Eco-innovation in Germany

EIO Country Profile

2013
The Eco-Innovation Observatory functions as a platform for the structured collection and analysis of an extensive range of eco-innovation information, gathered from across the European Union and key economic regions around the globe, providing a much-needed integrated information source on eco-innovation for companies and innovation service providers, as well as providing a solid decision-making basis for policy development.

The Observatory approaches eco-innovation as a persuasive phenomenon present in all economic sectors and therefore relevant for all types of innovation, defining eco-innovation as:

“Eco-innovation is any innovation that reduces the use of natural resources and decreases the release of harmful substances across the whole life-cycle”.

To find out more, visit www.eco-innovation.eu

Any views or opinions expressed in this report are solely those of the authors and do not necessarily reflect the position of the European Commission.
Eco-Innovation Observatory

Country Profile 2013: Germany

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Acknowledgments

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A note to Readers

Any views or opinions expressed in this report are solely those of the authors and do not necessarily reflect the position of the European Union. A number of companies are presented as illustrative examples of eco-innovation in this report. The EIO does not endorse these companies and is not an exhaustive source of information on innovation at the company level.

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Summary

Challenges in Germany are related to an ageing society, rising resource prices, and significant import dependencies for metals and other raw materials needed for manufacturing and supplying energy. The need for “greening” the economy has been recognised by government and business, but Germany will not meet many of its sustainability targets if current trends continue. The challenge for eco-innovation is finding cross-sectoral solutions that optimise synergies between production and consumption and drive a structural transformation of the German economy to meet the needs of a changing population.

In comparison to the rest of the EU, Germany ranks 3rd on the Eco-Innovation Scoreboard. Its strengths are shown in the areas of socio-economic outcomes and eco-innovation outputs whereas there is still ample space to catch-up to best performing Member States in terms of resource efficiency outcomes. The analysis of emerging trends reveals that Germany continues to have a strong environmental technologies industry, and will continue to be a world leader in green tech eco-innovations well into the future. Increasingly research initiatives focus on finding cross-cutting solutions and on joining efforts between industry, society, and government. While these types of activities are growing, they remain the exception and not the norm in Germany. The most common barriers and drivers for eco-innovation relate to economic factors—with rising costs for energy and materials driving eco-innovation and the need for long-term investments hindering it—and the regulatory framework. Germany has established particularly strong policy frameworks in the areas of climate, renewable energy and waste, characterised by clear targets, technology-forcing regulations, standards and incentives. Yet, barriers remain in the form of inadequate funding for sustainability research, perverse subsidies, weak green public procurement levels, a lack of legally binding CSR reporting requirements, overreliance on information campaigns and inability to integrate the inertia of social movements into policy frameworks, as well as a lack of learning processes in transition governance. Nevertheless, the creation of the German Resource Efficiency Programme (ProgRess) has started to bring resources onto the political agenda, and examples of innovative funding initiatives, clusters, networks and new eco-innovative products and services on the market show encouraging trends for Germany.
1 | Introduction

Nearly 82 million people live in Germany, with half living in urban areas (Destatis 2012). Population has been declining since 2003 and 69 million people are expected to live in Germany in 2050 (Destatis 2006). At that time there will be twice as many older people than younger ones, making an ageing population and smaller workforce significant structural changes posing challenges for the future.

The structure of Germany’s economy has been shifting over the last 20 years: service sectors have enjoyed rapid growth since 1991 and the production, mining, and construction industries have decreased in importance (Destatis 2012b). This structural shift has contributed to a relative decoupling of economic growth and resource use. However, the rate of decoupling has not been high enough to keep Germany on track to meeting its target of doubling resource productivity by 2020. Indeed, while Germany has a strong environmental policy framework, it will fail to meet its targets in the areas of energy productivity, energy consumption, biodiversity, land use, mobility and farming if current trends continue (ibid). Because many of these targets are interrelated, key challenges relate to bridging sectoral divides and promoting systemic changes. For instance, land take for settlements and infrastructure contributes to the loss of biodiversity and to the demand for construction minerals (increasing Germany’s material footprint). One factor contributing to land take is the sharp increase in living space per capita, which has also contributed to the increased demand for energy (ibid). Meeting sustainability targets in Germany will require new technological solutions, but also relate to life-style choices and social innovation.

