



BRIEFING

Green Economy

SUPPORTING BRIEFING
GREEN ECONOMY IN THE
EUROPEAN UNION

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Summary

A range of elements of the green economy concept are relatively well integrated in EU strategic documents, such as Europe 2020 and the Resource Efficiency Roadmap although the focus in the EU is arguably on achieving green/sustainable growth, rather than achieving a 'green economy'.

Some key elements of the green economy, most notably the aim for absolute decoupling between value creation (growth) and resource use, to grow within limits and stay below critical environmental thresholds, while largely absent from the Europe 2020 strategy and the Resource Efficiency Roadmap, are more fully addressed by sector specific strategies and policies such as the biodiversity strategy.

In eight of the ten sectors identified as key for a transition to a green economy (agriculture, buildings, energy supply, fisheries, forestry, industry, tourism, transport, waste management, water) the EU already has a policy framework in place which would provide a basis for measures to make these sectors more sustainable. Forestry and Tourism issues fall primarily under Member State competence.

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A wide range of EU-funded research projects contribute important insight to help address the green economy challenge for most of the sectors. It is essential that this insight, evidence base and recommendations are taken into account in policy-making and its implementation if the EU is to make a successful and timely transition to a green economy.

1. INTRODUCTION

This briefing aims to provide insights into the EU perspective on and integration of the elements of the green economy concept in its own policy-making. It supports the main briefing on the green economy, identifying a range of “core elements” that seem to be at the heart of the green economy concept and investigating whether and where these “core elements” have translated into changes in both policy orientations at a higher strategic level and in sectoral policies and where there might be some gaps¹. Whenever possible, this supporting briefing highlights EU-commissioned research that supports the mainstreaming of these core elements of the green economy concept into EU policies across the ten economic sectors identified as central to the green economy: agriculture, buildings, energy, fisheries, forestry, industry, tourism, transport, waste management, water. It must be noted, however, that the list of projects is not exhaustive and the use of the ten sectors emphasised by the UNEP Green Economy Initiative does not suggest that green economy activities are unimportant for other sectors. The objective is rather to provide examples of relevant EU-funded research projects that focus on the ten sectors most often talked about in green economy discussions.

First, the briefing looks into the extent to which three of the most prominent strategic horizontal policy documents of relevance to the green economy - Europe’s growth Strategy ‘Europe 2020’ (COM(2010) 2020 final¹), the Commission’s communication A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy (COM(2011) 21)² and 2011

Roadmap to a resource efficient Europe (COM(2011) 571 final)³ – reflect the integration of a range of core ideas underpinning the green economy.

The briefing then provides a detailed analysis of the ten key sectors to determine whether and where commitments to greening exist in the current EU policy framework and which research projects contribute relevant insight.

2. FOUNDATIONS: THE GREEN ECONOMY IN THE EU’S STRATEGIC ORIENTATIONS

According to UNEP’s Green Economy Report⁴: “*in the green economy, growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services.*”

The foundations of the green economy in the EU’s strategic orientations can be found with different levels of focus and explicit commitment across a mix of high level strategic documents and sectoral policies.

Europe 2020 is the EU’s growth strategy for the current decade. It pursues the objective of turning its economy into one that is smart, sustainable and inclusive by 2020 to deliver high levels of employment, productivity and social cohesion. Concretely, the Union set five ambitious objectives on employment, innovation, education, social inclusion and climate/energy to be reached by 2020. While this high-level strategic document does not explicitly refer to the green economy or have key elements core to the green economy concept, such as a commitment to absolute decoupling, sector-specific strategies and policies do. For example, while there is no direct reference in Europe 2020 to the need to enhance or rebuild natural capital as a critical economic asset and to call for measures and investments to prevent the loss of biodiversity and ecosystem services, these issues have, been addressed in the Biodiversity Strategy (COM(2011) 244 final)⁵ published in May 2011.

