resource use would rise from 11.9 tonnes per person in 2015 to 18.5 tonnes per person in 2060¹². The OECD's projections differ somewhat but relate to a similar scale of the challenge. In the OECD baseline scenario, the use of primary materials is projected to roughly double from 89 billion tonnes in 2017 to 167 billion tonnes in 2060, while the global GDP is projected to quadruple between 2011 and 2060. The projected use of all materials categories considered in their analysis¹³ would increase¹⁴ (see Figure 2). Countries and regions already enjoying higher material living standards face the challenge of demonstrating that the same needs can be met with fewer material resources.

Both the IRP and the OECD underline that this scale of growth in material resource use – without improvements in managing the impacts linked to their extraction, cultivation, regeneration, use and disposal – would result in substantial additional stress on resource supply systems and unprecedented environmental pressure and impacts. Already today, the IRP¹⁵ estimates that the world's material resources¹⁶ extraction and processing accounts for more than 90% of global biodiversity and water stress impacts, approximately half of global climate change emissions (not including climate impacts related to land use), and about one third of the health impacts due to particulate matter (see Figure 3).

Looking at the extraction and processing (not at the use and disposal phases) of each material resource type, the IRP¹⁷ finds that, globally (see Figure 3):

- The cultivation and processing of *biomass* (for food, feedstock and energy) is now responsible for almost 90% of global water stress and land-use related biodiversity loss, and more than 30% of greenhouse gas emissions related to resources (not including emissions from land use change).
- Between 2000 and 2015, the climate change and health impacts from global extraction and production of *metals* approximately doubled. Among metals, the global iron-steel production chain causes the largest climate change impact; it represents around one quarter of global industrial energy demand.
- Most impacts related to non-metallic *minerals* occur in the processing stage, and the production of clinker – the main ingredient in cement – is responsible for the largest proportion of climate change impacts and a substantial proportion of the other

¹⁰ Material resources include biomass (like crops for food, energy and bio- based materials, as well as wood for energy and industrial uses), metals (such as iron, aluminium and copper used in construction and electronics manufacturing), non-metallic minerals (used for construction, notably sand, gravel and limestone), and fossil fuels (in particular coal, gas and oil for energy).

¹¹ <https://www.resourcepanel.org/>.

¹² IRP (2019), Global Resource Outlook 2019, pp. 102-103.

¹³ See footnote 10.

¹⁴ OECD (2018), Global Material Resources Outlook to 2060. Highlights.

¹⁵ IRP (2019), Global Resources Outlook 2019, p. 68; IRP (2019), Global Resources Outlook 2019. Summary for Policymakers, pp. 15-17.

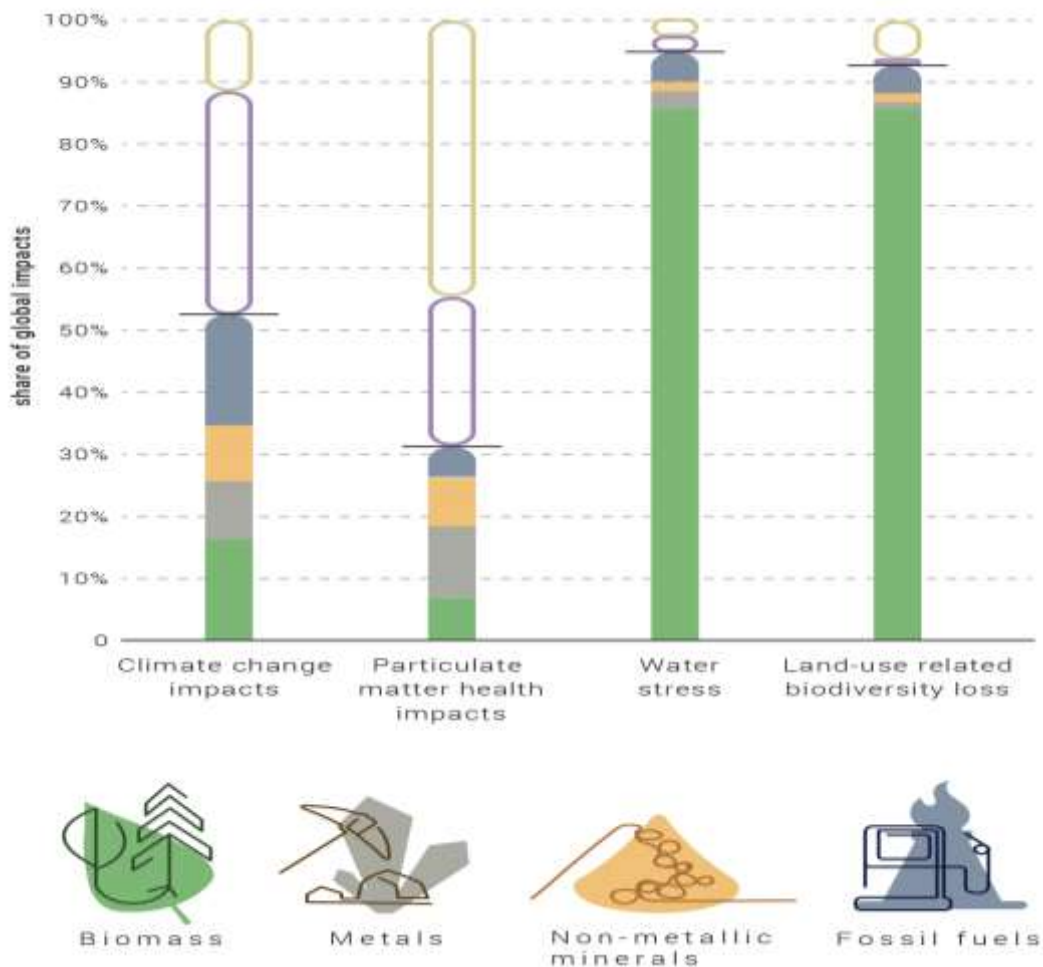
¹⁶ See footnote 10.

¹⁷ IRP (2019), Global Resources Outlook 2019. Summary for Policymakers, pp. 15-16; IRP (2019), Global Resources Outlook 2019, Chapter 3, pp. 64-96 (definitions of 'climate change impacts', 'particulate matter health impacts', 'water stress' and 'land-use related biodiversity loss' are on pp. 23-24; see also p. 67). See also OECD (2018), Global Material Resources Outlook to 2060, pp. 181-199.

impacts. Moreover, sand extraction in non-EU countries may have a critical impact on local ecosystems¹⁸.

- Extraction, processing, distribution and use of *fossil fuels* (coal, oil and natural gas) contribute considerably to climate change impacts and environmental pollution, especially in air.

Figure 3: Global impacts split by material resource type¹⁹



Global material productivity (the efficiency of material use) has grown substantially slower than labour and energy productivity²⁰. It started to decline around the year 2000, and has stagnated in recent years. Even though material productivity (defined as GDP per tonne of materials used) has improved rapidly in both the old and new industrialised countries, the simultaneous shift of global production away from economies that have a higher material productivity to economies that have a lower material productivity explains how difficult it is to bring about a rapid improvement in global material efficiency. This means that the average environmental pressure and impact per euro of products and services have been increasing in the global economy since the start of the new millennium.

¹⁸ UNEP (2019), Sand and Sustainability: Finding new solutions for environmental governance of global sand resources, Section 2.2, pp. 5-6.

¹⁹ Adapted from IRP (2019), Global Resources Outlook 2019. Summary for Policymakers, p. 16.

²⁰ IRP (2019), Global Resource Outlook 2019, pp. 39, 52-54.

2.2. Global challenges and opportunities in selected sectors

2.2.1. Global value chains

Markets for consumer goods and services are on track to experience unprecedented growth in the coming decade, with some 1.8 billion people expected to join the global middle class in the course of fifteen years by 2025, marking an increase by 75% compared to 2010²¹. The increase in consumer spending is likely to be even sharper, not only because of higher household incomes, but also as a consequence of adopting increasingly unsustainable lifestyles as people use bigger shares of their budgets to buy consumer goods²². These rapidly expanding markets are fed with consumer goods made and sold by businesses relying on similarly increasing supplies of energy and natural resources (see Section 2.1), and operating within a complex set of long and interconnected value chains worldwide.

A large number of EU multinational companies operate with global supply chains starting in developing countries. The latter have earned an increasing share in global value added trade, estimated in 2010 to be over 40%, compared to only 20% in 1990 and 30% in 2000²³ – a fact largely associated with the penetration of global value chains in emerging markets²⁴. This reality implies that circularity goals are unlikely to be met without ensuring that suppliers in developing countries also adopt circular business practices.

Making an effective link with micro, small and medium enterprises (MSMEs) operating in the ‘last mile’ of global value and supply chains is a major challenge towards sustainability and circularity, for multinational companies and smaller businesses alike. At the same time, multinational companies, while still meeting with difficulties in monitoring and influencing the sustainability of micro- and informal sector enterprises feeding into their second and third tier suppliers, are well positioned to use their leverage to induce circularity across their supply chains, including in SMEs in developing countries willing to adjust their processes and practices in order to continue gaining from the global value chains they are part of.

Widespread adoption of circular business practices is largely dependent on their broad integration in global value chains. Barriers are multiple, and include gaps or incoherence in policy frameworks, a lack of awareness and capacities of business operators, the protection of vested interests by those benefiting from unsustainable models, a still insufficient market demand for circular economy products and services, uninformed consumer choices, unavailable or prohibitive access to finance, particularly for smallholder operators, etc.

The EU has an important role to support and encourage companies in their efforts to conduct their business responsibly. Relevant EU efforts focus on mobilising investments in selected value chains (see Section 6.3.3), but also put a strong emphasis on facilitating the formation of strategic value chain groups, which can be used to drive networks and connectivity, i.e. partnerships between value chain leaders and producers to promote upscaling and replication of circular economy practices. Moreover, ‘as the world’s largest single market, the EU can set standards that apply across global value chains’²⁵. The EU’s interest in embedding circularity

²¹ McKenzie Global Institute (2012), [Urban world: Cities and the rise of the consuming class](https://www.mckinsey.com/featured-insights/urbanization/urban-world-cities-and-the-rise-of-the-consuming-class) (<https://www.mckinsey.com/featured-insights/urbanization/urban-world-cities-and-the-rise-of-the-consuming-class>).

²² McKenzie Global Institute (2016), [Urban world: The global consumers to watch](https://www.mckinsey.com/featured-insights/urbanization/urban-world-the-global-consumers-to-watch) (<https://www.mckinsey.com/featured-insights/urbanization/urban-world-the-global-consumers-to-watch>).

²³ UNCTAD (2013), Global Value Chains and Development: Investment and value added Trade in the global economy (https://unctad.org/en/publicationslibrary/diae2013d1_en.pdf).

²⁴ European Commission (2016), Industry Global Value Chains, Connectivity and Regional Smart Specialisation in Europe, JRC Science for Policy report.

²⁵ COM(2019) 640 – European Green Deal.

in global value chains has much to benefit from the use of standards related to recyclable waste, trade in minerals and other material resources.

2.2.2. *Material resources*²⁶

Biomass is used for food, feed, material feedstock and also energy²⁷. Food is the most essential biomass extracted, as it is vital for humans. However, globally food systems have a profound effect on biodiversity loss²⁸, as well as on soil erosion²⁹ and are responsible for 21-37% of the total man-made greenhouse gas emissions³⁰. Biomass extraction and processing accounts for more than 30% of greenhouse gas emissions related to material resources, not including emissions from land use change³¹.

Crop yields per area have increased considerably over the last few decades (a phenomenon known as the ‘green’ revolution). However, a growing population, and a shift to a more animal-based diet, as well as a growing demand for products with a large biodiversity and water stress impact, such as coffee, cocoa and cotton, put pressure on water and land resources, which can be further exacerbated through inappropriate use of agricultural inputs, such as agrochemicals and fertilisers. Furthermore, the sustainability of food and commodities production, as well as ecosystems, is threatened by the impacts of climate change. This requires measures to adapt to climate change impacts in these sectors, and to increase their resilience to climate change.

The EU is the world’s largest importer and exporter of food, and trades an increasing diversity of food products with countries all over the world. The EU imports certain commodities (e.g. animal feed, tropical fruit, seafood, palm oil and coffee) whose production can have negative environmental and social impacts in the exporting countries (including land degradation, depletion of natural resources and unfair labour conditions). Approximately 31% of the land required to meet EU food demand is located outside Europe and less than half of EU fish and seafood consumption is met by EU production, meaning that a substantial part of the EU food system footprint is outside of Europe³². According to a study³³ funded by the Commission, the EU imported and consumed one third of the globally traded agricultural products associated with deforestation between 1990 and 2008. According to the same study, when looking at deforestation embodied³⁴ in total final consumption, the EU consumption represents around 10% of the global share.

²⁶ See footnote 10.

²⁷ Unless otherwise indicated, the source is IRP (2019), *Global Resource Outlook 2019*, pp. 88-91.

²⁸ IPBES (2019), *Global Assessment. Summary for Policy Makers*, p. 12 and 28. For the EU, see Sala et al. (2019), *Consumption and Consumer Footprint: methodology and results. Indicators and Assessment of the environmental impact of EU consumption*. Luxembourg: Publications Office of the European Union, ISBN 978-92-79-97256-0, doi:10.2760/98570, JRC 113607.

²⁹ Borrelli et al. (2017), *An assessment of the global impact of 21st century land use change on soil erosion*, *Nature Communications*, Volume 8, Article number: 2013.

³⁰ IPCC (2019), *Special Report on Climate Change and Land*.

³¹ Cattle farming – for both meat and dairy – has the highest share of direct emissions, mainly from enteric fermentation (methane emissions) and nitrous oxide emissions. Rice production has second highest methane emissions after ruminants and has therefore the highest impacts of all crop production. Nitrous oxide emissions from agricultural soils are linked with the biogeochemical cycle of nitrogen, which has been greatly impacted by anthropogenic effects that include the application of synthetic fertilisers.

³² IPES-FOOD (2019), *Towards a common food policy for the European Union*.

³³ https://ec.europa.eu/environment/forests/impact_deforestation.htm.

³⁴ The concept of ‘embodied deforestation’ is used for linking deforestation to consumption. It refers to the deforestation embodied (as an externality) in a produced, traded, or consumed product, good, commodity or service.

Minerals and metals provide crucial raw materials for society and are used by almost every sector of the global economy. Their extraction and further processing will be key to deliver the clean technology, mobility and digital solutions necessary for the transition of all industrial sectors towards climate neutrality and a circular economy. Given the size of the demand, their extraction will continue to play a key role.

The extraction of minerals and metals across the world encompasses a very diverse and globally widespread range of activities, including very large, highly mechanised industrial mining operations and small informal or illegal artisanal mines that produce small quantities of mostly low-volume and high-value minerals (e.g. gold, precious and semi-precious minerals)³⁵, often with very poor labour conditions. Extraction and processing may have serious negative consequences if environmental and social impacts are not properly managed through responsible mining practices³⁶. Nevertheless, the extractive sector, if carefully managed, presents significant opportunities for advancing sustainable development, particularly in low-income countries³⁷.

In the light of these challenges, more efficient resource use will become an increasingly important factor for competitiveness and sustainable growth, for instance extending the lifetime of products so that the value of materials and their use in the economic system are maximised (e.g. for batteries³⁸). Europe depends on having a secure supply of critical raw materials largely from imports, highly concentrated in a few third countries. The EU can diversify critical raw material supply, and reduce its dependency, including by research and development of alternative (non-critical) materials and efficient recycling (recovery and reuse) processes³⁹.

*Coal, oil and natural gas*⁴⁰ are sources of energy used in various forms while also constituting the raw materials for numerous chemicals used in pharmaceuticals, plastics, paints and many more products. Extraction, processing, distribution and use are all major contributors to environmental pollution – especially of air – and to greenhouse gas emissions. A key air and climate pollutant in the extraction of fossil fuels is methane, which has a higher global warming potential⁴¹ than carbon dioxide and accelerates climate change. Mercury is released into the environment during oil and gas extraction, entering wastewater and solid waste streams. These emissions are considered to be major sources of mercury contamination in oceans and seas (but currently lack quantification). Overall, the climate change impacts associated with the extraction and processing of oil and gas are in a similar range to those of coal⁴². Moreover, unconventional extraction methods like shale oil and shale gas production

³⁵ IRP (2019), Mineral Resource Governance in the 21st Century: Gearing extractive industries towards sustainable development. Summary for Policymakers, p. 10.

