

Europe in transition: Paving the way to a green economy through eco-innovation

Eco-innovation brief #15

20 December 2012

This year the Eco-Innovation Observatory has looked at how eco-innovation can lead to and create pervasive change. It argues that if eco-innovation is based on partnerships of different stakeholders working together, it can play a crucial role in the transition to a green and competitive economy. This brief asks the following questions:

Vision: *What kind of future do we want?*

Status quo: *What is the state of resource use and eco-innovation in the EU?*

The transition: *What is the role of eco-innovation?*

Recommendations: *What can policy makers and businesses change?*





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Vision: Eco-Innovation as a means to reach a resource-efficient Europe

The recent financial crisis has brought the debate about what constitutes a “healthy economy” into the mainstream. It has led to concepts like the ‘green new deal’, ‘green growth’, and the ‘green economy’. Numerous studies have pointed to the significant growth opportunities of environmental industries, especially as regards the creation of new jobs. Moreover, the cost savings from improving material efficiency, akin to the large increases seen in labour productivity over the last few decades, is starting to be understood. This is partly a result of rising commodity prices. Such trends appear to combine environmental and economic objectives, but economic growth has remained at the heart of such strategies so far. There is no evidence of absolute decoupling of economic growth from resource use.

The vision of a resource-efficient economy goes beyond niche-like solutions to integrate environmental sustainability as the key condition for economic and social sustainability. The vision developed by the European Commission aims for an inclusive and competitive economy, which respects environmental limits¹. The Rio+20 vision of the ‘Future we want’, signed by 193 countries, recognises the need to ensure resource access to meet basic human needs in all parts of the world and to turnaround behaviours leading to overconsumption and pollution in, especially, industrialised countries². It is time for wider engagement with and awareness of these visions to prepare and mobilise stakeholders for change.

Figure 1: The green economy is the framework for change, while eco-innovation is a key part of the pathway to it

	Current global economy	Green global economy
		
Environment	1.5 planets are needed to regenerate renewable resources and absorb the CO ₂ waste at current levels of consumption (WWF et al. 2012)	Resource extraction and emissions are within the planetary boundaries. For the EU, this requires reducing total consumption levels of primary materials, land, water and energy.
Social	870 million people were chronically undernourished in 2010-12 (FAO 2012) and 1.29 billion people lived in extreme poverty in 2008 (World Bank 2012). People in industrialised countries consume up to 20 times more materials than people in least developed countries (Giljum et al. 2011).	Available global resources are more equitably distributed across the global. For the EU, this implies substantially reducing total per capita resource consumption.
Economic	Economic prosperity is coupled with resource use. Relative decoupling has been observed for the EU, but not absolute decoupling (EIO 2011a).	Economic prosperity is decoupled from primary resource consumption. For the EU, this means transforming the economy to find growth opportunities in resource efficiency, recycling, re-use and new business models.

Resource consumption targets for materials, land, water, and energy and climate are under discussion at the European level. Targets already established in policy (e.g. -80% GHG emissions per capita compared to 1990) and suggested by literature (e.g. -68% Total Material Consumption per capita compared to 2008) reveal the need for substantial reductions by 2050. While establishing global targets may take more time, the EU would benefit from setting its own targets for sustainable levels of resource use now. This would not only provide an example for other countries, but also better prepare the EU economy to adapt to on-going trends and challenges. Meeting such targets requires a structural change in the way resources flow through society, lowering the EU's high dependence on imports and mitigating climate change while opening up new market opportunities, creating a skilled workforce for the long term, and fostering innovation. Operational targets should be negotiated by different stakeholders to develop a common understanding and explicit agreement on what needs to be done over the short term to reach long-term targets.

