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Questions and answers on the Resource Efficiency Roadmap

What's the problem?

Demand for resources is rising, and the cheap supply we have enjoyed for so long is dwindling.

The economic miracle of the 19th and 20th century was based on inexpensive resources, and in the 21st century – as populations grow and living standards rise – resources will cost more. Global demand is already increasing pressure on the environment and competition for resources. 200,000 people currently join the global population daily and 2 billion middle income earners in 'developing countries' are expected to triple their consumption by 2020. Today in the EU, we use 16 tonnes of materials per person each year, of which 6 tonnes become waste, with half going to landfill.

Whilst demand for food, feed and fibre may increase by 70% by 2050, 60% of the world's major ecosystems that help produce these resources have already been degraded or are used unsustainably. Key natural resources such as biodiversity, water, air, soil and fish have been used as though supplies were inexhaustible, and are still undervalued as inputs to the economy, and the global system that has resulted is ill-prepared for scarcity.

If we carry on using resources at the current rate, by 2050 we will need, on aggregate, the equivalent of more than two planets to sustain us. To grow successfully and be competitive under these conditions, companies and countries must use resources better and more efficiently.

Until now, Europe has lacked a systematic approach with agreed and coherent targets and indicators across all the relevant policy areas and levels. The Europe 2020 resource-efficient Flagship initiative attempts to incorporate resource efficient strategies into all policy areas covered by the EU.

What is resource efficiency?

Resource efficiency builds on the idea that our economic and environmental systems and our well-being can no longer be kept apart. It's a way of thinking that allows our economy and well-being to grow, while resource use and environmental impacts decrease, ensuring a safe operating space for our countries, companies and families today and in the years to come.

Resource efficiency is about decoupling economic growth from resource use and its negative impacts. It is about preserving the resource base for the functioning of our economy and society and about increasing the value we get from the resource inputs along the various value chains, sometimes spreading globally. It's a route to a sustainable future of competitiveness and growth, to be reached by protecting our planet and natural resources. As we don't have another planet, we have to use the resources of this planet more efficiently. So we need to act sustainably. It's better to prevent damage and pollution in the first place rather than try to put it right afterwards.

Projected population trends and economies which continue to waste resources mean that resource efficiency isn't so much a choice as an inevitability. If we don't do it voluntarily, it will eventually be forced upon us.

The key words for resource efficiency are reduce, reuse, recycle, substitute and save. It implies using new materials, lighter materials, renewable materials and recycled materials. And it means changing the ways we use them – and also the way we live. It should push us to innovate in ways that will give us a competitive lead as the world's resources are becoming increasingly scarce.

What's in the roadmap?

The Roadmap outlines a competitiveness and growth plan for 2050 that is based on a sustainable use of natural resources. By 2050 the objective is that the EU's economy has grown in a way that respects resource constraints and within the boundaries of what our planet can bear, thus contributing to global economic transformation. Our economy is competitive, inclusive and provides a high standard of living with much lower environmental impacts. All resources are sustainably managed, from raw materials to energy, water, air, land and soil. Climate change milestones have been reached, while biodiversity and the ecosystem services it underpins have been protected, valued and substantially restored. To achieve this goal the Roadmap aims to remove the barriers holding back transition.

What are the main areas for action?

The Roadmap identifies key resources to be efficiently managed in priority: water, clean air, ecosystem services, healthy soils and marine resources. Although these resources are strategic for our well-being and economic activity, they have often been used as if they were free and unlimited commodities.

The Roadmap also singles out three key sectors to be addressed in priority: food and food waste; buildings and housing; and transport and mobility. Efficiency in these areas is of primary importance as they produce up to 70-80% of all environmental impacts.

