Briefing
January 2016

European Parliament

Closing the loop

New circular economy package

SUMMARY

Unlike the traditional linear economic model based on a 'take-make-consume-throw away' pattern, a circular economy is based on sharing, leasing, reuse, repair, refurbishment and recycling, in an (almost) closed loop, where products and the materials they contain are highly valued. In practice, it implies reducing waste to a minimum.

Moving towards a more circular economy could deliver opportunities including reduced pressures on the environment; enhanced security of supply of raw materials; increased competitiveness; innovation; growth and jobs. However, the shift also poses challenges such as financing; key economic enablers; skills; consumer behaviour and business models; and multi-level governance.

On 2 December 2015, the European Commission presented a new circular economy package. The package contains an action plan for the circular economy, mapping out a series of actions planned for the coming years, as well as four legislative proposals on waste, containing targets for landfill, reuse and recycling, to be met by 2030.

The European Parliament advocates specific measures to improve waste management and to promote eco-innovation and resource efficiency. Stakeholders, however, voice diverging views on the proposed circular economy package.

In this briefing:

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Glossary

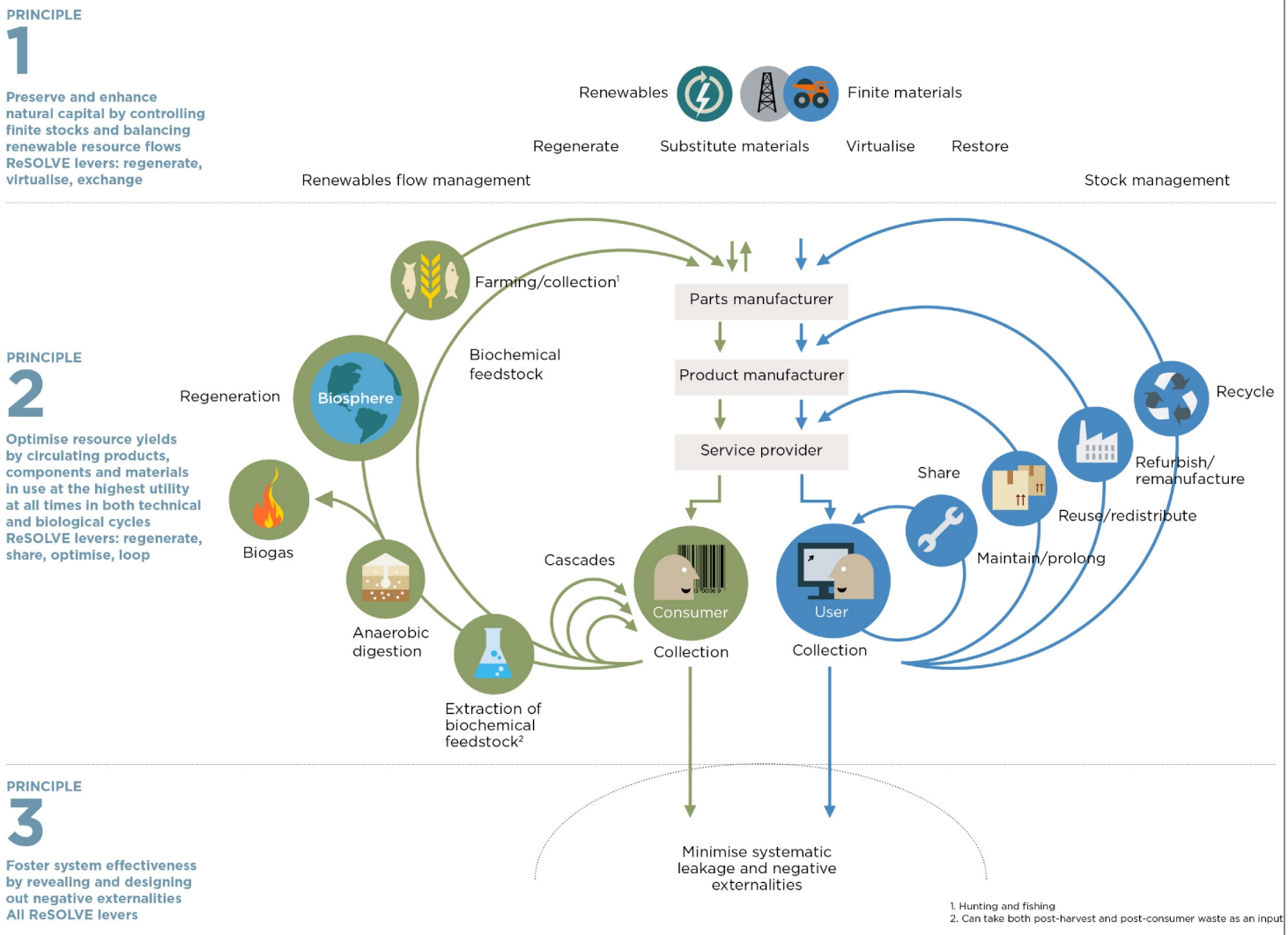
Circular economy: an economic model based inter alia on sharing, leasing, reuse, repair, refurbishment and recycling, in an (almost) closed loop, which aims to retain the highest utility and value of products, components and materials at all times.

