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Progress Report on the Roadmap to a Resource Efficient Europe

Accompanying the document

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

Towards a circular economy: a zero waste for europe

{COM(2014) 398 final}
{SWD(2014) 211 final}

Progress Report on the Roadmap to a Resource Efficient Europe

1. Resource efficiency in the context of the Europe 2020 Strategy

Resource efficiency is about setting the EU on a path to achieve a resilient and competitive economy, high quality of life and a healthy environment. It is an essential component of the Europe 2020 Strategy for sustainable, smart and inclusive growth[1]. Its **Flagship Initiative "A resource-efficient Europe"**[2] established a coherent policy framework, which builds on long-term strategies addressing climate, energy, transport, and broader resource challenges. It encompasses the reforms in agricultural, fisheries and regional development policies, while including initiatives in the field of biodiversity, water and air policy, as well as raw materials, the bioeconomy, construction, taxation, research and innovation.

With the Communication "**Roadmap to a Resource Efficient Europe**" adopted in 2011[3] (hereafter "the Roadmap") the Commission set out a comprehensive strategy based on a broad definition of resources – from metals and minerals to water, air, ecosystems, biodiversity, land and soil. It took forward the overarching aim of the Resource Efficiency Flagship to decouple economic growth from resource use and its environmental impacts, and proposed a long-term vision, 2020 milestones and a number of short-term actions to start the transition, many of which have already been delivered. A process for defining appropriate targets and solid, effective and science-based indicators was envisaged with a view to agreeing on a lead indicator, a dashboard and thematic indicators, and potential targets on resource efficiency.

By highlighting the need for restructuring, innovation, and ultimately transformation of our economy, the resource efficiency agenda has gained political visibility and support. It offers sustainable solutions to some of the challenges underpinning the recent economic crisis. The **European Council** in March 2012 in its conclusions on economic governance[4] called for rapid progress on the implementation of the Roadmap. Issues such as shifting towards environmental taxation and improving energy efficiency, reducing greenhouse gas emissions, and improving management of water and waste, have thus been integrated in the governance and monitoring mechanism of the Europe 2020 Strategy – the **European Semester**[5].

The main ideas of the Roadmap were taken up in the seventh **Environment Action Programme "Living well, within the limits of our planet" (7th EAP)** which was agreed by the Council and the European Parliament and entered into force on 17 January 2014[6].

Internationally, the EU has contributed to progress towards the green economy and a more efficient use of natural resources in the context of the 2012 UN Conference on Sustainable Development ("Rio+20") and its follow-up[7]. Resource efficiency related issues have been introduced into the High Level Political Dialogues with strategic partner countries, as well as into discussions with enlargement countries, and have entered the agendas of OECD, IMF and the World Bank.

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1 COM(2010) 2020
2 COM(2011) 21
3 COM(2011) 571
4 EUCO 4/3/12
5 http://ec.europa.eu/environment/integration/green_semester/index_en.htm
6 OJ L 354 , 28.12.2013, p. 171 - 200
7 COM(2013) 92

2. Reactions to the Roadmap to a Resource Efficient Europe

The agenda proposed by the Commission with the Resource Efficiency Roadmap was welcomed by the EU Institutions and a wide range of stakeholders.

In December 2011 the **Council (Environment)** adopted conclusions[8] welcoming the Roadmap and emphasising that transforming the economy along a sustainable and responsible resource efficient path should also contribute to the recovery from the economic crisis, and bring increased competitiveness and new sources of growth and jobs, through cost savings from improved efficiency. The Council highlighted that jobs can result from no- or low-cost actions, the deployment of innovative solutions in markets and society and better valuation and management of resources, in the short- and long-term. It encouraged the inclusion of further actions aimed at resource efficiency in the European Semester process and the Member States to report their progress in their National Reform Programmes.

In February 2012 the **Council (ECOFIN)** adopted conclusions on the economic aspects of the Roadmap[9], stressing that environmental taxes, revenues from other market-based instruments and the removal of environmentally harmful subsidies may contribute to a wider fiscal consolidation process. It called for the rationalisation and the phasing out of such subsidies, including those on fossil fuels.

The **European Parliament** adopted a resolution[10], which outlined priority actions to address: the three key areas of food, housing, and mobility; a functioning European market in recycling and reuse; boosting research and technological innovation; agreeing on indicators and targets; extension of ecodesign; and integration of resource efficiency in other areas. The resolution included a number of ideas on future growth, transforming the economy, natural capital and ecosystem services, governance and monitoring, and the international dimension.

The **European Economic and Social Committee** issued an opinion on the Roadmap[11] and an own-initiative opinion accompanied by a public hearing on the transition to an inclusive green economy[12]. The **Committee of the Regions** also adopted an opinion[13], carried out a survey, and in September 2013 organised a stock-taking conference on resource efficiency.

The **EU Member States** have been stepping up their efforts in the resource efficiency field and shifted to more integrated approaches. Dedicated initiatives have been developed by some countries, such as Germany, Austria, Finland, and Denmark, while others have mainstreamed resource efficiency in broad economy-wide strategies or action plans, or have translated the concept into specific actions. The Members States with a significant commitment to resource efficiency, including energy- and material efficiency and development of renewable energy sources, are currently also performing well economically. A dedicated Member State Group on Resource Efficiency has been set up by the Commission to discuss policy and exchange best practice[14].

Linking the resource challenge to competitiveness has resonated with a wide range of **stakeholders**, in particular from the business side, facilitating their **engagement** in achieving positive outcomes for the environment. This became visible, inter alia, in the **European**

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8 18346/11

9 6678/12

10 P7_TA(2012)0223

11 CESE 831/2012 - NAT/529

12 CESE 2407/2012 - NAT/590

13 CdR 140/2011

14 See the Register of Commission Expert Groups, http://ec.europa.eu/transparency/regexpert/

Resource Efficiency Platform (see 5.1.) and at a **Finance Roundtable** organised by the Commission in 2013, which both gathered high level stakeholder representatives and led to policy recommendations for the EU, Member States and business.