Within this context the Roadmap suggests a mix of market-based policy instruments that aim to give the right incentives, remove barriers and address market failures. The Roadmap proposes to:

- Improve products and change consumption patterns by creating more supply and demand for green products. The Roadmap proposes to combine voluntary and mandatory measures that optimise efficiency by rewarding green products with the help of initiatives such as eco-design, the Eco-label, green public procurement.
- Boost efficient production by introducing economic incentives that reward efficiency investments and encourage more long-term, innovative and concerted thinking in business, finance and politics. A common methodological approach to measure and compare businesses' environmental footprints will be developed.
- Treat waste as a resource by providing economic incentives to reinforce markets for secondary materials and boost demand for recycled materials. Public and private investments in modern recycling infrastructures should be increased, waste prevention targets should be reinforced and illegal shipping of waste combated.

- Deliver research to fill the gaps in our knowledge. Increase public and private investment in research and technological innovation on resources.
- Phase out subsidies that ultimately harm the environment by holding industries back from investing into green technologies or leading to higher levels of waste, fuel-consumption and resource extraction; and switch taxes away from labour and on to environmentally harmful activities.
- Remove market failures by properly valuing natural resources and improving management of open access resources.
- Create clear milestones, indicators and targets to provide guides and measure progress in resource efficiency.

What are milestones?

The Roadmap combines several timescales. It has a long-term vision of Europe in 2050, by which time the EU's economy has grown in a way that respects resource constraints and within planetary boundaries, thus contributing to global economic transformation. Our economy is competitive, inclusive and provides a high standard of living with much lower environmental impacts.

It also contains number of short term measures, such as indicators to be agreed with the Member States by 2013, and a number of medium-term milestones which set the pathway to clear targets that are underpinned by indicators, mostly by 2020.

The milestones cover areas like incentives to choose the most resource efficient products and services, waste management, the phasing out of environmentally harmful subsidies, a shift away from the taxation of labour towards the taxation of environmental impacts, the valuation of natural capital and ecosystem services, stopping biodiversity loss, meeting air quality standards, progress towards no net land take by 2050, achieving good environmental status for all EU marine waters, and fishing within maximum sustainable yields.

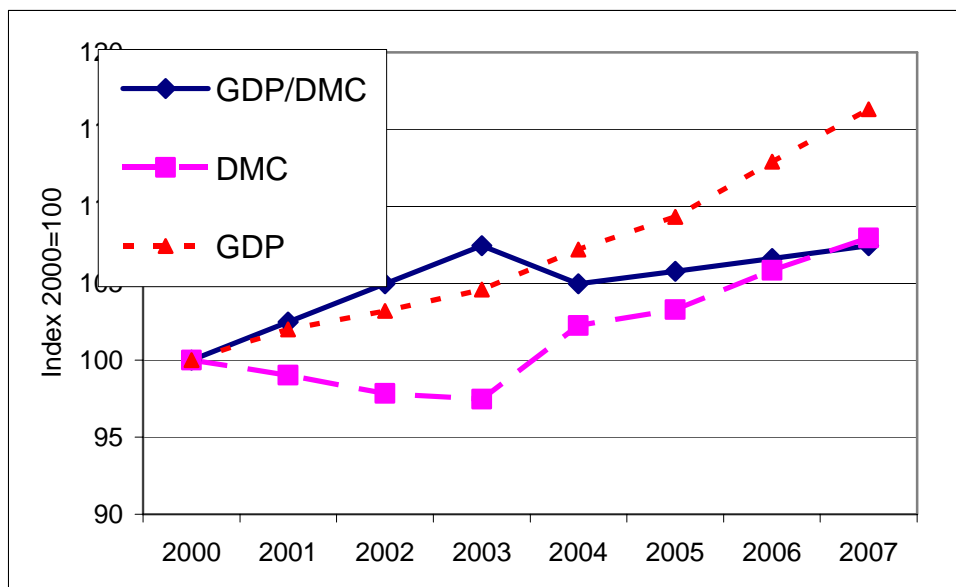
Why focus on waste?