Extended producer responsibility (EPR): an environmental policy approach whereby producers take over the financial and/or organisational responsibility for collecting or taking back used goods, as well as sorting and treatment for their recycling.

Background

The **circular economy concept**[1] is generally described as one in which products and the materials they contain are highly valued, unlike in the traditional, linear economic model, based on a 'take-make-consume-throw away' pattern. This production and consumption model is based on two complementary loops drawing inspiration from biological cycles: one for 'biological' materials (which can be decomposed by living organisms) and one for 'technical' materials (which cannot be decomposed by living organisms). In both cases, the aim is to limit the leakage of resources as much as possible.

Figure 1 – Outline of a circular economy



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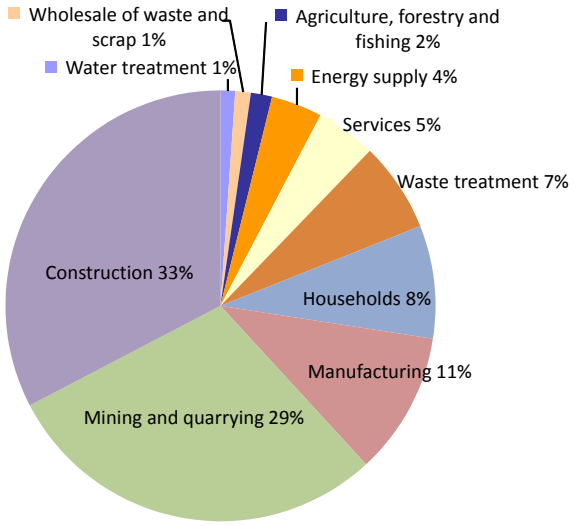
In **practice**, a circular economy implies **reducing waste to a minimum**. When a product reaches the end of its life, its materials are kept within the economy wherever possible. These can be productively used again and again, thereby creating further value. Measures leading towards a circular economy include reusing, repairing, refurbishing and recycling existing materials and products. What used to be considered as 'waste' can be turned into a valuable resource. There are many examples of companies implementing the concept on specific products in various sectors.[2]

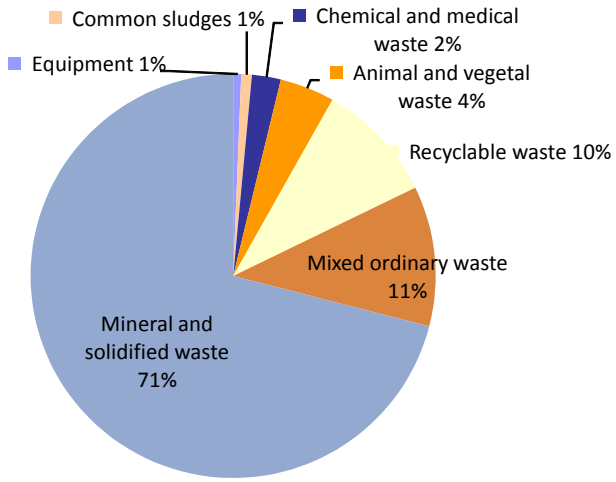
The **amount of waste generated in the European Union** (EU) appears to be declining. According to the European Environment Agency (EEA), between 2004 and 2012 waste generation from manufacturing and services sectors in the EU-28 and Norway declined by 25% and 23% respectively, despite respective increases of 7% and 13% in sectoral economic output. Meanwhile, total municipal waste generation in EEA countries declined by 2%, despite a 7% increase in real household expenditure. However, 2.5 billion tonnes of waste (or about 5 tonnes per capita) are still generated each year in the EU. Figures 2 and 3 show the breakdown of waste generated by sector and by type.

