



EUROPEAN
COMMISSION

Brussels, **XXX**
[...](2015) **XXX** draft

Circular Economy Package

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

Closing the loop - An EU action plan for the Circular Economy

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Introduction

The transition towards a circular economy responds to some of the main challenges of our time. The objective of a circular economy is to preserve and maintain the value of products, materials and resources in the economy for as long as possible, while minimising the generation of waste. This transition can help preserve resources that are increasingly scarce and subject to mounting environmental pressure and volatile prices. It can boost our economy and competitiveness with new business opportunities and innovative, more efficient ways of producing and consuming. It can create local low and high-skilled jobs and opportunities for social integration and cohesion. Such transition is the opportunity to reinvent our economy and generate new and sustainable competitive advantages for Europe. Action on the circular economy ties in closely with a number of other EU priorities, including jobs and growth, the investment agenda, climate and energy, the social agenda and industrial innovation.

The EU will play a key role in supporting this transition. The aim is to give clear signals to economic operators and society on the way forward. Action at EU level can drive investments and create a level playing field, remove obstacles stemming from European legislation or inadequate enforcement, deepen the single market, and ensure favourable conditions for innovation and the involvement of all stakeholders.

This action plan establishes a concrete and ambitious programme of action, with measures either adopted together with this Communication or to be carried out during the current Commission's term of office. These include key legislative proposals on waste, fertilisers, and water reuse; strong commitments on Ecodesign; the development of strategic approaches on plastics and chemicals; a major initiative to fund innovative projects under the umbrella of Horizon 2020; targeted action in areas such as food waste, critical raw materials, industrial and mining waste, consumption, public procurement, and others. The proposed actions support the circular economy in each step of the value chain – from production to consumption, repair and remanufacturing, waste management, and secondary raw materials that are fed back into the economy. It also sets out action for specific sectors in which an integrated approach is needed, and horizontal enabling measures such as innovation and investment.

The action plan focusses on areas in which action at EU level will have the greatest impact and make most sense. Making the circular economy a reality will require long-term involvement at all levels, from Member States, regions and cities, to businesses and citizens. The circular economy will also need to develop globally: recent events like the adoption of Agenda 2030 on Sustainable Development and the G7 Alliance on Resource Efficiency will have to be taken into account in the transition to a more circular economy.

1. Production

A circular economy starts at the very beginning of a product's life. Both the design phase and the production processes have an impact in terms of sourcing resource use and waste generation throughout a product's life.

1.1. Product design

Better product design can make products more durable or easier to repair, upgrade or remanufacture. It can help recyclers to disassemble products in order to recover valuable materials. Overall, it can help to save precious resources. However, market signals are often not sufficient to make this happen, in particular because the interests of producers, users and recyclers are not aligned. It is therefore essential to provide incentives for improved product design, while preserving the internal market and enabling innovation.

Electrical and electronic products are particularly significant in this context. Their reparability is important to consumers, and they can contain valuable materials that should be made easier to recycle (e.g. rare earth elements in electronic devices). In order to promote a better design of these products, the Commission will emphasise circular economy aspects in future product design requirements under the Ecodesign Directive¹. The objective of this directive is to increase efficiency of energy-related products. To date, Ecodesign requirements have mainly targeted energy efficiency²; in the future, issues such as reparability, durability, recyclability, or the identification of certain materials or substances will be systematically examined, taking into account the specificities and challenges of different product groups and in close cooperation with relevant stakeholders.

As a first step, the Commission has developed and will propose shortly to Member States mandatory product design and marking requirements to make it easier and safer to dismantle, re-use and recycle electronic displays (e.g. flat computer or television screens).

The Commission is also proposing to encourage better product design by differentiating the financial contribution paid by producers under Extended Producer Responsibility schemes on the basis of the end-of-life costs of their products. This can create a direct economic incentive for the design of products that can be more easily recycled or reused.

Finally, the Commission will examine options and actions for a more coherent policy framework of the different strands of work of its product policy³ in their contribution to the circular economy.

¹ 2009/125/EC. This directive covers all energy-related products.

² Together with the Energy Labelling measures in place, the Ecodesign directive is estimated to save 175 Mtoe of primary energy by 2020.

³ Such as Ecodesign, Energy Labelling, Ecolabel, Green Public Procurement, and other relevant product legislation.

- *The Commission will support reparability, durability, and recyclability of products by developing product requirements relevant to the circular economy in its future work under the Ecodesign directive, as appropriate and taking into account the specificities of different product groups. The Ecodesign working plan for 2015-2017, a part of the Circular Economy Package, elaborates on how this will be implemented. The Commission will also be proposing shortly requirements for electronic displays.*
- *[The Commission is also supporting better product design through provisions on Extended Producer Responsibility in the revised legislative proposal on waste.]*
- *The Commission will examine options and actions for a more coherent policy framework of the different strands of work of its product policy in their contribution to the circular economy.*

1.2. Production processes

Even for products or materials designed in a smart way, production processes can lead to lost business opportunities and significant waste generation through inefficient use of resources.