³⁶ In 2011, global extraction and processing of metals were responsible for 18% of resource-related climate change and 39% of particulate matter health impacts. The global impact of non-metallic mineral resource extraction is less than 2% of the total resource impact (IRP (2019), Global Resources Outlook 2019, pp. 76-83; see also OECD (2019) Global Material Resources Outlook to 2060, pp. 181-199).

³⁷ IRP (2019), Mineral Resource Governance in the 21st Century: Gearing extractive industries towards sustainable development. Summary for Policymakers, p. 7. See also OECD (2016), Due Diligence Guidance for Responsible supply Chains of Minerals from Conflict-Affected and High-Risk Areas (third edition), <https://www.oecd.org/daf/inv/mne/OECD-Due-Diligence-Guidance-Minerals-Edition3.pdf>.

³⁸ Bobba et al. (2019), How will second-use of batteries affect stocks and flows in the EU? A model for traction Li-ion batteries. Resources, Conservation and Recycling Vol. 145, pp. 279-291.

³⁹ See the JRC interactive tool ‘Materials that are critical to our green future’, available at <https://visitors-centre.jrc.ec.europa.eu/en/media/tools/materials-that-are-critical-to-our-green-future>.

⁴⁰ IRP (2019), Global Resource Outlook 2019, pp. 83-87.

⁴¹ <https://unfccc.int/process/transparency-and-reporting/greenhouse-gas-data/greenhouse-gas-data-unfccc/global-warming-potentials>.

⁴² IRP (2019), Global Resource Outlook 2019, pp. 83-84 and Fig. 3.19.

(as well as production from oil sands) have gained interest in recent years due to technological innovation and the decline of conventional reserves but carry their own negative impacts on climate and the environment.

2.2.3. *Construction and urbanisation*

Urbanisation is a megatrend⁴³: over the next 30 years, the global urban population will grow by an estimated 2.4 billion. This demographic shift will see the proportion of the population living in cities growing from 54% in 2015 to 66% in 2050. Nearly 37% of this growth is expected to come from only three countries: India, China and Nigeria. The number of urban dwellers in these countries will grow by an estimated 404 million, 292 million and 212 million respectively. This population increase will result in a significant expansion of existing cities and the construction of new cities.

In their construction and operation, and to support urban lifestyles, cities use billions of tonnes of material resources, from fossil fuels, sand, gravel and iron ore, to biotic resources such as wood and food. It is estimated that more than one-third of global resource consumption is assigned to construction materials and the building sector⁴⁴. The production of these materials requires energy, representing more than 40% of greenhouse gas emissions associated with global materials production⁴⁵. Such raw material consumption is predicted to grow faster than urban populations, and reach about 90 billion tonnes by 2050 (40 billion tonnes in 2010)⁴⁶. The high demand for such raw materials far exceeds what the planet can sustainably provide, and contributes significantly to climate change (today, concrete is responsible for 9% of total greenhouse gas emissions)⁴⁷. Material efficiency strategies have however a big potential to reduce material demand and, hence, related greenhouse gas emissions, e.g. above 50% in India and 80% in China⁴⁸.

Due to the long-standing trend of ‘de-densification’ or urban sprawl (i.e. cities becoming less compact) of 2% per year, global urban land use could potentially increase from just below one million square kilometres to over 2.5 million square kilometres in 2050. This would put agricultural land and food supplies at risk⁴⁹, and would require investment and materials to extend infrastructure and networks. In fact, soil sealing – the covering of the ground by an impermeable material – is one of the main causes of soil degradation in the EU and a consequence of urban sprawl, construction and operation. Soil sealing often affects fertile agricultural land, puts biodiversity at risk, increases the risk of flooding and water scarcity and contributes to global warming. The European Commission published guidelines on best practice to limit, mitigate or compensate soil sealing⁵⁰.

⁴³ WEF and BCG (2016), Shaping the future of construction. A Breakthrough in Mindset and Technology Report.

⁴⁴ Ellen MacArthur Foundation & ARUP (2019), Urban buildings system summary (https://www.ellenmacarthurfoundation.org/assets/downloads/Buildings_All_Mar19.pdf).

⁴⁵ UNEP(2019), Emmissions Gap Report 2019.

⁴⁶ IRP (2018), The Weight of Cities: Resource Requirements of Future Urbanization. Summary for Policymakers, p. 8. It is interesting to note that China alone used more cement in 2011-2013 than the United States used during the whole 20th Century.

⁴⁷ OECD (2018), Global Material Resources Outlook to 2060. Highlights, p. 18.

⁴⁸ IRP (2020), Resource Efficiency and Climate Change: Material Efficiency Strategies for a Low-Carbon Future.

⁴⁹ IRP (2018), The Weight of Cities: Resource Requirements of Future Urbanization. Summary for Policymakers, p. 8.

⁵⁰ SWD(2012) 101 – Guidelines on best practice to limit, mitigate or compensate soil sealing.

Efforts are also required to shift urban dwellers away from resource intensive lifestyles, and encourage an uptake of circular practices. Actions reducing the energy consumption and emissions attributed to the use of buildings may focus on efficient heating, cooling and lighting systems. Efficiency schemes in development cooperation can also address product lifetime extension, waste reduction and improved material efficiency. The implementation of Building Information Modelling (BIM) enables construction professionals to quantify the embodied environmental impact and lifecycle cost performance of buildings. BIM also enables planning for the potential future re-use and recycling of demolition materials. Level(s), an assessment and reporting framework for whole life cycle performance of buildings, which has recently been developed by the European Commission⁵¹, can further support BIM developments and project planning in this regard. Refurbishment, further to extending the lifetime of a building, can also be a cost-effective strategy for improving energy-performance. What is more, urban mobility accounts for some 40% of all CO₂ emissions of road transport and up to 70% of other pollutants from transport⁵². E-mobility, digitalisation and smart city systems should be rapidly deployed to offer solutions largely based on circularity principles and improve relevant quality-of-life indicators in urban areas⁵³.

Adopting circular economy principles in construction across the world – beginning with the planning phase – is therefore essential to deal with the challenges related to the built environment. In parallel, digitalisation can increase efficiency, minimise the amount of materials being wasted, and track the recycling of materials and equipment better. In addition, climate change requires adapted building standards and codes, to face new frequency and intensity of climate related disasters and ensure the resilience of old and new infrastructure. International cooperation between local governments could help to integrate circular economy principles in urban development plans, including substitution solutions geared towards the adoption of sustainable and low carbon construction materials.

2.2.4. Waste

Global economic and population growth is generating ever-greater amounts of waste. By 2050, global solid waste generation is expected to increase by 70%⁵⁴. Inefficient and unsustainable production and consumption patterns are creating waste challenges in all countries, in particular developing ones⁵⁵. Municipalities in low-income countries spend an average 20% of their budgets on waste management, while over 90% of waste is still openly dumped or burned. Financing solid waste management systems is a significant challenge. In high-income countries, operating costs for integrated waste management generally exceed \$100 per tonne. Lower-income countries spend around \$35 per tonne and sometimes more, but they have much more difficulty in recovering costs⁵⁶. Waste water management is a similar challenge, with 4.5 billion people across the world in 2015 lacking safe sanitation services, and 80% of the waste water, globally, flowing back into the environment without being treated and/or reused.

⁵¹ <https://ec.europa.eu/environment/eussd/buildings.htm>.

⁵² https://ec.europa.eu/transport/themes/urban/urban_mobility_en.

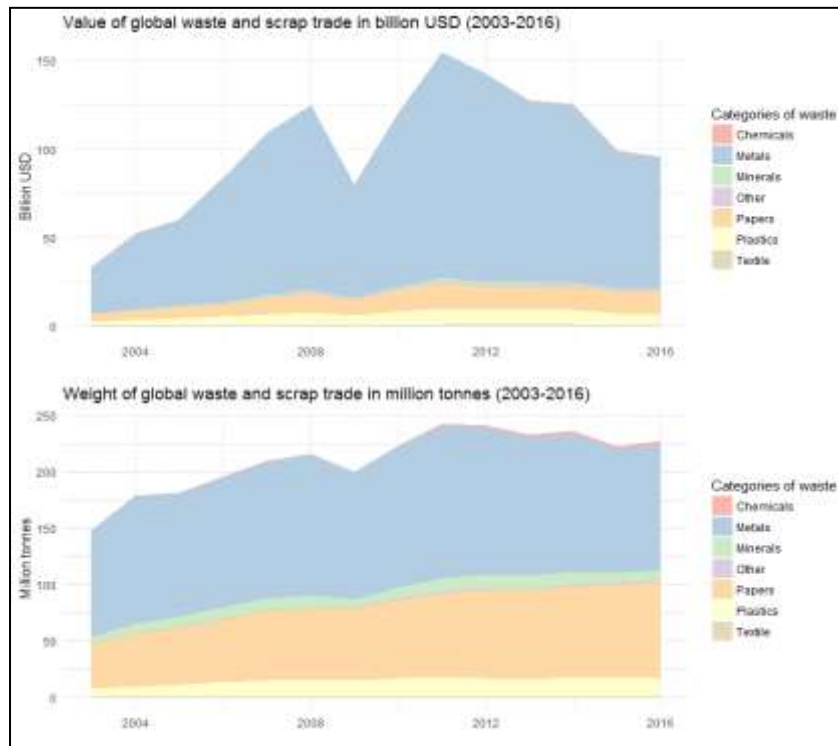
⁵³ McKenzie Global Institute (2018), Smart cities: Digital solutions for a more livable future (<https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/smart-cities-digital-solutions-for-a-more-livable-future>); IRP (2018), The Weight of Cities: Resource Requirements of Future Urbanization.

⁵⁴ The World Bank (2018), What a Waste 2.0. A Global Snapshot of Solid Waste Management to 2050.

⁵⁵ UNEP (2019), Global Environmental Outlook (GEO-6). Summary for Policymakers, p. 16.

⁵⁶ The World Bank (2018), What a Waste 2.0. A Global Snapshot of Solid Waste Management to 2050.

Figure 4: Global waste traded internationally, by value and weight⁵⁷



International trade in waste has increased considerably and markets for some waste streams have become more and more globalised in the last decades. In 2016, more than 200 million tonnes of waste were traded across international borders, four times more than the amount traded in 1992 (see Figure 4). In terms of value, this represents around \$100 billion.

The EU is an important player in the global waste market. In 2016, the EU exported an estimated 40 million tonnes⁵⁸ of waste to non-EU countries – around 20% of the global export of waste. At the same time, approximately 13 million tonnes of waste were imported into the EU. A growing attention is being paid to emerging waste streams due to new technologies such as solar panels, batteries, turbines, etc. Cooperation with industrialised countries can be reinforced to prevent landfilling and reduce the lifecycle impact of new green technologies.

The illegal and illicit waste trade is also a global concern as it represents one of the most serious forms of environmental crime, a major source of profit for organised crime groups and presents a serious risk to public safety. This is particularly significant in the case of e-waste and plastic waste illegally shipped from Europe and other industrialised countries to Africa and South East Asia⁵⁹.

Ensuring that the EU does not export its waste challenges to third countries and that waste is managed and traded in an environmentally-sound manner is therefore a major global challenge from an environment, public and workers' health and economic point of view. Ship recycling is a case in point. A large percentage of the European fleet is dismantled in South Asia, under conditions often harmful to workers' health and the environment. In that context,

⁵⁷ OECD (2018), International Trade and the Transition to a More Resource Efficient and Circular Economy: A Concept Paper, p. 13.

⁵⁸ Eurostat data on export of all waste streams, except mineral waste, based on customs information and available data from Member States.

⁵⁹ See UNEP (2018), The State of Knowledge of Crimes that have Serious Impacts on the Environment.

the EU continues to pursue an ambitious policy to make ship recycling greener and safer⁶⁰. In particular, since 2019, EU-flagged vessels can only be dismantled in facilities included in an EU approved list. In addition, the EU already supports international efforts towards sustainable ship recycling worldwide.

Waste management plays an important role in the circular economy. For many countries, particularly developing countries, this is the first problem that needs to be addressed to start the transition. Reducing the amount of waste generated, including through product design, product reuse and repair, favouring recycling (including through separate collection) and turning waste where possible into a resource will demand investment in waste prevention and reuse, collection and recycling infrastructures. This also to ensure as much as possible that waste treatment does not result in negative environmental and health impacts and that the recycled materials are safe and of high quality. Many of the EU's partner countries, in particular developing countries, lack the capacity, frameworks and systems to achieve this. Working with these countries to help them improve their waste prevention and management policies, standards and practices would contribute to address these challenges, in line with EU approaches.

2.2.5. *Water*

Water, with its life-giving property for nature, people and the economy, is an irreplaceable resource. In 2015, two billion people across the world lacked safe drinking water, and 4.5 billion lacked safe sanitation services⁶¹. Globally, 80% of waste water flows back into the environment without being treated or reused⁶². In 22 countries, mostly in Northern Africa, the Middle East and in Western, Central and Southern Asia, the water stress⁶³ level is above 70%, indicating a strong probability of future water scarcity. Data indicates that by 2030, the world may face a 40% gap in water supply versus demand⁶⁴. At the same time, water availability is crucial for food security. Agriculture is responsible for 70% of freshwater withdrawals globally⁶⁵.

Across the globe, water is increasingly becoming an acute environmental problem, with challenges ranging from water shortages and droughts to pollution through chemicals and nutrients caused by excessive use or lack of proper treatment, over-abstraction and contamination of groundwater, and the deterioration of water ecology due to hydromorphological changes. Climate change will exacerbate these problems as it will change precipitation patterns.

Energy and water are inextricably linked: 'water for energy' is needed for cooling, storage, biofuels, hydropower, etc., and 'energy for water' to pump, treat and desalinate. Without energy and water, basic human needs cannot be met to produce food for a rapidly growing global population and achieve economic growth. Producing more "crops per drop" to meet

⁶⁰ Regulation (EU) No 1257/2013 of the European Parliament and of the Council of 20 November 2013 on ship recycling (OJ L 330, 10.12.2013, p. 1-20).

⁶¹ UN Water and UNESCO (2019), Leaving no one behind. The United Nations World Water Development Report 2019.

⁶² <https://www.unwater.org/water-facts/quality-and-wastewater/>.

⁶³ <https://www.eea.europa.eu/archived/archived-content-water-topic/wise-help-centre/glossary-definitions/water-stress>.

⁶⁴ UN Water and UNESCO (2019), Leaving no one behind. The United Nations World Water Development Report 2019.

⁶⁵ FAO (2017), Water for Sustainable Food and Agriculture. A report produced for the G20 Presidency of Germany, p. 1; see also Science for Environment Policy (2013), In-Depth Report 'Sustainable Food. A recipe for food security and environmental protection?'

present and future food demands means developing new water governance approaches. At the same time, addressing the water needs of the energy and agriculture sectors should not have an unduly negative effect on natural ecosystems that provide essential services, such as fish provisioning, flood protection, erosion prevention, pollination, and indeed water to users. These interactions have been so far largely underappreciated. Solutions for efficient and equitable allocation of water across all sectors would be needed, recognising at the same time that they should be tailored to the socio-economic and ecological specificities of a region. More integrated approaches are needed to take into account the interactions between water, energy and agriculture as well as household demand⁶⁶. This also includes exploiting innovative and circular forms of sector integration (e.g. wastewater for energy). In fact, reducing water use and using water more efficiently does not only generate resource savings but also important energy savings, given the large amounts of energy that are needed for water treatment, water infrastructure (pumping it to end-users and back to water treatment facilities), as well as water heating in the case of warm water needs. A study for the European Commission estimated that water savings in all sectors in the EU could lead to between 2% and 5% of reduced total primary energy consumption in EU-28⁶⁷. The United States Environment Protection Agency estimates that 3-4% of the United States' electricity consumption is used to provide drinking water and wastewater services each year in the country⁶⁸.