Figure 2 – Waste generation in EU-28 by sector (2012)



Data source: Eurostat (env_wasgen), 2016.

Figure 3 – Waste generation in EU-28 by type (2012)



Data source: Eurostat (env_wasgen), 2016.

There are a variety of **indicators** for the circular economy, although most have limitations. The OECD and the G8 generally use resource productivity, measured as gross domestic product (GDP) divided by domestic material consumption, as an indicator for resource use. Other indicators measuring progress towards a circular economy include the EU resource efficiency scoreboard, the EU eco-innovation index, recycling rates, the amount of municipal waste per capita, or the amount of waste per GDP output.

Opportunities and challenges

Potential opportunities

Moving towards a more circular economy has both an environmental and economic rationale. Potential opportunities include:

- **Reduced pressures on the environment**: a circular economy would significantly reduce greenhouse gas (GHG) emissions through better waste management[3] and reduced use of resources (such as energy, water, land and materials) in manufacturing, with positive impacts on the climate. Large-scale reuse of raw

materials could help reduce landscape and habitat disruption as well as marine littering, which would in turn help to limit biodiversity loss.

- **Enhanced security of supply of raw materials**: a circular economy would mitigate risks associated with the supply of raw materials, such as price volatility, availability and import dependency. According to Eurostat data, the EU currently imports, in raw material equivalents, about half the resources it consumes.[4]
- **Increased competitiveness**: a circular economy could bring savings to businesses and consumers through improved resource efficiency. A 2015 Ellen MacArthur Foundation report estimates that by 2030, a shift towards a circular economy could reduce net resource spending in the EU by €600 billion annually, bringing total benefits estimated at €1.8 trillion per year once multiplier effects are accounted for. Additionally, research suggests that stricter environmental legislation can provide a competitive advantage to businesses.[5]
- **Innovation**: a circular economy could trigger a large innovation drive across sectors of the economy because of the need to redesign materials and products for circular use. The McKinsey & Company consultancy highlights that this would apply even in sectors not normally considered as innovative, such as the carpet industry.
- **Growth and jobs**: a circular economy could strengthen growth and create new jobs. It is estimated that the transition would increase GDP by 1 to 7 percentage points by 2030, depending on whether a higher pace of technological change is taken into account,[6] and that it would have an overall positive impact on employment,[7] although jobs in specific sectors could also be threatened.

Potential challenges

A transition towards a more circular economy would face a number of barriers and challenges. Potential challenges include:

- **Finance**: a transition to a circular economy would involve considerable transition costs, such as R&D and asset investments, subsidy payments to promote new business models, and public investment in waste management and digital infrastructure.[8] For businesses, in particular small and medium-sized enterprises (SMEs), the cost of 'green' innovation and business models is considered as one of the major barriers to the adoption of more sustainable practices. The lack of appropriate finance tools for mass market development of radical innovations is also seen as an issue.
- **Key economic enablers**: a series of key economic enablers are lacking, inter alia, pricing systems encouraging efficient resource reuse and reflecting full environmental costs; incentives for producers and recyclers to work together in order to improve performance within and across specific value chains; and markets for secondary raw materials.
- **Skills**: a circular economy would require technical skills which are currently not present in the workforce. Skills would for instance enable businesses to design products with circularity in mind, and to engage in reuse, refurbishment and recycling. Missing technical skills could be particularly problematic for SMEs.
- **Consumer behaviour and business models:** a circular economy would require systemic shifts in consumer behaviour and business models, with implications for everyday behaviour, in terms of waste sorting and food waste for instance. Many industries are currently based on a fast turn-around driven by fashion (typified by fast fashion in clothes and electronic devices, among others). Businesses and consumers have little knowledge about the potential benefits of a circular economy

and tend to be reluctant to adopt new business models (e.g. leasing rather than owning).

- **Multi-level governance**: a transition to a circular economy would require action at many levels (e.g. international, European, national, local, business, and individual) and in many policy areas (e.g. waste management, professional training, packaging and product design, research and development, and finance). External trade aspects and existing EU policies such as the internal market would have to be taken into account.