Each year we throw away 3 billion tonnes of waste in Europe and overall this figure is increasing. Often this is because products aren't designed to be recycled or reused due to market structure or lack of incentive. Our waste contains a wealth of valuable resources such as precious metals and plastics, materials we will be increasingly short of. Optimising waste recycling will increase the security of our external material supplies and reduce impacts linked to the extraction of raw materials and waste disposal. It will also create jobs and financial savings.

The European recycling industry is one of the most advanced worldwide and an important provider of raw materials for European industries. Out of 40 billion tonnes of waste generated annually in the EU, roughly 40% is recycled. The Member States that perform best in this area are recycling around 70 % of their waste, and five Member States are already landfilling less than 5 % of their waste. By providing the right incentives we could recycle much more and develop into a high-technology and high-quality industry that offers a wide range of recycled materials at competitive prices. Recycling and re-use of waste must become economically attractive options for public and private actors.

What are the indicators that are being proposed?

As no single indicator can capture all relevant aspects of resource use and efficiency, the Commission will use a combination of statistics. "Resource Productivity", a measure of how efficiently we use materials, will be the lead indicator.



(DMC= Domestic Material Consumption)

It will be supported by indicators on land and water use, and GHG emissions as a proxy for negative impacts on the environment. These indicators will only show the situation within the EU, but global indicators will be added when available, together with indicators on natural capital and environmental impacts, to complete a comprehensive "resource efficiency dashboard". By 2013 the Commission aims to have reached broad agreement with all stakeholders on how to measure progress and set targets.

What are the risks for Europe?

The risks for Europe lie in NOT becoming resource-efficient. If we fail to take action we risk becoming uncompetitive as all the factors of production start to become increasingly expensive and scarce. We risk degrading ecosystem services that underpin large parts of our economy, like pollination, water purification, flood protection, food production and clean air. We also risk adverse health effects and lower overall quality of life. If we do not reduce the current levels of waste, we will continue to pay for resources we do not need and waste the money that could have been saved by recycling and reusing materials. In the long run, becoming more resource-efficient means that we are less likely to actually run out of the things we need to keep the economy functioning properly.

What are the potential benefits?

By becoming resource-efficient, Europe should thoroughly modernise its economy and restore its competitive edge. Many of the benefits of resource-efficiency come surprisingly quickly. Reducing the quantities of materials, as well as energy, used in a process cannot fail to save money. And using smaller quantities of resources more carefully means that they are less likely to run out.

The values of such gains vary from resource to resource, and between countries, but exist across the sectors. Evidence suggests that a 10-20% reduction in resource and energy use in Germany is possible, for example. One third of the costs are investment costs, and two thirds capital expenditure – the payback period being only one year in the case of materials. For materials, this saving would be worth up to €160bn/year in Germany alone, with the German Resource Efficiency Agency estimating average savings per SME at €200 000 each year.

A study for the UK Government identified around £23 bn a year of potential savings to United Kingdom businesses from straightforward resource efficiency measures involving no or small scale investment (payback within a year). Looking at longer term savings with a payback of greater than one year, an additional potential of around £33 bn per year was identified.

At present some 20-40% of Europe's available water is being wasted. Losses of water in the supply network are often substantial in water-scarce regions in Europe. For example, in France and Spain up to 34% of water is lost before it reaches the consumer, but in Denmark only 7%. Water efficiency could be improved by nearly 40% through technological improvements alone.

On a wider scale, resource-efficiency will make the European economy much more resilient. Europe is heavily reliant on some specific regions for critical raw materials. For instance we import 48% of our copper ore, 64% of zinc and bauxite and 78% of nickel. We import all of our cobalt, platinum, titanium and vanadium.

But the major benefit will be in reducing our environmental impact and improving sustainability as we take better care of the natural resources – water, air and biodiversity – that we need to live.

Is this a problem of governance?