Applying the circular economy's main principles – reduce, reuse and recycle – in the water sector is an important way of addressing the problems outlined above. Wastewater “resource recovery” type treatment mechanisms are available to generate energy, capture nutrients like nitrogen, phosphorus and potassium, recycle irrigation grade water (alleviating water scarcity) plus improve fresh water quality and aquatic habitats (biodiversity) via reduced eutrophication-oxygen depletion⁶⁹. Industrial pretreatment programmes, a standard component to protect traditional wastewater collection and treatment infrastructure, must be optimised for greater gains in efficiency and water reuse.

An essential precondition to reducing the use of water is that the resource is properly priced taking account of: (i) local socioeconomic and cultural factors; (ii) cultural conditions, and environmental factors; (iii) the cost of resources and externalities, while respecting (iv) the human right to access water and sanitation. Watershed conservation and sustainable water management can also contribute to increasing water availability while reducing water use. Major water savings can be realised through improving water use efficiency in the agriculture and food sector (in particular through more efficient irrigation systems, enhanced efficiency in food processing and farmer/consumer food product selection/consumption based on local water availability/scarcity levels). In addition to being an important EU internal policy goal, sustainable water management – in line with the EU Foreign Affairs Council conclusions on Water Diplomacy (see below) – is an important topic in environmental discussions in fora outside the EU. International discussions could also focus on water reuse and the use of non-conventional waters, which are practices that can contribute to sustainable water management. Some countries are already extensively re-using water due to their particular environmental conditions. The EU could cooperate with relevant partners to ensure greater global uptake of water reuse. Future circular economy missions (see Section 6.3.4) may address the water

⁶⁶ https://publications.jrc.ec.europa.eu/repository/bitstream/JRC114177/kjna29509enn_002.pdf.

⁶⁷ https://ec.europa.eu/environment/enveco/resource_efficiency/pdf/studies/final_report.pdf.

⁶⁸ <https://www.epa.gov/sustainable-water-infrastructure/water-and-energy-efficiency-utilities-and-home>.

⁶⁹ UNU-INWEH, UN University Institute for Water, Environment and Health; M. Qadir et al.; Natural Resources Form (27 January 2020), Global and regional potential of wastewater as a water, nutrient and energy source.

sector, as this is a very innovative, fast moving sector, with many good practices to learn from, and that it includes many European businesses.

The EU Foreign Affairs Council conclusions on Water Diplomacy of November 2018⁷⁰ address these global challenges linked to water and reflect the EU commitment to enhance its water diplomacy in order to promote peace and stability. They also underline the significant contribution of the circular economy to water savings, including by re-use.

Overall, water-based governance offers clear opportunities to address resource sharing and align water themes to help usher in carbon-neutral, circular economies. More than 300 rivers in the world flow across country boundaries – and can benefit from establishing joint-entities to affect equitable, effective and gender-inclusive water use (with parallel pollution reduction), according to the approaches set forth in integrated water resource management and the EU Water Framework Directive.

2.3. Opportunities for different actors

2.3.1. Global opportunities

Raising resource productivity globally through more efficient extraction and processing of raw materials⁷¹, improved ‘circularity’ in product policy and reducing waste can greatly lower both resource consumption and greenhouse gas emissions, as well as reduce the supply risk of raw materials. Besides increasing circularity of resource extraction, more circular approaches at product level⁷² also offer opportunities to reduce global impacts as well as resource dependency. Given the local impacts⁷³ of mining and the fact that the demand for certain raw materials is set to increase in the future, for instance due to an enhanced focus on green energy and the transition towards climate neutrality, it is essential to mitigate these impacts by applying adequate technologies or management practices. As many areas of resource use are relatively inefficient or unexploited⁷⁴, the potential for resource efficiency is very high⁷⁵ (see Figure 5).

The IRP has elaborated a global sustainability scenario⁷⁶, in which resource efficiency and circularity slow significantly down the increase in resource use, so that incomes and other wellbeing indicators improve, while key environmental pressures decrease. In this scenario, a slowdown in natural resource use in high-income countries offsets an increasing use among emerging and developing economies. Global resource productivity increases by 27% from 2015 to 2060, while average GDP per person doubles and per capita resource use converges across different country groups decreasing to 13.6 tonnes per person in high-income countries and increasing to 8.2 tonnes per person in low-income countries.

⁷⁰ <https://www.consilium.europa.eu/media/37022/st13991-en18.pdf>.

⁷¹ Efficiency in mineral extraction and processing significantly reduces waste (need for management, reduction and recycling of extractive waste) and inputs needed (energy, water, etc.).

⁷² SWD(2019) 91 – Sustainable Products in a Circular Economy. Towards an EU Product Policy Framework contributing to the Circular Economy.

⁷³ STRADE (2016), European Policy Brief. Outlining Environmental Challenges in the Non-Fuel Mining Sector, pp. 1-5 (https://www.stradeproject.eu/fileadmin/user_upload/pdf/PolicyBrief_04-2016_Sep2016_FINAL.pdf).

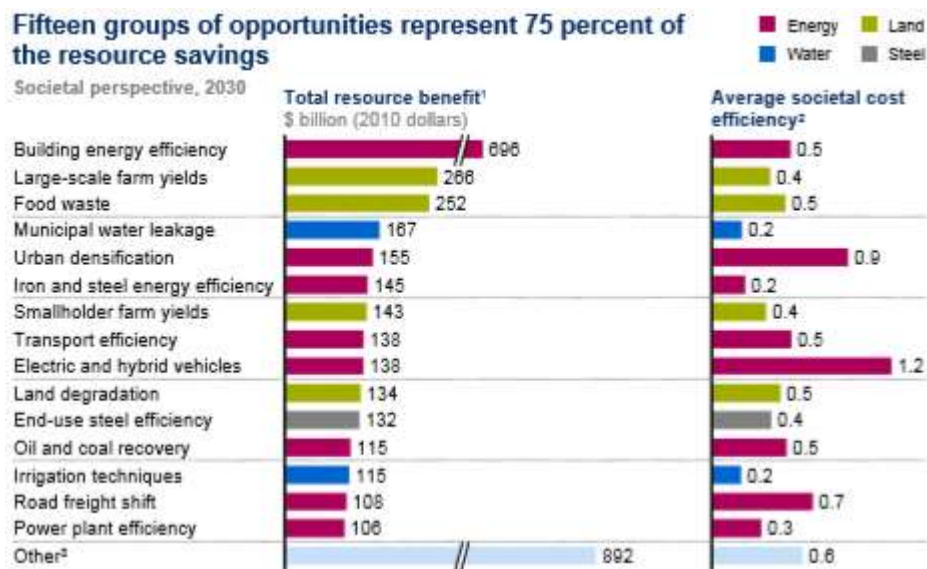
⁷⁴ It is estimated that the world is only 9% ‘circular’ (Circle Economy, ‘The Circularity Gap Report 2019’, p. 8).

⁷⁵ IRP (2016), Resource Efficiency: Potential and Economic Implications. Summary for Policymakers, Preface.

⁷⁶ IRP (2019), Global Resources Outlook 2019. Summary for Policymakers, pp. 28-29. See pp. 98-118 of the full report for details.

The IRP points out that measures in such sustainability scenario achieve *absolute* impact decoupling and *relative* resource decoupling. Furthermore, economic growth is boosted by 8% compared with the status quo and the near-term economic costs of shifting to a 1.5°C climate pathway are outweighed. Resource efficiency policies reduce greenhouse gas emissions by 19% compared with the status quo. Combined with other climate measures, global emissions fall by 90% in 2060, rather than rising 43%. The circular economy’s importance for climate action is confirmed by other reports⁷⁷. The 2019 initiative by the EU’s energy-intensive industries⁷⁸ is therefore noteworthy.

Figure 5: The top 15 categories of resource efficiency potential⁷⁹



2.3.2. Opportunities for the EU

With its global circular economy efforts, the EU supports, among others, sustained action by governments, particularly those that view their transition to a circular economy as a necessary strategic choice. The EU can benefit from ensuring that all countries and regions manage their natural resources sustainably and embrace a more sustainable model of economic development. Such model is considered to contribute to EU development and environment objectives, notably concerning sustainable product policy⁸⁰, facilitating market access and creating business opportunities for EU and other actors. Moreover, sustainable sourcing and security of supply of raw materials is essential to EU businesses operating in the context of global value chains and aspiring to place sustainable products on the market (despite advances

⁷⁷ Material Economics-SITRA (2018), The Circular Economy: a powerful force for climate mitigation; Ellen McArthur Foundation-Material Economics (2019), Completing the Picture: How the Circular Economy Tackles Climate.

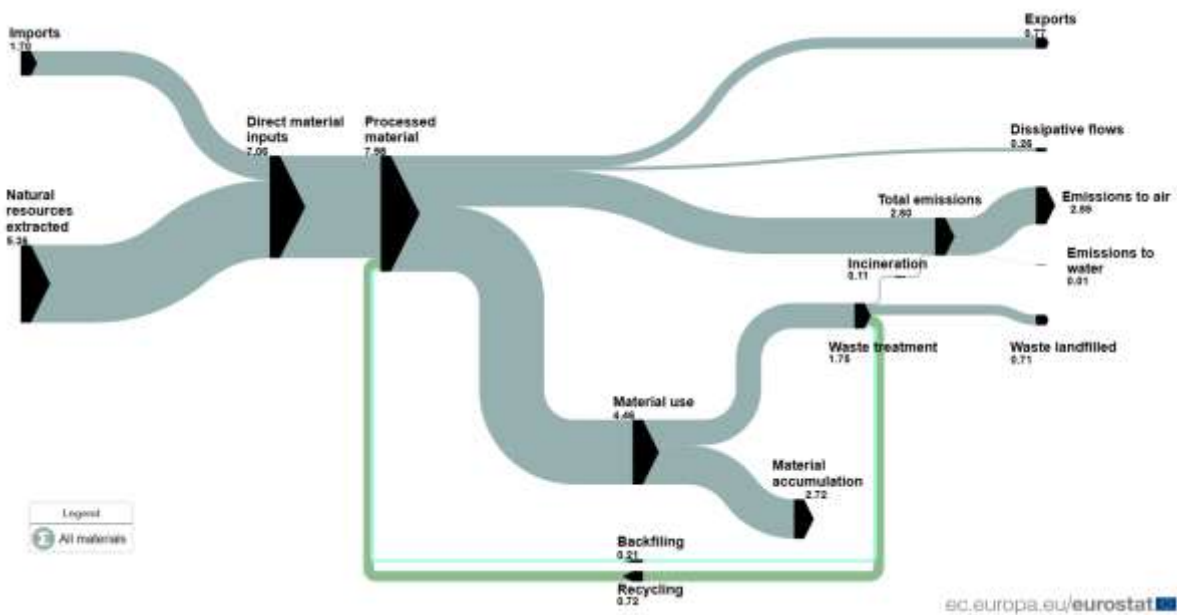
⁷⁸ Masterplan for a Competitive Transformation of EU Energy-intensive Industries Enabling a Climate-neutral, Circular Economy by 2050.

⁷⁹ Dobbs et al. (2011), Resource Revolution: Meeting the world’s energy, materials, food, and water needs, McKinsey Global Institute, p. 14. ‘Total resource benefit’: based on current prices for energy, steel, and food plus unsubsidised water prices and a shadow cost for carbon. ‘Average societal cost efficiency’: annualised cost of implementation divided by annual total resource benefit. ‘Other’: includes other opportunities such as feed efficiency, industrial water efficiency, air transport, municipal water, steel recycling, wastewater reuse, and other industrial energy efficiency.

⁸⁰ SWD(2019) 91 – Sustainable Products in a Circular Economy. Towards an EU Product Policy Framework contributing to the Circular Economy.

in research and innovation, the substitution potential of raw materials via deployment of existing solutions is relatively limited in the foreseeable future and existing secondary raw materials can only satisfy a limited part of the demand).

Figure 6: Material flows in the EU-27 (2017)⁸¹



In the short term, primary raw materials are projected to continue to be the main way of satisfying the demand for material resources (see Figure 6), especially given their importance for circular and clean technologies, and digital, space and defence applications⁸². The EU Raw Materials Initiative⁸³ involves a diversification strategy to secure the supply of and access to raw materials from multiple sources, e.g. from global markets, from the EU and through secondary raw materials. It addresses the sustainability aspect throughout the mining lifecycle, beginning with extraction, to minimise social and environmental impacts. Raw materials industries in the EU have steadily reduced the environmental impact in recent decades – including greenhouse gas and major air pollutant emissions, and significantly improved water use (through e.g. increasing water re-use) and the control of water discharges⁸⁴. Through the European Institute of Innovation and Technology (EIT) and its Raw Materials Knowledge and Innovation Community⁸⁵, the EU supports the upscaling of new technologies for the flexible use of raw materials with a focus on entirely new methods for sustainable extraction, recovery and production of raw and advanced materials critical for new applications in the green economy, such as e-mobility or renewable energy. A global transition towards a circular economy can help ease the pressure in terms of the supply of certain critical raw materials⁸⁶.

⁸¹ Eurostat data: [env_wassd](#); [env_ac_sd](#); [env_ac_mfa](#). A similar image for the global economy is in Figure 1.

⁸² COM(2015) 614 – Closing the loop. An EU action plan for the Circular Economy. See also the Raw Materials Scoreboard 2018, p. 8.

⁸³ COM(2008) 699.

⁸⁴ Raw Materials Scoreboard 2018, pp. 86-94.

⁸⁵ The EIT Raw Materials Knowledge and Innovation Community focuses on raw and advanced materials to secure Europe’s industrial leadership and sustainable future through pushing for new advances in the recycling of high-tech metals which are vital to the European industry and its transition from a linear to a circular economy by integrating key European industry players (<https://eitrawmaterials.eu/>).

⁸⁶ See references in footnote 4.

Digitalisation can both enable and accelerate the transition to circular economy by tracking, tracing and mapping information on products, components, materials and value chains. These data can be used to develop a digital product passport, resource mapping, consumer information and novel applications to promote and support sustainable and circular product design, use, maintenance, recycling and ultimately enabling new circular business models. This is particularly important for the EU, which does not possess natural resources for most of these materials and therefore often depends on imports from other countries. A more sustainable production and consumption pattern in third countries could reduce the growth rate of their domestic demand, thus potentially contributing to the EU's resource security.

As a major economy the EU is a leading exporter and importer of goods and services and is deeply embedded in global value chains⁸⁷. A global transition towards a circular economy will help lower both Europe's and the world's consumption footprint, including regarding biodiversity loss, deforestation, land and soil degradation, and pollution, and ensure a level-playing field for EU businesses. Improving resource efficiency also contributes to an ambitious climate mitigation policy⁸⁸. This is true both within the EU and abroad. EU solutions for decarbonisation, such as the circular economy, can be replicated also in third countries. Next to optimising the supply of waste material offered for high-quality recycling and preparation for reuse, circular economy policies provide opportunities for developing effective and efficient greenhouse gas and pollution reduction methods. When it raises the overall performance of national economies, the circular economy can help opening up new markets and jobs⁸⁹.

The bioeconomy plays a key role in this by stimulating sustainable, innovative use of biological resources that support local economies. Its three pillars on strengthening the bio-based sectors, deploying local bioeconomies around Europe and understanding the ecological boundaries address the environmental, economic and social challenges that we face⁹⁰. Sustainable biorefineries⁹¹ can represent a key element in this transformation, making the EU a global front-runner.

2.3.3. *Opportunities for developing countries*

It is increasingly recognised that the transition is not only urgent for developed economies, but also for developing countries. They face the same need to improve the environmental and social sustainability of their economies and mitigate the economic and social costs of further environmental degradation, which, if unaddressed, could lock them further into poverty. At the same time, greener economies can provide opportunities, such as improved market access (e.g. for producers of environmental goods and services) or financial savings from more resource efficient processes⁹² (see also Section 2.2.1). For economies largely based on agriculture, a hallmark of many developing countries, measures related to renewable energy,

⁸⁷ <https://ec.europa.eu/trade/policy/eu-position-in-world-trade/>.

⁸⁸ OECD (2018) *Global Material Resources Outlook to 2060*. Highlights, p. 183. See also Ellen MacArthur Foundation (2019), *Completing the Picture: How the Circular Economy Tackles Climate Change*, p. 11.

⁸⁹ UNIDO (2019), *Circular Economy* (https://www.unido.org/sites/default/files/2017-07/Circular_Economy_UNIDO_0.pdf).

⁹⁰ COM(2018) 673 – *A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment*.