One area in which Germany is well on its way to meeting its sustainability targets is in renewable energy, in particular due to its focus on the so-called “energy transition” in recent years. Indeed, renewable energy technologies have become a booming part of Germany’s competitive environmental technology and resource efficiency industry. Environmental technology currently accounts for 11% of Germany’s GDP and is expected to rise to 15% by 2025 (BMU 2012a). Nevertheless, the manufacture of green tech, like the rest of the German manufacturing sector, faces rising material costs. Germany is dependent on imports of raw materials, in particular metals, and rising material costs are increasingly playing a role in business decisions as companies face unprecedented price spikes and volatility. Future challenges relate not only to increasing efficiency in production, but also finding ways to enhance circularity for closed-cycle management of supply chains. In 2009, 13% of the raw materials requirement of German industry was met by secondary raw materials, and one of the main objectives of the new “German Resource Efficiency Programme (ProgRess)” is enhancing this share (BMU 2012b). All in all, this implies that eco-innovation in technological know-how, business infrastructure, as well as social structures will be necessary to change trends and simultaneously address environmental, social, and economic challenges in Germany.

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1 Growing by 46% to account for 70% of gross value added in 2010.
2 Accounting for 30% of gross value added in 1991 and less than 25% in 2010.
3 If the pace is maintained, the indicator would have covered around 82% of the distance in 2020.
4 At 87 ha per day in 2010 compared to the target of 30 ha per day.
5 Which rose by nearly 20% between 1993 and 2006.
6 The share of imported goods in all primary materials used increased from 26% in 1994 to 39% in 2010.
7 85% of companies questioned by a 2010 survey mentioned that resource and energy prices were important factors influencing their business situation, compared to 75% for labour costs and 50% for shortage of qualified personnel (as cited by BMU 2012b).
2 | Eco-innovation performance

The analysis in this section is based on the EU 28 Eco-innovation scoreboard (Eco-IS) for the year 2013. Eco-IS via its composite Eco-innovation index demonstrates the eco-innovation performance of a country compared with the EU average and with the EU top performers. Eco-IS is based on 16 indicators which are aggregated into five components: eco-innovation inputs, eco-innovation activities and eco-innovation outputs as well as environmental outcomes and socio-economic outcomes.

Germany has the third highest eco-innovation performance in the EU according to the 2013 Eco-Innovation Scoreboard (Figure 2.1). In comparison to the 2012 Scoreboard Germany’s performance has improved by 1 place (in 2012 Germany was ranked fourth). The major reason for this shift is changes in the way the indicators for especially socio-economic outcomes have been calculated.

![Figure 2.1 EU28 Eco-innovation scoreboard 2013, composite index](image)

Source: EIO, 2013

The spider diagram (Figure 2.2) shows that Germany is above average performance in all 5 components of the eco-innovation scoreboard. It is particularly strong in the component socio-economic outputs (ranked 2nd behind the UK) and eco-innovation outputs (ranked 3rd behind Denmark and Sweden). As regards socio-economic outcomes, Germany scores a close second for indicators on exports and turnover in eco-industries, but is below the EU average for employment in eco-industries. As regards eco-innovation outputs, Germany performs well with regard to eco-innovation patents (tying Denmark for first place) but mediocre when it comes to eco-innovation related publications and below average in terms of eco-innovation related media coverage. This indicates room for improvement to better mainstream eco-innovation in Germany. In the component
eco-innovation activities Germany is one of the top performers for indicators on company participation in eco-innovation (tying Portugal for first place for both material and energy efficiency activities) but is well below average for the indicator of ISO 14001 registered organisations. This could be because EMAS registration is preferred in Germany and might indicate a significantly better performance if EMAS instead of ISO certificates were assessed. As regards resource efficiency outcomes, Germany is close to the EU average for material, water and energy productivity as well as GHG emissions intensity. There is significant room for improvement to catch up with leading Member States and the new policy programme ProgRess could be an important step for encouraging activities to this end.