Primary raw materials will continue to play an important role in production processes even in a circular economy. In this context attention must be paid to possible environmental and social impacts, both in the EU and in non-EU countries. The Commission is therefore promoting the sustainable sourcing of raw material globally, for example through policy dialogues, partnerships, and its trade⁴ and development policy. The role of industry in making specific commitments to sustainable sourcing and cooperating across value chains is also crucial.

Each industry branch is different when it comes to resource use, waste generation and management. Therefore, the Commission will further promote best practices in a range of industrial sectors through best available technique reference documents or "BREFs" that Member States have to reflect when issuing permitting requirements for industrial installations, and promote best practices on mining waste. The Commission is also supporting SMEs to enable them to benefit from the business opportunities of increased resource efficiency with the creation of the European Resource Efficiency Excellence Centre⁵. Facilitating substitution of chemicals of concern or helping SMEs access to innovative technologies⁶ are examples of actions in this area. Improving the efficiency and uptake of the EU Eco-Management and Audit Scheme (EMAS) and the pilot programme on environmental technology verification (ETV)⁷ can also benefit businesses and in particular SMEs.

In addition, it is important to promote innovative industrial processes. For example, industrial symbiosis allows waste or by-products of an industry to become input for another one. [In its revised proposal on waste, the Commission will facilitate this practice.] The reuse of gaseous

⁴ In particular the "Trade and investment for all" strategy adopted in October 2015.

⁵ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014DC0440>

⁶ In order to facilitate SME's access to technological service centres in the area of Key Enabling Technologies

⁷ http://ec.europa.eu/environment/etv/etv_preprog.htm

effluents⁸ is an example of efficient use of by-products. Remanufacturing⁹ is another area that has potential to develop in support of a circular economy: it is already common practice in certain industries, such as vehicles or industrial machinery but could be applied to new sectors. The EU is supporting these promising developments through its research and innovation financing programme, Horizon 2020¹⁰, and through Cohesion Policy funds.

- The Commission will include guidance on best waste management and resource efficiency practices in industrial sectors in Best Available Techniques reference documents (BREFs)¹¹ and will issue guidance and promote best practices on mining waste.

- [The Commission is proposing (in the revised legislative proposal on waste) to clarify rules on by-products to facilitate industrial symbiosis and help create a level-playing field across the EU.]

2. Consumption

The choices made by millions of consumers can support or hamper the circular economy. These choices are shaped by the information to which consumers have access, the range and prices of existing products, and the regulatory framework. This phase is also crucial when it comes to preventing the generation of household waste.

Faced with a profusion of labels or environmental claims, EU consumers often find it difficult to differentiate between products and to trust the information available¹². The Commission will step up its work to make green claims more trustworthy, in particular by issuing better guidance on unfair commercial practices¹³. By testing a methodology for measuring environmental performance, the Product Environmental Footprint¹⁴, the Commission will explore its use to measure or communicate environmental information. The voluntary EU Ecolabel identifies products that have a reduced environmental impact throughout their lifecycle. The Commission will examine how to increase its contribution to the circular economy.

Earlier this year, the Commission has proposed an improved labelling system for the energy performance of household appliances and other energy-related products, which will help consumers to choose the most efficient products¹⁵. This system also allows for displaying information on the environmental performance of energy-related products, including durability in a way that is useful for consumers.

⁸ In particular CO₂.

⁹ A series of manufacturing steps acting on an end-of-life part or product in order to return it to like-new or better performance, with warranty to match.

¹⁰ Call for Factories of the Future, 2014 – call on industrial symbiosis, 2014

¹¹ This will take place at the occasion of the regular planned reviews of the BREFs

¹² See Consumer Market Study on Environmental Claims for non-food products:

http://ec.europa.eu/consumers/consumer_evidence/market_studies/environmental_claims/index_en.htm

¹³ Related to Directive 2005/29/EC on unfair business-to-consumer commercial practices

¹⁴ COM/2013/0196 final. Currently being tested on pilots projects. Subject to pilots' results, the Commission will consider the further use of the Product Environmental Footprint methodology.

¹⁵ COM(2015)341

Price is a factor for consumers. Member States are therefore encouraged to provide incentives and use economic instruments, such as taxation, to ensure that product prices better reflect environmental costs. Guarantees, such as legal guarantee period and the reversal of the burden of proof¹⁶, are also an important part of the consumption puzzle, as they can protect consumers against defective products and contribute to their durability and reparability, preventing them from being thrown away. A two year legal guarantee exists in the EU for physical goods; however problems are still encountered in its implementation. The Commission will address issues such as these, notably in the context of its upcoming proposal on rules for online purchases. The Commission will also evaluate key pieces of consumer legislation and will consider possible improvements¹⁷.

