



Manual of European Environmental Policy

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This section is the text of the Manual as published in 2012. It is therefore important to note the following:

- The contents have not been updated since 2012 and no guarantee is given of the accuracy of the contents given potential subsequent developments.
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Overview of EU policy: Resource use

Introduction

To produce the products and commodities desired by our societies requires the use of a multiplicity of finite resources such as minerals, metals and non-renewable energy. This consumption of commodities has an impact on the environment at every stage from the extraction of the raw material, through the processing into products and the use of these products, to their disposal. To deliver more sustainable societies we need to find a way of reducing the impact of our consumption through all the different production, use and end of life phases and importantly encourage more sustainable consumption patterns, that is to deliver more environmentally responsible goods that are used by consumers in a more environmentally responsible way. As stated by Environment Commissioner Janez Potočnik in 2010 'If Europe is to have a sustainable future, it needs to become more resource-efficient and less polluting'.

In an attempt to push the EU towards more sustainable patterns of consumption, the European Commission, Parliament and Council have adopted a variety of laws, policies and guidance documents aimed at improving the efficiency of our use of natural resources and reducing environmental impacts throughout a product's life cycle. These are supported by measures aimed at improving awareness and understanding of the impacts of the products we use and funding designed to promote the eco-innovation. These are further complimented by the wider environmental acquis that, for example, controls pollution associated with specific elements of a product chain whether that be industrial installations processing raw materials and products (regulated under [industry policies](#)) or the management of resultant waste installations (regulated by [waste law](#)).

Policies promoting improved resource management

The better management of resources, limiting consumption patterns and reducing the environmental footprint associated with different products is an evolving area of EU law making. There are several pressures driving the development of EU policies in this area:

- The desire to limit waste production and prevent waste by eliminating inefficiencies and contaminants during product design and development rather than during end of life phases.
- An awareness of the impacts of consumption within Europe on the European environment, but also on third countries. Europe's environmental footprint extends beyond its borders and by addressing consumption issues and product design is it possible to limit this.
- The need to address the life cycle impacts of products and materials.
- That the management of the environmental impacts of large installations can only go so far in delivering environmental protection and our consumption patterns need to change to deliver a sustainable society.

EU policy in this field can be conceived of as a structure of strategic policies focusing on resource use and consumption patterns – setting the proposed direction of law making – and policies explicitly aimed to provide the tools necessary to deliver the goals of better resource

use, the prevention of waste (both the reduction in quantity and in the hazardousness of end of life materials) and improved consumption patterns. These tool-based policies can be divided between measures to improve consumer knowledge, specifically labelling; measures to green product chains; and measures to support the innovation and adoption of more environmentally responsible technologies. Table 1 sets out the key policies in this field.

Table 1. Key policy measures linked to resource use in Europe – each of these policies are described in detail either within this section or within dedicated sections within this Manual.

Policy area	Description of area	Title of measure	Type of policy
Setting the Direction for natural resource use	These dossiers set out the direction for efforts related to the EU's use of natural resources and greening consumption.	Thematic Strategy on the sustainable use of resources	Strategic policy dossier – setting the direction for natural resource use policy and concepts of life cycle thinking.
		Sustainable Consumption and Production and Sustainable Industry Action Plan	Strategic policy dossier – setting the direction of policies focused on greening consumption and production processes, although there is a more limited focus on efforts to deliver the former.
		Raw Materials Initiative (COM(2008)699)	Strategic policy dossier – setting efforts related to the sourcing of raw materials. This Communication (COM(2008)699) contains some contradictions with a focus both on recycling and sustainable consumption, but also focusing on securing resource supplies for Europe. This is not strictly part of the environmental acquis, but should be noted in the context of discussions on natural resource use.
		Innovating for Sustainable Growth: A Bioeconomy for Europe (COM(2012)60 and Commission Staff Working Document)	Strategic policy dossier – setting the direction of efforts to encourage the sustainable use of renewable biological resources.
Improving consumer knowledge	These efforts focus on the use of labelling as a tool better to help inform the consumer	Regulation on an EU Eco-labelling	Sets out a legislative framework for the application of an EU certified eco-label to inform consumers.