Figure 2.2 Components of the eco-innovation composite index for Germany, 2013
The High-Tech Strategy for Germany continues to play a leading role in integrating innovation activities across different political and thematic fields. With forward-looking projects like “Industry 4.0” it supports high-tech solutions such as “smart tags” for products and implementation of “the internet of things”, but the strategy also goes beyond technology development. It aims to create, for example, a platform for dialogue to more intensely involve the general population in research and innovation. The focus on cross-cutting research is evident with priority focus areas like “Integration of production and services”, which aims to support the development of new value creation models in business, and “People-Technology-Interaction in demographic change”, aiming to address how new technologies and social innovation can improve life quality for older generations. Indeed, the focus on cross-cutting research and innovation activities is increasingly emerging as a new trend in Germany. The report “Green Tech: made in Germany 3.0” emphasizes that “Environmental technology and resource efficiency is a typical cross-sector industry” and that “…stakeholders—especially governments, customers, investors and companies—play a pivotal role in the transformation to a green economy” (BMU 2012a). Different forms of cooperation have manifested in a number of ways. For example, “innovation alliances and strategic partnerships” are an instrument of the High-Tech Strategy to leverage funds for innovation toward future markets. Increased cooperation is also seen in the development of clusters in Germany. Clusters are one of the flagships of the High-Tech Strategy, and the “Leading-Edge Cluster Competition” has highlighted 15 German clusters over the past five years with a focus on increased innovative capability and sustainable changes.

In the “Memorandum for a Green Economy”, a combined initiative of the German government (BMU) and the Federation of German industries (BDI), the areas of energy transformation, circular economy and resource efficiency are recognized as recent important impulses toward a transformed economy. Indeed, the energy efficiency market in Germany is now worth €98 billion, or almost one-third of the total German green tech market, and is expected to grow by an average 4.5% annually until 2025 (BMU 2012a). The market for material efficiency is around one-fifth the size, but is expected grow at a higher rate (nearly 8% annually). It encompasses material efficient processes, cross-application technologies and renewable resources. Innovation in the area of recycling, particularly for metals, is also an emerging focal point in Germany.

Smart cities culminate efforts to optimize synergies between sectors and people. It has become a growing area for research into e.g. smart mobility and smart buildings and also system changes. The “National Platform for Future Cities” brings stakeholders together to develop a research agenda for 2015 and highlights the emergence of smart cities as key for Germany.

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8 For example, between September 2012 and February 2013 a citizen dialogue on demographic change enabled an exchange of ideas between experts and citizens, with a resulting report bundling 31 "solutions" for policy and innovation.
9 This programme is being redeveloped into „research for production and services for tomorrow – innovation for jobs of the future“.
10 For example, the first project of the “Innovation Alliance Photovoltaics” was successfully concluded in January 2014 with the creation of an improved PV module that significantly reduces system costs for customers.
11 Especially the market for biotechnology is emerging in Germany, with e.g. an ”Industrial Biotechnology Innovation Initiative“ calling for strategic alliances between industry and science along value chains. Nevertheless greater consideration of land use need to be integrated.
12 Especially synergies between design and recycling have proven key, with scale-up from innovative processes identified in the ”R2-Innovative Technologies for Resource Efficiency“ funding initiative estimated to raise resource productivity in Germany by 5% (ISI 2013). The export market is also key for Germany, with more information on the German RETech Partnership online: www.retech-germany.net
According to companies, economic factors are among the most important drivers and barriers to eco-innovation in Germany (EC 2012). In particular, expected price increases for raw materials are driving companies to innovate, especially in terms of resource efficiency. On the other hand, uncertain investment returns and long payback periods are among the most critical barriers (ibid). This is especially true for more disruptive forms of eco-innovation, such as services. For example, investments into new forms of services are hindered by uncertain future developments in both Germany and abroad (where less stringent regulations make innovative services in e.g. leasing, maintenance, etc. less competitive) (ISI 2013).