¹ See also two Supporting Context Briefings: *Green economy and sustainable development: An historical account of the discourse around sustainable development and green economy* by Axel Volkery and Sonia Rouabhi and *Green Economy in the context of Rio +20* by Sirini Withana and Emma Watkins. See webpage: <http://www.unep.org/research4policy/>

The **Flagship initiative for a resource-efficient Europe** under the Europe 2020 Strategy supports the shift towards a resource-efficient, low-carbon economy to achieve sustainable growth. One of the building blocks of the above Flagship initiative is the European Commission's **Roadmap for a resource-efficient Europe**, a Communication adopted on 20 September 2011. The Roadmap builds upon and complements the other initiatives under the resource efficiency flagship, in particular the policy achievements towards a low carbon economy. It also takes into account progress made on the 2005 Thematic Strategy on the Sustainable Use of Natural Resources and the EU's strategy on sustainable development. These more focused strategic documents address a wider range of the elements that form the green economy concept, but do not go into detail about the scale of the greening of the economy nor commit explicitly to the need for absolute decoupling, the ultimate overarching green economy objective. UNEP and OECD details on green economy development and implementation both call for clear objectives and targets. The Resource efficient Europe Flagship and Resource Efficient Europe Roadmap do not themselves set any targets or identify limits within which growth needs to happen to stay under various sustainability thresholds. The Roadmap does, however, set out a stakeholder process for the development of a 2050 target on resource efficiency and also sets a range of targets and milestones for actions that would support a transition to a green economy, such as the commitment to reform environmentally harmful subsidies (EHS) – *“by 2020 EHS will be phased out, with due regard to the impact on people in need”*.

1. Current situation and recent developments in key sectors

1.1. Agriculture

Building green agriculture requires physical capital assets, financial investment, research and capacity building in five key areas: soil fertility management; more efficient and sustainable water use; crop and livestock diversification; biological plant and animal health management; and appropriate farm level mechanisation. In addition, policy changes would particularly focus on the reduction and eventual

removal of ecologically perverse subsidies that distort the true cost of unsustainable agricultural inputs.

EU policy framework

In the Common Agricultural Policy (CAP), developments supporting the greening of this sector include: a targeting of aid at rural development measures promoting environmentally sustainable farming practices, like agri-environment schemes; and enhancing compliance with environmental laws by sanctioning the non-respect for these laws by farmers through a reduction in support payments from the CAP.⁶

EU-funded research

Further greening of the agricultural sector could be supported by the findings of the **SOILSERVICE** project⁷ which investigates the conflicting demands of land use, soil biodiversity and the sustainable delivery of ecosystem goods and services. The FP-7 **CAPRI-RD** project⁸ is concerned with the development and application of a tool to inform policy-makers which is meant to allow the modelling and assessment of the social, economic and environmental impacts of changes to the Common Agricultural Policy and general rural development policies.

1.2. Buildings

A range of policy instruments that have proven particularly cost-effective and efficient for greening the buildings sector including sustainable building standards, often supported with economic and fiscal incentives as well as capacity building efforts.

EU policy framework

Developments supporting the greening of this sector include the adoption of an **Energy Performance of Buildings Directive** (2002/91/EC) in 2002 according to which Member States must apply minimum requirements for the energy performance of new and existing buildings, ensure the certification of their energy performance and require the regular inspection of boilers and air conditioning systems in buildings.⁹

EU-funded research

The **SUPERBUILDINGS** project¹⁰ aims to support further greening by developing:

- 1) Sustainability indicators for buildings;
- 2) Understanding about the needed performance levels considering new and existing buildings, different building types and local requirements;
- 3) Methods for the benchmarking of sustainable buildings (SB); and
- 4) Recommendations for the effective use of benchmarking systems as instruments of steering and in building processes.

The (FP-6) **LENSE** project's¹¹ main findings resulted in the development of a methodology for the assessment of the sustainability performance of existing, new and renovated buildings, which is broadly accepted by the European stakeholders involved in sustainable construction.

1.3. Energy Supply/Renewable Energy

The green economy concept identifies an essential role for government policy in enhancing incentives for investing in renewable energy. A range of necessary time-bound incentives which can make the risk/revenue profile of renewable energy investment more attractive include feed-in-tariffs, direct subsidies and tax credits.

