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SPIN Transnational Synthesis Report on the Needs of Small and Medium-sized Enterprises and Barriers & Incentives for Innovations for Sustainable Production

CBSS-BALTIC 21 LIGHTHOUSE PROJECT

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MAIN AUTHORS:
Dr. Karen Böhme, Anja Degenhardt, André Greif
PtJ Project Management Jülich
Forschungszentrum Jülich GmbH

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design_idee_erfurt GbR, Erfurt

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SUPERVISION:
Janka Clauder, (BMU), Daniel de Graaf (UBA)

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» 1 Introduction

This report has been developed by Project Management Jülich (PtJ) under supervision of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) within the project "SPIN – Sustainable Production through Innovation in Small and Medium sized Enterprises". The three year project is part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument) through the Baltic Sea Region Programme (2007-2013). SPIN project includes partners from Denmark (DK), Estonia (EE), Finland (FI), Germany (DE), Lithuania (LT), Poland (PL) and Sweden (SE).

The SPIN synthesis report on SME needs and barriers & incentives for innovations for sustainable production is one of the main deliverables of the project, summarizing the findings from individual country studies conducted within the SPIN project and drawing general conclusions. This draft version of the synthesis report should serve as a background material for preparation of the SPIN partner meeting in Berlin in December 2010 including a joint meeting with the CBSS expert group on sustainable development – Baltic 21. It is based on the SPIN project partners' work during 2009 – October 2010. It should be noted that this report presents the interim state of the project work and results at the time of writing. **All presented results and conclusions are still preliminary and will be further discussed and refined during the course of the project.**

» 2 Objectives

2.1 Objectives of the SPIN project

SPIN aims to increase the sustainable innovation potential of SMEs [1] throughout the Baltic Sea Region (BSR). The application of innovations for sustainable production in SMEs will lead to the creation of public benefits and private profits whilst reducing economic and environmental costs. Company performance – both in the production and service sector – can be made more sustainable in terms of environmental, economical and social performance through technical & organizational innovations. More specifically, SPIN aims at:

- Identifying innovation highlights developed throughout the BSR & supporting their dissemination and deployment
- Addressing the needs of SMEs by matching supply & demand for technical & organizational solutions
- Development & testing of a tools/instruments/schemes facilitating the application of innovations in SMEs
- Identifying appropriate incentives for SMEs to apply innovations
- Creating a consistent transnational framework

SPIN is a Baltic 21 Lighthouse Project and as such a joint effort of governments, national sector associations and transnational NGOs forming Baltic 21. SPIN brings together the expert institutions for eco-innovations in the BSR and builds on the work of the Baltic 21 Industry Sector and the Baltic 21 Institute for Sustainable Industry. The consortium is composed of three complementary types of organizations (public authorities, applied R&D institutes and institutions supporting practical action) sharing the same aim, i.e. the promotion of sustainable production. This set-up allows SPIN to apply an integrated political and practical approach. SPIN is establishing concrete framework conditions and provides pilot tools at the BSR level for a strategy on the transfer of innovations from & to SMEs. As such SPIN has a particular strategic relevance for the BSR programme 2007-2013.

SPIN will reach more than 2500 SMEs throughout the BSR and induce investment in new ecological solutions. At the same time the SMEs supplying innovations will increase their competitiveness. SPIN will connect 200 outstanding institutions in the field of eco-innovations in the BSR and will assemble over 500 best practice examples in a database on innovations made in BSR. It will elaborate and test a consistent transnational action plan enhancing the application of eco-innovations.

The SPIN project has focussed its SME activities on 4 selected industry sectors which are of particular interest for transnational cooperation between the SPIN partners:

- Sustainable construction
- Energy from biomass
- Decentralized water treatment
- Surface treatment

Other industry sectors are covered as well in individual project activities such as the SPIN innovation database and individual SME workshops in the SPIN partner countries.

1 SMEs = Further in the text: small and medium sized enterprises in the Baltic Sea Region

2.2 Objectives of the SPIN Transnational Agenda

The aim of the SPIN work package "Transnational Agenda" (WP5) is to turn the findings on the push and pull factors for eco-innovations and incentives into a transnational agenda, i.e. a transnational action plan that creates a coherent policy approach for the whole BSR to support the application of eco-innovations.
This work package aims at elaborating an action plan recommending incentives for SME to apply eco-innovations. It considers background information and results from parallel work packages and previous work of the SPIN project:

- influences leading to the development of the identified eco-innovation highlights
- existing SME needs and support tools for SMEs in the national framework
- identified barriers and incentives to innovations for sustainable production in participating countries

In this context special emphasis will be put on analyzing the causes for disparities (e.g. regulatory framework, support measures). Specific patterns for the whole BSR region are identified and conclusions are derived from them.
The WP aims at sustaining the impact of the transnational agenda by preparing the ground of a BSR-wide transnational forum that brings together the political and private decision makers in the field of eco-innovations.
The SPIN action plan should also include specific recommendations to policy makers to improve framework conditions for innovation in the 4 focus sectors of the project.