Once a product has been purchased, its lifetime can be extended if it is reused and repaired, hence avoiding wastage. The reuse and repairs sectors are work intensive and therefore contribute to the EU's agenda on jobs and growth and to its social agenda. Currently, certain products cannot be repaired because of their design, or because spare parts or repair information are not available. Future work on ecodesign of products (see section 1.1) will help to make products more durable and easier to repair: in particular, requirements concerning the availability spare parts and of repair information (e.g. through online repair manuals) will be considered, including through assessing the costs and benefits of a horizontal measure on the provision of repair information. Unfair commercial practices, such as suspicions of planned obsolescence, can also limit useful lifetime of products. Through an independent testing programme, the Commission will initiate work to detect such practices and ways to address them. [In addition, the revised legislative proposal on waste rewards the promotion of waste prevention and reuse.] Member States and regional and local authorities also have an important role to encourage reuse and repair, and some have already taken initiatives in this area.

Other actions can be taken to reduce the amount of household waste. This is often more effective at national and local level, where it can be better targeted: awareness campaigns and economic incentives¹⁸ have proven particularly effective. The Commission is also promoting waste prevention and reuse through the exchange of information and best practices and by providing Cohesion Policy funding for projects at regional level, including interregional cooperation.

Innovative forms of consumption also support the development of the circular economy, e.g. sharing products or infrastructure (collaborative economy), consuming services rather than products (e.g. through leasing contracts), or using IT or digital platforms. These new forms of consumption are often developed by businesses or citizens, and promoted at national, regional

¹⁶ Under Directive 99/44/EC, during the first 6 months from delivery, the seller has to prove that no lack of conformity existed at the time of delivery. The burden of proof is reversed towards the buyer afterwards.

¹⁷ Under the REFIT of consumer legislation.

¹⁸ Such as incentive systems for municipalities or "pay-as-you-throw" schemes, where e.g. households pay according to the amount of non-recyclable waste that they throw away.

and local level. The Commission supports these new business and consumption models through Horizon 2020 and through Cohesion Policy funding (see also section 6).

Public procurement accounts for a large proportion of European consumption (nearly 20% of EU GDP). It can therefore play a key role in the circular economy, and the Commission will encourage this role through its actions on Green Public Procurement, where criteria are developed at EU level and can then be used by public authorities on a voluntary basis. Firstly, the Commission will make sure that in the future a special emphasis is placed on aspects relevant to the circular economy, such as durability and reparability, when setting out or revising criteria. Second, the Commission will support a higher uptake of these criteria by public authorities¹⁹, and reflect how Green Public Procurement could be used more widely across the EU, in particular for products or markets that have high relevance for the circular economy. Finally, the Commission will lead by example, by making sure that Green Public Procurement is used as widely as possible in its own procurement, and by reinforcing the use of Green Public Procurement in EU funding.

- *The Commission will specifically consider requirements on the availability of repair information and spare parts in its work on Ecodesign.*
- *[In the revised waste proposal, the Commission proposes rewards for the promotion of certain reuse activities at national level.]*
- *The Commission will work towards better enforcement of the guarantees on tangible products and examine possible options for improvement, as well tackle false green claims.*
- *Together with consumer organisations, the Commission will develop a Horizon 2020-funded independent testing programme to help the identification of issues related to potential planned obsolescence.*
- *The Commission will take action on Green Public Procurement (GPP), by emphasising circular economy aspects in new or revised criteria, supporting higher uptake of GPP, and leading by example in Commission procurement and EU funds.*

3. Waste management

Waste management is a central part of the circular economy: it determines how the EU waste hierarchy is put into effect. The waste hierarchy establishes a priority order ranging from prevention, preparation for re-use, recycling, energy recovery and finishes with disposal, such as landfilling. The way we collect and manage our waste can lead either to high rates of recycling and to valuable materials finding their way back into the economy, or to an inefficient system where most of recyclable waste ends in landfills or is incinerated, with harmful environmental impacts and significant economic losses. To achieve high levels of material recovery, it is essential to send long-term signals to public authorities, businesses and investors, and to establish the right enabling conditions at EU level, including consistent enforcement of existing obligations. All waste should be considered, be it generated by

¹⁹ *Inter alia* through targeted training schemes

household, businesses, industry and mining (see section 1.2), or the construction sector (see section 5.4). Even waste that has been disposed of in landfills might in the future become a useful resource.

Today, only around 40% of the waste produced by EU households is recycled. This average masks a wide variation between Member States and regions, with rates as high as 80% in some areas, and lower than 5% in others.

[The revised waste proposal includes increased recycling targets for the packaging materials²⁰, which will reinforce the targets on municipal waste and improve the management of packaging waste in the commercial and industrial sectors.] More packaging waste (from households and industrial/commercial sources) has been recycled in the EU since the introduction of EU-wide targets for paper, glass, plastics, metal, and wood packaging²¹, and there is potential for more recycling with both economic and environmental benefits.

To raise levels of high quality recycling, improvements are needed as regards waste collection and sorting. Collection and sorting systems are often financed in part by Extended Producer Responsibility schemes, in which manufacturers are responsible for product collection and treatment costs. In order make these schemes more effective, the Commission is proposing minimum conditions when they are set up increasing transparency and costs efficiency. Member States and regions can also use these schemes for additional waste streams such as textiles or furniture.