	allowing them to make distinctions between products based on their environmental performance.	Directive on the labelling of household appliances for energy and other resource use	Sets out the legislative framework for the adoption of labelling standards for energy using appliances.
Greening Products and Product Design	Greening product design is central to the reducing that product's environmental footprint. The use of hazardous substances can be reduced, materials restricted and products designed to be more easily reused or recycled. Product policy is an important field for the EU given the EU's internal market. By creating product standards applicable across the EU market place it is possible for Europe to influence environmental impact beyond its borders.	Integrated Product Policy	Strategic dossier setting out an approach to the management and consumption of products focusing of life cycle impacts.
		End of Life Vehicles Directive	Legislative measure setting out binding requirements for the end of use of vehicles and limiting the use of hazardous substances during their production.
		Packaging and Packaging Waste Directive	Legislative measure setting out binding requirements and targets for the management of waste packaging and for limiting the use of hazardous substances within packaging materials.
		Batteries and Waste Batteries Directive	Legislative measure setting out binding requirements for the end of use of batteries and accumulators and restricting the levels of hazardous substances within these products.
		Waste Electrical and Electronic Equipment (WEEE) Directive and the Restriction of Hazardous Substances (ROHS)	WEEE is a legislative measure setting binding requirements for the end of life management of electronic and electrical equipment, it also specifies some design requirements for EEE. ROHS sets out legally binding restrictions on the content of hazardous substances within EEE.
		Energy Using Products Directive	Sets out a legislative framework for the adoption of product standards specifying the efficiency and broader environmental footprint applicable to different products.
Supporting Eco-innovation	The EU has a wide array of strategic policies and guidance documents in place to support eco-innovation, which is seen as key to delivering the Lisbon	Environmental Technology Action Plan (ETAP) (COM(2004)38)	ETAP is a series of technology platforms intended to foster eco-innovation through funding and the sharing of ideas. COM(2004)38 sets out the framework of ETAP, which coordinates funding support and

	<p>Strategy. This includes developing policy tools to encourage the roll out of positive technologies such as GPP, innovation platforms for the sharing of ideas (ETAP) and funding for technology development and adoption within the EU funding programmes.</p>		innovation within selected priority areas. Under ETAP each Member State has developed its own road map on eco-innovation
		Greening Public Procurement (GPP) Initiative	GPP is seen as a key mechanism for promoting green technologies with the adoption of GPP specified in several key policy dossiers from the Natural resources Thematic Strategy to the SCP Action Plan and Sustainable Development Strategy. While the EU has no policy dossiers on GPP it has adopted guidance and holds a range of materials supporting efforts on this in Member States.
		Research, Development and Funding	Various of the EU's funding programmes contain elements related to the support of eco-innovation. These include the Competitiveness and Innovation Programme , LIFE+ , the Research Framework Programmes .

Thematic strategy on natural resources

Following over three years of debate and consultation with stakeholders, the European Commission published the Thematic Strategy on Sustainable Use of Natural Resources (Natural Resources Thematic Strategy), in December 2005 alongside the Thematic Strategy on Waste Prevention and Recycling ([COM\(2005\)670](#)). This represented the first initiative at EU level taking an overall approach to tackling the environmental aspects of resource use. The final Strategy was preceded on 1 October 2003 by a Communication entitled ‘Towards a Thematic Strategy on the Sustainable Use of Natural Resources’ ([COM\(2003\)572](#)), which set out initial ideas.