» 3 Current state of the project work

The SPIN project started in March 2009. Since the project start the work has included the following activity areas:

- Collection of eco-innovation highlights from the participating countries (SPIN innovation database)
- Collection of SME tools to support innovations for sustainable production
- Country studies on SME needs for innovations for sustainable production
- Country studies on barriers & incentives to innovations for sustainable production

This report is based on the country studies on SME needs and barriers & incentives which have been elaborated by the SPIN project partners in each of the participating countries. It includes findings from the national studies which have been available by October 2010 and from discussions with the SPIN project partners and the Advisory Board. Another update of the country studies is planned during the course of the SPIN project including findings from the SME workshops to take place in the remaining project period.

It should be noted that although common terms of reference were established for the country studies, not all aspects have been covered in detail in the available country studies and different methods were used by the project partners during the studies. Some national studies are based on SME surveys, others on secondary literature or expert interviews or personal experience of the authors. Also the availability of data which is specific to SMEs and specific to innovations for sustainable production differs in the participating countries. In some cases generic innovation data had to be used. Despite these different approaches the country studies have been used as they were submitted for this synthesis report.

PtJ analyzed the available country studies in order to identify similarities or differences between the SME needs, barriers and incentives in the different countries. The following sections present the results of this analysis (section Results of the country studies) and suggest preliminary conclusions for the development of the Transnational Agenda (section Conclusions).

The subsequent steps for development of the Transnational Agenda after the SPIN project meeting in December 2010 will be the following:

- Finalizing the synthesis report incl. potential updates of the country studies (2011): Patterns, which are specific for the whole BSR region, are identified and common conclusions are derived from them.
- At the same time differences between the countries, which might derive from different regulatory framework, are highlighted. The appropriate measures to address the current/future priority needs of SMEs in the BSR for implementation and application of innovations for sustainable production are identified. Conclusions how to create new/additional incentives for SMEs will be derived.
- An iterative update of the findings is expected during the project course through feedback from the SME workshops in participating countries and from discussions with project partners and Advisory Board (2010-2011).
- The findings of the above activities are bundled in a set of policy recommendations which is the "Transnational Action Plan", i.e. measures that aim at improving the framework for the application of innovations in SMEs. It is envisaged that within the SPIN network a working group transforms conclusions to recommendations for policy making and future programmes. The Transnational Action Plan shall apply to all BSR countries and should be presented to the public at the forum of the final SPIN project conference in late 2011.

» 4 European Framework

The SPIN project and the national experience from the participating countries are embedded within a European framework of legislation and norms, policy strategies and action plans as well as support instruments influencing the transfer and uptake of innovations for sustainable production in SMEs. This section briefly summarizes a not exhaustive list of the most relevant aspects of this European framework.

4.1 European policy strategies and legislation

In the past EU policy was focused much on large scale industry with the result that some regulations did not meet the requirements of SMEs. Nevertheless, there is a general agreement on the level of European head of governments and states that SMEs are the backbone of the economy in the member states and the most important stakeholders in terms of employment and innovation. The development of the SME sector has recently received increasing attention and support from EU policy. This agreement is expressed for the first time in the **European Charter for Small Enterprises** [2], although only non-binding declaration of intentions and guidelines were formulated which aimed to improve the framework conditions for entrepreneurs to make them more innovative and there business more viable.

In 2005, first measures towards the principle "think small first" were introduced in the **Lisbon Strategy** for growth and employment, including five key categories:

- cutting red tape
- improving SMEs' access to markets
- promoting entrepreneurship and skills
- improving SMEs' growth potential
- strengthening dialogue and consultation with SME stakeholders

The **"Small Business Act" for Europe** [3] (SBA), adopted in June 2008, reflects the Commission's political will to recognize the central role of SMEs in the EU economy and for the first time puts into place a comprehensive SME policy framework for the EU and its Member States. It aims to improve the overall approach to entrepreneurship, to irreversibly anchor the "Think Small first" principle in policy making from regulation to public service, and to promote SMEs' growth by helping them tackle the remaining problems which hamper their development. SBA applies to all companies which are independent and have fewer than 250 employees: 99 % of all European businesses.