[The revised proposal will also address key issues relating to the calculation of recycling rates. This is essential to ensure comparable, high quality statistics across the EU, and to simplify the current system.]

It is also important to address obstacles on the ground. Often, higher recycling rates are limited by administrative capacity, a lack of investment and insufficient use of economic instruments (e.g. landfill charges or pay-as-you-throw schemes). The Commission is committed to facilitating exchange of best practices from countries and regions that have successfully improved their waste management. To ensure better implementation of EU waste legislation, the Commission has launched a number of compliance promotion initiatives, including on municipal and hazardous waste and separate collection. The ongoing close cooperation with Member States will be stepped up in the future and will better link waste legislation with wider actions in support of the circular economy. [Add text on elements of waste proposal as appropriate]

European Cohesion Policy has a key role to play in closing the investment gap for improved waste management and supporting the application of the waste hierarchy. In the past two decades, these funds have been used widely across the EU to develop waste management

²⁰ In the proposal for metals, separate sub-targets will be introduced for aluminium and ferrous metals.

²¹ http://ec.europa.eu/environment/waste/packaging/index_en.htm

infrastructure. For the current (2014-2020) financing programme, ex-ante conditions must be met to ensure that new investments in the waste sector are in line with waste management plans designed by Member States to meet their recycling targets. This means that funding for new landfill will be granted only in exceptional cases (e.g. mainly for non-recoverable hazardous waste), and that funding for new facilities for the treatment of residual waste, such as incineration or mechanical biological treatment, will be granted only in limited and well justified cases, where there is no risk of overcapacity and the objectives of the waste hierarchy are fully respected.

Another barrier to higher recycling rates is the illegal transport of waste, both within the EU and to non-EU countries, which often results in economically sub-optimal and environmentally unsound treatment. A revised regulation on waste shipment was adopted in 2014²² which will facilitate the detection of these illegal shipments; the Commission will take further measures to help ensure that it is properly implemented. Specific high-value waste streams, such as end-of-life vehicles will be targeted specifically, to prevent raw materials leakage.

In addition, in order to foster high-quality recycling in the EU and elsewhere, the Commission will promote the voluntary certification of treatment facilities for certain key types of waste (e.g. electronic waste, plastics).

When waste cannot be prevented or recycled, recovering its energy content is in most cases preferable to landfilling it, in both environmental and economic terms. "Waste to energy" can therefore play a role and create synergies with the EU energy policy, but guided by the principles of the EU waste hierarchy. We should examine how this role can be optimised, without compromising the achievement of higher reuse and recycling rates, and how the corresponding energy potential can best be exploited. To that end, the Commission will adopt a 'waste to energy' initiative in the framework of the Energy Union.

[The Commission is adopting, together with this action plan, a revised legislative proposal on waste comprising in particular:

- long-term recycling targets for municipal waste, packaging waste and landfill*
- general requirements for Extended Producer Responsibility schemes*
- simplification and harmonisation of definitions and calculation methods]*

and will step up its work with Member States for the improvement of waste management on the ground.

- The Commission commits to ensure that structural funds are used to support the objectives of the EU waste legislation and guided by the EU waste hierarchy.

²² [Regulation \(EU\) No 660/2014 of 15 May 2014](#)

4. From waste to resources: boosting the market for secondary raw materials and water reuse

In a circular economy, materials that can be recycled are injected back into the economy as new raw materials thus increasing the security of supply. These "secondary raw materials" can be traded and shipped just like primary raw materials from traditional extractive resources.

At present, secondary raw materials still account for a small proportion of the materials used in the EU²³. Waste management practices have a direct impact on the quantity and quality of these materials and therefore actions to improve these practices are crucial (see section 3.). However, other barriers restrict the growth of this important market and the smooth circulation of the materials. EU action is particularly important in this area given the single market implications and the links with existing EU legislation.

One of the barriers faced by operators who want to use secondary raw materials is uncertainty as to their quality. In the absence of EU-wide standards, it can be difficult to ascertain impurity levels, or suitability for high-grade recycling (e.g. for plastics). The development of such standards will increase trust in secondary raw materials and in recycled materials, and help support the market. The Commission will therefore launch work on EU-wide quality standards for secondary raw materials where needed, in consultation with the industries concerned.

Recycled nutrients are a distinct and important category of secondary raw materials, for which the development of quality standards is necessary. They are present in organic waste material, for example, and can be returned to soils as fertilisers. Their use in agriculture reduces the need for mineral-based fertilisers, the production of which has negative environmental impacts, and depends on imports of phosphate rock, a limited resource. However, the circulation of fertilisers based on recycled nutrients is currently hampered by the fact that rules and quality standards differ across Member States. In order to address this situation, the Commission will propose a revision of the EU regulation on fertilisers. This will involve new measures to facilitate the EU wide recognition of organic and waste-based fertilisers, thus stimulating the development of an EU-wide market.