⁹¹ C. Parisi (2020), *Distribution of the bio-based industry in the EU*, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-16408-1, doi:10.2760/745867, JRC119288.

⁹² European Commission, DG DEVCO (2018), *The inclusive green economy in EU development cooperation*, pp. 11-12.

water efficiency and resilience to climate change are essential to secure growth in the sector while addressing social and environmental problems.

In its report ‘Why a Green Economy Matters for the Least Developed Countries’⁹³, the UN stresses both the importance and the opportunities for the poorest countries to transform their economies, observing that the least developed countries (LDCs) rely significantly on natural capital assets on which their green economy can be based, and have a large potential. The report also argues that, ‘while other countries face sizable economic and social costs of ‘decarbonisation’, alongside costs linked to retiring inefficient fossil fuel-based technologies, LDCs can jump start the green economy transition by maintaining and expanding the sustainable practices that already exist’.

In its research paper ‘An Inclusive Circular Economy. Priorities for Developing Countries’ (May 2019), Chatham House notes that, under the right enabling conditions, the circular economy could provide new opportunities for economic diversification, value creation and skills development – going beyond waste management and recycling. With enough investment, developing countries could leapfrog developed countries in digital and materials innovation aimed at sustainable production and consumption patterns.

Finally, UNIDO’s paper on the circular economy⁹⁴ notes that developing countries, especially LDCs, may struggle to access the knowledge and new technologies that make the circular economy possible. Yet, developing countries stand to also profit immensely from a circular economy. There is a growing need for material, water and renewable energy (e.g. solar, wind) because of both population growth and increased demand driven by infrastructure, industry and consumers in developing countries. Circular economy activities have the potential to address a significant share of this need – dampening or, possibly, reversing the rise in resource use by developing countries, and in turn reducing resource depletion, climate change and the pollution of natural areas.

2.3.4. Opportunities for raw materials exporting countries

The transition to a global resource-efficient and circular economy that closes the loop of product lifecycles, extracting the maximum value and use from raw materials, products and waste may threaten the economic interests of raw materials exporting countries through a lower demand for their resources⁹⁵. However, the IRP has proposed a sustainability scenario in which annual global extraction would reach 143 billion tonnes by 2060 (instead of 190 billion tonnes on the basis of historical trends)⁹⁶. Measures in such sustainability scenario would achieve *absolute* impact decoupling and *relative* resource decoupling, but not at the expense of economic growth. Global GDP in 2060 would be 8% above historical trends 2015-2060⁹⁷ and economic growth would increase at 11% on average in low- and middle-income countries and at 4% on average for high-income nations, while all country groups would still benefit from economic gains⁹⁸.

⁹³ United Nations Environment Programme (UNEP), United Nations Conference on Trade and Development (UNCTAD), and Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS) for the LDC-IV Conference in May 2011.

⁹⁴ UNIDO (2019), Circular Economy (available at https://www.unido.org/sites/default/files/2017-07/Circular_Economy_UNIDO_0.pdf).

⁹⁵ See OECD (2018), International Trade and the Transition to a Circular Economy. Policy Highlights.

⁹⁶ IRP (2019) Global Resource Outlook 2019, p. 127 and 102, respectively.

⁹⁷ IRP (2019), Global Resources Outlook 2019, section 4.2, pp. 102-108.

⁹⁸ IRP (2019) Global Resource Outlook 2019, pp. 127-128.

The EU Raw Materials Initiative (see Section 2.3.2) pursues action to diversify supply from third countries and supports international partnerships based on sustainable resource production. Much of the global supply of raw materials is concentrated in countries with low levels of governance, which often results in harmful environmental and social impacts⁹⁹. Robust schemes for responsible sourcing of raw materials could contribute to increase social benefits of raw materials extraction in local communities¹⁰⁰. Furthermore, climate change impacts, if unaddressed, pose additional challenges to the sustainability of raw material trade, by for instance affecting the operations of port infrastructure, interrupting supply streams and with potential cascading effects in the global economy. The EU can benefit from securing access to raw materials and working with these countries to promote EU standards and practices on resource efficiency, sustainability (transparency, due diligence, responsible mining practices) and circularity, including on reducing the environmental impact (reducing greenhouse gas and major air pollutant emissions and lessening water impacts). Further possibilities are linked to supporting international initiatives, such as the Extractive Industries Transparency Initiative (EITI) (see Section 3.6), as well as promoting the implementation of climate change adaptation and resilience measures.

3. DESCRIPTION OF ACTIONS AT MULTILATERAL LEVEL

The Action Plan calls for promoting the global circular economy transition systematically including in the EU's multilateral policy dialogues, as well as in international and in multilateral environmental agreements.

3.1. Global agreement on plastics

3.1.1. *The plastics challenge*

Plastic is a ubiquitous feature of modern life thanks to its various material advantages including flexibility, robustness and versatility. Global plastics production reached 314 million tonnes in 2014, a twenty-fold increase from the 1960s. It is expected to reach up to 1.2 billion tonnes annually by 2050. Plastics production and the incineration of plastic waste is estimated to give rise globally to approximately 400 million tonnes of CO₂ a year¹⁰¹. If current trends continue, by 2050 it could rise to 20% of global oil consumption and 15% of the global annual carbon emissions¹⁰². Moreover, due to the cheap price of plastics, reuse and recycling of end-of life plastics remains very low, particularly when compared to other material streams. In the EU, around 29.1 million tonnes of plastic waste are generated every year and only 32.5% of such waste is collected for recycling¹⁰³. Worldwide, between 8 and 13 million tonnes of plastic enter the oceans each year¹⁰⁴. The economic activities directly affected by marine plastic litter and micro-plastics include shipping, fishing, aquaculture, tourism and recreation. The cost associated could be estimated to be at least \$8 billion per year globally¹⁰⁵.

⁹⁹ JRC (2019), Mapping the Role of Raw Materials in Sustainable Development Goals. A preliminary analysis of links, monitoring indicators, and related policy initiatives. EUR 29595 EN, Publications Office of the European Union, Luxembourg, 2019 ISBN 978-92-76-08385-6, doi:10.2760/026725, JRC112892.

¹⁰⁰ L. Mancini and S. Sala (2018), Social impact assessment in the mining sector: Review and comparison of indicators frameworks, *Resources Policy* 57 (2018) 98–111.

¹⁰¹ <https://ec.europa.eu/environment/circular-economy/pdf/plastics-strategy-brochure.pdf>.

¹⁰² Ellen MacArthur Foundation (2016), *The New Plastics Economy*; CIEL (2019), *Plastic & Climate*.

¹⁰³ <https://ec.europa.eu/environment/circular-economy/pdf/plastics-strategy-brochure.pdf>.

¹⁰⁴ Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A., Narayan, R., & Law, K. L. (2015), Plastic waste inputs from land into the ocean, *Science*, Volume 347, 6223, pp. 768-771.

¹⁰⁵ SWD(2018) 16, p. 17.

With plastic production expected to double again over the next 20 years, based on current production and waste management trends an estimated 12 billion tonnes of plastic waste will be in landfills or in the natural environment by 2050¹⁰⁶. The solution must therefore go beyond waste management, and emphasis should be placed on prevention as well as on resource-efficient and long-term circular use of plastic products¹⁰⁷.

3.1.2. *Moving towards a global agreement on plastics*

Despite the many political and legal initiatives on plastic waste, there is no dedicated international agreement in place that is specifically designed to address the production and consumption elements relating to plastic pollution. Multiple campaigns and efforts (see Section 3.4, and also 3.5) are currently pushing for action on reducing and recycling plastic products, but only a few countries have concrete measures in place to address the plastic pollution problem at the beginning of the life cycle of these products (e.g. product design, and sustainable consumption and production). Interestingly, a number of developing countries¹⁰⁸ have adopted measures to ban the use of single-use plastics. But the absence of an agreement on global response options also hampers the ability of countries to effectively implement some of these measures, particularly those with trade implications and/or affecting products standards (e.g. concerning microplastics intentionally added).

Promoting the global uptake of the EU's circular economy approach to plastics has the potential of considerably reducing the overall impacts of plastics on the environment (both land and seas). An international agreement on preventing plastic pollution would contribute to tackling the global plastics crisis, in line with the European Plastics Strategy¹⁰⁹. Explicit references to an international agreement on plastics were made by EU Member States in the Council conclusions on the circular economy¹¹⁰ and on oceans and seas¹¹¹. More recently, in its resolution on the European Green Deal, the European Parliament called for global action in tackling the plastic pollution problem¹¹².

In line with the approach set out in the European Plastics Strategy, a global agreement on plastics can target both land- and sea-based sources of plastic pollution, including all types of intentionally added and un-intentionally released microplastics, and can cover the whole plastics life cycle (design, production, logistics, consumption, and waste stages). This would result in a more balanced approach at the global level, so that the entire life cycle of plastics – rather than only the waste management phases (see Section 3.7 on the Basel Convention) – is taken into account in developing circular solutions and that costs and efforts are more evenly spread along the product cycle / supply chain. In so doing, synergies with work being done at

¹⁰⁶ UNEP (2018), Combating marine plastic litter and microplastics: an assessment of the effectiveness of relevant international, regional and subregional governance strategies and approaches – a summary for policymakers, UNEP/AHEG/2018/1/INF/3 (https://papersmart.unon.org/resolution/uploads/unep_ahег_2018_inf3_summary_assessment_en_rev.pdf).

¹⁰⁷ In 2018, the Commission adopted a comprehensive European Strategy for Plastics in Circular Economy (COM(2018) 28), followed in 2019 by the Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment (OJ L 155, 12.6.2019, pp. 1-19). Work is under way (<https://ec.europa.eu/research/sam/index.cfm?pg=pollution>) to address intentionally-added and unintentionally-released microplastics, e.g. from tyre wear, synthetic textiles, plastics prills and pre-production plastic pellets.

¹⁰⁸ Including Bangladesh, Mauritania, Morocco, Rwanda, Eritrea and lately Senegal.

¹⁰⁹ COM(2018) 28.

¹¹⁰ 12791/19 (4 October 2019).

¹¹¹ 14249/19 (19 November 2019).

¹¹² 2019/2956(RSP).

the national, regional and multilateral¹¹³ level could be fully exploited and country-specific contexts taken into account.

3.2. Global Circular Economy Alliance

The way in which we extract, process and use material resources and how we minimise their environmental and social impact are key factors for achieving commonly agreed international objectives. In the Action Plan, the Commission has announced that it will propose a Global Circular Economy Alliance to identify knowledge and governance gaps in advancing global circular economy and take forward partnership initiatives, including with major economies. The Alliance could also be of use in supporting the circular economy transition through multilateral fora, such as the G7/G20 (see Section 3.5).

To achieve this overarching objective and building on existing processes, the Alliance could:

- a) help map domestic policies and regulatory frameworks in third countries on the management of natural resources (e.g. water, soil, minerals, biomass) and the circular economy transition, including sustainable use, improving circularity, and strengthening resilience to climate change impacts;
- b) disseminate and exchange best practices and, where relevant, compare the different circular economy initiatives being developed in selected countries and regions, and by relevant stakeholders (international organisations, global businesses etc.), to take forward partnership initiatives;
- c) identify, disseminate and exchange knowledge about just transition policies and practices towards circular economy, such as promoting green and decent work, or developing accompanying measures in sectors that may be negatively affected by the transition;
- d) identify global barriers to the circular economy transition and bottlenecks in decoupling economic growth from emissions, resource use and biodiversity loss, reducing exposure and vulnerability to climate change and disasters, including through long-term circular materials and products with a low environmental footprint;
- e) advise on possible global governance improvements to address such barriers and bottlenecks; and
- f) promote a global data base on resources mapping and resources monitoring solutions based on the Copernicus Earth observation and modelling services aiming at establishing a planetary resource “budget” plan, in the light of the definition of a ‘safe operating space’ (see Section 3.3).

The Alliance could bring together other global champions of circular economy and sustainable resource management, including relevant international organisations and bodies, selected partner countries and regions, business associations, NGOs, and academia. Priority could be given to prospective members who can play a key role in facilitating the dissemination and uptake of the work of the Alliance, have a track-record in driving global change towards the circular economy, and more generally can contribute robust expertise and access to relevant networks.

The Alliance could build on insights, reports, assessment and other relevant information, e.g. under the EU Raw Materials Initiative or the Space programme. Specific terms of reference, meeting frequency, and tentative work plan would be developed separately.

¹¹³ In particular, as mentioned above, in the context of the Basel Convention.

3.3. Defining a ‘Safe Operating Space’ and initiating discussions on an international agreement on the management of natural resources

3.3.1. Defining a ‘Safe Operating Space’

Aware that circular economy and the management of natural resources are two intertwined aspects of sustainable development¹¹⁴, in the Action Plan the Commission has committed to explore the feasibility of defining a ‘safe operating space’ for natural resource use. A ‘safe operating space’ refers to use of resources (e.g. water, soil, land, minerals, metals, biomass) that does not exceed certain local, regional and/or global thresholds so to avoid that environmental impacts exceed planetary boundaries¹¹⁵ and lead to the breakdown of life-sustaining functions and impairing sustainable livelihoods across countries¹¹⁶. The 1.5°C target of the Paris Agreement and the resulting pathways to climate neutrality is an example of a remaining safe operating space for greenhouse gas emissions. The limit of 1.64 billion hectares for the expansion of cropland by 2020 proposed by the IRP¹¹⁷ is another (albeit less known) example.

For other resources, however, the science and knowledge around such science-based targets is far from straightforward or well-established. Further research and insights can be provided by bodies such as the IRP¹¹⁸, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Science-Policy Interface of the United Nations Convention to Combat Desertification, the Intergovernmental Technical Panel on Soils (ITPS) of the Global Soil Partnership, the World Resources Forum, the OECD, the European Environment Agency, the Copernicus services (Space Programme), and relevant outcomes of Horizon 2020 and Horizon Europe projects.

3.3.2. Considering initiating discussions on an international agreement on the management of natural resources

There is a lack of governance mechanism that address the unsustainable and linear use of natural resources at global level, despite the strong link between resource management, environmental impacts and the circular economy. While a number of resources are (at least partially) dealt with by multilateral environmental agreements or conventions¹¹⁹, their geographic scope, thematic coverage and implementation success vary greatly and they do not constitute an adequate governance framework to bring about the transformative change needed.

Building on the possible development of a ‘safe operating space’ for natural resource use, the Action Plan foresees that the Commission will consider initiating discussions on an international agreement on the management of natural resources. It should be noted that the

¹¹⁴ Yong Geng, Joseph Sarkis and Raimund Bleischwitz (2019), ‘Globalize the circular economy’, *Nature*, 565, pp. 153-155.

¹¹⁵ Rockström et al. (2009), A safe operating space for humanity, *Nature*, 461 (7263), 472-475.

¹¹⁶ WEF (2019), The Next Frontier: Natural Resource Targets Shaping a Competitive Circular Economy within Planetary Boundaries.

¹¹⁷ IRP (2014), Assessing Global Land Use. Balancing Consumption with Sustainable Supply.

¹¹⁸ At its 24th meeting held in Nairobi in March 2019, the Steering Committee of the International Resource Panel stressed the high political relevance of the work on science-based targets and underlined the need for a robust outcome.

¹¹⁹ For example, land by the United Nations Convention to Combat Desertification, and water by the UNECE Water Convention and the UN Watercourses Convention (see Section **Error! Reference source not found.**).

Council, in its conclusions on ‘More circularity – Transition to a sustainable society’, adopted on 4 October 2019, encouraged the Commission and the EU Member States to explore opportunities for such an agreement¹²⁰.

While considering initiating discussions on an international agreement on the management of natural resources, the Commission may explore whether such an agreement could set up the necessary mechanisms for knowledge exchange and capacity building as well as provide the context in which the safe operating space can be operationalised. This may include international rules on waste prevention and management, extended producer responsibility, rules on product design or consumer information to name just a few approaches. Such international agreement may also consider the establishment of national circular economy action plans, which would need to be coherent with the global aims of the instrument, mindful of SDG target 8.4¹²¹. The scope of such an international agreement may need to be narrowed down, as natural resources in principle include material resources (biomass, minerals, metals, fossil fuels), soil, water etc.

