1. Introduction

As the world economy grows, the demand for resources increases steadily, leading to higher or more volatile resource prices, greater competition for resources, security of supply risks, environmental degradation and climate change. Unless action is taken, resource depletion and environmental degradation will accelerate, and will negatively affect not only people's health, quality of life and the environment, but most significantly the economy itself. Continuing to follow a resource-intensive development path is not a viable option to achieve long-term, resilient and ultimately sustainable growth.

Resource efficiency is an essential component of the Europe 2020 Strategy for sustainable, smart and inclusive growth. It addresses the broader challenges to our well-being: the EU needs growth and jobs that are not only good for a competitive economy, but also for our health, quality of life and the environment.

There is untapped potential for the whole economy, as well as for economic sectors and individual companies to benefit from more efficient resource use. Reducing costs, improving productivity, investing and innovating to address resource and environmental challenges are important sources of growth, jobs and competitiveness in an import-dependent EU. Promoting the circular economy, including better design, durability, re-use, repair and recycling, is an essential part of increasing resource efficiency.

2. Identification of challenges

There is need and scope for improving the efficient use of all resources – from metals, minerals and energy, to water, land, air, biomass, soil, ecosystems and biodiversity. Stepping up efforts to increase resource efficiency goes hand in hand with EU policy objectives such as reducing greenhouse gas emissions, increasing energy efficiency, sustainable reindustrialisation of the EU economy, and securing access to raw materials, whilst reducing environmental impacts.
In order to monitor progress towards resource efficiency, both at the national and European levels, the Commission developed a Resource Efficiency scoreboard. First published in December 2013, the scoreboard is regularly updated by Eurostat. It includes a lead indicator, a dashboard of indicators covering water, land, materials and carbon, and thematic indicators to assess priority policy areas.

The lead indicator, resource productivity, captures the trend in material resource use and links it to economic growth. It indicates whether more wealth is generated domestically with fewer resources. It is calculated as the ratio of GDP to Domestic Material Consumption and expressed in euro per kilogramme. Resource productivity in the EU increased by around 27% in the period 2005-2014, which considerably exceeds the growth in GDP over the same period (7.4% in real terms). Hence, there has been a certain degree of decoupling of growth from domestic resource consumption.

Resource productivity varies considerably across the Member States due to their different GDP levels, their stages of economic development, and the structure of their economies. Countries showing highest values in resource productivity include the Netherlands, Luxembourg, the United Kingdom, Spain and Italy. Member States with the lowest levels of resource productivity, such as Bulgaria and Romania, also rank low on competitiveness.

Figure: Resource productivity, 2014

At sectoral level, there is significant potential for growth and employment creation in the production of energy from renewable sources, energy efficiency, waste and water management, air quality, restoring and preserving biodiversity and developing green infrastructure, which is resilient to changes in the business cycle. Employment in the sector of environmental goods and services in the EU increased from 3 million in 2002 to 4.2 million

3 Eurostat, 2015.
in 2011, growing by 20% in the period 2007 – 2011, throughout the recession years⁴. High European standards have helped create a competitive advantage for European companies in the eco-industries – a global market valued at a trillion euros and forecast to double over the coming years⁵.

An area of particular importance for the transition to a resource efficient, circular economy is waste management. While the annual material consumption in the EU is 13.3 tonnes per capita, each EU citizen generates on average 5 tonnes of waste per year, or 1.8 tonnes, if mineral waste is excluded. 30% of this non-mineral waste is disposed of in landfill sites. Europe has made substantial progress in turning waste into a resource and promoting sustainable ways of waste management such as recycling. However, performance varies considerably between Member States. Six have already effectively eliminated the landfilling of municipal waste, reducing it from 90 % to less than 5 % in the past 20 years and reaching recycling rates of 85 % in certain regions. In others over 90 % of waste is still landfilled and less than 5 % is recycled.

**Figure:** Municipal waste management, 2013⁶

---

⁴ EUROSTAT data  
⁵ Ecorys (2012). The number of Jobs dependent on the Environment and Resource Efficiency  
3. **Identification of appropriate policy levers to address the identified challenges**

The transition to a resource efficient economy requires a smart way of doing policy, addressing multiple objectives at the same time. The link to the restructuring of the economy makes resource efficiency highly relevant to a broad range of EU policy areas, such as energy, transport, agriculture, and construction, industrial, regional and cohesion policy, research and innovation. Measures should combine smart regulation, market-based instruments, incentives, information exchange and support for voluntary approaches.

3.1 **Getting the prices right for an efficient resource use while supporting fiscal consolidation**

Environmental taxes are an efficient market-based instrument to achieve environment policy objectives while supporting growth-friendly fiscal consolidation. Some Member States have achieved a relatively large proportion of environmental tax revenues as a share of total taxes (up to around 10%), whilst maintaining fiscal revenues and improving competitiveness and energy efficiency. This demonstrates that it is possible to shift taxation onto environmentally harmful activities within a sound economic framework. Shifting the burden of taxation away from labour towards the environment can encourage improvements in resource productivity, enhance innovation and support growth whilst at the same time implementing the polluter-pays principle and ensuring the correct pricing of resources.