European citizens are convinced of a strong positive link between growth, jobs and resource efficiency. A recent **Eurobarometer survey**[15] revealed that a substantial majority of people think that more efficient resource use would have a positive effect on the quality of life in their country (86%), on economic growth (80%), as well as on employment opportunities (78%).

3. Making and measuring progress towards resource efficiency

3.1. Current trends and expected impacts

The full impacts of the actions launched under the Roadmap are yet to unfold. They will be assessed against already existing positive trends, which remain to be further encouraged. Resource productivity in the EU measured as the volume of Gross Domestic Product over Raw Material Consumption (GDP/RMC), increased by around 20% in the period 2000-2011, slightly faster than the rate of GDP growth. This indicates that the EU is making better use of the resources its economy needs and thus achieving relative decoupling of economic growth from resource use. Employment in the sector of environmental goods and services in the EU increased from 3 million in 2002 to 4.2 million in 2011, growing by 20% in the period 2007 – 2011, throughout the recession years[16]. High European standards have helped create a competitive advantage for European companies in the eco-industries – a global market currently valued at a trillion euros and forecast to double over the next 10 years[17]. The EU's bioeconomy sectors are worth € 2 trillion in annual turnover and account for more than 22 million jobs and approximately 9% of the workforce[18].

Moreover, it has been estimated that reducing the total material requirement of the EU economy by 17% to 24%, could boost GDP by up to 3.3% and create 1.4 to 2.8 million jobs[19]. By using resources more efficiently, business could benefit from savings in the range €245-604 billion per annum, representing between 3% and 8% of their annual turnover, and entailing a reduction of 2-4% of total annual greenhouse gas emissions in the EU[20].

A study for the UK Government shows that UK businesses could save £23 billion a year by using resources more efficiently[21]. As regards Germany, estimations were made that a 20% reduction in resource and energy use in the country could lead to an increase in resource productivity of 2.9% per year. The economic benefits would include the creation of more than one million jobs, an improved growth rate and an increase of GDP by 12%, with a payback period of one year in the case of materials and six years for energy[22]. The variation

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15 Flash Eurobarometer 388: Attitudes of Europeans towards Waste management and Resource Efficiency

16 EUROSTAT data

17 Ecorys (2012), The number of Jobs dependent on the Environment and Resource Efficiency

18 BECOTEPS (2011) The European Bioeconomy in 2030: Delivering Sustainable Growth by addressing the Grand Societal Challenges

19 GWS mbH (2011), Macroeconomic modelling of sustainable development and the links between the economy and the environment

20 AMEC (2013), The opportunities to business of improving resource efficiency

21 Oakdene Hollins "Further Benefits of Business Resource Efficiency" 2011, see also https://www.gov.uk/government/policies/encouraging-businesses-to-manage-their-impact-on-the-environment

22 "The economic benefits of environmental policy", GHK (2009),

in levels of resource efficiency between Member States suggests there is considerable scope for improving resource productivity across the EU.

3.2. Resource efficiency indicators and targets

High level indicators and targets are essential to focus effort, and to give a clear direction and measure progress towards a more resource efficient economy. The Roadmap emphasised the need for further work to improve the set of available indicators and to formulate a resource efficiency target, further requested by the European Parliament and various stakeholders.

Developing **methodologies for measuring and benchmarking** the efficiency of **land, carbon, water and material** use by 2015 and assessing the appropriateness of the **inclusion of a lead indicator and target in the European Semester** are commitments under the **7th EAP**.

Based on the results of public consultation on resource efficiency targets and indicators and a further study[23], the Commission Staff Working Document "Analysis of an EU target for Resource Productivity"[24] sets out the rationale for a target to increase **resource productivity as measured by GDP relative to Raw Material Consumption**. The forthcoming assessment of the Europe 2020 Strategy provides an opportunity to take forward this debate.

The work on the most suitable indicators for target setting as regards **water and land** continues. In the meantime, a **Resource Efficiency Scoreboard** has been published by Eurostat since 2013[25] to monitor progress in the implementation of the Roadmap, communicate the link between resources and economy, and engage stakeholders. However, data for many indicators is produced with a substantial time lag. As soon as sufficient time series become available, further analysis of the effects of implementing the Roadmap and the distance to its milestones will be possible.

3.3. GDP and beyond

The European Commission has continued its efforts under its roadmap for "**GDP and Beyond: measuring progress in a changing world**"[26] with a view to complementing GDP with indicators of societal and environmental progress. This work is placed within the context of work carried out by the World Bank and the OECD to develop broader measurement of societal progress and environmental well-being beyond economic and financial indicators. A number of results of interest to resource efficiency have been achieved:

Top-level indicators on environmental protection are being developed. Pilot versions of two complementary comprehensive environmental indices – a composite index of environmental pressures and an index of the environmental impacts of European consumption – are currently being tested.

The time to publish key environmental indicators on emissions has been shortened in order to be more in line with the publication of GDP estimates. Since 2012, Eurostat has

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23 "Study on Modelling of the Economic and Environmental Impacts of Raw Material Consumption", Cambridge Econometrics et al (2014)

24 SWD(2014) 211

25 http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/ree_scoreboard

26 COM(2009) 433

produced ‘early estimates’ — within four months — for CO2 emissions from energy use. Early estimates of Material flow accounts should be available within 12 months.

Measurement towards sustainability has been improved. While the feasibility testing of an EU Sustainable Development Scoreboard has been inconclusive due to a lack of data, the work on resource efficiency indicators and targets (see section 3.2) has contributed to the progress on the GDP and beyond agenda. **The Life Cycle Data Network**[27] of the European Commission's European Platform on Life Cycle Assessment launched in 2014 provides data on resource consumption and emissions associated with supply chains and waste management activities provided by various stakeholders (governments, academia, research projects, industry, and others). Such information allows more in-depth analyses of opportunities to address resource-related concerns and trade-offs.