EU policy framework

The **Directive on Renewable Energy** (Directive 2009/28/EC)¹² sets ambitious targets for all Member States, such that the EU will reach a 20% share of energy from renewable sources by 2020 and a 10% share of renewable energy specifically in the transport sector. The Directive also improves the legal framework for promoting renewable electricity, requires national action plans that establish pathways for the development of renewable energy sources including bioenergy, creates cooperation mechanisms to help achieve the targets cost effectively and establishes the sustainability criteria for biofuels.

EU-funded research

The **RECIPES** project has aimed to provide the Commission and stakeholders with recommendations to facilitate appropriate action in order to further the implementation of renewable energy in developing countries. The FP6 **CIRCE** (Climate Change and Impact Research: the Mediterranean Environment) project, described in more detail in the main briefing,

also looked into future energy demand and priority investment needs in the energy sector.

1.4. Fisheries

In order to rebuild overfished and depleted fish stocks, greening the sector requires reorienting this public spending to strengthen fisheries management, and financing a reduction of excess capacity through decommissioning vessels and equitably relocating employment in the short term.

EU policy framework

A range of provisions in the **Regulation on the conservation and sustainable exploitation of fisheries resources** (No 2371/2002 of 20 December 2002) under the Common Fisheries Policy aim to limit fishing mortality and the environmental impact of fishing activities by: adopting recovery plans for stocks outside safe biological limits; adopting management plans to maintain stocks within safe biological limits; setting objectives for sustainable exploitation of stocks; limiting catches; setting the number and type of vessels authorised to fish; limiting fishing effort; adopting technical measures to promote more selective fishing or fishing which has a smaller impact on marine ecosystems and non target species fishing. In December 2011, however, the EU Court of Auditors published a report which came to the conclusion that EU measures had not been able to adapt the capacity of the fishing fleets to available fishing opportunities because of weaknesses in the framework, in the design and implementation of measures to reduce fishing overcapacity¹³.

EU-funded research

The **INDECO** project identified and assessed the applicability of quantitative indicators for the impact of fishing on the ecosystem state, functioning and dynamics, as well as indicators for socio-economic factors and for the effectiveness of different management measures. The **ELME** project aimed to highlight the link between the declining state of the marine environment and human lifestyles in Europe. The project focused on four major European sea areas (the Baltic Sea, Black Sea, Mediterranean Sea and North- East Atlantic) and on four cross-cutting environmental issues: habitat change, eutrophication (over fertilisation of the sea), chemical pollution and fishing. The FP6 **MODELKEY**

project, looking into the modelling of the impacts of key pollutants on marine ecosystems and biodiversity, described in more detail in the main briefing, is also relevant in this context.

1.5. Forestry

Reducing deforestation and increasing reforestation are key, with particular opportunities in tested economic mechanisms and markets which can be replicated and scaled up. These include certified timber schemes, certification for rainforest products, payments for ecosystem services, benefit-sharing schemes and community-based partnerships.

EU policy framework

While Forestry policy is primarily a Member State competence, there are complementary EU policy developments supporting the greening of this sector. Measures foreseen under its 1998 EU Forestry Strategy and the EU Forest Action Plan¹⁴ adopted in 2006 aim to support and enhance sustainable forest management and the multifunctional role of forests. In support of its objective to maintain and appropriately enhance biodiversity, carbon sequestration, integrity health and resilience of forest ecosystems at multiple scales it foresees actions including:

- (a) Facilitate EU compliance with the obligations on climate change mitigation of the UNFCCC10 and its Kyoto Protocol and encourage adaptation to the effects of climate change;
- (b) Contribute towards achieving the revised Community biodiversity objectives for 2010 and beyond;
- (c) Work towards a European Forest Monitoring System; and
- (d) Enhance the protection of EU forests.

EU-funded research

The **JRC FOREST** project¹⁵, aimed to support an integrated approach to aspects of forest monitoring such as biodiversity, carbon sinks, soil conditions, forest pollution and forest fires.