A mid-term review of implemented policy measures was presented by the European Commission in 2007 [4]. Financial support on different levels can be recognized as a main focus of EU activities. It comprises promotion of micro credits by the EU, financing via the EU structural and regional funds, support of the dialogue and collaboration between banks and SMEs, improvement of availability of financial resources on regional level by the European Investment Bank (EIB) and the European Investment Fund (EIF) within the JEREMIE programme [5] and the Competitiveness and Innovation Framework Programme (CIP) [6].

In 2007, **"Small, clean and competitive – a programme to help small and medium-sized enterprise to comply with environmental legislation"** [7] was initiated. This programme aims to connect ecology with economy to achieve an improvement in environmental performance, development of eco-innovation and competitiveness of SMEs by helping them with environment legislation compliance. The action plan mentions five focal areas which should help to reach these aims:

2 European Charter for Small Enterprises (2000), http://ec.europa.eu/enterprise/policies/sme/documents/charter/index_en.htm

3 http://ec.europa.eu/enterprise/policies/sme/small-business-act/index_en.htm

4 Commission of the European Communities (2007): Small and medium-sized enterprises – key for delivering more growth and jobs. A mid-term review of modern SME policy. COM(2007) 592 final

5 http://ec.europa.eu/regional_policy/funds/2007/jjj/jeremie_en.htm

6 Competitiveness and Innovation Framework Programme; www.ec.europa.eu/cip/index_en.htm

7 Small, clean and competitive - a programme to help small and medium-sized enterprise to comply with environmental legislation. COM(2007) 379 final.

- better regulation in design and implementation of policies
- more accessible tailor-made environmental management schemes
- focused financial assistance and a multi-annual financial programme
- building local environmental expertise for SMEs
- improved communication and more targeted information

Besides the European policy framework targeted on SMEs' business development, innovations and compliance also the European policy in the areas of environment and sustainability influences eco-innovation and sustainable production in SMEs. During the last decade a number of new and harmonized environmental legislation was introduced at EU level and translated into national laws of the member states. They aim at improving the quality of environment and minimizing environmental impacts of production (and consumption) and directly affect the activities of SMEs, the technologies to be used and the products entering the market. Some prominent examples of **EU legislation on environment and sustainability** are:

- legislation focusing on certain industry sectors with major environmental impact, e.g. on land-filling and waste disposal, on waste electrical and electronic equipment (WEEE), on end-of-life vehicles (ELV), on energy performance of buildings (EPBD)
- legislation for regulation of substances, materials and product design which have a cross-cutting influence on several sectors, e.g. restriction of hazardous substances (ROHS), chemicals and materials (REACH)
- legislation setting voluntary incentives or compulsory requirements for eco-design and sustainable production, e.g. environmental management and auditing scheme (EMAS) or eco-design of energy-using products (EuP)
- legislation for protection of environmental resources, e.g. the Water Framework Directive (WFD)
- legislation to foster application of best available technologies in defined industry sectors, e.g. the Integrated Pollution, Prevention and Control (IPPC) Directive
- legislation to set market-oriented framework for achievement of environmental targets, e.g. Emission Trading Scheme for greenhouse gas emissions

A relevant action plan on EU level is the **Environmental Technologies Action Plan (ETAP)**[8]. The plan was adopted by the Commission in 2004 to cover a wide range of activities promoting eco-innovation and use of environmental technologies. Its objective is to improve European competitiveness in this area, and enable the EU to become the recognized world leader. ETAP aims to overcome the many barriers – such as the complexity of switching from traditional to new technologies and insufficient access to financing – that hinder the development of environmental technologies. The plan complements the Environment Directorate-General's regulatory approaches and directly addresses the three dimensions of the Lisbon strategy: growth, jobs and the environment. Priority actions for ETAP involve getting environmental technologies from research to markets, improving market conditions and acting globally. Some activity areas of ETAP include:

- European environmental technology verification scheme should establish a mechanism to validate the performance of products objectively to increase purchasers' confidence in new environmental technologies.
- Setting performance targets that are long-term and visionary as well as perceived as being viable and realistic by many different stakeholders to encourage industry to develop and take up environmental technologies.
- Mobilization of financing ranging from classical loans through guarantee mechanisms to venture capital for environmental technologies. Current EU instruments include the R&D Framework Programme, Environment LIFE, Structural Funds, Cohesion Fund and the Competitiveness and Innovation Programme (CIP).
- Market-based instruments providing targeted economic incentives to help promote the take-up of environmental technologies.

8 http://ec.europa.eu/environment/etap/index_en.html

- Green public procurement – taking a lead at EU level in offering a potentially powerful economic driver to further the uptake of environmental technologies.