National accounts have been extended to environmental and social issues. A Regulation on three sets of environmental economic accounts (air emissions, environment-related taxes and material flow accounts) was adopted in 2011[28] and will deliver first statistics for the EU in 2014. Three more sets (energy accounts, environmental protection expenditures and environmental goods and service sector) have been adopted in 2014.

Finally research is on-going to put a **monetary value** on the loss of natural resources and on external costs relating to human activities.

4. Key initiatives

The Resource Efficiency Roadmap has provided a framework for coordinated action, involving a broad range of stakeholders, to initiate transformation across the economy while safeguarding natural capital. As a result, resource efficiency thinking has been increasingly integrated in various policies at EU, national, and international level.

4.1. Transforming the economy

Sustainable consumption and production

With the 2013 Communication **"Building the Single Market for Green Products"** the Commission proposed EU-wide methods based on Life Cycle Assessment to measure the environmental performance of products and organisations, encouraging Member States and the private sector to take them up[29]. A three year **Environmental Footprint pilot phase** was set up in cooperation with volunteering industry: product and sector rules are being developed through a multi-stakeholder process. The most relevant environmental impacts and the most relevant life cycle stages (e.g. extraction, production, logistics, use, end of life) will be defined for a given product or sector. The evaluation of the results of the pilot phase in 2016 will set out how this work can best contribute to providing purchasers with better information on sustainable choices and look into potential further policy applications.

On **product design**, since 2011 material efficiency requirements have been integrated in five Ecodesign implementing regulations, in addition to energy efficiency (durability requirements for vacuum cleaners; information relevant for disassembly, recycling and disposal at end-of-life for fans, water pumps, space heaters, water heaters and vacuum cleaners). In addition, the ecodesign voluntary agreement on imaging equipment contains

[27] http://eplca.jrc.ec.europa.eu/

[28] OJ L 192, 22.7.2011, p. 1–16

[29] COM(2013)196 and Commission Recommendation 2013/179/EU

specific design requirements to facilitate recycling. The Methodology for the Ecodesign of Energy-related Products (MEErP)[30] has been updated to include certain material efficiency parameters (recyclability benefit rates, recycled content, lifetime, and a critical raw material index), which enable further analyses of material efficiency aspects in products. The introduction of criteria related to durability[31], modularity, reusability and recyclability are addressing the need to keep materials circulating in the economy and has a potential for transforming product design due to the mandatory nature of the tool.

The Commission Communication "A **Stronger European Industry** for Growth and Economic Recovery"[32] identified six priority areas, where investment in new technologies and innovation has significant potential: advanced manufacturing technologies for clean production; key enabling technologies; bio-based products; sustainable industrial and construction policy and raw materials; clean vehicles and vessels; and smart grids. The 2014 initiative "For a European Industrial Renaissance"[33] confirmed resource efficiency as essential to industrial modernisation. The European Council in March 2014[34] draw special attention to the role of cleantech as a cross-cutting element for enhancing the competitiveness of the European industry, and invited the Commission to report on how to promote it through concrete actions in all relevant EU policies.

In the context of developing a **Green Action Plan for SMEs** efforts have been focused on identifying the most effective support measures for SMEs in all sectors, to become more resource efficient and exploit opportunities on green markets within the EU and internationally. Providing support to actors that are best placed to help SMEs in the process is also explored.

Policy development in the **key sectors** related to the transformation of the economy - reducing the impact of housing, nutrition and mobility - is also progressing with the implementation of actions under the **White Paper on Transport** "Roadmap to a Single European Transport Area – Towards a competitive and resource-efficient transport system"[35], and the launch of initiatives on **sustainable food** and **sustainable buildings** in 2014. Moreover, the **Bioeconomy Strategy** and its Action Plan[36] aim to pave the way to a more innovative, resource efficient and competitive society that reconciles food security with the sustainable use of renewable resources for industrial purposes, while ensuring environmental protection. They inform research and innovation agendas in bioeconomy sectors and contribute to a more coherent policy development, better interrelations between national, EU and global bioeconomy policies and a more engaged public dialogue.

In the field of **Green Public Procurement** (GPP) the Commission, together with the Member States and stakeholders, has established priorities regarding product groups for which GPP criteria should be developed or revised in the future to best meet the needs of procurers. GPP criteria have been adopted for several new product groups, e.g. in the field of waste water treatment plants. In 2013, a new EU funded projects (GPP 2020) was launched, supporting joint procurement and networking of public procurement officers. Moreover, a process has been started to develop recommendations for Member States and contracting

30 http://ec.europa.eu/enterprise/policies/sustainable-business/ecodesign/methodology/index_en.htm

31 See for details JRC Technical Reports (2012), "Integration of resource efficiency and waste management criteria in European product policies – Second phase"

32 COM(2012) 582

33 COM/2014/014

34 EUCO 7/1/14 REV 1

35 COM(2011) 144

36 COM(2012) 60, SWD(2012) 11

authorities on how to best measure the uptake of GPP so that the effectiveness of the policy can be better monitored.

Turning waste into a resource

In order to turn **waste into a resource**, the **7th EAP** calls for the removal of barriers faced by recycling activities in the EU internal market, and reviewing existing prevention, re-use, recycling, recovery and landfill diversion targets. The objective is to move towards a lifecycle-driven 'circular' economy, with cascading use of resources and residual waste close to zero.

These objectives have guided the 2014 package of measures to move to a circular economy, underpinned by extensive analysis in the context of **the review of the targets** in the EU Waste Framework Directive, the Landfill Directive and the Packaging and Packaging Waste Directive. The waste policy review draws on the results of a fitness check on five EU waste stream directives as well as the responses to the Commission's Green Paper on plastic waste.