The stated aim of the Natural Resources Thematic Strategy is to ‘reduce the negative environmental impacts generated by the use of natural resources in a growing economy’. In practice this means ‘reducing the environmental impact of resource use while at the same time improving resource productivity overall across the EU economy’. When promoting the Natural Resources Thematic Strategy the Commission used the mantra, ‘More value – Less impact – Better alternatives’ by way of explaining its aims. This is to be achieved over the whole life cycle, thus avoiding environmental impacts being shifted from one phase to another or to other countries.

Although the objectives of the Natural Resources Thematic Strategy suggest a reduction in negative environmental impacts, an end point is not specified. There is a vague reference in the text to ‘staying below the threshold of overexploitation’ for renewable resources, but

there is no specific statement highlighting the extent of ambition of the Natural Resources Thematic Strategy, so that no reference is made in the aims to ultimately achieving sustainable levels of resource use. The strategy looks more to reduce the negative impacts of the resources already used, that is ‘achieving more sustainable use of natural resources’, rather than suggesting a shift to sustainable consumption patterns.

It was originally envisaged that the Natural Resources Thematic Strategy would set quantitative targets ‘for resource efficiency and the diminished use of resources’. It was felt, however, that this was not possible at the time of adoption given the state of knowledge. To take efforts forward, the Natural Resources Thematic Strategy identified two key interlinked initiatives:

- [Integration of environmental](#) concerns into other policies.
- The need to consider the whole life cycle of resource use, increasing understanding and allowing policy makers to better prioritize action – this is specifically being taken forward under the Waste Thematic Strategy (see above) and initiatives such as integrated product policy (see below).

The Commission claims that the Natural Resources Thematic Strategy provides ‘an analytical framework with a view to allowing the environmental impact of resource use to be routinely factored into public policymaking’. This is a laudable aim, but one which presents a major challenge. Reflecting this challenge, the Natural Resources Thematic Strategy anticipates a long process of change, with a proposed time horizon of 25 years. The types of actions proposed in the Natural Resources Thematic Strategy are set out in detail in Table 2. This includes the following types of actions:

- Improve our understanding and knowledge of European resource use, its negative environmental impact and significance in the EU and globally.
- Develop tools to monitor and report progress in the EU, Member States and economic sectors.
- Foster the application of strategic approaches and processes both in economic sectors and in the Member States and encourage them to develop related plans and programmes.
- Raise awareness among stakeholders and citizens of the significant negative environmental impact of resource use.

Table 2. Actions proposed in the Natural Resources Thematic Strategy and Timetables

Actions proposed	Timetable
Develop the data set and indicators to allow targets to be set that would clearly server the purpose of reducing environmental impacts in a growing economy.	Next five to ten years.
<p>The European Commission will develop:</p> <ul style="list-style-type: none"> • Indicators to measure progress in efficiency and productivity in the use of natural resources, including energy. • Resources specific indicators to evaluate how negative environmental impacts have been decoupled from resource use. • An overall indicators package to measure progress in resources use by the EU (eco-efficiency indicator). 	By 2008.
European Data Centre on natural resources – This will bring together all the available information for monitoring, analysis and to provide policy-relevant information to Decision makers. The Statistical Office of the EU (Eurostat) will coordinate the work of other information providers (in particular the Joint Research Centre and the European Environment Agency) to set up the Data Centre.	To be operational 12 months after the strategy's adoption.
Proposed that Member States develop national measures and programmes on the sustainable use of natural resources to achieve the strategy's objectives. These measures and programmes should focus on resource use which has the most significant environmental impacts.	No date set.
Commission to set up a High Level Forum composed of senior officials responsible for the development of natural resource policy in Member States, representatives from the Commission and, as appropriate, other stakeholder groups. This group is envisaged to facilitate the development of these national measures. Group to consider the use of market based instruments in managing natural resources.	To be set up 'soon after the strategy's adoption'.
Commission to identify measures taken in Member States that could be usefully applied EU wide.	No date set.
Setting up of an International Panel on the sustainable use of natural resources in cooperation with UNEP.	No date set.
Incorporating natural resource concerns into sectoral initiatives under the EU Strategy for Jobs and Growth.	Ongoing.
Review of the progress made in achieving the strategy's objective.	2010 and then every five years.