Switching towards a global resource efficient economy will require concerted action across a wide range of policies and between different policy levels. Appropriate legislation is needed at the European level, which is properly implemented in the Member States and complemented by a set of supporting measures. The Commission will initiate a participative process with Member States, businesses and civil society to work on defining the right targets and indicators for guiding actions and monitoring progress. Member States are also encouraged to act at their level to develop or strengthen their resource efficiency strategies, and mainstream these into national policies for growth and jobs.

These measures will only have the transformational effect that is required if they play their full part in the Europe 2020 Strategy, with resource efficiency integrated into the European Semester on economic policy coordination.

One of the greatest challenges is the need for more integrated policy making, to ensure that gains in one area are not simply cancelled out by losses in others. This is why the road map calls for an integrated approach that brings together investments in technology, infrastructure, innovation, and new business models that apply resource-efficient ways of thinking.

Governance is also a factor at the international level. A range of actions will be taken here, including direct support and joint initiatives with global partners, promoting delivery on existing agreements and working towards stronger multilateral mechanisms for a global governance of public goods. The Rio +20 United Nations Conference on Sustainable Development in 2012 will offer a unique opportunity to gain support for a concerted global switch to resource efficiency. In the run up to the Rio+20 Summit, the Commission has already proposed a wide range of actions, including new international initiatives on agriculture, land use, forests, chemicals, and marine resources and assistance in setting up a multilateral governance system.

Are there any good business practices that can be easily followed?

Many businesses are not fully aware of the potential risks – or advantages – of natural resource scarcity for their future development, despite the fact that good business practices such as efficient water use can be relatively easily implemented.

For example, one UK food manufacturer carried out a water investigation in 2008 and found anomalies. An analysis using detailed sub-metering of water usage found potential savings of 73000 cubic meters of water (42% reduction per tonne of product). In the Netherlands, a large chemical firm has, since 2007, secured a long-term, cost-effective, reliable supply of water by taking the local community's wastewater, and reusing it twice – firstly for steam production in manufacturing plants and then again in cooling towers, taking more than 9.9 million litres of household wastewater every day and cutting freshwater use. It has also reduced resource use in purifying salt water that was used in the past, using 65 % less energy and 500 tons fewer chemicals per year, and consequently 5000 tons less CO₂.

On a global scale, the World Business Council for Sustainable Development (WBCSD) and the World Economic Forum are representative of many leading international business organisations. These organisations see resource efficiency as a strategic response with short-term benefits. The WBCSD Vision's for 2050 sets out the steps for transitions businesses need, with significant changes required by 2020.

Which sectors might benefit in particular?

Leading companies are already showing what can be done by saving huge amounts of energy, water or raw materials and reducing waste. This shows that it is clearly possible to reduce the environmental impacts of our economic activity massively whilst boosting competitiveness.

Taken together, the food, housing and mobility sectors are together responsible for over two thirds of all environmental impacts. So these sectors stand to benefit most – and to provide the most benefit – by improving their resource efficiency. By working to improve their environmental impacts they will reap economic rewards for themselves.

Food and drink account for 17% of our direct greenhouse gas emissions and 28% of our use of materials. A combined effort by farmers, the food industry, retailers and consumers through resource-efficient production techniques, sustainable food choices and reduced food waste could help improve resource efficiency and food security at global level.

There are also lots of gains to be made in the building industry. Better construction and use of buildings in the EU would cut 42% of our final energy consumption, about 35% of our greenhouse gas emissions and more than 50% of all materials used – and would also save lots of water. Significant improvements in resource and energy use during the life-cycle – with more sustainable materials, higher waste recycling, and improved design – would help create a competitive construction sector and develop a resource-efficient building stock.

Another area where huge benefits are to be made is transport. A modern, resource efficient mobility system, serving both passengers and freight, could significantly improve competitiveness and sustainability.

What are the particular obstacles Europe faces?

Resource efficiency is a complex concept. It implies fundamental changes in our production and consumption. Previous patterns of growth have brought increased prosperity, but through intensive and often inefficient use of resources. The Roadmap calls for a coherent and integrated response over a wide range of policies to remove certain obstacles and to create the right set of incentives for production and consumption decisions.