1.6. Industry/Manufacturing

Government regulation and pricing play an important role in guiding industries and consumers on a more

resource efficient path. Given the key stage in the lifecycle of material use manufacturing represents, greening the manufacturing sector implies extending the useful life of manufactured goods by means of greater emphasis on redesign, remanufacturing and recycling to achieve closed-loop manufacturing. Recycling also has a role as it supports the use of by-products of the production process while also providing alternatives for substitution of inputs in manufacturing (e.g. hazardous substances, or potentially some materials). At a broader level, the development of eco-industrial parks provides a basis for the effective implementation of closed-loop manufacturing at a higher level.

EU policy framework

The **IED/IPPC Directive**¹⁶, concerning industrial emissions/integrated pollution prevention and control (Directive 2008/1/EC), is a cornerstone of EU legislation addressing industrial installations with a high pollution potential. Such installations may only be operated if the operator holds a permit containing requirements for the protection of air, water and soil, waste minimisation, accident prevention and, if necessary, site clean-up. These requirements must be based on the principle of best available techniques (BAT).

EU-funded research

The FP-6 **POPA-CTDA** project¹⁷ objective was to assess the issues driving and barriers slowing the development and uptake of cleaner technologies across the energy, agricultural, transport and industrial sectors of the economy. Other relevant projects identified in the main briefing include the **INDI-LINK** project, which gives insights into the best policy instruments to implement relevant aspects of the sustainable development strategy, **TESTNET** (Towards a European verification system for Environmentally sound Technology), **AIRTV**, which looked specifically at environmental technologies in air emissions prevention and reduction and **ECODRIVE**, which explored how best to measure eco-innovation.

1.7. Tourism

The importance of greening the fast growing tourism sector is essential, and can be done, for example, by increasing the involvement of the local community in the tourism value chain.

EU-funded research

Tourism falls under Member State competencies and there is no driving EU policy framework to support the greening of this sector. The European Commission is, however, engaging in consultations with stakeholders with the view of producing a **European Charter for Sustainable and Responsible Tourism**¹⁸.

EU-funded research

The FP7 **In-Context** project¹⁹ aims to study both internal and external contexts of sustainable behaviour and seeks to identify the framework conditions enabling the societal transition towards an ecologically sound, economically successful and culturally diverse future. At the core of the project lies an examination of the interplay between structural conditions and internal factors in building the context for individual behaviour.

1.8. Transport

Policies for greening transport follow three interlinked principles: 1) avoiding or reducing trips by integrating land use and transportation planning, and localised production and consumption 2) shifting to more environmentally efficient modes such as public and non-motorised transport for passengers and to rail and water transport for freight; and 3) improving vehicle and fuel technology to reduce the negative social and environmental effects from each kilometre travelled.

EU policy framework

A **greening transport package** (COM(2008) 433 final)²⁰ was adopted by the Commission in 2008 to steer the European transport sector towards enhanced sustainability. It includes a strategy to ensure that the prices of transport better reflect their real cost to society in terms of environmental damage and congestion; a proposal to enable Member States to help make this happen through more efficient and greener road tolls for lorries; and a proposal for reducing noise pollution from rail freight. In its 2011 **White Paper on EU transport policy from now to 2050** (COM(2011) 144 final)²¹ the Commission proposed new targets which can be expected to frame policy making at the EU, national and municipal level. The proposals included in the roadmap could reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60% by 2050. The high-level working group CARS21 has also underlined the need to 'largely decarbonise transport by 2050'.

Already adopted initiatives include the Eurovignette Directive (1999/62/EC)²² which allows those states that wish to take advantage of it to impose a levy on lorries, taking into account the cost of noise and air pollution caused by road traffic.