The regulatory framework also has a major impact in Germany, and is significantly more important for eco-innovation than other forms of innovation (Horbach et al. 2011). This has been confirmed by multiple surveys of companies and is well-established in literature. A recent study on “Drivers and barriers for the transformation of the Germany economy into a green economy” also highlighted the importance of the regulatory framework for steering the market in the right direction (Adelphi & Borderstep Institut 2013). It emphasized that in some areas clear inroads towards a green transformation have been made (e.g. the “energy transition”) whereas in other areas the development of framework conditions is just starting. The study analysed the barriers and drivers for 10 key innovations, showing that different drivers and barriers are relevant for eco-innovations in different stages of development and for meeting different types of needs. Nonetheless, market conditions are the re-occurring theme, requiring new political instruments, structures and activities. Table 1 highlights drivers and barriers for 5 of these eco-innovations.

<table>
<thead>
<tr>
<th>Key innovations for a green economy</th>
<th>Innovation stage</th>
<th>Drivers</th>
<th>Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circular material flows of P and N (e.g. from wastewater)</td>
<td>Research and development, pilot phase</td>
<td>Natural capital (growing scarcity of P and soil fertility) leading to political pull (pilot projects)</td>
<td>Regulatory framework (no legislative activity)</td>
</tr>
<tr>
<td>Green logistic systems</td>
<td>Application and testing</td>
<td>Social (customer demand for greening) and economic (energy prices)</td>
<td>Regulatory (missing incentives and unclear accounting for the carbon footprint)</td>
</tr>
<tr>
<td>Long-term heat storage</td>
<td>Development of Prototypes and pilots</td>
<td>Human (pioneers with long-term visions)</td>
<td>Economic (high investment costs with payback 30-50 years; banks do not accept as security)</td>
</tr>
<tr>
<td>Virtual power stations (decentralized generation)</td>
<td>Market entry</td>
<td>Economic (market demand for network stability) and political (research support)</td>
<td>Regulatory (structure of the electricity market with payment for “energy only”, not services)</td>
</tr>
<tr>
<td>Sustainable and responsible investment</td>
<td>Application and diffusion</td>
<td>Social (increased demand for transparency)</td>
<td>Regulatory (lack of standards and criteria)</td>
</tr>
</tbody>
</table>

Source: Adelphi and Borderstep Institut (2013)
5 | Eco-innovation policy landscape

German policy support for eco-innovation is strongly focused on technologies. Research programmes like the High-Tech Strategy, the Master plan on Environmental Technology, and Materials Innovation for Industry and Society (WING) are oriented toward further development of German lead markets. Clear targets, technology-forcing regulations, standards and incentives have been instrumental in the development of these markets. Germany has established particularly strong policy frameworks in the areas of climate, renewable energy and waste, and with the creation of the German Resource Efficiency Programme (ProgResS) has started to bring resources onto the political agenda. Nevertheless, the primary focus of legislative instruments and eco-innovation support remains the energy transformation.

Funding for research in Germany is consistent with the average level of funding in the EU-15, but the German Advisory Council on Global Change recommend substantial increases to meet sustainability goals (WBGU 2011). For example, funding on energy research increased sharply to reach €691 million in 2010\(^\text{13}\), but still comprised an insubstantial share (5.4%) of German federal government R&D funding. Shares for research in urban development and construction were significantly lower (€20.5 and €26.4 million in 2010 respectively) (ibid). Additionally, innovation programmes for SMEs like “The Central Innovation Programme SME (ZIM)” and “KMU-Innovativ” do not have an explicit focus on eco-innovation. Exceptions are e.g. the joint initiative between the "Framework Programme Research for Sustainable Development" (FONA) and “KMU-Innovativ”, which is a positive example for the emergence of joint efforts. Germany spent around 1.9% of GDP on support measures with a negative impact on the environment in 2008 (OECD 2012), indicating a need for continued reform in environmentally harmful subsidies and overall more policy harmonisation. In particular, perverse subsidies like tax rebates for automobile commuters hinder eco-innovation.

In comparison to other EU Member States, green public procurement is weak in Germany. Efforts to improve GPP have begun, for instance in 2013 the Federal Ministry for Economic Affairs and Energy established a “Centre of competence for innovation in public procurement”. Progress has also been made in the establishment of sustainability criteria for corporate social responsibility (e.g. the “Action Plan for CSR” was passed in 2010), but an overarching strategy is still missing and companies are not legally required to follow recommendations. This puts Germany behind other EU countries which have made sustainability reporting mandatory, and decreases transparency for customers. Indeed, while Germany is distinguished by a populace generally willing to engage in “green” behaviours\(^\text{14}\), its policy directed at consumers has been almost overwhelmingly focused on information campaigns, in particular in the form of labels. Funding for projects related to social innovation are just starting to emerge\(^\text{15}\) while bottom-up citizen movements (such as the commons-based economy) seem to be gaining momentum.