In some cases new initiatives would be required, but existing policies were also to be utilized and life cycle resource concerns incorporated into policy processes, for example through the impact assessment process applied to new EU legislation. The Commission suggested action is needed at all levels of governance from local to international. One key initiative of note was the proposal that Member States develop national measures, programmes and, where possible, targets on sustainable use of natural resources (although no timetable for this process was suggested). This process would be accompanied by an EU-level High Level Group composed of Member State representatives, Commission officials and other appropriate stakeholders. It was felt that action was best completed at Member State level

given that: they have a wider range of policy tools available – specifically economic instruments that are difficult to introduce at an EU level; have responsibility for education and training curricula; and are better placed to pursue consumer policies aimed at changing behaviour. The legal gravitas of the Natural Resources Thematic Strategy to ensure that these actions are undertaken is, however, unclear. The Natural Resources Thematic Strategy, unlike others, was not accompanied by any legislative proposals, making it difficult to envisage exactly how it would make a difference to resource use. There still remains more work to be done to develop a clear way forward. A key focus of work into the future will be the development of goals and targets to assess resource use. It should be taken into consideration that more extensive targets in this area may be imposed at a local level, not only in relation to waste management, but more broadly. Reducing resource use and its impacts is likely to remain a key policy challenge into the future at both the Member State and EU levels. The Natural Resources Thematic Strategy will be reviewed by the Commission in the Autumn of 2010.

Raw Materials Initiative

In 2008 the European Commission published its Raw Materials Initiative ([COM\(2008\)699](#)), as a first step towards developing a more coherent EU strategy to address the critical dependence of the EU on certain raw materials. The Initiative is based on three pillars: fair access to non-energy raw materials from international markets; fostering sustainable supply of raw materials from EU sources; and boosting resource efficiency through increased recycling and lower resource consumption. Steps in achieving these goals were to include: defining critical raw materials; launching EU strategic raw materials diplomacy with major industrialised and resource rich countries; addressing access to and sustainable management of raw materials in trade agreements; promoting sustainable access to raw materials in the field of development policy through budget support and cooperation strategies; improving the regulatory framework related to access to land; increasing the EU knowledge base by encouraging better networking between national geological surveys; and promoting innovative exploration and extraction technologies, recycling, materials substitution and resource efficiency.

Since the Initiative was announced, an ad-hoc Working Group of the Raw Materials Supply Group has produced a list of 14 ‘critical raw materials for the EU’: antimony, beryllium, cobalt, fluor spar, gallium, germanium, graphite, indium, magnesium, niobium, PGMs (Platinum Group Metals), rare earths, tantalum and tungsten. These materials are deemed to be economically important (notably for emerging technologies including batteries and fuel cells, photovoltaics, fibre optics, micro-capacitors, seawater desalination and laser technology) and in relatively short supply. A parallel report on ‘best practices in the area of land-use planning and permitting’ recommended that a National Minerals Policy and a Sustainable Minerals Policy are established to ensure the economically and environmentally sustainable extraction of mineral resources. In addition, a public consultation that closed on 19 September 2010 sought stakeholder input to the future development of the Initiative.

Following these developments, the Commission published a Communication in February 2011 on ‘tackling the challenges in commodity markets and on raw materials’ ([COM\(2011\)25](#)). The Communication is effectively an update to the original Initiative, and maintains the three pillars of the Initiative (sustainable international access, sustainable EU supply and improved resource efficiency and recycling). Recycling features more strongly in the updated Communication; there is a focus on improving waste legislation implementation

and enforcement (in particular the [Waste Shipment Regulation](#)); and several areas of progress are highlighted, including the publication of guidelines clarifying rules on mining in protected natural areas and greater integration of raw materials issues into EU development and trade policies. The inclusion of issues relating to commodity markets made the Communication rather unwieldy, but did serve to highlight the serious need for a more coherent, detailed, EU natural resources strategy.