EU-funded research

The **REFIT** project²³ aimed to provide the Commission with a comprehensive methodology for assessing the impact of various transport policies and strategies on sustainability through incorporating the economic, environmental and social dimensions of sustainability. Also relevant is the **TRANSFORUM** project²⁴, which focused on policy support and assessment tools and tried to develop commonly accepted indicators used in measuring transport policy impacts; these tools are also compatible with measuring *sustainable* transport. Finally, DG Research also published an overview of sustainable Surface Transport Research under FP7 as a publication which provides information on more than 100 projects in the field of sustainable surface transport, selected in the first two FP7 calls.²⁵

1.9. Waste management

Most urgent needs in this sector are for decoupling waste from economic growth and addressing the fast growing challenges of waste from electrical and electronic equipment (e-waste) and increasing their recycling rate. Emphasis is also put on turning waste materials into valuable resources (e.g. biomass waste is composted or recovered for energy) and reducing food waste due to losses and waste in the entire food chain – including agricultural and post-harvest practices.

EU policy framework

Developments supporting the greening of this sector include the identification of waste prevention and management as one of four top priorities in the EU's Sixth Environment Action Programme (6EAP), setting decoupling waste generation from economic activity as a primary objective. EU's **Waste Framework Directive** (Directive 2008/98/EC)²⁶ established a legal framework for the treatment of waste aimed at the whole waste cycle from generation to disposal, emphasising recovery and recycling. In order to protect the environment, the directive requires Member States to take measures for the treatment of their waste in line with the following hierarchy, listed in order of priority: prevention,

preparing for reuse, recycling, other recovery (e.g. energy recovery), and disposal. Earlier legislation – the ‘recycling Directives’ - already focused on **specific waste streams**, such as Directive 2002/96/EC²⁷ promoting the collection and recycling of electrical and electronic equipment, which provides for the creation of collection schemes where consumers return their used e-waste free of charge to increase the recycling and/or re-use of such products. The other ‘recycling Directives’ address **batteries, packaging and packaging waste and end-of-life vehicles**.

EU-funded research

The FP7 **Zerowin** project²⁸ examines and develops new and innovative approaches and effective strategies for the prevention of waste in industries based on industrial symbiosis. Industrial symbiosis is the regional collaboration of companies from traditionally separated sectors that facilitates the exchange of by-products, energy, water and materials in such a way that the waste from one industry becomes raw material for another. Another FP7 project, **ISSOWAMA**²⁹, aims to raise awareness about the Integrated and Sustainable Waste Management (ISWM) approach using a case study approach focused on good practice examples across a wide range of Asian countries. Participants showcase the wide variety of alternative approaches that have been adopted in the region and draw lessons learned (see main briefing for more detail).

1.10. Water

Growing water scarcity must be mitigated with policies to increase investment in improving water supply and efficiency. Greening the water sector may focus on improving institutional arrangement, entitlement and allocations systems; expanding the use of payments for ecosystem services; reducing input subsidises; and improving water charging and finance arrangements.

EU policy framework

The **Water Framework Directive** (WFD) pursues a wide range of aims to achieve a sustainable water sector, including: expanding the scope of water protection to all waters, surface waters and groundwater; achieving “good status” for all waters by a set deadline; water management based on river basins; “combined approach” of emission limit values and quality standards; getting

the prices right; getting the citizen involved more closely; streamlining legislation. A previous supporting briefing has focused on the contribution of the Directive addressing water scarcity.³⁰ In 2012, the Commission is expected to publish a ‘**Blueprint to Safeguard Europe’s Waters**’. This will include a review on progress of the Communication on water scarcity and droughts and a report on the implementation of the WFD.

EU-funded research

The FP7 **ACQWA** Project³¹ aims to use advanced modelling techniques to quantify the influence of climatic change on the major determinants of river discharge at various time and space scales, and analyse their impact on society and economy (see main briefing for more detail). The FP6 **AquaStress** project’s³² aim was to delivering interdisciplinary methodologies enabling actors at different levels of involvement and at different stages of the planning process to mitigate water stress problems. The Fp6 **NEWATER** project³³ studied and fostered Adaptive Integrated Water Resources Management (AWM) as a concept guiding theory and practice (see main briefing for more detail). Finally, the FP6 **AquaMoney project**³⁴ looked into the issue of water pricing.