Framework conditions for transformative governance have been criticized for not being strategic enough in Germany (Adelphi & Borderstep Institut 2013). For example, the “National Sustainable Development Strategy” has the potential for transformative change, but indicators and individual instruments have not been combined toward an integrated, long-term, overarching strategy. Instruments for “losers of innovation” are mostly lacking, but some positive examples from recent years are apparent\(^\text{16}\). While a “green economy” has been called for, the development of a strategic roadmap to a green economy is just beginning. Germany has also just begun its efforts toward the creation of an “eco-innovation roadmap”\(^\text{17}\). Governance models to steer a transformation are increasingly seen as a learning process, with mechanisms needed for monitoring, evaluating and improving policies on the way towards concrete targets. While approaches like the peer-review process of the “National Sustainability Strategy” are evident in Germany, the understanding of and mechanisms for a more transformative policy system rooted in learning processes and the wider integration of stakeholders is not, yet, apparent in Germany.

\(^{13}\) with 25% of this dedicated to nuclear

\(^{14}\) for example separating waste, reducing water consumption, refraining from littering, etc.

\(^{15}\) e.g. the Project „Social innovation and the necessary governance forms in societal transformation processes“ funded by BMU and UBA

\(^{16}\) e.g. the Electricity-Saving Check Programme provides free electricity saving technologies and advice to poor households

\(^{17}\) Two workshops on the potential contents and procedures for developing a national roadmap were held in 2012 and 2013 (Taurus 2013) and research call to further develop the national action plan has been announced for 2014.
6 | Good practice examples

PYUA Ecorrect outerwear: closed-loop recycling

Combined efforts of the sportswear brand PYUA and Textile Recycling K. & A. Wenkaus GmbH led to the creation of their closed-loop recycling system. It utilises general collection bins for customers to discard their old polyester textiles, which are then sorted, recycled and returned to production for the creation of new sports wear. Parts that cannot be recycled like zippers and buttons are either re-used or down-cycled to assure customers that all PYUA products are recycled. The use of recycled polyester uses up to one-fifth of the energy when compared to former polyester production, simultaneously reducing CO₂ emissions, waste, and the demand for resources. PYUA has won the ECO Responsibility Award over three consecutive years at the world’s biggest winter sports fair ISPO. The company’s core philosophy is to confront nature respectively, and these values have been the driving force for integrating and developing sustainable solutions for their products.

Key words: closed-loop, textiles, eco-design

Link: http://www.pyua.de/

Inspiro: Eco-design for public transportation

Siemens has developed a new metro for public transportation in cities. It is based on a weight-saving design with an aluminium body that has reduced the weight of a single car by more than 3 tons compared to the previous generation. It employs energy-efficient technologies like LED lighting and a demand-responsive air quality system. The life-cycle impact of materials were considered in the design and the Inspiro metro has a recyclability rate of up to 94.8% at the end of its service life (UNIFE Recyclability Calculation Method for Rolling Stock).

Key words: Public transportation, product innovation, mobility concepts, eco-design


Pfandring: combining social and environmental objectives

The “Pfandring” is an extra component for trash bins in Germany. “Pfand” refers to bottles with a refundable charge, and digging through public trash bins for refundable bottles has become a common practice in Germany by so-called “Pfandsammler” (refund-collectors). The Pfandring is intended to allow pedestrians to dispose of their recyclable drink bottles and cans when “on the go” in the city, and collectors to maintain their dignity when gathering bottles to cash in on the refund. In this way, these bottles are kept in the recycling system longer, and it sends a clear signal for environmental awareness. The innovation combines social and environmental objectives, and was developed by a student in Cologne. It was featured in the 2012 German eco-design awards, where it was mentioned that in the future the ring could be integrated into the design of public trash bins.