To assist Member States in improving their **waste management** performance, in 2012 the Commission developed a **Waste Management Scoreboard**[37], and **roadmaps** with **specific recommendations for the ten Member States** with the weakest performance, extensively discussed with the countries concerned. This initiative will be continued for as long as necessary to bring the desired improvements.

A recast **directive on waste electrical and electronic equipment** (WEEE)[38] was adopted in June 2012 and was to be transposed by Member States by 14 February 2014. It includes ambitious new collection targets of 85% of WEEE generated, and provides Member States with tools to fight illegal export of waste more effectively. The work on end of waste criteria has resulted in a Council Regulation on iron, steel and aluminium scrap[39] and Commission Regulations on glass cullet[40] and copper scrap[41]. Moreover, in 2013 the Commission adopted a legislative proposal to tackle illegal waste shipments by strengthening inspections and enforcement under the **Waste Shipment Regulation**[42]. The Commission is analysing options for a global certification scheme of waste facilities, to ensure environmentally sound management of exported waste.

Supporting research and innovation

Resource efficiency is addressed as a societal challenge through the EU Framework Programme for **Research and Innovation** for 2014-2020, **Horizon 2020**. Innovative actions under its pillars, notably Societal Challenges, Industrial Leadership and Excellent Science, will promote a more circular economy, triggering broad stakeholder cooperation. Key initiatives to leverage business action are the Public Private Partnership "Sustainable Process Industry through Resource and Energy Efficiency" (SPIRE) and the Joint Technology Initiative "Bio-Based Industries". The European Institute of Innovation and Technology is contributing towards a more circular and resource efficient economy through its Knowledge and Innovation Communities (KICs). The KICs bring together business, research and education players in highly integrated partnerships aimed at boosting the innovation capacity in the areas of climate change, sustainable energy and ICT. The EIT will designate five

37 IP/12/888
38 2012/19/EU
39 333/2011
40 1179/2012
41 715/2013
42 COM(2013) 516

additional KICs, dealing with, inter alia, raw materials, food supply chain, and added value manufacturing.

Waste and water feature among the 12 focus areas addressed in the 2014 – 2015 Work Programme of Horizon 2020. In the Waste Focus Area an innovation action is included for 'Moving towards a circular economy through industrial symbiosis'. The majority of the other focus areas also cover environmental elements – for example 'Smart Cities' in relation to urban design and 'Blue Growth in relation to marine environment.

The Commission has also launched **European Innovation Partnerships** (EIPs) for water, raw materials, and agricultural sustainability and productivity, in order to bring together actors and activate resources to tackle societal challenges, to speed up breakthrough innovations and their rolling out. A methodology for assessing the impact of regulation on innovation was developed and applied in the context of the Water and Raw Materials EIPs[43].

In 2011 the Commission adopted **an Eco-innovation Action Plan** to expand the EU's focus from green technologies to non-technological innovative products, services and processes. Initiatives in 2013-14 under this plan include **INNEON**, a network of eco-innovation financiers to strengthen the "investor readiness" of eco-innovative SMEs and leverage further funding for eco-innovative entrepreneurs, and **INNOCAT**, a network of public and private procurers to address the fragmentation of the demand for eco-innovative solutions in the catering sector. The initiative on **market replication for eco-innovation** concluded in 2013 led to net employment creation of around 8 full-time jobs per project on average and an average leverage factor of 20 (1€ of public investment leading to 20€ gross revenue leverage). The total global environmental and economic benefit from this initiative is estimated at more than 1.6 billion euro for 5 years[44]. **The Eco-Innovation Scoreboard**[45] provides Member States' profiles and identifies their eco-innovation potential.

Transforming the economy towards a more resource efficient and circular model has been supported also by action on the side of progressive **business:**

SPIRE is a Public-Private Partnership supported by Horizon 2020 with the objective to develop enabling technologies and solutions along the value chain, required to reach long term sustainability for Europe in terms of global competitiveness, ecology and employment. It represents more than 90 industrial and research process industry stakeholders from over a dozen countries spread throughout Europe, joining the efforts of eight industry sectors: chemical, steel, engineering minerals, non-ferrous metals, cement, ceramics and water.

The **Bio-based Industries** Initiative is a Public Private Partnership supported by Horizon 2020 bringing together more than 60 European large and small companies, clusters and organisations across technology, industry, agriculture and forestry. It aims at fostering innovation to deliver bio-based products, which are superior or at least comparable to the corresponding non bio-based products in terms of price, performance, availability and environmental benefits. It focuses on three main streams of activities: feedstock, biorefineries, and markets, products and policies.

43 "Screening of regulatory framework", Technopolis Group (2013)

44 Based on results from 125 projects reported two years after their completion; the final report and infographics are available here: http://ec.europa.eu/environment/eco-innovation/discover/publications/index_en.htm

45 http://www.eco-innovation.eu/

Climate-KIC is a highly integrated public private partnership supported by the European Institute of Innovation Technology consisting of more than 220 innovation players from all over Europe. It brings together more than 110 large and small companies with excellent academic and research institutions and the public sector. The KIC integrates education, entrepreneurship and innovation resulting in the transformation of knowledge and ideas into new viable products or services in relevant climate change areas, such as resource efficiency and waste, bioeconomy, land use and water engineering, resource and energy efficiency in the built environment, and sustainable city systems.

ARMOR, a leading company in ink and printing techniques, developed an "Alternative print programme" to address **eco-design, materials recycling, collection and take-back and responsible production**. After discussion with its supply chain, the company adopted a "*Convention de filière*" to eliminate barriers to a more circular model (design, split incentives, lack of intra-chain and cross-sector dialogue, financial risks).

Umicore has been demonstrating that **efficient recycling** is a profitable and sustainable business model offering investment, innovation and employment opportunities. Close to 50% of Umicore's metal supply requirements comes from in-house recycling. This also reduces CO2 emissions substantially.