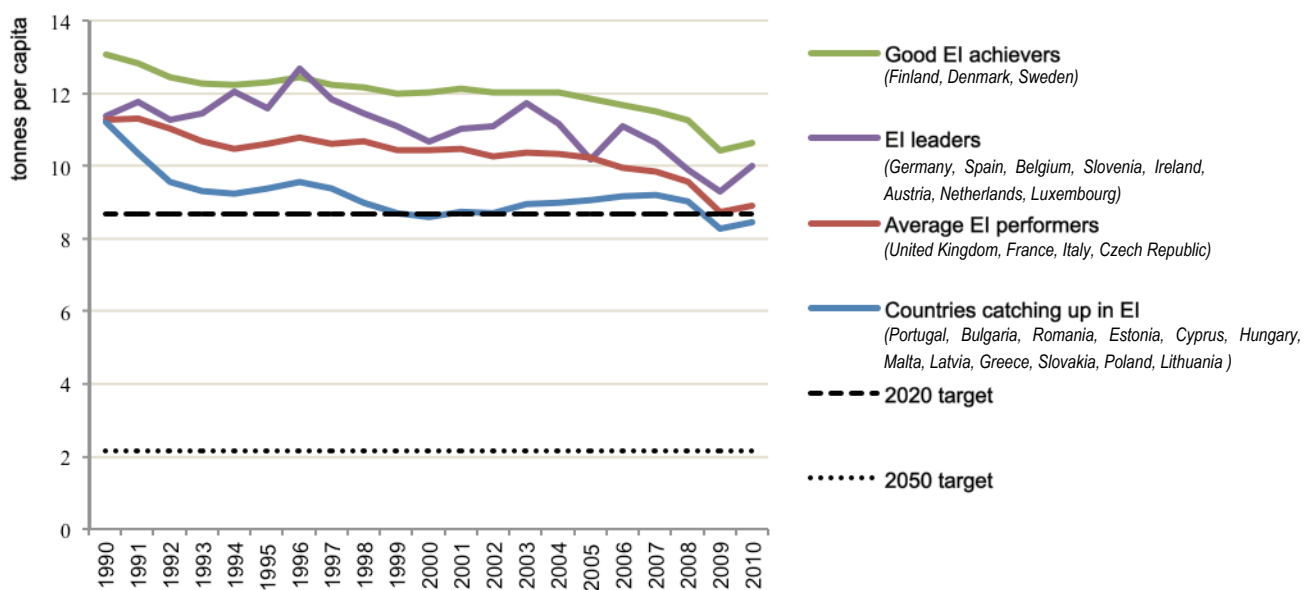
Eco-innovation and resource use across the EU

The Eco-Innovation Scoreboard compares the relative performance of EU Member States in key areas related to eco-innovation, including investments, company performance and economic and environmental outcomes. It seeks to reflect the extent to which eco-innovation has penetrated business in each country. As in the 2011 version, Finland, Denmark, and Sweden are still ranked as the EU leaders in eco-innovation. However, they are not the best performers when it comes to environmental outcomes. There is a moderate correlation between relatively high eco-innovation performance and high levels of both per capita material consumption and GHG emissions in Member States. Reasons could include a time lag between innovation and impacts, a focus on clean technologies instead of resource productivity, and a concentration of eco-innovation in niches instead of a widespread diffusion across society.

Figure 2 depicts the extent that eco-innovation performance, as measured with the Eco-Innovation Scoreboard, correlates with the achievement of GHG emission targets. All Member States have

been clustered into four groups based on their scoreboard ranking. As a whole, the EU achieved a significant reduction in territorial per capita GHG emissions since 1990. However, the group of countries “catching up in eco-innovation” is the only group, which is currently below the average European per capita 2020 target for GHG emission reductions. This indicator only reflects territorial GHG emissions, not those emitted to produce the products imported to Europe. Recent studies illustrate that the reduction of territorial GHG emissions in Europe are overcompensated by increased emissions from imports by a Factor 210. The lack of correlation between the scoreboard results and resource use and emission trends points to the need to delve deeper into the causes underlying these trends for different countries. This especially means looking at the different structural conditions -- and their drivers and barriers -- to more effectively target eco-innovation at reducing resource use (and thereby emissions) in the future. New policy approaches and ways to achieve resource efficiency improvements are probably needed to bring about greater levels of change.

Figure 2: Territorial per capita GHG emissions of the four eco-innovation performance groups from the Eco-Innovation Scoreboard, and the EU reduction targets for 2020 and 2050



The transition to a resource-efficient Europe

Past experiences suggest that structural change has been driven by “waves of innovation” converging technological potential with collective shifts in perception. The next decade will prove whether the green economy is the next “big thing” and if it can create synergies between socio-economic benefits and environmental objectives. For the green economy, structural barriers such as systemic lock-ins and market failure have a direct bearing on the strategic operations of companies and may hinder disruptive eco-innovation efforts. System eco-innovation is above all about identifying the root causes of systemic problems and targeting these levers to shift systems toward sustainability

in a co-ordinated way. By aiming to improve the performance of an entire system, instead of focusing on its individual components, system eco-innovation equips eco-innovators to more easily overcome structural barriers. Transformative system eco-innovation re-arranges the way specific functions or services, such as mobility, shelter and nutrition, are developed and delivered to people. It is not a “quick fix” strategy, but aims for long-term wins.