Resource Efficient Europe Flagship Initiative

In January 2011 the European Commission published ‘A resource-efficient Europe – Flagship initiative of the Europe 2020 Strategy’ ([COM\(2011\)21](#)). This ‘flagship initiative’ under the Europe 2020 strategy (the EU's strategy for growth to 2020) aims to support the shift towards a resource-efficient, low-carbon economy to achieve sustainable growth. It sees increasing resource efficiency as vital to securing growth and jobs, providing major economic opportunities, improving productivity, reducing costs and boosting competitiveness. The Flagship Initiative therefore provides a long-term framework for actions in many policy areas, supporting policies in the areas of climate change, energy, transport, industry, raw materials, agriculture, fisheries, biodiversity and regional development.

The Communication sets out three conditions to be fulfilled to achieve a resource efficient and low-carbon economy: coordinated action, with political visibility and support, in a range of policy areas; urgent action (given long investment lead-in times); and empowering consumers to consume in a resource-efficient way, to drive continuous innovation and ensure that efficiency gains are not lost.

The Flagship Initiative is a positive evolution from the 2005 Natural Resources Strategy, especially as it links a wide range of policy areas with important resource relevance, develops policy thinking on some issues (particularly on the types of indicators needing to be developed to address environmental impacts) and recognises the need to address other areas yet to be addressed by EU policy (for example, consumption and production behaviour). However, whilst the document brings together activities in a range of areas under an umbrella of ‘resource efficiency’, it does not provide details on how these other areas can better or more directly address resources issues, and does not mention how areas where activity is not already underway (for example, industrial and innovation policies, fiscal instruments, consumption and behaviour) will be developed.

The Flagship Initiative does however highlight several specific initiatives to be tabled during 2011, including: a low-carbon economy roadmap 2050; a 2020 energy efficiency plan (for both of these see the section on [overview of EU policy: climate change](#)); a white paper on the future of transport; an energy roadmap 2050; a roadmap for a resource-efficient Europe; reforms of the Common Agricultural Policy, the Common Fisheries Policy, Cohesion Policy, energy infrastructure and trans-European transport networks; a new EU biodiversity strategy for 2020; and measures regarding commodity markets and on raw materials. Public consultations have already been held to kick-start the development of several of these initiatives.

Roadmap to a resource-efficient Europe

After controversial internal discussions, the ‘Roadmap to a resource-efficient Europe’ ([COM\(2011\)571](#)) was published by the Commission on 20 September 2011, together with a Commission Staff Working Paper providing background analysis (SEC(2011)1067 [Part 1](#) and [Part 2](#)) and a Communication on the progress of the Thematic Strategy on the Sustainable Use of Natural Resources ([SEC\(2011\)1068](#)).

The starting point for the Roadmap is rising global demand, constraints on natural resource supply and global environmental degradation, which require a transformation of Europe's economy into a sustainable one by 2050. The Roadmap highlights that a transformation of Europe's economy needs to go hand-in-hand with a strategy to preserve Europe's natural capital and ecosystem services and a focus on key sectors. For each of these three building blocks the Roadmap describes in a three-staged approach:

1. A general vision for 2050 (lacking for sectoral action).
2. Intermediate milestones for 2020.
3. A selection of policy actions for three main themes.

The Roadmap describes that a transformed European economy by 2050 should manage all resources sustainably, having met policy objectives on climate change and biodiversity. Intermediate milestones are defined for four main areas of policy action: sustainable consumption and production (SCP); turning waste into a resource; supporting research and innovation; and environmentally harmful subsidies and getting the prices right.

To help with tracking progress the Commission proposes two levels of indicators:

- ‘Resource productivity’ as a headline indicator, to measure improvements in economic performance while reducing pressure on natural resources; and
- A set of complementary indicators on key natural resources such as water, land, materials and carbon, to take account of the EU's global resource consumption.