Suez Environnement has established 278 sorting centres, 99 composting platforms, and 85 recovery facilities for **electronic waste**, producing 12 million tons of secondary raw materials, while avoiding 2.8 M tons of CO2 emissions.

Renault's plant in Choisy-le-Roi, near Paris, **remanufactures** automotive engines, transmissions, injection pumps, and other components for resale. The plant's remanufacturing operations use 80 percent less energy and almost 90 percent less water than comparable new production does, with high operating margins. Renault redesigns certain components to make them easier to disassemble and use again. The company also targets components for closed-loop reuse, essentially converting materials and components from worn-out vehicles into inputs for new ones. Renault also works with suppliers to identify "circular benefits" that distribute value across its supply chain and shifting from a sales to a performance-based model[46].

A **European Network on Industrial Symbiosis** (EUR-ISA) was established in 2013, bringing together organisations responsible for up to 10 established industrial symbiosis programmes (collectively engaged with more than 20,000 companies across Europe).

The **Ellen MacArthur Foundation** has created the "**Circular Economy 100**" programme to support business in unlocking commercial opportunities and to enable them to benefit from subsequent first mover advantages. In January 2012, the Foundation produced a report "Towards the Circular Economy: Economic and business rationale for an accelerated transition" presenting the economic and business case for the transition to a restorative, circular model, and detailing the potential for significant benefits across the EU.

4.2. Natural capital and ecosystem services

The **Communication 'Our life insurance, our natural capital: an EU biodiversity strategy to 2020'** was adopted by the Commission in May 2011. This strategy sets six main targets and 20 actions to help Europe reach its goal to halt the loss of biodiversity and

[46] "remaking the industrial economy", McKinsey Quarterly, February 2014

ecosystem services in the EU by 2020. The six targets consist of: the full implementation of EU nature legislation to protect biodiversity; better protection for ecosystems, and more use of green infrastructure; more sustainable agriculture and forestry; better management of fish stocks; tighter controls on invasive alien species; and a bigger EU contribution to averting global biodiversity loss. The 7th EAP expressed the commitment of the EU, national authorities and stakeholders to speed up the delivery of the 2020 Biodiversity Strategy objectives.

In line with commitments under the Strategy, a number of measures were implemented to strengthen the implementation of the **EU nature legislation.** The Commission **proposed a Regulation** on the prevention and management of the introduction and spread of **invasive alien species** in 2013. The proposal is designed to respond to increasing problems caused by these species, which include ecological and economic damage worth at least EUR 12 billion every year in Europe.

A **Regulation** establishing rules governing **access and benefit sharing** for genetic resources and traditional knowledge associated with them was adopted, enabling the Union to ratify the **Nagoya Protocol** and contribute to its entry into force. This will help ensure that biodiversity is sustainably used, create transparent rules for EU researchers and companies utilising genetic resources, and contribute to the sharing of benefits with the providers of those resources.

The Commission adopted a **Communication on "Green Infrastructure (GI) — Enhancing Europe's Natural Capital**" in 2013. It works with Member States and regions on enhancing green infrastructure and its financing, in particular as regards flood management, natural water retention, cohesion, agricultural, and climate adaptation polices. The Commission is also working together with the European Investment Bank to attract private financing through the establishment of a **Natural Capital Financing Facility**, which is to be launched as a pilot in 2014. Work on **Mapping and Assessing Ecosystems and Services** at EU and Member State's level is progressing and a first delivery is due by December 2014.

The Commission **Communication "A Blueprint to Safeguard Europe's Water Resources"** was adopted in November 2012. The Blueprint highlights that preserving water is not only about environmental protection, health and well-being, but it is also about economic growth and prosperity. It is a way of ensuring that the EU fully develops its growth potential and that all economic sectors have the water they need to operate. The Blueprint is supported by the **European Innovation Partnership on Water** launched in May 2012. The Commission **proposal** for amending Directives 2000/60/EC and 2008/105/EC as regards **priority substances** in the field of water policy was adopted in 2013.

In relation to the marine environment, a far-reaching reform of the **Common Fisheries Policy** was agreed in 2013, which aims to progressively eliminate the wasteful practice of discarding unwanted species, and also puts in place a framework for achieving stocks capable of producing 'Maximum Sustainable Yield'- by 2015 where possible, and by 2020 at the latest. In its Report on the first phase of implementation of the **Marine Strategy Framework Directive**[47], the Commission has identified a series of recommendations to be undertaken in order to achieve Good Environmental Status for marine waters by 2020. The new **Maritime Spatial Planning Directive** obliges Member States to take into account land-sea interactions when considering the sustainable use of marine resources. It will enable Member States to further contribute to resource efficiency by setting the framework within which a balanced

[47] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2014:0097:FIN:EN:PDF

approach can be taken, leading ultimately to the sustainable development of marine areas and promoting the sustainable growth of maritime economies.

The **Clean Air Policy Package** adopted in December 2013 is a key contribution to the resource efficiency agenda. The package includes a **Communication** "A Clean Air Programme for Europe" with measures to ensure that existing targets are met in the short term, and new air quality objectives for the period up to 2030. It also contains measures to help cut air pollution, with a focus on improving air quality in cities, supporting research and innovation, and promoting international cooperation. **Proposals** are made for a revised National Emission Ceilings Directive with stricter national emission ceilings for the six main pollutants, and a new Directive to reduce pollution from medium-sized combustion installations, such as energy plants for street blocks or large buildings, and small industry installations.

Guidelines on best practice to limit, mitigate or compensate **soil sealing** have been developed by the Commission[48], and work on the preparation of a Communication on **'land as a resource'** is ongoing. A Consultative Communication on the Sustainable Use of **Phosphorus** was published in 2013[49] and a public debate on this issue has been launched.