Business

Delivering value in a resource-efficient way

Instead of viewing the environment as just a source of materials or as an external challenge to be dealt with separately, companies in the future will internalise environmental sustainability in how they meet customer needs. Businesses will change the rules of the game by changing how they create, deliver and capture value. Key eco-innovations will be achieved through collaborations across the supply chain to source primary and secondary resources with less environmental impact and to substitute resource and energy inefficient products and processes with new ones. The company-customer relationship will also change as company's shift from selling products to selling the utility derived from products, thereby reducing the importance of ownership and creating new incentives to extend the life of products. Currently, a lack of incentives for change (e.g. the low price of natural resources) and an uncertain policy direction hinder eco-innovation, even as increased consumer awareness leads to many creative business models.

Research

Improving the knowledge base

Research will contribute to the transition by facilitating a co-creation of knowledge. In particular, sustainability research, characterised by a demand-driven, socially-oriented and transdisciplinary nature, will play a bigger role in the future. Universities will not only conduct inter-disciplinary research, but also actively seek, expand and deepen collaboration and networks with other stakeholders in society. Bridging the traditional division of disciplines will be key to overcoming structural barriers to sustainability research.

Citizens

Opting for sustainable lifestyles

Car-sharing, slow tourism and co-housing are examples of eco-innovations which enable citizens to satisfy their needs and desires with lower environmental impacts. Higher levels of engagement between citizens and businesses will be key to co-developing appropriate eco-innovative products and services in the future. Nevertheless, awareness alone will not be enough to drive social and structural change and move niche success stories into the mainstream. Society's preoccupation with economic growth shapes our underlining cultural norms and values. As long as personal advancement is based on the ideal of material wealth, resource-efficient lifestyles that involve moderation will be difficult to promote. Starting to measure 'happiness' in a more deliberate way and addressing the real reasons for promoting growth at all costs could be first steps. Policies at all levels of governance are needed to provide the structural conditions required to let people make more sustainable choices.

Government

Leader and partner in the transition

Government must not only adjust policy objectives to support eco-innovation, but also change how public policies responding to long-term challenges are designed, consulted and managed to set an overall direction for the transition. Key policy approaches to this end will be (1) policy deliberation to co-develop a vision and potential pathways to that vision and (2) a systemic approach to designing and setting up framework conditions and direct eco-innovation support. By engaging stakeholders in the co-development of long-term visions, instead of imposing a vision and related policies toward that vision on them, stakeholders may be more willing to welcome new policies and make changes. Beyond policy making, governments and public administrations may also need to innovate in their own organisational structures to meet the challenges of sustainability. New governance models will better allow for integrated approaches and flexible collaborations, and they will be based on the principle of subsidiarity to ensure that eco-innovation challenges are tackled on the level where collective capacity to act is concentrated.

Transition coalitions: strategic alliances for pursuing change

The roles of individual stakeholders in the transition are just as important as the new forms of collaborations between them. New strategic alliances of “fast movers” will develop and implement eco-innovations demonstrating desirable alternatives to business-as-usual. In this way, the risk of radical eco-innovation activities can be shared. The role of government will be key to safeguarding “innovation spaces”, both by supporting demand (e.g. through pre-commercial procurement) and engaging with stakeholders directly in the process of eco-innovation.

Key messages to policy makers

There is no simple recipe on how to promote structural change, but there are several actions governments can consider to kick-start the transition. The European Commission's Eco-Innovation Action Plan (EcoAP) could play a key role in placing eco-innovation at the centre of this process. The EIO has developed five key recommendations:

Build a shared understanding of the eco-innovation challenge

Engage with key stakeholders to exchange knowledge and views to prepare the ground for future visions and policy targets of eco-innovation. Use the knowledge gained to underpin European Innovation Partnerships (EIPs) as well as major demonstration projects.

Develop shared visions and scenarios with targets and milestones

Investing in creating a shared understanding and broad agreement on visions is one of the smart ways to assure a fundamental level of coherence. Specific eco-innovation targets and milestones should be co-developed with stakeholders and used to develop a new EU-level Eco-Innovation Roadmap to complement the EcoAP and set key eco-innovation priority areas for Europe.