Key words: social eco-innovation, recycling, eco-design

Links: www.pfandring.de
References

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OECD, 2012, Environmental Performance Reviews: Germany 2012 Highlights, OECD.

### ANNEX 1. Policy measures addressing eco-innovations in Germany

<table>
<thead>
<tr>
<th>Group of policy measures</th>
<th>Type of policy measure</th>
<th>Specific measure</th>
<th>Focus of policy measure (tick if relevant)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Generic focus on eco-innovation</td>
</tr>
<tr>
<td>Equity/business support</td>
<td>Venture capital funds</td>
<td>Business Angels Network Deutschland e.V. (BAND) is responsible for the development of the Business Angels culture in Germany, organizing the exchange of experiences and supporting cooperation among business angels.</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Public guarantee funds</td>
<td>The &quot;Mikrokreditfonds Deutschland&quot; was established in 2009 as a guarantee fund and sponsors mainly SME; among others start ups which developed eco-innovations benefit.</td>
<td></td>
</tr>
<tr>
<td>Support for R&amp;D in public sector and industry</td>
<td>R&amp;D funding</td>
<td>National High-Tech Strategy 2020: 5 demand areas, 8 key technologies, 11 future projects</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Collaborative grants</td>
<td>The funding program &quot;IT goes green&quot; supports technology based eco-innovations associated with resource and energy efficient computer technology and the information and communication infrastructure.</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>R&amp;D infrastructure</td>
<td>The expansion of wastewater systems is subsidised by &quot;Förderung von Abwasseranlagen&quot;. Expenditures for such systems will be subsidised up to 60 %, depending on various factors.</td>
<td></td>
</tr>
<tr>
<td>Fiscal measures</td>
<td>Tax incentives for R&amp;D and start-ups</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tax incentives for R&amp;D personnel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education, training and mobility</td>
<td>Tailored training courses for companies, entrepreneurs</td>
<td>The funding program &quot;Umweltbildung, -erziehung und -information&quot; finances measures for environmental education, such as seminars, congresses and workshops in enterprises, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Advise/consulting for start-ups, companies</td>
<td>The funding program “Informations- und Schulungsveranstaltungen sowie Workshops” of the Federal Office of Economics and Export Control</td>
<td></td>
</tr>
</tbody>
</table>
### Eco-innovation in Germany

#### Networks and partnerships

<table>
<thead>
<tr>
<th>Competence centres, clusters, science-technology parks</th>
<th>The &quot;Umweltcluster Bayern&quot; in an initiative which facilitates the collaboration between the actors of environmental industry and science in Bavaria.</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The &quot;Cluster Umwelttechnologie NRW&quot; aims to improve North Rhine-Westphalia’s position in the GreenTech industry.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>In order to pool the knowledge of the efficient use of resources the German Environment Ministry established the national &quot;Resource Efficiency Network&quot;</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology platforms and innovation networks</td>
<td>Germany’s information platform for the procurement of ICT products (<a href="http://www.itk-beschaffung.de">www.itk-beschaffung.de</a>) will be expanded to include information on the latest energy efficiency and environmental standards.</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Support for R&D workers recruitments

| Placement schemes for students | Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in the areas resource efficiency, recycling, decentralisation of the natural resource management, waste management, resource efficient economy, sustainable tourism | | | | |

#### Placement schemes for students

| Entrepreneurs | supports training events, workshops, etc. for start ups. Among others events regarding environmental protection are to be financed / subsidised. The German Material Efficiency Agency (demea) provides consulting regarding the possible efficiency potentials in manufacturing enterprises. The Efficiency Agency NRW (EFA) offers the PIUS check (product integrated protection of the environment). In this context consultants analyse the relevant material and energy flows of enterprises and reveal possible saving potentials, such as the reduction of various inputs, a cut of production costs, increase of quality and possible emission abatement measures. | X | X | X | |