4.3. Integration of resource efficiency into other policies

Beyond the specific LIFE programme focused on environmental priorities, 20% of the overall EU spending under the new **Multiannual Financial Framework** should be related to climate mainstreaming. This is to be reflected in the annual budgets of all relevant policy areas. 60% of Horizon 2020 should be linked to sustainable development. The **Common Agriculture Policy** envisages devoting 30% of direct payments to permanent pastures, crop diversification and ecological focus areas. Moreover, Member States should spend a minimum of 30% of the total contribution from the European Agricultural Fund for Rural Development to each rural development programme on climate change mitigation and adaptation,n as well as environment issues.The 2014-2020 **Cohesion Policy** provides significant opportunities for investments in resource efficiency and the circular economy. Within the thematic objective on 'preserving and protecting the environment and promoting resource efficiency' Member States can support programmes and projects for improved waste management. Furthermore, the thematic objective on research and innovation includes eco-innovation as an investment priority while the thematic objective on the competitiveness of SME's will help SME's to invest in resource efficiency and circular economy related projects. Sustainable urban development will be specifically also supported. Eventually the Common Provisions Regulation 1303/2013/EU[50] also includes a specific article on promoting sustainable development in all co-financed actions in the 2014-20 period, encouraging Member States to direct investments toward the most-resource efficient and sustainable options.

Resource efficiency concerns have also been integrated into the **state aid** modernisation process. The objective of avoiding environmental harm in general has been integrated into the new regional aid guidelines[51]. The new guidelines on environmental and energy state aid include for the first time a specific chapter allowing aid for promoting resource efficiency. In addition, they consider negative impacts of environmental harmful subsidies, including for

[48] SWD(2012) 101 final/2
[49] COM(2013) 517
[50] OJ L 347/320, 20.12.2013.
[51] OJ C209, 23.07.2013

fossil fuels, while taking into account the need to address trade-offs between different areas and policies as recognised by the flagship initiative on Resource Efficient Europe. Aid for the extraction of fossil fuels is not included , and concerning aid to generation adequacy Member States should primarily consider alternative ways, which do not have a negative impact on the objective of phasing out environmentally or economically harmful subsidies, such as facilitating demand side management and increasing interconnection capacity.

Resource efficiency issues, such as environmental taxation, GHG emissions reductions, energy efficiency, waste and water management, have been addressed since 2011 in the **European Semester of economic governance -** in the Annual Growth Surveys, a number of Country Specific Recommendations, and the Staff Working Documents analysing the progress of Member States towards the priorities set in this process. **Targeted studies** have been launched by the Commission to support integrating resource efficiency better in the European Semester, estimating potential economic benefits from action on resource efficiency and revealing the cost of inaction, while analysing county-specific challenges. A recent study on the potential for **greener taxes**[52] suggests that moving taxes away from labour towards pollution would bring in revenues of EUR 35 billion in real terms in 2016, rising to EUR 101 billion in 2025. Steps to remove environmentally harmful subsidies can further increase these figures. The potential revenues range from 1% to 2.5% of GDP per annum in 2025, depending on the Member State concerned. Another study shows that the approximate **total cost of damage from flooding** in the EU over the 2002-2013 period was at least EUR 150 billion[53.] Investing in measures to reduce flooding is highly effective, on average costing 6 to 8 times less than the damage caused by flooding. Green infrastructure - restoring natural features to help manage and store flood water - offers better outcomes for biodiversity and could help reduce construction costs. Benefits and best practices in the Member States to **support resource efficiency in SMEs** are also analysed.

Concerning the **shift of taxation from labour to energy, pollution and resource use,** some Member States have achieved, through various steps of environmental tax reforms, a share of environmental tax revenues in total taxes of more than 10%, while preserving fiscal revenues and improving competitiveness and energy efficiency. At the level of the EU, environmental taxes generated 6.2% of the total tax revenue in 2011. Energy taxes accounted for around three quarters of this revenue. In many Member States, there is scope for better accommodating environmental concerns in the taxation system. This relates both to the level and trend of taxation (in many Member States, revenues from environmental taxes are falling, due to the lack of indexation of tax rates) and to the structure and design of environmental taxation. It is also linked to tax expenditure with a negative environmental impact, e.g. reduced tax rates on fossil fuel and the subsidies embedded in company car tax regimes.

Shifting to environmental taxation and eliminating environmentally harmful subsidies

Changes to various **environmental taxes** are underway or planned: Estonia (increases to excise duties and charges); Finland (increases in taxes of vehicles and traffic fuels, on peat, a new windfall-tax for hydro and nuclear power, tax on waste); the Netherlands (removal of reduced excise tax rates for certain uses of diesel, tax-free compensation of commuter

[52] Study on Environmental Fiscal Reform Potential in 12 EU Member States (2014), Eunomia Research & Consulting et al.

[53] Study on Economic and Social Benefits of Environmental Protection and Resource Efficiency Related to the European Semester (2014), RPA et al.

expenses and the exemption from the coal tax on coal used in power plants; increase in existing energy tax rates, continuation of tap water tax and tax on heavy motor vehicles, reduced rate of energy tax for small-scale renewable electricity production, redesign of motor vehicle tax to reflect environmental performance of vehicles); France (new carbon tax, review of bonus-malus schemes for car registration tax); Denmark (taxes increased or announced on lorry road pricing, motor vehicles, fuel consumption, tap water, some consumer products; and nitrogen oxides); Italy (need for green fiscal reform and possible introduction of carbon tax on energy products discussed).

The positive impacts of environmental taxes have to some extent been offset by persisting direct and indirect **environmentally harmful subsidies** (EHS) in all EU Member States and occur across various sectors. Some steps in their removal are being taken: for instance, reports identifying EHS in key sectors have been published in Germany, the Netherlands, Sweden, Finland (by environmental organisations); Cyprus identified some EHS in its government budget, Slovenia created a working group to study existing EHS. The Commission together with the OECD has developed a database of subsidies to fossil fuels. However, achieving the objective to phase out these subsidies by 2020 is not likely to be achieved without further substantial effort.