3.4. United Nations (UN)

As the world’s highest decision making body on the environment, the United Nations Environment Assembly (UNEA) has an important role in promoting a global circular economy. A EU-supported resolution on the circular economy was adopted at the fourth meeting of the Assembly (UNEA-4), held in Nairobi in March 2019. The resolution on ‘Innovative pathways to achieve sustainable consumption and production’¹²² acknowledges that a more circular economy can significantly contribute to sustainable consumption and production and invites the UN Member States to consider approaches and policies for achieving sustainable consumption and production, including but not limited to improving resource efficiency and moving towards a circular economy.

The High Level Dialogue between the EU and the United Nations Environment Programme (UNEP), held every year, includes also circular economy and identifies how best to cooperate to promote a global circular economy.

The EU and its Member States are active in the work of the ad hoc open-ended expert group on marine litter and microplastics (AOEEG)¹²³, established by UNEA-3 to examine the barriers to and options for combating marine plastic litter and microplastics from both land-based and sea-based sources. The AOEEG is due to report its results to UNEA-5 (February 2021).

Bringing the circular economy concept to the United Nations General Assembly (UNGA) could build up its global ownership, and strengthen and widen the recognition of its necessity. Recognition by the UNGA would drive circular economy uptake by the UN system as a whole, including its country-level action. It would also potentially boost the action needed from the UN membership and stakeholders. The EU has, in recent years, organised events in the UN and worked with like-minded countries to inform on and promote a circular economy.

¹²⁰ Paragraph 12: ‘ENCOURAGES the Commission and the Member States to explore opportunities for an international agreement on natural resources management in order to move towards a sustainable and efficient use of natural resources’ (<https://www.consilium.europa.eu/media/40928/st12791-en19.pdf>).

¹²¹ ‘Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead’.

¹²² UNEP/EA.4/Res.1, 28 March 2019.

¹²³ UNEP/EA.3/Res.7, 30 January 2018.

There is a widely recognised gap in the UNGA consideration for SDG 12 on sustainable consumption and production (no UNGA resolution has so far focused in particular on that SDG), which all UN Member States have nevertheless agreed to address as part of the 2030 Agenda for Sustainable Development¹²⁴.

3.5. G7/G20

The G7 and G20 are two influential decision-making processes for a wide range of policy areas¹²⁵. The G7 and G20 Presidencies set the agendas – and recently they have given more attention to environmental topics. Current G7/G20 processes of particular interest to advance the global transition to a circular economy include:

- the G7 Alliance on Resource Efficiency (launched in 2015);
- the G7 Action Plan to Combat Marine Litter (2015);
- the G20 Resource Efficiency Dialogue (2017) to share knowledge, best practice and advance resource efficiency;
- the G20 Marine Litter Action Plan (2017); and
- the G7 'Future of the Seas and Oceans' working group (2017);
- the G7 Innovation Challenge to Address Marine Plastic Litter (2018);
- the G20 Implementation Framework for Action on Marine Plastics Litter (2019) to raise awareness, engage stakeholders and commit the members to priority actions to combat marine litter and address plastics mismanagement.

In 2019, the G20 Leaders also endorsed the 'Osaka Blue Ocean Vision' – a commitment to reduce additional pollution by marine plastic litter to zero by 2050. Apart from participating in the formal G7 and G20 negotiations, the Commission organises thematic events and workshops to foster environmental diplomacy in the G7 and G20¹²⁶.

Given the importance of EU action in G7/G20, the Commission launched a three-year Partnership Instrument support contract in 2018 for 'Environmental Diplomacy in G7/G20'¹²⁷ to facilitate the EU's engagement in relevant environmental activities and encourage a greater ownership of environmental issues within these fora, including through workshops.

3.6. Selected multilateral initiatives

The **10 Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP)**¹²⁸, also known as the One Planet Network, is a global framework of action to enhance international cooperation to accelerate the shift towards sustainable consumption and production (SCP) in both developed and developing countries. It was adopted at the United Nations Conference on Sustainable Development in 2012 (Rio+20) to accelerate the

¹²⁴ The definition of different indicators and sub-indicators based also on sources like the Copernicus Land and Marine monitoring services products, already taken up by various International organisations like the Group on Earth Observation (GEO), the International Panel for Climate Change (IPCC), or the Food and Agriculture Organisation (FAO) would facilitate a renewed attention to the goal.

¹²⁵ <http://www.g20.utoronto.ca/>.

¹²⁶ https://ec.europa.eu/environment/international_issues/relations_g20_events_en.htm

¹²⁷ Annex 7 to the Commission Implementing Decision on the 2017 Annual Action programme for the Partnership Instrument.

¹²⁸ <https://www.oneplanetnetwork.org/>.

shift towards SCP across the world. It is composed of six programmes on Sustainable Public Procurement (SPP), the Sustainable Tourism Programme (STP), the Consumer Information for Sustainable Consumption and Production (CI-SCP) programme, the Sustainable Buildings and Construction programme (SBC), Sustainable Food Systems and the Sustainable Lifestyle and Education (SLE). The EU financially supports the 10YFP Secretariat.

The **Partnership for Action on Green Economy**¹²⁹ (PAGE) was launched in 2013 as a response to the call at Rio+20 to support those countries wishing to embark on greener and more inclusive growth trajectories. It seeks to put sustainability at the heart of economic policies and practices to advance the 2030 Agenda for Sustainable Development and supports nations and regions in reframing economic policies and practices around sustainability to foster economic growth, create income and jobs, reduce poverty and inequality, and strengthen the ecological foundations of their economies. It is a mechanism to coordinate UN action on the green economy and to help countries achieve and monitor the emerging Sustainable Development Goals, especially SDG 8 ‘Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all’. The EU is one of the main PAGE financial supporters.

The **Platform for Accelerating the Circular Economy**¹³⁰ (PACE), launched in 2017, is a public-private collaboration to create systems change at speed and scale. To this end, it: (i) helps partners develop blended financing models for circular economy projects, in particular in developing and emerging economies; (ii) helps create and adjust enabling policy frameworks to address specific barriers to advancing the circular economy; and (iii) helps bring the private and public sector into public-private collaborations to scale up the impact of circular economy initiatives. The World Economic Forum hosts and facilitates the Platform, and the Commission is represented in the PACE Steering Committee.

The **Extractive Industries Transparency Initiative**¹³¹ (EITI) is guided by the consideration that a country’s natural resources belong to its citizens. It has thus established a global standard to promote the open and accountable management of oil, gas and mineral resources. The EITI Standard requires the disclosure of information along the extractive industry value chain from the point of extraction, to how revenues make their way through the government, and how they benefit the public. By doing so, the EITI seeks to strengthen public and corporate governance, promote understanding of natural resource management, and provide the data to inform reforms for greater transparency and accountability in the extractive sector. In each of the 53 implementing countries, the EITI is supported by a coalition of government, companies, and civil society. The Commission is represented as an observer to the EITI Board.

The **Green Initiative** of the International Labour Organisation concentrates on three important areas: (i) advance research and understanding of the challenges and opportunities for the world of work arising from a green transition; (ii) forge policy responses from the world of work in all sectors to ensure decent work and social justice for all; and (iii) build strategic partnerships at national, regional and international levels. The Green Initiative seeks to better equip the world of work to understand the challenges and opportunities of the coming transition, and help them take up the active role that they must play in managing this change. It provides a platform of knowledge and research to further build the case that decent work approaches and social dialogue are indispensable for truly transformative change.

¹²⁹ <https://www.un-page.org/>.

¹³⁰ <https://pacecircular.org/>.

¹³¹ <https://eiti.org/>.

UNEP's **Special Programme**¹³², also known as the Chemicals and Waste Management Programme, provides support to developing countries and countries with economies in transition to enhance their sustainable institutional capacity to develop, adopt, monitor and enforce policy, legislation and regulation for effective frameworks for the implementation of the Basel, Rotterdam and Stockholm Conventions, the Minamata Convention and SAICM (Strategic Approach towards International Chemicals Management) (see section 3.7).

3.7. Selected multilateral environmental agreements and other international agreements

Most environmental problems have a transboundary nature and often a global scope, and they can only be addressed effectively through international cooperation. The EU plays an active role in developing, ratifying and implementing multilateral environmental agreements (MEAs), and has already ratified many of them¹³³. A number of MEAs have clear connections to the circular economy and can help support the transition to a global circular economy.

The **United Nations Framework Convention on Climate Change** (UNFCCC) entered into force on 21 March 1994 and today it has near-universal membership (197 countries). The UNFCCC is a “Rio Convention” – the other two are the UN Convention on Biological Diversity (CBD) and the Convention to Combat Desertification (UNCCD). The three are intrinsically linked. Preventing “dangerous” human interference with the climate system is the ultimate aim of the UNFCCC. The ultimate objective of the Convention is to stabilise greenhouse gas concentrations ‘at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system’. The Paris Agreement is a key tenet in that effort. The importance of the circular economy for climate action is acknowledged by science and policy, e.g. in reports by the OECD, the IRP and the Ellen MacArthur Foundation and Materials Economics¹³⁴ and in the the Commission’s long-term strategic vision on greenhouse gas emissions reduction¹³⁵.

The **Convention on Biological Diversity** (CBD) is the largest, and politically most important international agreement in the field of biodiversity. Biodiversity and healthy ecosystems are fundamental to human wellbeing, sustainable economic growth, resilience to climate change, and to achieving the United Nations Sustainable Development Goals (SDGs) by 2030. The CBD lays a particular emphasis on designing and implementing robust plans for a sustainable use, consumption and production of resources, thereby helping to halt biodiversity loss and to facilitate the adoption of a circular economy approach – and conversely, a more circular economy contributes to reducing the pressure on ecosystems.. The Zero Draft of a Post-2020 Global Biodiversity Framework¹³⁶ includes among its 2030 targets: ‘People everywhere take measurable steps towards sustainable consumption and lifestyles, taking into account individual and national cultural and socioeconomic conditions, achieving by 2030 just and sustainable consumption levels’. The **Convention on International Trade in Endangered Species (CITES)** and the **International Tropical Timber Agreement (ITTA)** are two other example of international treaties that ensure sustainable trade in natural resources.

¹³² <https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/special-programme/goal-special-programme>.

¹³³ https://ec.europa.eu/environment/international_issues/agreements_en.htm

¹³⁴ OECD (2018), Global Material Resources Outlook to 2060; IRP (2019), Resource Efficiency and Climate Change. Material Efficiency Strategies for a Low-Carbon Future; EMF and ME (2019), Completing the Picture: How The Circular Economy Tackles Climate Change.

¹³⁵ COM (2018) 773 – A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy.

¹³⁶ CBD/WG2020/2/3, 6 January 2020.

The **United Nations Convention to Combat Desertification (UNCCD)** is the sole legally binding international agreement linking environment and development to sustainable land management. The Convention addresses specifically the arid, semi-arid and dry sub-humid areas, known as the drylands, where some of the most vulnerable ecosystems and people can be found. The new UNCCD 2018-2030 Strategic Framework is the most comprehensive global commitment to achieve Land Degradation Neutrality (LDN)¹³⁷. The Convention's 197 Parties work together to improve the living conditions for people in drylands, to maintain and restore land and soil productivity, and to mitigate the effects of drought.

The **Basel Convention** on the control of transboundary movements of hazardous wastes and their disposal is the only internationally, legally binding instrument on waste. The Basel ban on exports of hazardous wastes from OECD countries, which has been implemented in EU legislation since 1997, entered into force internationally in December 2019. The Convention regulates shipments of hazardous waste and certain non-hazardous waste. The 187 Parties to the Basel Convention also took a landmark decision in May 2019 with the adoption of new rules governing international trade in plastic waste. This is the primary global tool to promote the adoption of ambitious measures to make sure that international trade in waste is properly controlled and to improve the environmentally-sound management of waste globally. The EU supports other Basel Convention activities, namely strengthening controls on waste shipments and supporting the environmentally-sound management of waste in developing countries. This includes assessing whether additional waste should be placed under the control mechanisms of the Convention, which currently regulates only a fraction of all waste being traded worldwide. The insufficient legislative, administrative and enforcement structures in many countries prevent them from adequately implementing the obligations of the Convention and ensuring the environmentally-sound management of waste. A range of actions involving capacity building, legal and technical guidance would improve the situation. Space based capacities could also be used in the assessment of the implementation of the Convention.

The **Rotterdam Convention** on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade aims to promote shared responsibility and cooperative efforts in the international trade of certain hazardous chemicals in order to protect human health and the environment and contribute to their sound use, for example by facilitating information exchange about their characteristics and by providing rules for their import and export. This global cooperation and exchange of information among Parties is very important for achieving greater harmonisation of chemical management approaches and standards by countries across the globe, which makes it much easier to achieve toxic-free material cycles at global level. The EU very much supports these objectives and goes beyond the requirements of the Convention, providing more information on the regulatory status of chemicals and their characteristics¹³⁸.

The **Stockholm Convention** on persistent organic pollutants (POPs) aims to phase-out the production and use of chemicals that persist in the environment, bio-accumulate in organisms, have adverse effects on human health or the environment and are subject to long-range environmental transport. It also aims to ensure the sound management of those chemicals if already present in products. This is crucial for achieving toxic-free material cycles, which is the basis of a safe circular economy. The EU supports the scientific and technical work under the Convention to develop guidance on best practices for the substitution of POPs and their

¹³⁷ SDG target 15.3: 'By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world'.

¹³⁸ https://ec.europa.eu/environment/chemicals/trade_dangerous/index_en.htm.

sound management when they become or are present in waste¹³⁹. This is very important for ensuring POPs free material cycles at global level.

The **Minamata Convention** on mercury includes provisions prohibiting or restricting the use of mercury and mercury compounds in products and in manufacturing processes. Furthermore, the Minamata Convention provides for the environmentally sound management of wastes constituted of, containing or contaminated by mercury and mercury compounds. The Parties have to take account of the technical guidelines on environmentally sound management of mercury wastes adopted under the Basel Convention, which are currently under review.

Currently, discussions are ongoing at the international level on the **Strategic Approach towards International Chemicals Management (SAICM)** and the sound management of chemicals and waste beyond 2020. Integrating waste into the international framework would allow a more comprehensive approach that takes into account the full life cycle of chemicals. This is particularly important from a circular economy perspective since waste will become an even more important resource in future, and it is therefore crucial to ensure that any contamination of recycled material with hazardous chemicals is minimised in order to protect human health, including the health of workers handling recycled material, and the environment. To achieve this, the EU pursues a life cycle approach for chemicals, which includes full transparency on the presence of hazardous chemicals in products¹⁴⁰. This approach ensures that the information on the presence of such chemicals is available throughout the supply chain and at the end of the product's life, when it becomes waste. Integrating the life cycle approach into this international framework will be very supportive in achieving toxic-free material cycles at global level. The EU also supports FAO's work on improving the management of highly hazardous pesticides in Africa, the Caribbean and Pacific countries.

The **Convention on the Protection and Use of Transboundary Water Courses and International Lakes** (Helsinki Water Convention 1992) and the **United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses** (New York 1997) contribute to the achievement of the Sustainable Development Goals and other international commitments on water, environment and sustainable development. Almost all countries sharing transboundary waters in the region of the United Nations Economic Commission for Europe (UNECE) are Parties to the Helsinki Convention. The UN Convention has currently 36 Parties, of which 13 EU Member States. The EU continues to promote accession to and implementation of international agreements on water cooperation, in particular these two Conventions¹⁴¹.

4. DESCRIPTION OF BILATERAL AND REGIONAL ACTIONS

The EU's extended external relations network and its global 'soft' power provide major prospects for promoting key circular economy policies and approaches internationally. Circular economy tools and approaches that offer important opportunities to the EU include:

- policy dialogues, trade, technical and financial assistance and investments to promote the circular economy in partner countries, as part of its broader efforts to promote climate neutrality and sustainable development;

¹³⁹ https://ec.europa.eu/environment/chemicals/international_conventions/index_en.htm.

¹⁴⁰ https://ec.europa.eu/environment/chemicals/reach/reach_en.htm.

¹⁴¹ Council conclusions on Water Diplomacy (19 November 2018), <https://www.consilium.europa.eu/media/37022/st13991-en18.pdf>.