The Roadmap stipulates that natural capital and ecosystem services are properly valued and accounted for by 2050. It describes milestones for policy actions in a further six areas, including biodiversity, minerals and metals, water, air, land and soils, and marine resources and outlines for each a sample of policy actions.

The Roadmap does not set out a vision for 2050 for key sectoral action, but notes that housing, food and mobility are the key sectors as they account for 70-80 per cent of environmental impacts in industrialised countries. For 2020, milestones are formulated along the lines of existing and proposed policy action at the EU level.

Progress shall be achieved by a broad mixture of actions at the European and Member State levels. While the Resource Efficiency Flagship Initiative called for clear targets and indicators, the Roadmap abstains from setting clear caps for different natural resources. Targets and indicators shall be developed by 2013 through a ‘participative process’ involving policy makers, experts, NGOs, business and consumers, with the aim of providing predictability and transparency.

The section of the Roadmap on ‘transforming the economy’ suggests a mixture of voluntary and mandatory measures should be used, including strengthening green public procurement, more life-cycle thinking on products, helping businesses to improve resource efficiency, full implementation of EU waste law and reviewing waste targets, stimulating demand for recycled materials and supporting recycling facilities, boosting research and innovation spending, phasing out environmentally harmful subsidies by 2020, and achieving a ‘major shift’ from taxation of labour towards environmental taxation, also by 2020. The Roadmap also recommends adapting prices to reflect the real costs of resource use, in particular the environmental and health costs.

Policy actions to preserve natural capital and ecosystem services include:

- On **ecosystem services**: The Commission intends, together with Member States, to map the state of ecosystems and their services by 2014, assessing their economic value and promoting inclusion of these values into EU and national accounting and reporting systems by 2020; innovative financial and market-based instruments shall be promoted (including a possible establishment of a biodiversity financing facility and payments for ecosystems services); and Communications shall be put forward on Green Infrastructure and Restoration (2012), and a ‘No Net Loss’ initiative (2015);
- On **biodiversity**, the commitments refer to the objectives of the EU Biodiversity Strategy: halting biodiversity loss and ecosystem services degradation by 2020 and ‘as far as feasible’ restoring biodiversity; and ‘significantly strengthen[ed]’ efforts by the Commission to integrate biodiversity protection and ecosystem actions into other Community policies (particularly agriculture and fisheries);
- **Minerals and metals** are deemed to be adequately dealt with by the Raw Materials Initiative and are therefore only mentioned in passing;
- On **water**: the Blueprint to safeguard Europe's water is supposed to define a cost-effective strategy (see section on [overview of EU policy: water and marine](#)); Member States' River Basin Management Plans (RMBPs) will be assessed (2011); water efficiency targets and measures, together with better demand management through economic instruments shall be assessed and proposed (2012); and Member States should set water efficiency targets for 2020 at River Basin level;
- On **clean air**: a comprehensive review of all EU air pollution policies by 2013, leading to an upgraded strategy that looks beyond 2020 and assesses the scope for further emissions reductions from key sources;
- On **land and soils**: guidelines on limiting soil sealing are to be published (2012); an inventory of contaminated sites shall be set up (by 2015); indirect land use change (ILUC) due to renewable energy policy ‘will be addressed’; a Communication on land use is foreseen (2014); and an Innovation Partnership on agricultural productivity and sustainability is foreseen to secure soil functionality; and
- On **marine resources**: the [Marine Strategy Framework Directive](#) ‘should be implemented’ and marine protected areas designated by the Member States; reform of the Common Fisheries Policy (see section on [fisheries](#)) should aim to ensure sustainable fisheries management; proposals shall be made to phase out all environmentally harmful fisheries subsidies; policy measures on management and planning of natural coastal and marine capital are to be proposed (2012); and Communications shall be published on ‘Climate change adaptation in the coast and the sea’ (2012) and on ‘Blue Growth’ (identifying new business opportunities in the maritime and coastal economy, 2012). Work will also be done on marine litter

strategies (2012) and measures to achieve good environmental status in marine waters and an extensive network of protected areas by 2020.