A new circular economy package

The European Commission put forward an initial circular economy package in July 2014, but withdrew the legislative proposal on waste included in the package in February 2015, in order to make way for new proposals. On 2 December 2015, the European Commission presented its new circular economy package containing a communication (action plan for the circular economy, together with a list of measures in annex) and four legislative proposals on EU waste policy.[9]

Among the main measures put forward in the **four legislative proposals on waste policy**, the following can be underlined:

- setting **new waste management targets** to be met by 2030, in particular increasing the share of municipal waste prepared for reuse and recycling to 65%, increasing the share of packaging waste prepared for reuse and recycling to 75% (with specific targets for various materials used in packaging), and gradually limiting municipal waste landfill to 10%;
- introducing an **early warning system** for monitoring compliance with targets;
- setting minimum requirements for **extended producer responsibility** schemes and differentiating the contribution paid by producers on the basis of the costs necessary to treat their products at the end of their life;
- promoting **prevention** (including for food waste) and **reuse**;
- streamlining provisions on **by-products** and **end-of-waste** status (the stage at the end of the waste treatment process when materials are no longer considered waste, provided they meet certain conditions);
- aligning **definitions**, **calculation methods** for targets, **reporting obligations** and provisions on delegated and implementing acts.

The **action plan for the circular economy** aims to 'close the loop' by complementing the measures contained in the legislative proposals and to contribute to meeting the United Nations Sustainable Development Goals (SDG) adopted in 2015, in particular Goal 12 on sustainable consumption and production. The action plan highlights several broad areas for action besides waste management:

- Regarding **production**, the Commission intends to improve product design by promoting the reparability, durability and possibilities for upgrading and recycling of products through the Ecodesign Directive and extended producer responsibility schemes. It also intends to foster resource efficiency in production processes and to facilitate industrial symbiosis (turning one industry's by-product into another industry's raw material) in order to reduce environmental impacts and to create business opportunities, in particular for SMEs.
- Regarding **consumption**, the Commission intends, among other things, to better inform consumers about the sustainability of products through labelling, to

encourage innovative forms of consumption (e.g. sharing products or consuming services rather than products), and to integrate requirements promoting a circular economy in 'green' public procurement.

- The Commission intends to help create **markets for secondary raw materials** by setting quality standards for materials recovered from waste, encouraging nutrient recycling in fertilisers, and promoting non-toxic recycling cycles. It also intends to facilitate the safe **reuse of treated wastewater**.
- The Commission proposes to promote **innovation** for a circular economy through a series of existing instruments (e.g. the research framework programme Horizon 2020), to foster new **skills** within the workforce, and to engage with **stakeholders** through sectoral platforms.
- The Commission plans to propose a **monitoring** framework for the circular economy by building on existing indicators.

The action plan presents measures in **five priority sectors**: 1) plastics, 2) food waste, 3) critical raw materials, 4) construction and demolition, 5) biomass and bio-based products. On **marine litter**, the Commission retains the aspirational objective set in 2014 to reduce marine litter by 30% by 2030. On **food waste**, the Commission indicates that it is committed to the 2030 target set in the Sustainable Development Goals to 'halve per capita global food waste at the retail and consumer levels', inter alia, by developing a common methodology to measure food waste and clarifying EU legislation on waste, food and feed.

Across these areas and priority sectors, several **types of measures** can be identified, inter alia:

- **legislative measures**: e.g. putting forward a revised Regulation on fertilisers and a proposal on water reuse for irrigation, integrating circular economy requirements in implementing measures under the Ecodesign Directive;
- **communications and reports**: e.g. communication on waste-to-energy, strategy on plastics, report on critical raw materials;
- **implementation and enforcement**: e.g. on waste shipments, end-of-life vehicles, or food donation and use of former foodstuffs for animal feed;
- **guidance and best practices**: e.g. integrating waste management and resource efficiency in Best available techniques Reference documents (BREFs);
- **indicators**: e.g. developing indicators to measure food waste and to assess the lifecycle environmental performance of buildings;
- **standards**: e.g. developing standards for recycling of electronic waste and batteries, promoting voluntary standards for the recycling of construction and demolition waste;
- **support**: e.g. improving the exchange of information between manufacturers and recyclers of electronic products, setting up a pilot project addressing possible regulatory obstacles for innovators;
- **financing instruments**: e.g. encouraging uptake of funding under the European Fund for Strategic Investments (EFSI) and cohesion policy funds for the circular economy.