- alignment, where appropriate, with EU circular economy norms and standards, product policy (including eco-design);
- new business models, resource-efficient production and uptake of clean technologies;
- the sound management of chemicals;
- ambitious waste prevention and management measures (including through waste prevention and management plans aligned with the waste hierarchy and circular economy objectives; targets for recycling of key waste streams and reducing landfills; extended producer responsibility schemes and deposit return schemes for plastic products and packaging);
- sustainable consumption and consumer information (including through the product environmental footprint method¹⁴², to enable companies to optimise their operations, avoid green washing and ensure consumers' informed choices);
- strategies for action in priority sectors (e.g. plastics, textiles, buildings); and
- up-skilling and re-skilling in a way that responds to the needs of the circular economy.

4.1. Policy dialogues

4.1.1. General aspects

The EU has a number of formal and informal dialogues with third countries and regions, where respective policy priorities and concrete activities for cooperation are discussed. These dialogues are set up under the various cooperation agreements or, in the absence of such agreements, are established through e.g. memoranda of understanding, joint declarations, specific terms of reference or similar administrative arrangements. The outcomes of these dialogues, along with other political outcomes, such as summit and ministerial declarations, provide the justification for follow-up actions.

Policy dialogues are also a key opportunity to advance the transition in third countries in the context of free-trade agreements (see Chapter 5), as part of European Green Deal diplomacy efforts (see Section **Error! Reference source not found.**). In this context, EU delegations and missions in third countries, as well as EU Members States' embassies, can play a key role (see Section 6.2). Furthermore, as European businesses are often leaders in circular economy and resource and energy efficiency methods and technologies, policy dialogues can have beneficial spill-over effects in opening new markets in third countries and strengthening ties with European green businesses (see Section 6.3).

4.1.2. Enabling policy and institutional frameworks for circularity

Government intervention (at national, multilateral, regional and sub-national levels) is key to steer the circular economy transition which requires action in a wide range of areas, such as raising awareness, mobilising the private sector and other key stakeholders like consumers, and developing policy frameworks to provide long-term certainty to economic operators, mobilise investments, and facilitate trade in sustainable products. Likewise, enabling frameworks require coherent measures in a large number of relevant policy areas such as

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https://ec.europa.eu/environment/green-growth/tools-instruments/index_en.htm#pefoef.

industrial development, entrepreneurship, investments and finance, trade, research and innovation, and education and skills development.

While facilitating the adoption of sustainable consumption and production practices by the private sector (see Section 6.3), emerging circular economy policies may also contribute to an improvement in the business environment of selected sectors. Relevant examples, indicatively include: concrete and enforceable product requirements promoting design for reuse, repair or recycling; legislative action on the separate collection and pre-treatment of plastic waste streams enabling a reduction in the cost of processing and recycling compared to mixed waste management; and/or legislative amendments to facilitate uptake of secondary resources (alleviate provisions based on health and consumer protection concerns that hinder the use of recycled materials in production processes).

An enabling policy environment for circular economy can also ensure mutual supportiveness with trade policies (see Chapter 5). Policy interventions focusing on standards development, in particular, may significantly impact trade on products within certain value chains. The European Green Deal ambition to promote a just transition in Europe that leaves no one behind is fully relevant to the advancement of a circular economy in third countries (see Sections 2.3.3 and 2.3.4). Particular attention to net job creation, focusing on new and decent jobs, but also taking into account the possible adverse effects for workers in sectors with environmental impacts, is necessary. Such an approach will ensure coherence with EU development and international cooperation policy. It will also contribute to encourage the social and political acceptance of circular economy reforms. Relevant interventions in this context include, for example, supporting the development of skills of workers in polluting sectors where activities are declining, to match market demand in emerging circular economy sectors.

4.1.3. *Selected countries*

In the case of **China**, a Memorandum of Understanding was signed with the National Development and Reform Commission, establishing a dialogue on circular economy issues. Moreover, the successful eco-design/CESIP projects¹⁴³ promoted EU norms and methodologies via training courses and information exchanges. Under the EU-China Industrial Policy Dialogue recent discussions include: (i) the access to raw materials (particularly rare earths, for which China has the dominant global position); circular economy in the EU and the Industrial Green Development in China; (ii) the EU Product Policy Framework and the Chinese Green Design of Products; (iii) the EU Plastics Strategy; (iv) progress in China's green supply chain development; and (v) EU sustainable finance. The EU SME Centre in China¹⁴⁴ supports small businesses in their activities, giving value to EU expertise on the circular economy. In addition, the EU-China dialogue on environment, green economy and wildlife protection informs environmental standards, green development and integration of environmental concerns in all government areas in China. This contributes to the development of Chinese circular economy to reduce waste and pollution.

The high-level dialogue on environment under the EU-**Canada** Strategic Partnership Agreement has identified the circular economy as a joint priority. For example, Canada will host the World Circular Economy Forum in Toronto in September 2020, and the Commission expects to collaborate with Canada on events to raise the profile of specific aspects of the

¹⁴³ [https://www.cencenelec.eu/intcoop/projects/visibility/pastprojects/Pages/EU-ChinaStandardisationPlatform\(CESIP\).aspx](https://www.cencenelec.eu/intcoop/projects/visibility/pastprojects/Pages/EU-ChinaStandardisationPlatform(CESIP).aspx)

¹⁴⁴ <https://www.eusmecentre.org.cn/>.

transition to a circular economy. The EU also maintains the raw materials dialogue under the Comprehensive Economy and Trade Agreement (CETA) with Canada and is present at one of the leading global mining fairs in Toronto, organised by the Prospectors and Developers Association of Canada (PDAC). The security of supply of critical raw materials for the EU industrial value chains has increased in relevance in this dialogue.

Japan is a critical international partner facing similar challenges and having often similar concerns as the EU. The ongoing extensive cooperation between Japan and EU includes:

- the High-level Environment Dialogue;
- the High-Level Economic Dialogue;
- the bilateral Industrial Policy Dialogue; and
- the EU-Japan Centre for Industrial Cooperation¹⁴⁵.

The EU-Japan Industrial Policy Dialogue is becoming one of the main channels for addressing circular economy issues. It involves cross-departmental cooperation of governmental services from both sides, which is setting a model for bilateral cooperation with other countries. It provides a basis for expanding cooperation on and coordination of international policy actions, which should hopefully increase cooperation with those countries that are willing to transform their economies in line with a circular economy paradigm. EU and Japan cooperated closely on environmental aspects in 2019 during Japan's G20 Presidency, and co-organised two workshops dedicated to marine plastic litter, and financing the circular economy¹⁴⁶.

A framework for policy dialogue with **India**, including on circular economy issues, is provided by the EU-India Environment Forum and Working Group on Environment. Following a successful circular economy mission in 2018 and with further work conducted in the context of the EU Resource Efficiency Initiative¹⁴⁷ (see Section **Error! Reference source not found.**), cooperation on resource efficiency and circular economy with India is expected to further intensify in the future, through the EU-India Resource Efficiency and Circular Economy Partnership expected to be adopted at the next EU-India Summit. The EU-India Clean Energy and Climate Partnership also deepens policy dialogue and technical cooperation between the EU, its Member States and India, to help India achieve its nationally determined contribution to the Paris Agreement, while adopting EU's sustainable, low carbon and climate resilient, and digitally enable solutions and products¹⁴⁸.

The EU-**Indonesia** Working Group on Environment and Climate Change provides a platform to discuss subjects including: (i) circular economy integration in the national development plan; (ii) circular economy indicators; (iii) product design and standards; and (iv) extended producer responsibility.

The EU discusses future scenarios and possible risk mitigation strategies towards undistorted and sustainable access to raw materials (particularly rare earths) with the **US** and **Japan** during the annual EU-US-Japan trilateral meeting on critical raw materials.

¹⁴⁵ <https://www.eu-japan.eu/>.

¹⁴⁶ https://ec.europa.eu/environment/international_issues/relations_g20_events_en.htm.

¹⁴⁷ <https://www.eu-rei.com/>.

¹⁴⁸ https://ec.europa.eu/fpi/sites/fpi/files/ann_3_-_action_fiche_for_support_to_the_india_eu_clean_energy_and_climate.pdf.

4.1.4. Selected regions

Concerning **candidate countries** to join the EU and **potential candidates**, accession negotiations offer opportunities for the development, adoption and implementation of policies and legislation, relevant strategies and programmes in support of the circular economy. The EU is committed to providing financial and technical assistance for the alignment process with the *acquis* and prioritise the implementation of the initiatives and actions included in the Green Agenda for the Western Balkans, including those on circular economy.

The development of the **Green Agenda for the Western Balkans** can profit from the potential of circular economy for the region, in all relevant areas such as raw material extraction or waste management, as well as for more sustainable consumption and production patterns. Some dedicated circular economy national action plans and specific financial schemes supporting green businesses are envisaged to ensure this transition.

In the **Eastern and Southern neighbourhood**, strong bilateral and regional policy platforms, supportive regulatory frameworks (e.g. association agreements) as well as financial and technical support already available can be used to fully integrate the Action Plan within the EU's cooperation in these regions. Focus on key sectors could be incentivised to engage in a rapid, just and socially acceptable (and accepted) transition. Empowering private sector actors and local authorities, engaging civil society, and academia is also important in this context. Within the dedicated partnerships with the Eastern and Southern neighbourhood, the EU can support the sustainable management of natural capital, including in the buildings and construction value chains, and in waste management, notably for plastics. The Eastern Partnership Summit in June 2020 is expected to step up efforts in support of the green transformation and the work towards climate neutrality.

The 9th meeting of the EU-**Central Asia** Working Group on Environment and Climate Change held in Brussels on 12-13 February 2020 focused mainly on circular economy for sustainable development.

The second High-level Dialogue on Environment and Climate Change meeting between the EU and the Association of South-East Asia Nations (**ASEAN**) is scheduled in 2020 in Vietnam. It can advance cooperation on the circular economy with ASEAN Member States, in particular on plastics. The EU supports this dialogue with concrete actions, for example by working with the ASEAN Secretariat to establish an ASEAN stakeholder platform on circular economy, under the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI)¹⁴⁹ initiative on circular economy. The 'Rethinking plastics – circular economy solutions to marine litter' Partnership Instrument project¹⁵⁰ will assist policy dialogues between the EU, regional organisations and partner countries (Indonesia, Philippines, Thailand, Vietnam, and Singapore).

Following successful circular economy missions in 2016 to Chile, in 2017 to Colombia, in 2018 to Peru and in 2019 to Mexico, cooperation on resource efficiency and the circular economy has intensified with **Latin America**. It would be important to enhance this cooperation further in view of the socio-economic and ecological potential and benefits circular economy transformation holds for the region and its biodiversity. Latin America and the EU emit the same quantity of global greenhouse gases – about 9 % each. However, the EU's GDP is more than three times higher than that of Latin America. Circular economy missions to Brazil and Costa Rica are envisaged for 2021 (see section 6.3.4). Raw materials

¹⁴⁹ [https://eeas.europa.eu/headquarters/headquarters-homepage_my/49815/Enhanced%20Regional%20EU-ASEAN%20Dialogue%20Instrument%20\(E-READI\)](https://eeas.europa.eu/headquarters/headquarters-homepage_my/49815/Enhanced%20Regional%20EU-ASEAN%20Dialogue%20Instrument%20(E-READI)).

¹⁵⁰ <https://beatplasticpollution.eu/rethinking-plastics/>.

diplomacy dialogues with the countries of Latin America have taken place since 2013. Starting in 2017, the EU developed the Latin America-EU Mineral Development Network Platform and ensured its continuity for the coming years.

4.2. Africa

In the Action Plan, the Commission has committed to build a stronger partnership with Africa to maximise the benefits of the green transition and the circular economy. The new EU Strategy with Africa¹⁵¹ includes a partnership for green transition and energy access which also promotes a clean circular economy with sustainable and fair value chains. Considering the high urbanisation rate in Africa, a strong engagement on building and construction energy and resource efficiency could lead to substantial benefits in terms of job creation, reduced energy demand and climate action for African cities. Actions could run in coordination with outreach of the Covenant of Mayors for Climate and Energy in Sub-Saharan Africa. .

In a recent meeting of the African Ministerial Conference on the Environment in November 2019, strong commitments were made by African leaders to raise the political visibility and awareness of the circular economy in Africa and to replicate, scale up and use circular economy approaches as part of Africa's transformation efforts. Circular economy in Africa is increasingly recognised as an important way to help reduce dependence on natural resources and reduce pollution and to contribute to economic growth and job creation.

An African Circular Economy Alliance (ACEN)¹⁵² has been formalised. It could provide a new platform for engagement with Africa on the circular economy, pursuant to the Action Plan commitment to build a stronger partnership with the continent. EU membership of ACEN could be considered. Further policy dialogue with Africa on the topic is expected.

Concerning raw materials, the EU supported institutional and technical capacity building in Africa, notably in artisanal and small scale mining through the ACP-EU development minerals programme, in the area of conflict minerals through the European Partnership for Responsible Minerals (EPRM), and through a project that supports the training of geoscientific staff from African geological surveys through the development of an innovative training programme.

5. TRADE AND THE CIRCULAR ECONOMY

Sustainable development is at the heart of the EU's trade policy as for instance reflected in the 2015 'Trade for All' Strategy¹⁵³. The Strategy called, among others, for a responsible trade policy, which follows the principles of sustainable development, in line with the 2030 Agenda for Sustainable Development. This Strategy is accompanied by Aid for Trade (AfT) measures and programmes. In 2017 the updated Joint EU Strategy on Aid for Trade¹⁵⁴ embedded the principles of circular economy and environmental sustainability as offering developing countries opportunities in trade, growth and employment while enhancing ecological and societal resilience. Many EU and EU Member States development cooperation programmes address Aid for Trade and include support to circular economy. Currently¹⁵⁵, the EU and EU

¹⁵¹ JOIN(2020) 4 – Towards a comprehensive strategy with Africa.

¹⁵² <https://www.afrik21.africa/en/africa-african-circular-economy-alliance-acen-adopts-charter/>.

¹⁵³ COM(2015) 497 (<https://eur-lex.europa.eu/legal-content/en/ALL/?uri=celex%3A52015DC0497>).

¹⁵⁴ COM(2017) 667 (<https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52017DC0667>).

¹⁵⁵ The latest available data in the OECD Creditors Reporting System – the source of statistics in the Aid for Trade 2019 Progress Report, is for 2017.

Member States, with €14.5 billion¹⁵⁶, remain the first Aid for Trade donors in the world (representing 31% of global Aid for Trade).

Starting with the EU-Korea free trade agreement (FTA), which entered into force in 2011, all new EU trade agreements include a chapter on trade and sustainable development that upholds and promotes social and environmental standards. These chapters also include provisions that are relevant to the circular economy (for example on sustainability measures, eco-labelling, trade and investment in environmental goods and services, and waste management). Furthermore, the Commission is committed to propose a specific Energy and Raw Materials Chapter in all the free trade agreements that it negotiates¹⁵⁷. The objective is to ensure undistorted trade and investment in raw materials, including those essential for the production of e.g. batteries.

These chapters offer opportunities for increased engagement between the EU and its trading partners, building on synergies with existing formal policy dialogues on the environment and on circular economy-related cooperation activities. As stated in the Action Plan, the Commission will ensure that FTAs reflect the enhanced objectives of the circular economy. Active dialogue and cooperation on circular economy is already ongoing with many EU FTA partners including Japan, Canada, Singapore, South Korea, Mexico, Chile, Colombia and Peru. The Commission has carried out or is planning circular economy missions (see Section 6.3.4) to all of these countries.

The transition to a more circular economy at global level would benefit from the further development of common and global standards that promote more circular business models, goods, technologies and services. EU standards and methods can serve as models in this regard. Moreover, industry pledges, ‘soft standards’, shared approaches and measurement standards can also have a strong positive impact. Regulatory dialogue and cooperation between countries can also help, for instance on more efficient sourcing and production processes, the waste hierarchy and waste management, as well as the use and standardisation of secondary raw materials.

The World Trade Organization (WTO) provides a useful platform where members can discuss and explore issues at the interface of trade and environment, including through the Committee on Trade and Environment (CTE). Current work within the CTE focuses on efforts by a wide range of WTO members to address climate change, the circular economy and plastic pollution. Environment policy issues also come up in other WTO committees, such as the Rules Committee, TBT (Technical Barriers to Trade) and SPS (Sanitary and Phytosanitary) committees, Committee on Agriculture and Committee on Development etc. The next WTO Ministerial Conference (MC12, Kazakhstan, June 2020) may provide an opportunity to deepen dialogue and step up efforts on these matters.