4.4. Awareness raising and communication

The transition towards a resource efficient economy cannot be achieved without a shift towards sustainable consumption and behavioural change. Raising awareness of issues related to unsustainable use of resources, notably, via visualising the link between individual choices and pressure on resources are important to ensure public participation and support. The 7th EAP also confirmed that public information campaigns are required to build awareness and understanding of waste policy and to stimulate a change in behaviour.

Examples of **awareness raising and communication initiatives:**

The Commission dedicated its **'Green Week'** to **resource efficiency** in 2011 This large conference attracts participants from government, business and industry, non-governmental organisations, academia and the media and offers a unique opportunity for debate and exchanges of experience and best practices. In 2014, Green Week is devoted to the **circular economy**.

In 2011, the Commission launched an EU-wide campaign on resource efficiency: **'Generation Awake'**. The campaign is part of a wider effort to raise awareness about economic, social and environmental benefits of using natural resources in a more efficient and sustainable way. Since 2014 the emphasis of the campaign is on the circular economy and better waste management. It aims to encourage EU citizens to discover the value of waste and to recycle, reuse, exchange, upcycle, repair rather than throw away. Key tools and activities include an interactive website www.generationawake.eu in 24 languages, social media activities and other promotional means. The results to date include more than 6 million videos views, over 1.400 articles published; a million visits to the website, and 120.000 social media followers.

5. Mapping the way forward

5.1. Recommendations of the European Resource Efficiency Platform

The multi-stakeholder European Resource Efficiency Platform was set up in 2012 to provide high-level guidance to the European Commission, Members States and private actors on the transition to a more resource-efficient economy. It gathered European Commissioners, Members of the European Parliament, business and thought leaders, representatives of national and regional authorities, civil society and academia. In the course of its mandate the Platform issued a policy Manifesto (in December 2012), a first set of recommendations "Action for a resource efficient Europe" in June 2013 and a second set of recommendations "Towards a resource efficient and circular economy" in March 2014.

The Platform identified the following priority actions[54]:

- Setting objectives, measure and report progress;
- Improving information on environmental and resource impacts for decision making;
- Phasing out environmentally harmful subsidies;
- Moving towards a circular economy and promoting high-quality recycling;
- Improving resource efficiency in business–to-business relations;
- Taking forward a coherent, resource efficient product policy framework;
- Delivering a stronger and more coherent implementation of Green Public Procurement;
- Developing instruments for SMEs;
- Promoting new, resource efficient business models;
- Boosting Extended Producer Responsibility;
- Enabling consumers to make more sustainable choices;
- Developing employment and skills; and
- Financing to enable the transition.

The Platform also called upon the EU to set a target for a substantially increased decoupling of growth from the use of natural resources, in order to improve competitiveness and growth as well as quality of life. It stated that the target should aim to secure at least a doubling of resource productivity as compared with the pre-crisis trend, equivalent to an increase of well over 30% by 2030.

5.2. Consultation with the Member States

In order to develop or strengthen existing national resource efficiency strategies, and mainstream these into national policies for growth and jobs, exchange on national resource efficiency strategies and EU policy developments is supported by a Member State group on resource efficiency gathering twice a year. The following areas of shared interest were identified at its first meeting in the autumn of 2012, and many of them were subsequently a subject of discussion[55]:

- cooperating on environmental tax reform, and unlocking the process for removal of environmentally harmful subsidies;

[54] http://ec.europa.eu/environment/resource_efficiency/re_platform/about/meetings/index_en.htm

[55] See the register of Commission expert groups http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2812&NewSearch=1&NewSearch=1

- product standardisation, eco design: promoting resource efficiency in standards and technical norms, addressing issues such as recyclability, etc.;
- tackling barriers to implement the waste hierarchy, encouraging producer responsibility schemes and industrial symbiosis;
- encouraging consumers to buy greener products: initialising consumer friendly information campaigns, improving consumer friendly labelling schemes;
- green public procurement (GPP): harmonised support for MS as regards criteria that can be included in a procurement tender and evaluation, considering making the 50% GPP target[56] mandatory;
- tackling sectors using biotic resources, and exploring the potential of the food sector to achieve greater resource efficiency;
- dissemination of good practices among businesses, in particular SMEs: demonstration projects, helping with evidence, developing methodologies;
- developing resource efficiency indicators and potential targets; and
- exchanging experience on the knowledge base and pooling economic evidence (modelling) in the field of resource efficiency.

Examples of Member States resource efficiency initiatives

In **Germany**, in the framework of the national strategy for sustainable development, the decoupling of economic growth and material consumption has been underlined since 2002. In 2012, in implementing the EU Waste Framework Directive, a law was adopted promoting the circular economy and ecologically sound waste management that calls for a closed material loop. This law is a part of a broader programme for an efficient use of resources (PROGRESS).

The UK developed an initiative on circular economy WRAP[57], estimating that a circular economy could generate 50 000 new jobs and EUR 12 billion of investment, boosting GDP by EUR 3.6 billion. Taking circular economy principles into account when designing products could allow for 140 million extra tons of waste to be successfully captured between now and 2020, leading to EUR 1.7 billion in extra recyclate revenues for the UK economy.

In the **Netherlands,** it is estimated that shifting to a circular economy would bring[58] a reduction of 17,150 kt in CO_2 emissions, a reduction in land use of 2,180 km^2, avoided use of fresh water of 0.7 billion m^3 and avoided use of raw materials of 100,400 kt (more than 25% of the total imports of goods by weight in the Netherlands/year). The circular economy could amount to EUR 7.3 billion a year in market values (or 1.4% of today's GDP) and could create 54 000 jobs.