#### Technology platforms and innovation networks

| Networks and partnerships | | | | |

#### Support for R&D workers recruitments

| Networks and partnerships | | | | |

#### Technology platforms and innovation networks

<p>| Networks and partnerships | | | | |</p>
<table>
<thead>
<tr>
<th>Regulations and standards</th>
<th>Energy use.</th>
<th>Regulations, targets, cap &amp; trade schemes</th>
<th>Erneuerbare Energien Gesetz (Renewable Energies Law) – a fixed compensation for the feed-in of renewable energies (feed-in tariffs) for 15-20 years incl. a depression</th>
<th>Erneuerbare-Energien-Wärmegesetz: aims to advance renewable energies for heating and cooling systems in buildings</th>
<th>Biokraftstoffquotengesetz: regulating the blending of biofuels into the fuel for motor vehicles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance standards, labeling, certification</td>
<td></td>
<td></td>
<td>The &quot;Saarländisches Umweltmanagement-Förderprogramm&quot; assists the integration of the EMAS-System. Goal is an increase of EMAS-certified enterprises in order to tackle the sustainable resource-management issue.</td>
<td></td>
<td>The national eco-label scheme “Blue Angel” allows the identification of eco-friendly products (many sectoral eco-labels are in place, such as Naturkind, Bio, Bioland, Demeter, Hess Natur, Öko-Tex, etc. Altogether 67.</td>
</tr>
<tr>
<td>“Green” public procurement of goods and services</td>
<td></td>
<td></td>
<td>The German Environmental Agency (UBA) offers the latest information on green public procurement and serves as a contact point for interested parties.</td>
<td></td>
<td>Associated with the action plan “Germany: Green IT Pioneer” green public procurement plays an important part in “Using ICT in an energy- and resource-efficient manner”.</td>
</tr>
<tr>
<td>R&amp;D procurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology Transfer</td>
<td></td>
<td>Pre-commercial procurement</td>
<td></td>
<td></td>
<td>The KfW bank programme “Energy efficiency advice for SMEs” advises to find possible saving potentials. The program “Energieeffizienzberatung” takes over a part of the consulting fees and helps to overcome bureaucratic barriers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advisory support for technology adopters</td>
<td></td>
<td></td>
<td>Potential analyses of the German Material Efficiency Agency (demea) are financed by vouchers; these vouchers cover 50% of the total counselling costs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financial or fiscal support for technology adopters (e.g. grants for purchasing)</td>
<td></td>
<td></td>
<td>BMU-Umweltinnovationsprogramm supports primarily SME investing in processes for the abatement of any environmental damage. Therefore the KfW-Bank provides credits at reduced rates of interests.</td>
</tr>
<tr>
<td>Support of private demand</td>
<td>Wirtschaftsforschung und Technologietransfer Schleswig-Holstein GmbH (WTSH) provides grants for future oriented eco-innovations, which reduce material and/or material use within enterprises.</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Tax incentives for consumers (e.g. for purchasing environmentally efficient products)</td>
<td>The funding program &quot;Heizen und Wärmnetze mit regenerativen Energien&quot; (EFRE) supports the utilisation of renewable energies associated with the efficient use and production of heat.</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Tax reductions for products and services (e.g. VAT reductions)</td>
<td>The &quot;Regierungsprogramm Elektromobilität&quot; ensures a car tax exemption for 10 years for e-car owners.</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td></td>
<td>The integration of a particulate filter (soot particle filter) entails tax reliefs for car owners.</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td></td>
<td>§ 2 of the German energy taxation law gives information on possible tax reliefs of various biofuels.</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Demand subsidies (e.g. eco-vouchers, consumer subsidies)</td>
<td>The German government subsidised the purchase of particulate filters for diesel-engine cars (bonus of €330).</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td></td>
<td>Scrap bonus: government subsidy of €2,500, when an old car was scrapped and new car was bought.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Awareness raising and information provision</td>
<td>There exist various funding programmes raising the awareness of environmental issues (BMU-Umweltinnovationsprogramm, the above mentioned funding programmes on training, workshops, etc.).</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
About the Eco-Innovation Observatory (EIO)

The Eco-Innovation Observatory (EIO) is an initiative financed by the European Commission’s Directorate-General for the Environment. Since 2009 the Observatory has been developing an integrated information hub on eco-innovation addressed to business, policy makers, innovation service providers and researchers. The EIO supports the implementation of the European Eco-Innovation Action Plan of the European Commission.

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www.eco-innovation.eu