A major constraint is that markets and prices, taxes and subsidies do not reflect the real costs of resource use and lock the economy into an unsustainable path. This is an example of one of the "fundamental changes" required.

There is a need to encourage more long-term innovative thinking in business, finance and politics. This should lead to the uptake of new sustainable practices and stimulate breakthroughs in innovation. Regulations need to be more forward thinking and cost-effective.

A lot of innovation requires new knowledge and training. The first step is to identify the gaps in knowledge and skills, and then to fill them with the right information and training.

There will also be concerns about international competitiveness. A major effort needs to be made to seek consensus with international partners so that they start to move in a similar direction.

Is this just a vision for Europe? What about the rest of the world?

Resource scarcity and depletion are not rich countries' problems, but global ones. Resource constraints – for example in water, energy and raw materials – will not only be a brake on the development of many economies, but a threat to stability and peace. The Rio+20 Conference in June 2012 will be an ideal opportunity to start global transition to a green, resource efficient economy.

At the RIO conference, the Commission will be presenting the "what, how and who" of a global transition to a green economy, proposing specific actions that could be implemented at the international, national and regional levels. The key themes are:

- Investing in key resources and natural capital (the "what"): i.e. water, renewable energy, marine resources, biodiversity and ecosystem services, sustainable agriculture, forests, waste and recycling. These areas underpin millions of livelihoods and can help alleviate poverty. They could become areas for future economic growth and global markets;
- Combining market and regulatory instruments (the "how"): getting the prices right so that they reflect true scarcities through eco-taxes and by removing environmentally harmful subsidies, sending correct signals to the market, mobilising public and private financial resources, investing in research, skills and green jobs. Indicators that reflect a wider sense of progress (both environmental and social), and that can work alongside GDP, need to be developed;
- Improving governance and encouraging private sector involvement (the "who"): reinforcing and streamlining the existing international governance structures (for example by upgrading UNEP, the United Nations Environment Programme. The much greater involvement and engagement of businesses and civil society is also essential.

What are other countries doing about these problems?

The EU is one of many to identify the benefits of a transition to a more resource-efficient economy. Actions have already been taken at international, national and EU Member State level.

The OECD's recent Green Growth Strategy, the G20's commitment to phasing out inefficient fossil fuel subsidies and the Green Economy Report of the United Nations Environment Programme (UNEP) have made important international contributions. UNEP's International Resource Panel has provided independent, coherent and authoritative scientific assessments of policy relevance on the sustainable use of natural resources and their environmental impacts over the full life cycle.

A number of non-EU countries have launched strategic plans that put resource efficiency as their major priority: Japan has introduced visions and laws that represent a conceptual turn from a throwaway society in order to become a Junkangata Shakai (sound material-cycle society), and is operating its economy at half the material resource rate of the EU; China's latest Five Year Plan (11th) represents a change in development philosophy, aiming for an ecologically viable society with greater industrial efficiency; while the Republic of Korea's 'Framework Act for Low Carbon Green Growth' establishes a legal framework to promote sustainable development.

Some EU Member States already have many elements in place, including recycling, support for eco-innovation and for sustainable consumption and production. Several Member States have set out strategies and goals for improving resource efficiency, for example the UK National Industrial Symbiosis Programme (NISP), the German Effizienz-Agentur NRW (EFA) – PIUS-Check and the City of Vienna's cross-departmental procurement programme "ÖkoKauf Wien" (Eco-buy Vienna)

The EU can learn from experience of others, and participates actively in helping to influence the path that our partner countries take. Progress in resource efficiency in partner countries will not only enable them to develop sustainably, but will also in turn make it easier for the EU to reduce its own global footprint. For this reason, the EU proposes resource efficiency as a major topic of discussion at the June 2012 Rio+20 Conference.