Water scarcity has worsened in some parts of the EU over the last decades, with damages to our environment and economy. In addition to water-efficiency measures, reuse of treated wastewater in safe and cost-effective conditions is a valuable but under-used option to increase water supply and alleviate pressure on over-exploited water resources in the EU. Water reuse in agriculture also contributes to nutrients recycling by substitution of solid fertilisers. The Commission will take a series of actions to promote reuse of treated waste water, including legislation on minimum requirements for water reuse.

²³ With some exceptions such as steel or paper – E.g. plastics 5%.

Another very important issue for the development of secondary raw materials markets is the link with legislation on chemicals. A growing number of chemical substances are identified as being of concern for health or the environment and become subject to restrictions or prohibitions. However, these substances may be present in products sold before the restrictions applied, some of which have a long lifetime, and therefore chemicals of concern can sometimes be found in recycling streams. Such substances can be costly to detect or remove, creating obstacles in particular for small recyclers.

Promotion of non-toxic products and better tracking of chemicals of concern in products will facilitate recycling and improve uptake of secondary raw materials. The interaction of legislations on waste, products and chemicals must be assessed in the context of a circular economy in order to decide for the right course of action at EU level to address the presence of substances of concern, limit unnecessary burden for recyclers and facilitate the traceability and risk management of chemicals in the recycling process. The Commission will therefore develop its analysis and propose options for action to overcome unnecessary barriers while preserving the high level of protection of human health and the environment. This work will feed into the future EU strategy for a non-toxic environment²⁴.

It is also essential to facilitate the cross-border circulation of secondary raw materials to ensure that they can be traded easily across the EU. Action in this area will include the simplification of cross-border formalities through the use of electronic data exchange. The Commission is examining other barriers that can hamper the smooth circulation of waste in the EU. To improve the availability of data on secondary raw materials the Commission will further develop the recently initiated Raw Materials Information System and support EU-wide research on raw materials flows.

A key factor in creating a dynamic market for secondary raw materials is sufficient demand, driven by the use of recycled materials in products and infrastructure. For certain raw materials (e.g. paper or metal), demand is already high; for others, it is still developing. The role of the private sector in creating demand and helping to shape supply chains will be essential; a number of industrial and economic actors have already given public commitment to ensuring a certain level of recycled content in products they put on the market for both sustainability and economic reasons. Public authorities can also contribute to the demand for recycled materials through their procurement policies.

- *The Commission will launch work to develop quality standards for secondary raw materials where they are needed (in particular for plastics).*
- *The Commission will propose a revised EU regulation on fertilisers, so as to facilitate recognition of organic and waste-based fertilisers in the single market and thus support the role of bio-nutrients in the circular economy.*

²⁴ Announced in the [7th Environment Action Programme](#)

- *The Commission will also take a series of actions to facilitate water reuse; this will include a legislative proposal on minimum requirements for reused water, e.g. for irrigation and groundwater recharge.*
- *The Commission will develop analysis and propose options on the interface between chemicals, products and waste legislation, including on how to promote non-toxic cycles and improve the tracking of chemicals of concern in products.*
- *The Commission will further develop the recently initiated Raw Materials Information System and support EU-wide research on raw materials flows.*

5. Priority areas

A number of sectors face specific challenges in the context of the circular economy, because of the specificities of their products or value-chains, their environmental footprint or the dependency on material from outside Europe. Those need to be addressed in a targeted way, to ensure that the interactions between the various phases of the cycle are fully taken into account along the whole value chain.

5.1. Plastics

The use of plastics in the EU has been growing steadily, but less than 25% of plastic waste collected is recycled, and about 50% goes to landfill. Large quantities of plastics also end up in the oceans, and the 2030 Sustainable Development Goals include a target to prevent and significantly reduce marine pollution of all kinds, including marine litter. Increasing plastic recycling is essential for the transition to a circular economy. Smarter separate collection and certification scheme for collectors and sorters are critical to divert recyclable plastics away from landfills and incineration into recycling. The presence of hazardous chemical additives can pose technical difficulties and the emergence of innovative types of plastics raises new questions, e.g. as regards plastics biodegradability. However, innovation in the sector can contribute to the circular economy by better preserving food, improving the recyclability of plastics or reducing weight of materials used in vehicles.

In order to address these complex and important issues, the Commission will prepare a strategy addressing the challenges posed by plastics throughout the value chain and taking into account their entire life-cycle²⁵. The Commission will also take action to fulfil the objective of reducing marine litter²⁶. A number of other elements of this action plan will also help to increase plastics recycling, including Ecodesign (section 1.1), an EU-wide target on recycling of plastic packaging (section 3), quality standards and action to facilitate cross-border trade of recyclable plastics (section 4).

²⁵ This strategy will include a follow-up to the [Green Paper on plastic waste](#).

²⁶ The 7th EAP calls for a Union-wide quantitative headline reduction target supported by source-based measures.