The share of environmental taxation as a proportion of total tax revenues in the EU decreased from 2000 to 2008, and then stabilised. As far as this trend reflects the falling real value of tax rates and not a reduction in the environmentally harmful activities, it runs counter to a move towards a more growth-friendly tax system, in particular by means of a shift from labour to environmental taxation. The countries with the lowest share of environmental taxation in total tax revenues, i.e. France, Belgium and Germany, have also a ratio between environment and labour taxes that is far below the EU average, which provides opportunities for shifting taxation from labour towards environmental taxation.

A complementary action is to reform the subsidies offered for inefficient activities that also harm the environment, including tax reductions to fossil-fuel consumption or production, which can weaken the effect of environmental taxation. For instance, adding up fossil fuel subsidies by Member States gives a figure of about €25 billion. In several Member States fossil fuel subsidies are equivalent to more than 10% of the environmental taxes collected (Belgium, Estonia, Hungary, Latvia, Slovakia, Sweden), while Germany is estimated to have the biggest absolute amount of such subsidies).
3.2 Structural reforms in support of better economic and environmental performance

Increasing resource efficiency and moving to a circular economy is an important part of structural economic policies, which require targeted measures across economic sectors in order to boost innovation for sustainable consumption and production, as well as in the sectors that are directly linked to better environmental performance.

The transition to a circular economy requires re-thinking the way we produce and consume goods and services. Boosting resource efficiency in companies could bring net savings of €600 billion, or 8% of annual turnover, for businesses in the EU, while reducing total annual greenhouse gas emissions by 2-4%. Greater uptake of eco-innovative solutions has the potential to create a competitive advantage for European businesses, while contributing to green growth and job creation.

The gap between the best performers in eco-innovation and the Member States which could still improve their eco-innovation performance remains significant. Accelerating market uptake of eco-innovations in all sectors could be effectively promoted by addressing the obstacles faced by eco-innovative businesses and through supporting market replication and clusters of SMEs, developing targeted financial instruments, and public procurement of innovations.

---

7 Eurostat, 2015; Data for Cyprus, Hungary and Portugal refer to 2012.
8 The opportunities to business of improving resource efficiency (2013), AMEC et al.
9 Eco-innovation Scoreboard: http://www.eco-innovation.eu/
Concerning the environmental goods and services sector, implementing existing legislation on waste management could create more than 400,000 new jobs\(^\text{11}\), while opening up new markets, making better use of resources, reducing dependence on imports of raw materials, and lowering pressure on the environment. A 1% increase of the rate of growth of the water industry in Europe can create between 10,000 and 20,000 new jobs\(^\text{12}\). Tourism and recreation in Natura 2000 sites are estimated to directly support around 8 million jobs corresponding to 6% of the total employment in the EU\(^\text{13}\).

Air pollution reduction as foreseen in the Commission’s 2013 Clean Air Quality Package proposal can lead to more than 100,000 new jobs\(^\text{14}\), while the benefits to people’s health from implementing the package are around €40 billion a year, over 12 times the costs of pollution abatement, which are estimated to reach €3.4 billion per year in 2030. The total external health-related costs to society from air pollution are estimated to be in the range of €330-940 billion per year. The situation is especially severe in urban areas, which are now home to a majority of Europeans.

---

\(^{10}\) Eco-innovation Observatory, 2014.

\(^{11}\) Bio Intelligence Service (2012), Implementing EU waste legislation for green growth.

\(^{12}\) Ecorys, Acteon (2014), Potential for sustainable growth in the water industry sector in the EU and the marine sector – Input to the European Semester”.

\(^{13}\) Bio Intelligence Service (2011), Estimating the economic value of the benefits provided by the tourism/recreation and employment supported by Natura 2000.

\(^{14}\) http://ec.europa.eu/environment/air/clean_air_policy.htm
4. Cross-examination of policy state of play

The Europe 2020 Flagship Initiative "A resource-efficient Europe"\textsuperscript{16} established a coherent policy framework, which built 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"\textsuperscript{17} the Commission set out a comprehensive strategy 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, both at the EU and national level. The seventh Environment Action Programme "Living well, within the limits of our planet", which entered into force on 17 January 2014, identified as a priority objective turning the Union into a resource-efficient, green and competitive low-carbon economy and specified concrete areas for action at EU and national level\textsuperscript{18}. The Circular Economy Action Plan aims to further improve the efficient use of resources.

The EU Member States have been stepping up their efforts in the resource efficiency field and have 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

\textsuperscript{15} European Environment Agency, 2015, Airbase.
\textsuperscript{16} COM(2011) 21
\textsuperscript{17} COM(2011) 571
\textsuperscript{18} OJ L 354 , 28.12.2013, p. 171 - 200
translated the concept into specific actions. A dedicated Member State Group on Resource Efficiency has been set up by the Commission to discuss policy and exchange best practice.