Take a systemic approach to policies

Design eco-innovation policies to respond to the root causes of systemic problems and use demonstrations (not only R&D projects but also clusters, cities or regions committed to a shared vision and targets) to lead by example. To this end, an "European Innovation Partnership" dedicated to system eco-innovation should be added to the EcoAP.

Measure progress toward the vision and targets

Improve data and develop robust indicators that enable the setting of meaningful targets. In particular, eco-innovation should be made a permanent and compulsory part of the Community Innovation Survey.

Keep innovating modes of governance and government models

To keep up with the complexity, scale and pace of future challenges, integration across ministries and across policy levels should be strengthened. As a first step toward enhanced coordination, the European Commission could establish a horizontal "Eco-Innovation Competence Centre" comprising staff from different Directorates-General (DGs) of the European Commission, European agencies responsible for major EU programmes, and the European Investment Bank.

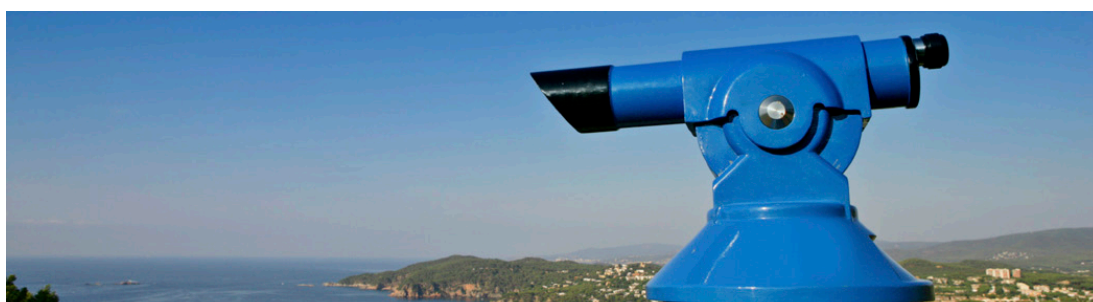


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Key considerations for business

Reduce your costs

Improve your energy and material productivity to reduce both monetary and environmental costs.

Anticipate regulatory trends

Make sure to be ready for new regulatory requirements changing as well as for more stringent norms of business partners.

Think outside the box

Re-consider how you create value for your customers and whether this value could be created in other ways (e.g. from substituting materials to completely new business models).

Engage with people outside your normal networks

Engage with partners along the value and supply chain. Engage with customers. Engage with policy makers.

Develop a long-term vision in light of emerging and expected market trends

Check the resilience of your business model in the future and take potential "slow wins" into consideration today.

For further business recommendations see also the new EIO brochure: *Eco-Innovate! A guide to eco-innovation for SMEs and business coaches.*

Further links and resources:

EC (2011). *Roadmap to a Resource Efficient Europe. Communication from the Commission. COM(2011) 571. Brussels*

UN (2012). *The future we want. Outcome of the United Nations conference on sustainable development. Rio de Janeiro, Brazil.*

EC (2011). *A roadmap for moving to a competitive low carbon economy in 2050. Communication from the Commission. COM(2011) 112. Brussels.*

Bringezu, S. (2011). *Key Elements for Economy-wide Sustainable Resource Management. Responsabilité & Environnement 61: 78-87.*

WWF, ZSL, and Global Footprint Network (2012). *Living Planet Report 2010. Gland: WWF.*

Giljum, S., C. Lutz, A. Jungtitz, M. Bruckner and F. Hinterberger (2011). *European Resource Use and Resource Productivity in a Global Context. In: Ekins, P. and S. Speck (eds.): Environmental Tax Reform (ETR): A Policy for Sustainable Economic Growth. OUP, Oxford.*

EIO (2011). *The Eco-Innovation Challenge: Pathways to a resource-efficient Europe. Eco-Innovation Observatory, Funded by the European Commission, DG Environment, Brussels.*

The EIO resources:



- Detailed analyses of eco-innovation in EU Member States www.eco-innovation.eu/countries
- Analytical, thematic and foresight reports: <http://www.eco-innovation.eu/reports>
- Eco-innovation good practices repository: <http://www.eco-innovation.eu/practice>
- Database: <http://database.eco-innovation.eu/>
- News stream: <http://www.eco-innovation.eu/news>
- Glossary: <http://www.eco-innovation.eu/glossary>