In 2013 **France** developed a strategy with long term measurable objectives and a roadmap to transition to Circular Economy. The French Institute for Circular Economy brings together a wide range of stakeholders, and promotes exchange of best practices, awareness-raising, research and development of concrete examples. The outcome of consultations underway will

56 COM(2008) 400

57 http://www.wrap.org.uk/content/wrap-and-circular-economy

58 TNO, Opportunities for a Circular Economy in the Netherlands (2013).

be summarized in a white paper, with a view to adopting legislation on the circular economy by 2017.

In various EU MS a number of **agencies provide support services**, including advisory services, skills transfer and funding **for SMEs** to help them become more resource efficient and exploit growing business opportunities in the circular economy, for example:

* The North Rhine Westphalia Effizienz-Agentur has put in place a toolbox to help SMEs increase resource efficiency, including advice cutting resource use, and access to funding. Over 500 SMEs have taken part, generating almost EUR 40 million investment and saving EUR 12 million a year in resource costs

* "Resource Efficient Scotland", offering free, specialist advice to businesses on resource-efficiency savings in energy, water, raw materials and waste management, with access to interest free loans also provided.

* EcoBusinessPlan Vienna provides advisory services for resource efficiency improvements in SMEs, resulting in over EUR 100 million of savings in operating costs

* The Enworks project in North West England helps companies to use resources such as energy, materials and water more efficiently, and to reduce the amount of residual waste that goes to landfill. For every £1 of public investment, £10 of bottom-line savings for businesses are generated.

5.3. Outcomes of the Resource Efficiency Finance Round Table

The transition to a resource efficient economy in the EU will require a significant shift in investments. In order to identify the main barriers that prevent this shift from happening, and the actions that could be taken to remove these barriers, the Commission has established a dialogue with the financial sector, notably by organising a Resource Efficiency Finance Roundtable with high level representatives from the financial sector in February 2013.

In addition to getting the resource prices right, the main barriers identified to investments in resource efficiency include the perceived higher risk of resource efficiency investments, their complexity (both technical and financial), the lack of available information for investors on the sustainability of investments, and the overall short termism of financial markets. As a result, the financial impact of resource depletion on investment portfolios is not sufficiently taken into account by investors. Stakeholders recommended a number of actions to address these barriers, including:

- Disclosure by companies and investors of the way they take into consideration resource issues (including their risk exposure to resources), and integration of resource efficiency in the responsibility of financial actors (fiduciary duties);
- Evaluating the impact of resource scarcity for businesses and the economy, in particular through "resource stress tests" for companies
- Exploring the potential of the bond markets in the resource efficiency context, in order to reach out to large investors;
- Developing financial instruments to cater for resource efficiency investments, using the EU budget and closely involving the European Investment Bank;

- Putting in place the right incentives to avoid discouraging long term investments, and ensuring that accounting standards take proper consideration of the costs and liabilities linked to resource use;
- Developing dialogue and awareness on the relevance of resource efficiency for investments with the financial sector.

As a follow-up to this dialogue, the Commission has foreseen a number of studies to examine in more detail the issues of accounting standards, fiduciary duty, resource stress tests for companies, and the potential of the bonds market. The work developed in the context of long term finance, including the Green Paper[59] is also highly relevant for addressing barriers to resource efficiency investments.

The Communication on Long-Term Financing of the European Economy, adopted by the Commission on 19 March 2014 includes actions related to transparency of investors and asset managers on environmental, social and governance issues, and on the link between fiduciary duties and sustainability. Study work now being initiated will inform the Commission of further policy steps to be taken.

The Commission has also made two proposals that would increase the amount of information available to investors (both institutional investors and retail investors): the proposal on non-financial reporting[60], which requires large companies to report on relevant social and environmental factors, and the proposal on key information documents for investment products[61], whereby it would be mandatory for mutual funds to inform retail investors on how environmental, social and governance concerns are taken into account in their investment. Finally, awareness raising actions that the Commission has put forward on resource efficiency include elements on the financial benefits of resource efficiency.

6. **Conclusion**

The majority of the actions announced in the Roadmap have been launched. However, its 2020 milestones and the overall objective of decoupling economic growth from resource use and its environmental impacts are not likely to be fully achieved unless efforts are stepped up. In some cases implementation of agreed action will be essential, while in others this has to be combined with agreement on further policy development – as is the case for the outcomes of the waste policy and targets review. Significant shifts in fields linked to products, production and consumers are still not guaranteed, while there are areas, such as financing, where policy initiatives still need to be shaped by further analysis.

Future action on resource efficiency by the EU and Member States will be underpinned by the commitments under the 7th EAP and informed by the results of the mid-term review of the Europe 2020 Strategy. In the Communication on "Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth"[62] the Commission identified pressure on resources and environmental concerns as a key long-term trend affecting growth.

As an important next step in the resource efficiency agenda, the Commission has identified the need to facilitate the shift to a more circular economic model. An innovative, circular economy where nothing is wasted and where natural resources are managed sustainably, and

59 COM(2013)150
60 COM(2013) 207
61 COM(2012) 352
62 COM(2014) 130

biodiversity is protected, valued and restored is central to the vision of the 7th EAP. Based on the reusability of products and raw materials, and the restorative capacity of natural resources, a circular economy will lead to fewer resources being extracted, less energy used and less waste generated, while precluding the release of toxic substances in the environment and relying on clean energy sources. Together with efficiency improvements in the use of resources, such a model should contribute to a substantial increase in the resource productivity of the EU.

Action on the side of national, regional and local governments is important, since in many cases the most effective policy instruments to promote efficient resource use and implement sustainability in practice are in their hands – for instance in the areas of waste and water management, urban planning, or public procurement. Leadership from business remains essential to bring about change in many fields such as sustainable sourcing, and better cooperation in the value chain. Citizens are increasingly aware and supportive of resource efficiency, while a shift to more sustainable consumption and behaviour has to be further promoted. Internationally, there is a real opportunity to put an effective post-2015 Development Agenda in place, and tap the potential of the green economy to address the related challenges of poverty eradication and sustainable development.