1.11. Cross-cutting: Measuring to manage

It is worth noting that we cannot hope to manage what we do not measure, and therefore indicators are a central supporting tool for the green economy. The identification and use of appropriate indicators at both a macroeconomic level and a sectoral level are essential.

EU policy framework

Measures to support the development of indicators of progress and for the integration of environmental matters across sectoral policies include the 2009 Commission Communication “GDP and beyond: Measuring progress in a changing world”. In May 2010, this was followed by the European Parliament’s adoption of the Regulation on European environmental economic accounts (No 691/2011) which aims to aid the collation and comparability of data that is already collected by most Member States on a voluntary basis. The environmental economic accounts to be compiled shall be grouped in three modules (air emissions accounts, environmentally related taxes by economic activity, economy-wide material flow accounts).

EU-funded research

Further greening across sectors through a more appropriate use of indicators across the policy-cycle could be supported by the findings of several projects. The **IN-STREAM** project³⁵, highlights policy needs and opportunities of an increased use of sustainability indicators for selected policy areas (biodiversity, agriculture, fisheries, resource efficiency, climate change and cohesion policy). It also provides guidance on how these could be adopted at different phases of the policy development process.³⁶ In the context of this project a quantitative and qualitative assessment was also performed in order to link mainstream economic indicators with key well-being and sustainability indicators whilst also recommending new indicator approaches (and sets of indicators) based on their robustness, feasibility and suitability to EU policy objectives. Another project, the **OPEN:EU**³⁷, focused on developing a 'Footprint Family' of indicators: Ecological, Carbon and Water footprint to track the multiple and often hidden demands that human consumption makes on the planet's resources and to measure their impacts on the planet. Four policy scenarios were developed which highlighted that, given Europe's economy is now nearly three times larger than what is required for a sustainable world, the current policy framework needs to undergo further transformation for a sustainable Europe to be achieved in 2050. Finally, a study commissioned by DG Research entitled *Sustainable Development Indicators – Overview of relevant FP-funded research and identification³⁸ of further needs*, assessed the main FP6 and selected FP7 projects which have examined (or referred to) indicators supporting the renewed EU Sustainable Development Strategy in order to identify trends and gaps in the research agenda and produce recommendations on further research in light of activities and uses of indicators within the EU and beyond. The report includes a review of over 40 such research projects selected that develop relevant indicators.

2. The way ahead

As the green economy is relevant beyond the EU, the upcoming Rio+20 conference is an important event for discussion of the green economy. Indeed, this is one of two topics of discussion, the other being the international governance of sustainable development. The EU's position in the conference is presented in its Communication Rio+20: towards the green economy and better governance (COM(201) 363 final) published in June 2011. The EU considers that Rio+20 can mark *"the start of an accelerated and profound, world-wide transition towards a green economy – an economy that generates growth, creates jobs and eradicates poverty by investing in and preserving the natural capital offers upon which the long-term survival of our planet depends. It can also launch the needed reform of international sustainable development governance"*. To guarantee commitment beyond Rio+20, the Communication calls for the development of a '**Green Economy Roadmap**' to help countries accelerate progress towards the green economy. This Communication is particularly useful for better understanding the EU's current position on the green economy (for more information see *Supporting Context Briefing #1: Green Economy in the context of Rio+20*).

For the EU's further transformation towards a green economy, the 7th Environmental Action Programme (7EAP), which is currently under development, could be a mechanism for achieving the transition to the green economy³⁹. The 7th EAP could take the environment as the starting point and set out how the sustainability challenge needs to relate to a suite of policies across the ten key sectors to a transition to a green economy. Concrete measures, focus could be on institutionalising targets and indicators on resource efficiency by 2013 for key resources (land, water, materials, carbon and nutrients), helping policy integration and the monitoring of related efforts. In addition, the long-term policy transition by 2050 would suppose that Europe's place in the biosphere be reappraised, drawing on the emerging scientific discussion on planetary boundaries and critical thresholds and the need to define safe economic operating spaces⁴⁰. It would also suppose associated consumption issues and critical trends be assessed and addressed throughout the EU acquis, policies and their implementation.

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