- *The Commission will adopt a strategy on plastics in the circular economy, addressing issues such as recyclability, biodegradability, the presence of hazardous substances of concern in certain plastics, and marine litter.*
- *[The Commission is proposing, in the revised legislative proposal on waste, a more ambitious target for the recycling of plastic packaging.]*

5.2. Food waste

Food waste is an increasing concern in Europe. The production, distribution and storage of food use natural resources and generate environmental impacts. Discarding food that is still edible increases these impacts, and causes financial loss for consumers and the economy. Food waste also has an important social angle: donation of food that is still edible but that for logistic or marketing reasons cannot be commercialised should be facilitated. As part of the Sustainable Development Goals for 2030, the United Nations General Assembly adopted, in September 2015, a target to halve per capita food waste at the retail and consumer level, and reduce food losses along production and supply chains. The EU and its Member States are committed to meet this target.

Food waste takes place all along the value chain: during production and distribution, in shops, restaurants, catering facilities, and at home. This makes it particularly difficult to quantify: today, there is no harmonised, reliable method to measure food waste in the EU, which makes it more difficult for public authorities to assess its scale, origins, and trends over time. In addition, action by Member States, regions, cities, and business along the value chain is essential to prevent food waste and tackle varying situations across countries and regions.

Awareness campaigns are needed to change behaviour. The Commission prepares materials to support awareness raising at national, regional or local level and dissemination of good practices in food waste prevention²⁷.

Addressing the measurement issue is an important step towards a better understanding of the problem, a coherent monitoring and reporting as well as effective exchange of good practices across the EU. The Commission will elaborate a common EU methodology to measure food waste in close cooperation with Member States and stakeholders.

Further, to help Member States (i) best achieve the Sustainable Development Goals, (ii) maximise the involvement of stakeholders and (iii) share valuable and successful innovation, the Commission will also create a stakeholder platform dedicated to food waste, bringing together Member States and all actors of the food chain.

EU action is also important in areas where food waste can happen as a result of the way EU legislation is interpreted or implemented. This is the case for rules concerning food donation to food banks, and utilisation of unsold food as a resource in animal feed – the Commission will take measures in these two areas.

²⁷ http://ec.europa.eu/food/safety/food_waste/stop/index_en.htm

Another area where action might be needed concerns date marking, and in particular the "best before" date. This can be wrongly interpreted as an expiry date and lead to the discarding of safe, edible food. The Commission will examine ways of promoting a better use and understanding of date marking by the different actors of the food chain. The EU is also active to prevent edible fish being thrown back into the sea from fishing vessels²⁸.

In order to help Member States define the measures needed to achieve the Sustainable Development Goal on food waste and maximise the contribution of actors in the food supply chain, the Commission will:

- develop a common EU methodology to measure food waste and define relevant indicators. It will create a stakeholder platform in order to help Member States define the measures needed to achieve the Sustainable Development Goal on food waste and maximise the contribution of actors in the food supply chain.*
- take measures to clarify EU legislation relating to waste, food and feed and facilitate food donation as well as the reuse of former foodstuff and by-products from the food chain in feed production.*
- examine ways to improve the use of date marking by actors of the food chain and its understanding by consumers, in particular the "best before" label.*

5.3. Critical raw materials

Critical raw materials are both of high economic importance for the EU and vulnerable to supply disruption²⁹; in certain cases, their extraction also causes significant environmental impacts. They are often present in electronic devices³⁰. The current very low rate of recycling of these materials means that significant economic opportunities are lost. For all these reasons, increasing the recovery of critical raw materials is one of the challenges that must be addressed in the move to a more circular economy.

Existing EU legislation encourages the recycling of electronic waste, including through mandatory targets³¹; but only high quality recycling ensures the recovery of critical raw materials. One of the challenges is collecting, dismantling and recycling products that contain such materials. It will be essential to improve the recyclability of electronic devices through product design (see section 1.1), thus improving the economic viability of the recycling process. [The Commission is encouraging Member States to promote recycling of critical raw materials in its revised proposal on waste.]

Other barriers include insufficient information exchange between manufacturers and recyclers of electronic products, the absence of recycling standards, and a lack of data for economic

²⁸ Article 15 of the Common Fisheries Policy, Reg 1380/2013

²⁹ The European Commission has listed critical raw materials here: http://ec.europa.eu/enterprise/policies/raw-materials/critical/index_en.htm. They include, for example, rare earth elements and other precious metals, but also phosphorus.

³⁰ Such as rare earths in electronic displays or precious metals in printed circuit boards

³¹ http://ec.europa.eu/environment/waste/weee/index_en.htm

operators on the potential for recycled critical raw materials. Such materials could also be recovered in landfills (e.g. from discarded electronic devices) or in certain cases from mining waste. The Commission is developing R&I programmes, data and information exchange, and will promote best practices on all these issues. In order to ensure a coherent and effective approach, to provide key data sources and to identify options for further action, the Commission will prepare a report on critical raw materials in the circular economy.

- The Commission will take a series of measures to encourage recovery of critical raw materials, and prepare a report including best practices and options for further action.
- [The Commission is also encouraging action by Member States on this topic in its revised proposal on waste.]