Besides these measures, the Commission intends to **consider possible options** – such as the need to ensure the non-toxicity of recycled materials, the contribution of the bioeconomy to the transition, the improvement of date labels on food, or financial support for the transition to a circular economy.

Comparing the old and the new package

Differences between the initial circular economy package put forward in July 2014 and the new one presented in December 2015 have attracted some attention. On the one hand, waste management targets have been revised downwards;[10] derogations have been introduced for five Member States; the overarching target to increase resource productivity by 30% by 2030 has been dropped; and the aspirational target to reduce food waste by at least 30% by 2025 no longer appears in the legislative proposals. On the other hand, the action plan contains many new initiatives on aspects not directly related to waste management but essential for a transition to a circular economy, such as production, consumption, secondary raw materials or innovation.

European Parliament

In its resolution of 9 July 2015 on 'resource efficiency: moving towards a circular economy', Parliament urged the Commission to put forward an ambitious proposal by the end of 2015, as per its initial announcement. Regarding the legislative proposal on waste, Parliament advocated, inter alia, strictly limiting incineration of recyclable and biodegradable waste by 2020; gradually implementing, by 2030, a ban on landfilling (except for certain hazardous waste and residual waste); and increasing targets for recycling and preparation for reuse to at least 70% of municipal solid waste and 80% of packaging waste by 2030.

Parliament called for EU and national targets to increase resource efficiency by 30% by 2030 compared to 2014 levels, and for a 'dashboard' of indicators to measure various aspects of resource consumption. It also requested a review of eco-design legislation and relevant product-policy legislation, to gradually include mandatory resource-efficiency requirements, measures promoting the development of markets for secondary raw materials, compulsory green public procurement, and mobilisation of EU funds for resource efficiency. Parliament also pointed out that education and training policies would have to take into account the 'green skills' needed in the shift towards a circular economy.

In its resolution of 12 December 2013 on 'eco-innovation – jobs and growth through environmental policy', Parliament called for an ambitious sustainable industrial policy with emphasis on resource efficiency, and highlighted the dual environmental and economic benefits of transition to a green sustainable economy.

In its resolution of 24 May 2012 on a 'resource efficient Europe', Parliament highlighted that decoupling economic growth from resource consumption is essential for improving Europe's competitiveness and reducing its resource dependency. It also underlined the need to support innovation and investment in new techniques and business models, such as a leasing society.

Stakeholders' views

Business associations generally welcomed the package, while making specific, both supportive and critical, comments. BusinessEurope hailed the package as a positive step to support businesses in this long-term transition. Non-ferrous metals association EuroMetaux particularly welcomed the landfilling and recycling targets, as well as the requirements for separate collection and increased recyclability. European Steel association Eurofer called, among other things, for a move away from 'waste management' to genuine 'resource management' and for more recycling of construction and demolition waste. European Aluminium advocated phasing out landfilling and

called for more ambition on construction and demolition waste targets. Paper association CEPI welcomed the recognition of the role of biomass and bio-based products, and container glass federation FEVE recognised the ambitious glass packaging recycling targets. Europen, representing the packaging supply chain in Europe, particularly favoured the intention to improve the functioning of EPR schemes. Eurochambres, the Association of European Chambers of Commerce and Industry, underlined that EPR provisions are problematic and that packaging waste targets seem unrealistic. Plastics Europe called for the phasing out of landfilling and voiced concerns about 'extremely ambitious' plastic packaging recycling targets. Domestic equipment manufacturers' association CECED warned that introducing resource efficiency requirements under the Ecodesign Directive could hamper innovation if not carefully carried out.

Stakeholders from the **waste sector** also generally welcomed the package, nevertheless issuing a mix of positive and negative comments. Waste management federation FEAD particularly welcomed the binding waste management targets and called for greater regulatory pull to help create markets for secondary raw materials. Municipal Waste Europe, representing municipalities and publicly-owned companies responsible for waste management, expressed satisfaction with the waste management targets, the requirements for EPR schemes, and the new definition of municipal waste; and also highlighted the need for waste-to-energy (incineration). Waste-to-energy sector association CEWEP called for more ambition on landfilling and highlighted the role of waste-to-energy in a circular economy. PlasticRecyclersEurope criticised the lack of concrete action on plastics recycling, especially as regards sorting and exports.