6. DESCRIPTION OF OUTREACH ACTIVITIES

6.1. European Green Diplomacy and the circular economy

The European External Action Service and EU delegations and missions in third countries have a key role to play in facilitating the circular economy transition in third countries,

¹⁵⁶ The EU Aid for Trade Progress Report 2019, p. 68 (https://webgate.ec.europa.eu/multisite/devco/eu-aid-trade-progress-report-2019_en).

¹⁵⁷ Negotiations are currently ongoing with important raw materials suppliers, including Australia and Chile.

notably in the context of the ‘Green Deal Diplomacy’¹⁵⁸, as well as through bilateral cooperation. EU delegations, making use of the synergies with the EU’s Climate Diplomacy and with their knowledge of the EU’s policy priorities for the country, the local conditions, policy dynamics, and activities by EU Member States and European businesses, can encourage the adoption of energy and resource-efficient, low carbon and circular growth models suitable for the local conditions.

Green Deal Diplomacy can also profit from the EU delegations’ role in monitoring the impacts of EU policies in third countries¹⁵⁹, and continue assessing the social, economic and environmental impacts of EU initiatives linked to the circular economy. Furthermore, EU delegations in regional “hub” countries have an essential role in facilitating the specific regional dimension of the transition to a circular economy. Better coordination and collaboration with EU Member States’ embassies and financial institutions (see Section 6.2), and their involvement in partnerships with third countries would also be crucial for a successful uptake of circular economy approaches. Sharing relevant information in a timely manner, as well as developing a comprehensive overview of key policy, legislative and financial instruments for advancing the circular economy transition in third countries are ways to strengthen the collective role of Member States and EU delegations in circular economy advocacy.

6.2. Working with EU Member States

The Action Plan foresees the need to enhance coordination and joint efforts with EU Member States for a global circular economy. Hence, better coordination and collaboration with the EU Member States, including embassies in host countries and national trade promotion organisations, would be crucial for contributing to the EU’s outreach on circular economy and thus the EU’s impact. Regular and systematic exchange of information on circular economy external relations issues among EU Member States would reduce duplication and wasted resources, while making the EU’s message more coherent. A dedicated network of European experts on the circular economy would facilitate reaching out to third countries, e.g. during the preparation and follow-up of bilateral and regional policy dialogues (see section 4.1), circular economy missions (see section 6.3.4). This network could also favour cross-border collaboration, enhance innovation, and speed up the process of scaling up best practices, taking into account the diverse situations in various world regions, and the social and economic effects of the transition. Joint programming of EU and Member States’ bilateral cooperation can be promoted and offer opportunities to increase coherence, complementarity and impact.

6.3. Promoting stakeholder participation: working with civil society and the private sector

6.3.1. Civil society

Civil society has an important role to play in advocating, monitoring and supporting policy development and implementation, in building consensus and support for policy and regulatory reforms, as well as in raising awareness among policymakers, businesses and citizens on the need to adopt a circular economy. The engagement of civil society organisations (CSOs) is

¹⁵⁸ ‘The EU will continue to promote and implement ambitious environment, climate and energy policies across the world. It will develop a stronger ‘green deal diplomacy’ focused on convincing and supporting others to take on their share of promoting more sustainable development’, COM(2019) 640, p. 20.

¹⁵⁹ Council conclusions ‘Policy coherence for development’, 16 May 2019.

therefore essential to contribute changing citizens' consumption patterns and reducing waste generation. Due to their expertise, CSOs can also provide innovative circular economy practices and influence consumer awareness, with actions supporting consumer information, and initiatives advocating for increased circularity in public procurement. CSOs may also deliver support to micro, small and medium enterprises (MSMEs) in the informal sector, inducing circularity principles in priority value chains, such as electronics, building and construction. The involvement of social partners and especially trade unions and workers' organisations can contribute to ensuring the just transition to the circular economy.

As experience with the SWITCH programmes (see Section 7.1.2) has shown, partnerships with civil society may also contribute to the creation of demand for more resource efficient and circular products. Campaigns focused on natural resources initiated by CSOs have encouraged improvements in resource efficiency and the uptake of circular economy practices by economic operators, often as a response to Corporate Social Responsibility (CSR) or Responsible Business Conduct (RBS) commitments or simply to improve their reputation. Actors such as associations of cooperatives, fair trade movements and indigenous groups – who are the custodians of natural resources in many regions and whose rights are supported by the EU - can also provide positive solutions to relevant circular economy challenges.

6.3.2. Businesses and SMEs

The EU's frontrunner role means that it has a major advantage in making use of business opportunities stemming from the transition to a circular economy. The industry's engagement and strong collaboration in the value chain play a critical role in the transition to circular economy, from extraction and sourcing of materials, design and production to waste management, and transformation into new resources. Many businesses in the EU are engaged in circular economy activities and have acquired much experience in the design of innovative solutions. In addition, the active encouragement of sectors of businesses or entire value chain systems to adopt global pledges and commitments to lower emissions stemming from their operations worldwide and to move towards carbon neutrality is essential.

Small and medium enterprises (SMEs) make up the majority of companies worldwide. Given their lack of financing and capacity, they need effective support enabling them to embrace the circular economy and participate in effective collaboration with larger companies in research and innovation partnerships aligning efforts and practices as part of the entire value chain.

The Commission manages a number of platforms, meetings and other relevant initiatives that bring Member States and business together, such as the Circular Economy Stakeholder Platform, the European Business Organisations Worldwide Network, the European Resource Efficiency Knowledge Centre, the European Cluster Collaboration Platform and the Enterprise Europe Network (see also Section 3.2). SMEs could also benefit from better access to European Research and Technology Infrastructures, which allow them to carry out research and innovation activities at lower cost and offer links to larger companies. Business support structures such as the EU-Japan Centre for Industrial Cooperation and the EU SME Centre in China (see Section 4.1.3) can help businesses expand in third countries and are instrumental in exporting EU expertise in the circular economy. The Sustainable Business for Africa Platform (SB4A) provides an overarching framework for structured dialogue with the private sector under the External Investment Plan (see Section 7.1.1) and will also offer a relevant forum. SB4A enhances systematic dialogue with the private sector and relevant stakeholders and supports public-private dialogue, to understand business and investment challenges and address them.

The World Economic Forum's Partnership for Action on the Circular Economy¹⁶⁰, the initiatives by the Ellen MacArthur Foundation on e.g. plastics and textiles, as well as synergies with global projects (see Section 7.1.2), to foster public-private collaborations in support of circular economy initiatives, also contribute to discussions with the private sector in this.

6.3.3. *Supporting green business development in key value chains*

The adoption of circular economy practices by the private sector is progressing, as more and more businesses become aware of the associated commercial and economic opportunities, notably potential savings from resource efficient production processes, increased security of supply chains resulting from the procurement of recycled / sustainably produced raw materials, premium prices, improved reputation, etc. Relevant private sector initiatives – including the development of circular economy business models, related environmental standards, Corporate Social Responsibility strategies – are important drivers of the circular economy transformation in many countries. Yet, SMEs – making up the majority of companies worldwide – often lack the required financing and capacity to embrace the circular economy.

The SWITCH programmes in Asia, the Mediterranean and Africa (see Section 7.1.2) offer models on which to build for future support to business uptake of circular economy practices, through the funding of private sector initiatives in areas such as: awareness raising on circular business opportunities; capacity building of business/ industry associations and their MSME members on circular economy business models and practices; facilitation of access to finance (e.g. capacity building on the development of bankable projects, matchmaking with financial institutions, etc); private sector participation in the development of circular economy policies; business to business dialogues and best practices dissemination; support to business and consumer information through eco-labelling, environmental standards and certification, etc.

Planning of future EU support to circular economy business development could target priority value chains, in line with the Action Plan, while taking into consideration economic sectors and business models with the greatest opportunities in partner countries, notably in terms of job creation. This work could develop capacities of local business structures in partner countries, but also build on relevant EU platforms and initiatives, such as those mentioned in Section 6.3.2, bringing Member States and businesses together.

6.3.4. *Circular economy missions*

High-level circular economy missions¹⁶¹ and other outreach activities provide a valuable contribution to the global circular economy transition. These missions, led by the Commission at Commissioner or Director-General level and accompanied by an EU business delegation and other relevant stakeholders, comprise a mix of high-level political and business meetings between the EU and a specific third country. They have proven their potential in strengthening existing ties and creating new ones between the EU and the third country institutions in the environment area, as well as supporting green European businesses – especially SMEs – in expanding their activities abroad.

Opportunities could be offered by widening up the scope of the relevant ministries and government services on both the EU and the recipient countries' side to include – beyond

¹⁶⁰ <https://www.weforum.org/projects/circular-economy>.

¹⁶¹ https://ec.europa.eu/environment/international_issues/missions_en.htm.

environment administrations – other relevant services and ministries such as economic affairs, industry, transportation, etc. The circular economy missions and other outreach activities are part of the EU’s economic diplomacy as acknowledged in the Council conclusions ‘More circularity – Transition to a sustainable society’, adopted on 4 October 2019¹⁶².

Potential destinations for circular economy missions and other outreach activities in 2020-2021 currently include countries in Africa (e.g. Ethiopia, Nigeria, Ghana, Kenya, Rwanda), the Southern Neighbourhood (e.g. Egypt, Morocco), Asia (e.g. South Korea, Vietnam, China, India, Japan¹⁶³), the Americas (e.g. Canada, Brazil, Costa Rica), the Western Balkans, and the Eastern Neighbourhood (e.g. Ukraine).

7. FINANCING FOR THE GLOBAL CIRCULAR ECONOMY TRANSITION

7.1. General aspects

The cost savings and economic opportunities that a circular economy transition entails (see Section 2.3) suggest that governments and economic operators should allocate sufficient resources to pursue circularity. To accelerate the transition, the EU provides flanking measures through its international cooperation. Under the next multiannual financial framework (2021-2027), the Commission's proposal for the **Neighbourhood, Development and International Cooperation Instrument (NDICI)**¹⁶⁴ and the third instalment of the **Instrument for Pre-accession Assistance (IPA III)**¹⁶⁵ provide opportunities to further support circular economy action globally. This complements engagement at bilateral and multilateral level, and allows the development of enabling policy and institutional frameworks, the promotion of circularity in key value chains, and the mobilisation of finance and investments to shift financial flows to support the transition to low-emissions, climate-resilient circular economies. This ambition is fully in line with the EU’s external policy and the European Green Deal, which the NDICI and IPA III should contribute to.

International partnerships are essential to accelerate the pace of progress in circular economy globally. Building on the approach and experience of recent EU initiatives on the circular – and more broadly the green – economy, future international cooperation on circular economy is expected to focus mainly on three areas of intervention:

- developing enabling policy and institutional frameworks for circularity,
- promoting green business development in key value chains, and
- mobilising finance for the global circular economy transition.

Concerning **development cooperation**, the European Consensus on Development¹⁶⁶, which provides the overarching framework for EU development policy, calls on the EU and its Member States ‘to promote resource efficiency and sustainable consumption and production, including the sustainable management of chemicals and waste, with a view to decoupling economic growth from environmental degradation and enabling the transition to a circular economy’. The Consensus highlights the contribution to environmental sustainability and to

¹⁶² <https://www.consilium.europa.eu/media/40928/st12791-en19.pdf>.

¹⁶³ In May 2021, on the occasion of the N-Expo Fair in Tokyo on environment, materials, recycling and waste management.

¹⁶⁴ COM(2018) 460 – Proposal for a Regulation establishing the Neighbourhood, Development and International Cooperation Instrument.

¹⁶⁵ COM(2018) 465 – Proposal for a Regulation establishing the Instrument for Pre-accession Assistance (IPA III).

¹⁶⁶ https://ec.europa.eu/international-partnerships/european-consensus-development_en.

socio-economic development. The importance of the circular economy to EU development and international cooperation has been further highlighted in relevant communications of the Commission, such as the Communication ‘Achieving Prosperity through Trade and Investment’¹⁶⁷, which notes that ‘climate finance and the green and circular economy offer developing countries leapfrogging opportunities in trade, growth and employment’, as well as communications on the ‘Africa-Europe Alliance for Sustainable Investment and Jobs’¹⁶⁸, and on ‘EU, Latin America and the Caribbean: joining forces for a common future’¹⁶⁹.

As to **accession countries**, the European Commission is working closely with them by providing technical and financial assistance for the alignment with the environmental acquis. Bilateral and regional programmes and projects are ongoing where capacity building for understanding and uptaking the circular economy goals and principles is provided. The future IPA III instrument is expected to focus on actions related to circularity and proper waste management. Another instrument is the Green Agenda for the Western Balkans that is meant as a radical move towards more sustainable consumption and production patterns and towards building a green economy on the principles of circularity in the region. For this to happen, there is potential to strengthen links to all relevant policy areas such as agriculture, food, industry, digital, consumer, health, employment, research, climate, automotive, maritime and fisheries, and synergies with other policy objectives.

7.1. Mobilising investments

7.1.1. EU external financial instruments

Financing the transition to a circular economy needs to rely on a combination of funding sources. Adopted in 2017, the **EU External Investment Plan (EIP)** supports partner countries by:

- mobilising finance, through the European Fund for Sustainable Development (EFSD),
- providing technical assistance to help prepare investment projects, and
- developing a favourable investment climate and business environment.

The EIP prioritises its support to sectors such as: sustainable energy, energy efficiency, sustainable cities and agriculture.

Within the EIP structure, the proposed NDICI foresees the establishment of the **European Fund for Sustainable Development Plus (EFSD+)**, an integrated financial package supplying financing capacity in the form of grants, budgetary guarantees and financial instruments. Fully aligned with EU development cooperation objectives, the EFSD+ is expected to have a particular focus on ‘the eradication of poverty, sustainable and inclusive growth, the creation of decent jobs, economic opportunities, skills and entrepreneurship, socioeconomic sectors, micro, small and medium-sized enterprises as well as addressing specific socioeconomic root causes of irregular migration, in accordance with the relevant indicative programming documents’¹⁷⁰. The EIB circular economy guide¹⁷¹ provides clear

¹⁶⁷ COM(2017) 667 – Achieving Prosperity through Trade and Investment Updating the 2007 Joint EU Strategy on Aid for Trade.

¹⁶⁸ COM(2018) 643 – A new Africa. Europe Alliance for Sustainable Investment and Jobs: Taking our partnership for investment and jobs to the next level.

¹⁶⁹ JOIN(2019) 6 – European Union, Latin America and the Caribbean: joining forces for a common future.

¹⁷⁰ COM(2018) 460, Preamble 34.

¹⁷¹ https://www.eib.org/attachments/thematic/circular_economy_guide_en.pdf.

illustrations of the type of investments that may be supported in the context of EFSD+, such as the deployment of new technologies, infrastructures to repair, refurbish or remanufacture products, the processing of waste, residues and by-products into secondary raw materials etc. A study on options to promote the circular economy in the context of the EFSD+ is ongoing and will provide further guidance for future EU action by end 2020.

Also the new Framework Programme for Research and Innovation **Horizon Europe** (2021-2027) will provide investment for innovative projects enhancing the circular economy in Europe and beyond. The programme allows the vast majority of world’s low and medium income countries for partnering with European researchers and innovators and get financial support.

7.1.2. EU projects

The EU, through its external financing instruments, helps partner countries manage their resources more sustainably and adopt sustainable consumption and production practices, in line with SDG 12. This brings multiple benefits, contributes to most EU development goals and its global strategy policy priorities, and to the 2030 Agenda for Sustainable Development objectives. Of the 17 SDGs, 12 directly depend on the sustainable economy-wide management of a whole range of natural resources¹⁷². Eight of the 17 SDGS are already monitored through the Copernicus services and products¹⁷³. Some of the key initiatives contributing to circular economy on which future EU action will build are illustrated below.

The **SWITCH to Green**¹⁷⁴ initiative promotes enabling policy frameworks and green business development through activities such as awareness raising, mapping of green economy opportunities, economic modelling, capacity development of public institutions, support to private sector initiatives, business to business dialogue etc. It focuses on key value chains such as food production, textile, construction materials, or tourism and, as such, provides a model on which to build for future cooperation on circular economy. The initiative is implemented in partnership with international organisations such as UNEP and UNIDO, government counterparts in partner countries, private sector actors – in particular micro, small and medium size enterprises – and civil society.