5.4. Construction and demolition

In volume terms, construction and demolition are among the biggest sources of waste in Europe. Many of these materials are recyclable or can be reused, but reuse and recycling rates vary widely across the EU. The construction sector also plays a role in the environmental performance of buildings throughout their life.

The recycling of construction and demolition waste is encouraged by an EU-wide mandatory target³², but challenges have still to be addressed on the ground if waste management in this sector is to improve. For example, valuable materials are not always identified, separately collected, or adequately recovered. The Commission is currently conducting a study to identify the obstacles to, and drivers for, recycling of construction and demolition waste as well as best practices in this area. It will also develop targeted guidelines, including on the treatment of hazardous waste, for use on demolition sites. It will also help to spread best practices by developing voluntary recycling protocols based on the highest common standards for each waste stream.

Given the long lifetime of buildings, it is essential to encourage design improvements that will reduce their environmental impacts and increase the durability and recyclability of their components. The Commission will develop indicators to assess environmental performance throughout the lifecycle of a building³³, and promote their use for building projects through large demonstration projects and guidance for green public procurement.

- The Commission will take a series of actions to ensure recovery of valuable resources and adequate waste management in the construction and demolition sector, as well as facilitate assessing the environmental performance of buildings.

³² http://ec.europa.eu/environment/waste/construction_demolition.htm

³³ In application of the [Communication "Resource efficiency opportunities in the building sector](#)

5.5. Biomass and bio-based products

Bio-based materials, i.e those based on biological resources (such as wood, crops or fibres) can be used for a wide range of products (construction, furniture, paper, food, textile, chemicals...) and energy uses. The bioeconomy is hence providing alternatives to fossil-based products and energy. Bio-based materials can also present advantages linked to their renewability, biodegradability or compostability.

In the case of wood in particular, different parts of the trees can be used for specific purposes, and reuse and recycling can take place several times, thus increasing its value. On the other hand, using biological resources requires attention to their lifecycle environmental impacts and sustainable sourcing. The multiple possibilities for their use can also generate competition for them and create pressure on land-use.

In a circular economy, a cascading use of renewable resources should be promoted, with several reuse and recycling cycles, together with the application of the waste hierarchy (including for food: see section 5.3) and more generally options that result in the best overall environmental outcome. National measures such as extended producer responsibility schemes for furniture or wood packaging, or separate collection for wood can have a positive impact. The Commission will work on identifying and sharing best practices in this sector and promote innovation; [the revised legislative proposal on waste also includes a mandatory EU-level target on recycling wood packaging waste.] In addition, the Commission will ensure coherence and synergies with the circular economy when examining the sustainability of bioenergy under the Energy Union.

The bio-based sector has also shown its potential for innovation in new materials, chemicals and processes, which can be an integral part of the circular economy. Realising this potential depends in particular on investment in integrated bio-refineries, capable of processing biomass and bio-waste for different end-uses. The EU is supporting such investments and other innovative bio economy-based projects through research funding³⁴.

- *The Commission will promote an efficient use of bio-based resources through a series of measures including the promotion of the cascading use of biomass and support to innovation in the bioeconomy.*
- *[The revised legislative proposal on waste contains a target for recycling wood packaging and a provision to ensure the separate collection of biowaste.]*

6. Innovation, investment, and other horizontal measures

The transition to a circular economy is a systemic change. In addition to targeted actions affecting each phase of the value chain and key sectors, it is necessary to create the conditions under which a circular economy can flourish and resources can be mobilised.

³⁴ <http://ec.europa.eu/research/bioeconomy/index.cfm>

Innovation will play a key part in this systemic change. In order to rethink our ways of producing and consuming, and to transform waste into high value-added products, we will need new technologies, processes, services and business models which will shape the future of our economy and society. Hence, support of research and innovation will be a major factor in encouraging the transition; it will also contribute to the competitiveness and modernisation of EU industry. The recently adopted Work Programme 2016-2017 of Horizon 2020 includes a major initiative: "Industry 2020 and the circular economy". It will grant over €600 million for innovative demonstration projects that support the objectives of the circular economy in a wide range of industrial and service activities, including process industries, manufacturing, and new business models. It also explores a pilot approach to help innovators facing regulatory obstacles (e.g. ambiguous legal provisions), by setting up partnerships with public authorities ('innovation deals').

This initiative adds to a wide range of existing Horizon 2020 programmes supporting innovative projects relevant to the circular economy, in fields such as waste prevention and management, food waste, remanufacturing, sustainable process industry, industrial symbiosis, and the bioeconomy³⁵. These will be complemented by the implementation of the Eco-innovation Action Plan³⁶.

Important R&I funding opportunities are also available through Cohesion Policy: circular economy is one of the priorities highlighted by regions in their Smart Specialisation Strategies³⁷. The Commission will offer further support to those regions.