NGOs were generally critical of the package. The European Environmental Bureau and Friends of the Earth Europe criticised the package for lowering waste management targets and not living up to the promise of more ambition. Zero Waste Europe highlighted that the package fails to address waste prevention and reuse, although some improvements have been introduced as regards methodologies, definitions and requirements for EPR schemes.

The European Academies Science Advisory Council urged the Commission to promote the circular economy in international trade negotiations so as to maintain the competitiveness of EU businesses.

Main references

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Understanding waste management: policy challenges and opportunities, European Parliamentary Research Service, European parliament, June 2015.

Resource Efficiency Indicators, European Parliament Policy Department A, June 2015.

Growth Within: a circular economy vision for a competitive Europe, Ellen MacArthur Foundation, June 2015.

Well-being and the environment: Building a resource-efficient and circular economy in Europe, European Environment Agency, June 2014.

Endnotes

1 The concept of a circular economy is associated with concepts such as 'industrial ecology' (popularised in 1989), 'cradle to cradle' and 'biomimicry' (popularised in 2002). For more details, see this overview of concepts associated with the circular economy.

2 See for instance the list of Cradle to Cradle certified products or case studies by the Ellen MacArthur foundation, a private trust promoting the circular economy in partnership with businesses.

3 The European Commission estimated that the adoption of the legislative proposals contained in the 2015 circular economy package would avoid over 600 million tonnes of CO_2 equivalent emissions by 2035 (on average 30 million tonnes per year). It also indicated that a circular economy could reduce EU CO_2 equivalent emissions by 450 million tonnes per year. For comparison, 4 477 million tonnes of CO_2 equivalent were emitted in the EU in 2013. See also The Potential Contribution of Waste Management to a Low Carbon Economy, Eunomia, 2015.

4 In 2013, Raw Material Consumption in the EU27 was 14 tonnes per capita, while total imports in Raw Material Equivalents amounted to 7 tonnes per capita.

5 For a recent review of this effect, known as the 'Porter hypothesis', see The Porter hypothesis at 20: can environmental regulation enhance innovation and competitiveness?, Ambec. S et al., Review of Environmental Economics and Policy, 2013.

6 The Commission estimated in 2014 that a shift to a circular economy would deliver a 0.8% GDP increase by 2030, while the Ellen MacArthur Foundation estimated in 2015 that a transition could bring a 7% GDP increase by 2030, based on a higher pace of technological change in the big product and resource sectors.

7 The Commission estimated that the adoption of the legislative proposals contained in the circular economy package would create over 180 000 direct jobs in the EU by 2030 (in the now withdrawn 2014 proposal) and 170 000 direct jobs by 2035 (2015 proposals). In addition, the Commission estimated in 2014 that increasing resource productivity by 30% could deliver over 2 million additional jobs in the EU by 2030, and indicated in 2015 that a circular economy could create 580 000 jobs. A 2015 report by Green Alliance, a UK think tank, estimated that an ambitious circular economy strategy could bring – in Italy, Poland and Germany alone – 270 000 unemployed people back into work. See also a 2015 meta study on the circular economy and employment.

8 For example, the Ellen Mac Arthur Foundation calculated, extrapolating from UK government estimates, that the cost of creating a fully efficient reuse and recycling system in the EU could be about €108 billion.

9 These four proposals relate to 1) the Waste Framework Directive (2008/98/EC); 2) the Landfill Directive (1999/31/EC); 3) the Packaging and Packaging Waste Directive (1994/62/EC); 4) the Directives on end-of-life vehicles (2000/53/EC), on batteries and accumulators and waste batteries and accumulators (2006/66/EC), and on waste electrical and electronic equipment (2012/19/EU).

10 The 2030 municipal waste reuse and recycling target has been reduced from 70% to 65%. Regarding packaging waste reuse and recycling, the 2030 target has been reduced from 80% to 75% and the material specific targets have been reduced accordingly. Regarding landfilling, the new proposal sets a binding 2030 target to landfill no more than 10% of municipal waste, compared with a 5% non-binding target associated with a ban on landfilling recyclable and compostable waste set in the old proposal.

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