The main ongoing actions supported by the EU in the context of this initiative include:

<i>Actions</i>	<i>Indicative EU commitments to date</i>	<i>Links</i>
SWITCH Asia	EUR 280 000 000	https://www.switch-asia.eu/
SWITCH Med	EUR 39 400 000	https://www.switchmed.eu/en
SWITCH Africa	EUR 39 000 000	http://www.switchafricagreen.org/
SWITCH to Circular Economy Value Chains	EUR 19 000 000	N.A.
Partnership for Action on Green Economy (PAGE)	EUR 17 500 000	https://www.un-page.org/

¹⁷² UNEP (2016), Resource Efficiency: Potential and Economic Implications. Summary for Policy-Makers, p. 4.

¹⁷³ <https://www.copernicus.eu/en>.

¹⁷⁴ <http://www.switchtogreen.eu/>.

Green Economy Coalition	EUR 5 000 000	https://www.greeneconomycoalition.org/
SWITCH to Green Facility	EUR 5 300 000	http://www.switchtogreen.eu/

The EU has funded a project with the Barcelona Convention supporting the implementation of the *regional action plans against marine litter in the Mediterranean*¹⁷⁵. Work on marine litter is also carried out *in the Black Sea*.

The €9 million project *Reducing plastic waste and marine litter in East and South East Asia – Supporting a transition to a circular economy in the region* started in May 2019. Under this project, activities in the region’s target countries (China, Indonesia, Philippines, Thailand, Viet Nam, Singapore and Japan) will help reduce plastic waste, including in relevant major rivers, as well as marine litter. These circular economy-related activities will (i) promote the waste hierarchy and extended producer responsibility; (ii) address abandoned, lost and otherwise discarded fishing gears, and (iii) support sustainable plastic production and green public procurement.

Inspired by this first project, a second, €5 million project *Reducing Plastic Waste in the Americas* was given the go-ahead by the Commission at the end of 2019. This project targets Brazil, Chile, Colombia as well as Canada.

The project *Low Carbon and Circular Economy Business Action in the Americas* (targeting Canada, Brazil, Mexico, Chile, Colombia and Argentina) provides business support to companies in the region, using as an example EU businesses that use low carbon and circular economy related technologies and services and help limit/reduce greenhouse gas emissions in line with the Paris Agreement. The project mobilises European industrial clusters and builds on the low carbon business action pilot phase in Brazil and Mexico (which ran from 2014-2019 with a budget of €12 million). More than 700 business agreements have been signed between European SMEs and companies in Brazil and Mexico. About 130 of these business agreements received technical assistance to develop commercially viable projects with a value added of around €300 million. The environmental impact for Brazil is estimated at a reduction of 18 million tonnes of CO₂ equivalent. The project in the Americas will start in 2020 and last three years with a budget of €20 million.

The €20 million project *Strategic Partnership for the implementation of the Paris Agreement in major economies (SPIPA)* aims to strengthen EU bilateral policy and technical dialogues on climate and energy policy with 15 non-European major economies (Argentina, Australia, Brazil, Canada, China, India, Indonesia, Iran, Japan, Mexico, the Republic of Korea, Russia, Saudi Arabia, South Africa and the United States of America). It will create conditions that enable the uptake in the partner countries of EU climate policy options, know-how and good practices in four main areas: (i) mitigation policy instruments; (ii) mid-century strategies and renewal of contributions; (iii) monitoring and reporting; and (iv) adaptation planning. The project also aims to promote European investment in support of the Paris Agreement and to increase public awareness¹⁷⁶.

The €7 million project *Natural Capital Accounting and Valuation of Ecosystem Services* was launched in 2016 and supports EU’s circular economy and biodiversity protection priorities in Brazil, China, India, Mexico and South Africa. Under this project, the EU and the UN Statistics Division (UNSD) work together to build on existing natural capital assessment systems and develop new tools and approaches to better quantify the economic benefits that

¹⁷⁵ https://ec.europa.eu/environment/marine/good-environmental-status/descriptor-10/pdf/Marine_litter_med_project_20_4_2016.pdf.

¹⁷⁶ https://ec.europa.eu/fpi/sites/fpi/files/c_2017_7573_f1_annex_en_v6_p1_945033_en.pdf.

ecosystems and biodiversity provide. This offers opportunities to promote green innovation and the uptake of clean, low carbon technologies in the transition to a more circular economy in these countries. The project follows the UN System of Environmental-Economic Accounts (SEEA) methodology (see Chapter 8).

Launched in 2015, the €30 million *International Urban Cooperation* (IUC) programme supports international city-to-city pairings between European cities and their international counterparts. Together, these cities can be frontrunners in proposing integrated sustainable urban development strategies that chart the path to a circular economy¹⁷⁷.

The €2.5 million project on *Resource Efficiency Initiative in India*¹⁷⁸, aims to create a swathe of positive effects for the Indian economy through stronger engagement at government level and to align the country with global thinking on sustainable resources. The action contributes to enable India to take stock of its current and future resource needs, providing a better understanding of the future of its economy, in particular in construction and demolition, e-mobility and transportation, clean energy and sustainable solar-energy systems, as well as addressing e-waste and plastic waste. This will help green trade and businesses by integrating sustainability criteria in business models, along with sustainable production and consumption and the prevention, reuse and recycling of waste.

The *EU-China Flagship Initiative on Biotechnology* between the European Commission and the National Natural Science Foundation of China (NSFC) was launched in 2018 for three years with an approximate budget of €30 million from the EU (plus an equivalent amount of €10 million from China). The Initiative tackles environmental issues such as cleaning polluted soils and water and the degradation and upcycling of plastics mixtures. Two projects have been granted to work on environmental bioremediation, which uses more sustainable and gentle alternatives to physicochemical options to deal with high toxicity pollution that create concerns from the health and environmental viewpoints and a significant economic burden to society. Two other projects work on the degradation of plastics mixtures to develop alternatives for mechanical and chemical recycling of mixed recalcitrant and biodegradable plastics. These biotechnology themes will support European industry through the continued development of cutting-edge biotechnologies, new biotechnologies for the global challenge of environmental protection and breakthrough solutions to transform industrial processes using environmentally friendly and sustainable methods outcompeting conventional alternatives.

On e-waste, the *Countering WEEE Illegal Trade project*¹⁷⁹ highlighted the needs for better global cooperation and communication aspects whereas the *DOTCOM-Waste project*¹⁸⁰ provided relevant training materials for enforcement agencies in different continents. Other problematic waste streams such as vehicles and batteries will also have to be tackled.

The EU supports the *World Benchmarking Alliance* (WBA), which is a multi-stakeholder platform having as its core mission the promotion of dialogue and action around the role of business in achieving the SDGs. Its main objective is the creation of a widely accepted benchmarking framework that can be used for comparing companies' performance and impact towards the achievement of the SDGs including the empowerment of consumers and investors constituencies towards sustainable choices. By 2023, the WBA will assess the progress of 2,000 companies across seven major areas of transformation covering: social, digital, circular, food and agriculture, urban, financial, decarbonisation and energy.

¹⁷⁷ https://ec.europa.eu/fpi/sites/fpi/files/annexes_aap_2018_phase_ii_2.pdf.

¹⁷⁸ See Section 4.1.3.

¹⁷⁹ <https://www.cwitproject.eu/>.

¹⁸⁰ <https://dotcomproject.eu/>.

The *EU cooperation portfolio in raw materials*, which amounts to €35 million (2019), promotes responsible, transparent and predictable mining practices both with actions in the field, in particular in artisanal and small scale mining, and at institutional level. Actions in the field include the European Partnership on Responsible Minerals (EPRM), which supports responsible mining practices in conflict minerals (€7 million), and the cooperation with UNDP on development minerals, which includes industrial minerals and applies also to cobalt within the new Phase II (€10 million). At institutional level the EU supports the implementation of the Extractive Industries Transparency Initiative (EITI)¹⁸¹ (€1 million) and the associated World Bank Trust Fund on Extractive Global Programmatic Support (€5 million). In addition the G7 CONNEX initiative (technical assistance to developing countries to promote predictable and fair contracts in the extractives field) has recently been integrated in the EU cooperation portfolio.

7.1.3. Sustainable finance and the private sector

The Commission's European Green Deal Investment Plan (EGDIP), also referred to as the Sustainable Europe Investment Plan¹⁸² reiterated the importance of crowding in private finance to meet the investment needs of moving towards greener and more sustainable societies. The Commission's 2018 Action Plan on Financing Sustainable Growth¹⁸³ has led to several initiatives to better mainstream sustainability considerations in financial markets¹⁸⁴. A renewed sustainable finance strategy, to be launched in the third quarter of 2020, is to further scale up sustainable finance.

7.1.3.1. Opportunities offered by the International Platform on Sustainable Finance (IPSF)

The EU's work on sustainable finance recognises the importance of the international dimension. Financial markets are well positioned to help countries in their transition to climate-neutral and circular economies by linking their financing needs to global sources of funding. This is especially relevant for developing countries that face difficulties in accessing finance for their sustainable development.

As part of the recently-launched International Platform on Sustainable Finance¹⁸⁵ and in close cooperation with the Coalition of Finance Ministers for Climate Action and the Network for Greening the Financial System, the Commission has committed to mobilise private finance globally for sustainable investments, including those promoting a circular economy.

The IPSF connects the EU with third countries willing to exchange best practices and coordinate their approaches on sustainable finance. The European Commission, holding the IPSF Secretariat and representing the 27 Member States of the EU, will coordinate work internationally to avoid market fragmentation and promote integrated markets for sustainable finance. The IPSF scope covers different frameworks and tools of capital markets that are key for investors to identify and seize green investment opportunities, such as in green taxonomies, climate-related disclosures, standards and labels for green financial products.

¹⁸¹ See also Section 3.7.

¹⁸² https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_24.

¹⁸³ COM(2018) 97.

¹⁸⁴ For example, the requirements under the Disclosure Regulation (EU) 2019/2088 for financial market participants to disclose how sustainability risks are integrated in their investment processes and how they consider adverse impacts on sustainability factors; as well as the recently agreed Taxonomy Regulation.

¹⁸⁵ https://ec.europa.eu/commission/presscorner/detail/en/QANDA_19_6116.

7.1.3.2. The global dimension and circular economy in the EU Taxonomy of environmentally sustainable activities

The Taxonomy Regulation¹⁸⁶, which was agreed at political level in December 2019¹⁸⁷, has an important international dimension. Once formally adopted by the European Parliament and the Council, the Regulation will stipulate obligations for financial market participants that market their products in the EU to disclose the alignment of the underlying investments with the taxonomy¹⁸⁸. These underlying investments can support economic activities anywhere in the world, e.g. a fund may invest in a waste management infrastructure project, such as a recycling plant in India. In order to be classified as “sustainable”, the economic activity that is funded by this investment would need to comply with criteria spelled out in the delegated acts to be adopted under the Taxonomy Regulation, were the fund manager to declare this share of his/her product as “environmentally sustainable”.

The Commission will work on adopting delegated acts under the Taxonomy Regulation by 31 December 2020 covering the climate objectives, and by 31 December 2021 covering the remaining four environmental objectives spelled out in the Taxonomy Regulation, including the objective to transition to a circular economy. These will contain the detailed technical screening criteria against which economic activities, and hence investments, will be assessed. A Platform on Sustainable Finance, to be set up (which is different from the ‘International Platform’ referred to in the previous Section) in accordance with the recently adopted Regulation, will advise the Commission on the criteria. The Regulation stresses the need for experts with global expertise to be part of the Platform, in line with the potential international applicability of the resulting criteria.

8. KNOWLEDGE GAPS

Managing the global transition requires a better understanding of broad societal trends and the drivers of investments, global production and consumption patterns. Furthering and disseminating the research and scientific evidence about the multiple socio-economic and ecological benefits including jobs and wealth creation and cost savings will facilitate the needed transition. More knowledge is necessary concerning primary and secondary raw materials stocks and flows in various regions of the globe. At present, there is little detailed analysis on the impact of the circular economy on different sectors, countries and markets resulting from changing trade and investment patterns, volumes, and interdependencies; nor on the resultant social and environmental consequences. This includes analysis on the impact of measures at EU level on third countries, which needs to be better understood to ensure EU policy coherence.

In addition, there are still knowledge gaps in the identification of sustainable production and consumption practices concretely and at scale, so that current circular economy activities reach their potential. There is also a need to better understand the reasons and obstacles to private investment in research and innovation for circular economy solutions to be able to design supporting policies. Further, more work is needed to guide towards new and innovative circular economy opportunities and the means to seize these opportunities, such as finance and investments, which could be supported through EU international and regional cooperation actions.

¹⁸⁶ The Taxonomy Regulation provides for a general framework that will allow for the progressive development of an EU-wide classification system for environmentally sustainable economic activities.

¹⁸⁷ https://ec.europa.eu/commission/presscorner/detail/en/IP_19_6793.

¹⁸⁸ The disclosure obligations differ according to the type of financial product and whether or not it is marketed as pursuing environmental objectives.

More research on the design and use of market-based instruments can play an important role in improving resource efficiency and in promoting the circular economy. Coordinated work by the IRP and the OECD¹⁸⁹ can be particularly useful. Together with other relevant organisations, the IRP and the OECD could analyse the circular economy implications for resource-dependent countries and could for example provide an initial report for possible discussion by the G20 under India's Presidency in 2022.

Finally, an important area of work concerns footprints, which are estimates of the (environmental) impact of demand for products and services, capturing impacts from production domestically and abroad. Two indicators have been developed by the European Commission's Joint Research Centre¹⁹⁰: one is the *consumer* footprint, which assesses the average impact of one citizen by means of the impact and services which is consuming; the other is the *consumption* footprint, which assesses the impacts of consumption patterns at country scale. Both can be the basis to further test circular economy scenarios and consumer lifestyle changes beyond what has been done already. Moreover, Eurostat produces inter alia measures of EU-wide material footprints, carbon footprints and energy footprints. They are all relevant for the circular economy. EU-wide footprints by Eurostat are based on the standards of the System of Environmental-Economic Accounts (SEEA 2012), which is an international statistical framework supported by the United Nations, the European Commission, the Food and Agriculture Organization (FAO), the International Monetary Fund (IMF), the OECD, and the World Bank. The Commission is setting up the regular production of time-series of inter-country – inter-industry tables (FIGARO project). This work will allow estimating footprints of individual Member States and their bilateral trade flows. The Commission cooperates with OECD as part of the FIGARO project, to further develop the methodology of estimating material footprints and to identify best practices for communication. The Commission also cooperates with UN Statistical Division as regards developing applications and extensions of the SEEA framework, of which environmental footprints is only one. Further work could in particular focus on ensuring availability and comparability of footprint measures at global level.

There are several international science-policy panels that provide policy-relevant advice to international audiences on sustainable development themes. These include: the IRP, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Intergovernmental Panel on Climate Change (IPCC), the Science-Policy Interface of the United Nations Convention to Combat Desertification (SPI-UNCCD), and the Intergovernmental Technical Panel on Soils (ITPS) of the Global Soil Partnership. Much of their work informs international negotiations, either under specific international conventions, or is provided to UN bodies. More efficient ways of working could involve

organising regular joint meetings and work of scientific panels and their secretariats on links between themes and resource efficiency / circular economy, and considering possible future work programme synergies, as it already happens for the Earth observation domain through Copernicus in the Committee on Earth observation Satellites (CEOS) or the Group of Earth Observation System of Systems (GEOSS).

¹⁸⁹ The OECD is developing an analysis of the macroeconomic consequences of policy to improve resource efficiency and the transition to a circular economy, as part of its RE-CIRCLE project (<http://www.oecd.org/environment/waste/recircle.htm>) and building on e.g. its 'Global Material Resources Outlook to 2060'.

¹⁹⁰ Sala et al. (2019), Consumption and Consumer Footprint: methodology and results. Indicators and Assessment of the environmental impact of EU consumption. Luxembourg: Publications Office of the European Union, ISBN 978-92-79-97256-0, doi:10.2760/98570, JRC 113607.