Policy actions are outlined for three key sectors:

- On **food**: a Communication on sustainable food is announced (by 2013); sustainability criteria shall be developed for key food commodities (by 2014); and Member States shall be invited to address food wastage in their National Waste Prevention Programmes (2013);
- On **buildings**: resource efficient building practices should be communicated and promoted; and incentives should be developed for resource-efficient buildings and to promote the sustainable use of wood in construction (Communications on sustainable buildings (2013) and on the sustainable competitiveness of the construction sector (2011)); and
- On **mobility**, the Roadmap states that the Commission will ensure the initiatives in the Transport White Paper (see section on [transport](#)) are implemented with resource efficiency objectives in mind, particularly by internalisation of external costs, although no real detail is given on how this will be achieved.

The Roadmap is seen not as the ‘ultimate response’ to all resource efficiency challenges, but rather as a ‘first step towards designing a coherent action framework that cuts across different policy areas and sectors’. The Commission will set about prepare the various policy and legislative proposals to implement the Roadmap, and calls on public and private sector actors to assist in achieving its objectives.

Bioeconomy Action Plan

In March 2012, the European Commission published a Communication ([COM\(2012\)60](#)) entitled ‘Innovating for Sustainable Growth: A Bioeconomy for Europe’, together with a Commission Staff Working Paper providing more background ([SWD\(2012\)11](#)). The Communication aimed to encourage the sustainable use of renewable biological resources, and contained a twelve-point ‘Bioeconomy Action Plan’ to this end, with actions grouped under three headings:

- Investments in research, innovation and skills:
 1. Ensure substantial EU and national funding, private investment and partnering, and coherence and synergies between public programmes.
 2. Increase research and innovation to improve the knowledge base, develop new technologies and provide scientific advice for policy decisions.
 3. Promote the uptake and diffusion of innovation in bioeconomy sectors and expand support to networks, advisory and business support services.
 4. Build human capacity to support the growth of the bioeconomy, by organising university fora and vocational training.
- Reinforced policy interaction and stakeholder engagement:
 1. Create a ‘Bioeconomy Panel’ to help enhance coherence between policies, initiatives and economic sectors at EU level, and encourage similar Member State and regional level panels.

2. Establish a 'Bioeconomy Observatory' to regularly assess the progress and impact of the bioeconomy and develop forward-looking and modelling tools (by 2012).
 3. Support the development of regional and national bioeconomy strategies by mapping existing research and innovation, competence centres and infrastructures in the EU (by 2015).
 4. Develop international cooperation on bioeconomy research and innovation to jointly address global challenges (e.g. food security and climate change) and the issue of sustainable biomass supply (from 2012).
- Enhancement of markets and competitiveness in bioeconomy:
 1. Provide the knowledge base for sustainable intensification of primary production, improve the understanding of biomass availability (including agricultural and forestry residues and waste), and support the development of a methodology for the calculation of environmental footprints.
 2. Promote the creation of networks with the required logistics for integrated and diversified biorefineries, demonstration and pilot plants across Europe.
 3. Support the expansion of new markets by developing standards and standardised sustainability assessment methodologies; facilitate green procurement for bio-based products by developing labels, an initial European product information list and training.
 4. Develop science-based approaches to inform consumers about product properties and to promote healthy and sustainable lifestyles.

The Action Plan is seen as building on FP7 (the Seventh Framework Programme for Research and Technological Development), Horizon 2020 (The EU Framework Programme for Research and Innovation) and other existing policy initiatives such as the European Innovation Partnerships (EIPs), as well as inviting Member States and stakeholders to engage.