Member States use a variety of approaches to support business in improving their resource efficiency, ranging from voluntary to regulatory measures. The variation in levels of resource efficiency between Member States suggests there is considerable scope for improving resource productivity across the EU. Many support measures could be more systematically adopted, building on the lessons learnt from where they have proven to be a success. For instance, a recent study for the Commission identified and examined ten key measures with potential for wide application in the EU:

1. **Support for industrial symbiosis**: Measures that support industrial symbiosis aim to enable the sharing among industries of services, utility and by-products/resources (including reuse of waste from one industry by another industry) in order to add value, reduce costs and make environmental improvements. This may include financial support for technology parks/clusters, and/or virtual support for networking and skills.

2. **Incentivising external audits to support resource efficiency**: The aim of external resource efficiency audits is to provide support to businesses to help them identify and make resource efficiency improvements. Governments may provide incentives for such audits e.g. by offering government payments or vouchers, providing tax rebates for companies that have been audited for resource efficiency, or including resource efficiency audits as one beneficial criterion for Green Public Procurement processes.

3. **Improving financing**: Financial support can be an effective way to encourage resource efficiency in businesses that might not otherwise have the capacity to make resource efficiency improvements. In particular, the following types of financing, which can offer improved support for resource efficiency: encouraging private equity funding (e.g. through setting up green bonds); encouraging public-private partnerships; low-interest loans to SMEs for investments in resource efficiency; improving SME access to funding by pooling loan demands of groups of SMEs to create larger loan demands that may be more readily approved by banks/lending institutions.

4. **Supporting voluntary agreements and initiatives**: The aim of voluntary agreements or initiatives is to encourage resource efficiency in groups of businesses by creating shared goals. In this way, businesses may become more motivated and committed to take steps towards greater resource efficiency. Governments might support such initiatives e.g. by encouraging the development of codes of conduct/covenants (between businesses, or between businesses and government), offering support for the development of voluntary product labelling, voluntary corporate disclosure or voluntary collaboration between actors along a supply chain, or by hosting meetings/discussions between businesses.

---

19 See Progress Report on the Roadmap to a Resource Efficient Europe (SWD/2014/0206 final/2)
5. **Providing targeted resource efficiency information and advice to companies:** In some cases, the provision of targeted information/advice to companies on resource efficiency can help to encourage improvements. Online information on improving resource efficiency, support for sharing of best practices between companies, virtual or ‘in person’ support and advice programmes, and financial support for implementing advice all have the potential to help.

6. **Building resource efficiency related skills and capacity within a company/business:** If a company lacks the skills to improve its resource efficiency, it will be trapped in using existing methods. Governments use various skill and capacity building tools to remove this barrier, e.g. by encouraging the inclusion of resource efficiency issues in curricula for vocational training or further education. Skills related to resource efficiency (sometimes called ‘green skills’) can be defined as any knowledge, abilities, values and attitudes that are needed to develop and support a resource-efficient society. They are useful in all sectors, not just for ‘green jobs’, since they can help to adapt products, services and processes to environmental challenges and regulations.

7. **Improving company accounting and reporting practices:** Existing accountancy and business reporting rules can fail to capture and illustrate progress on resource efficiency. Sometimes they can reinforce practices which reject investments in resource efficiency with longer pay-back times. Changes to accountancy and reporting practices which better allow resource efficiency measures to be seen as beneficial for business may help businesses to change. Governments can support change, either through supporting work by accountancy bodies, or through prompting change in reporting practices.

8. **Development of non-legal standards for products and services:** Standards for products and services can help producers with greener products to differentiate them from less environmentally-friendly alternatives, as well as allowing consumers to make more informed purchasing choices. Common voluntary (e.g. sector-wide) standards such as minimum efficiency standards, requirements for use of recycled materials in new products, or application of eco-labels, can therefore help to generate and spread resource efficiency improvements.

9. **Measures supporting extended producer responsibility (EPR) for materials and/or products:** One of the aims of applying extended producer responsibility (EPR) to materials and products is to reduce the amount of waste generated, and to encourage the use of specific types of waste as a resource/raw material. Together, waste regulation, EPR and other economic instruments can help to support more circular supply chains between the production and end-of-life phases of a product. Governments may in some cases take steps to offer additional, non-regulatory support for the application of extended producer responsibility.

10. **Any other non-legislative support measures promoting a Circular Economy and resource efficiency:** There are undoubtedly many non-legislative measures in use that do not fit into any of the previous categories. Examples could include support for re-use and repair, measures to prevent the obsolescence of products, provision of extended warranties/guarantees, or schemes to support alternative business models such as leasing, shared ownership or exchange of services.
The study found out that across the EU-28, there is a diversity of good practices for all ten support measures from many different countries, while the scope of application strongly differs both per measure and across the Member States. In only two Member States – Germany and in Finland – all ten support measures are used. In eight Member States only for two or one support measures there is no national policy in place: Austria, Denmark, France, Ireland, Italy, Poland, Spain, and UK. The data for Bulgaria, Croatia, Greece and Hungary each indicate that only for three support measures there is no national policy in place.

Date: 26.11.2015