The development of the circular economy will also require public and private sources of financing to scale up improved technologies and processes, develop infrastructure and increase cooperation between actors in the value chain. Important support for these objectives will come from EU funding programmes such as Cohesion Policy, LIFE and COSME. For example, Cohesion Policy Funds are directed towards a growing number of programmes supporting the circular economy, including support for reuse and repair, improved production processes, product design and SMEs³⁸. The Commission will assist Member States in strengthening their circular economy approach in this context through targeted outreach and is considering the possibility of a multi-platform dedicated to financing the circular economy. Private finance needs to be directed towards new opportunities created by the circular economy. For the financial sector, such projects can differ significantly from 'business as usual'. The European Fund for Strategic Investments (EFSI) is one instrument that can be used to fund such investments. Together with the European Investment Bank, and the European Investment Advisory Hub, the Commission will carry out outreach to encourage

³⁵ Horizon 2020 Work Programme 2014-2015, Focus Area 'Waste: a resource to reuse, recycle, and recovery raw materials' call (http://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/main/h2020-wp1415-climate_en.pdf); FP7 Environmental Theme, 2013 resource efficiency call (http://ec.europa.eu/research/participants/data/ref/fp7/132129/f-wp-201301_en.pdf)

³⁶ http://ec.europa.eu/environment/ecoap/index_en.htm

³⁷ <http://s3platform.jrc.ec.europa.eu/home>

³⁸ http://ec.europa.eu/regional_policy/en/policy/what/investment-policy/

applications for funding, and support the development of projects and investment platforms relevant to the circular economy, e.g. in the areas of plastics recycling or mineral. Work will be done to develop cross-sectoral clusters and pool resources to formulate projects of European dimension³⁹. In addition, circular economy projects can benefit from EIB advisory and financing tools under the InnovFin programme⁴⁰.

SMEs, including social enterprises, will make a key contribution to the circular economy: they are particularly active in fields such as recycling, repair, and innovation. However, they also face specific challenges, such as access to funding, and the difficulty of taking into account circular economy if it is not their core business. As set out in the 2014 Green Action Plan for SMEs, the Commission is acting to support these companies, analyse the barriers they encounter to a better use of resources and waste management, and to encourage innovation and cooperation across sectors and regions.

The transition to a circular economy will also require a qualified workforce with specific and sometimes new skills, and opportunities for employment and social dialogue. If the right skills are to be developed, they will have to be espoused by the education systems, including engineering and business schools. The Commission is following up on its Green Employment Initiative⁴¹ with action to anticipate needs and encourage the development of skills and other measures to support job creation in the green economy.

The global dimension of the circular economy is prominent in areas such as sustainable sourcing, marine litter, food waste, or an increasingly globalised market for secondary raw materials. This action plan will also be instrumental in reaching the Sustainable Development Goals for 2030.

Finally, the Commission will actively engage stakeholders in the implementation of this action plan, in particular through existing sectorial platforms in key sectors. This will be complemented by further support to public private partnerships, voluntary business approaches, and exchange of best practices among Member States and regions.

- In October 2015, the Commission launched a major Horizon 2020 initiative on 'Industry 2020 and the circular economy', with funding of over €600 million and a pilot approach to overcoming regulatory obstacles for innovators.

- The Commission will step-up its action to mobilise stakeholders on the circular economy and in particular for the implementation of this action plan. It will also carry out targeted outreach to help the development of circular economy projects for various sources of EU funding, in particular Cohesion Policy Funds.

³⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0209:FIN:EN:PDF>

⁴⁰ <http://www.eib.org/products/blending/innovfin/?lang=en>

⁴¹ [COM\(2014\)446](#)

7. Monitoring progress towards a circular economy

In order to assess progress towards a more circular economy and the effectiveness of action at EU and national level, it is important to have a set of reliable indicators. A lot of relevant data already collected by Eurostat can form a basis for this monitoring. In addition, the Resource efficiency scoreboard⁴² and the Raw Materials Scoreboard⁴³ contain relevant indicators and analysis which will be particularly useful for tracking progress.

On this basis, the Commission will work in close cooperation with the European Environment Agency (EEA) and in consultation with Member States to propose a simple and effective monitoring framework for the circular economy. Complementing the two above-mentioned scoreboards, this framework will include a set of key, meaningful indicators that capture the main elements of the circular economy. These will be published linked to the Commission reporting on Sustainable Development Goals, and will include new indicators on food waste (see section 5.2) and indicators based on existing Eurostat and other official data in areas such as security of supply for key raw materials, repair and reuse, waste generation, waste management, trade in secondary raw materials in the EU and with non-EU countries, and use of recycled materials in products. Where necessary, action will be taken to improve the quality of existing data. The Commission will report on progress in implementing this action plan five years after its adoption.

In close cooperation with the EEA and in consultation with Member States, the Commission will develop a monitoring framework for the circular economy, designed to measure progress effectively on the basis of reliable existing data.

⁴² <http://ec.europa.eu/eurostat/web/environmental-data-centre-on-natural-resources/resource-efficiency-indicators/resource-efficiency-scoreboard>

⁴³ Developed in the context of the European Innovation Partnership on Raw Materials - Reference or link to the scoreboard.