- Awareness raising and training to encourage the development and take-up of environmentally friendly technologies, particularly through training in industrial and business settings.

- Supporting eco-technologies in developing countries, and promoting foreign investment to encourage sustainable development at the global level.

The European Commission is co-operating closely with Member States and industry to implement ETAP. A High Level Working Group (HLWG) – established in 2004 – facilitates implementation of ETAP all over Europe and steers co-operation between all participants. The HLWG consists of representatives from EU Member States and European Commission services. Open co-ordination with the Member States helps advance ETAP by exchanging ideas on best practices, developing indicators and setting guidelines and timetables. Complete success depends on the participation of all stakeholders, requiring mobilization of relevant business and finance players and technology developers working in the field. For this reason, the European Forum on Eco-Innovation organizes regular meetings on specific topics.

In 2008 the European Commission presented the **Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan**. It includes a series of proposals on sustainable consumption and production that should contribute to improving the environmental performance of products and increase the demand for more sustainable goods and production technologies. It also seeks to encourage EU industry to take advantage of opportunities to innovate. The core topics of the action plan are leaner production, better products, smarter consumption and global markets[9].

Following a consultation process in March 2010 the European Commission has communicated the **Europe 2020 Strategy** – A strategy for smart, sustainable and inclusive growth"[10]. Europe 2020 is the EU's growth strategy for the coming decade in a changing world to make EU a smart, sustainable and inclusive economy. These three mutually reinforcing priorities should help the EU and the Member States deliver high levels of employment, productivity and social cohesion. EU has set five ambitious objectives – on employment, innovation, education, social inclusion and climate/energy – to be reached by 2020. Each Member State will adopt its own national targets in each of these areas.
The Innovation Union is one flagship initiative within the Europe 2020 Strategy. It aims to improve conditions and access to finance for research and innovation in Europe, to ensure that innovative ideas can be turned into products and services that create growth and jobs.
Not only countries within Europe but also other leading economies have recognized the link between sustainability and economic growth, particularly as a chance to overcome the global economic crisis. This is also reflected in the **OECD Strategy on Green Growth** which is in development.

4.2 Specific support instruments on European level

This section briefly summarizes some relevant support instruments which are offered on European level. The focus is on instruments to support transfer and application of eco-innovations in SMEs. R&D is not included because this is out of scope of the SPIN project although large European programmes such as the Research Framework Programme exist.

The **Competitiveness and Innovation Framework Programme (CIP)** aims to encourage the competitiveness of European enterprises. With SMEs as its main target group, the programme supports innovation activities (including eco-innovation), provide better access to finance and deliver business support services in the regions. CIP is composed of three specific programmes. Two of these specific programmes are connected to eco-innovation in a broad

9 http://ec.europa.eu/environment/eussd/escp_en.htm

10 http://ec.europa.eu/eu2020/index_en.htm

sense: the programme entitled "Intelligent Energy Europe" (IEE) dealing with energy efficiency and renewable energies and the "Entrepreneurship and Innovation Programme" (EIP). The Entrepreneurship and Innovation Programme addresses different topics, one of which is "support eco-innovation" (short name: **CIP Eco-Innovation** [11]).

EIP has issued three specific calls for SMEs supporting the first application and market replication projects since 2008. Priority areas of the 2009 call were "Materials recycling", "Buildings", "Food and drink sector", "Greening business/ smart purchasing". The eco-innovation calls aim to support projects "concerned with the first application or market replication of eco-innovative techniques, products, services or practices of Community relevance, which have already been technically demonstrated with success but which, owing to residual risk, have not yet penetrated the market". The beneficiaries are primarily SMEs which have to prove the economic sense, tangible benefits in terms of investments, turnover and market penetration and job creation.

The initiative **PRO INNO Europe** [12] has been launched under the EIP with the objective of becoming the focal point for innovation policy analysis, learning and development in Europe, with a view to learning from the best and contributing to the development of new and better innovation policies in Europe. While this initiative does not focus specifically on eco-innovation, instruments like INNO-Actions and INNO-Nets will foster transnational cooperation between public organizations in charge of innovation. INNO-Actions aim to bring innovation closer to the citizens and create a more favorable innovation culture in Europe.
The objective of INNO-Nets is to encourage regional and national innovation policy makers and public support providers to work closer in different sectors including eco-innovation. The three following priority areas have been defined:

- Green public procurement
- Waste and recycling management
- International cooperation in diffusing environmental technologies.

Furthermore, the **LIFE programme** [13] which initially started in 1992, has since then supported environment protection projects including also SMEs. It shall be expanded by a multiannual programme termed Life+. Life+ has been designed to support environmental compliance assistance measures for SMEs.
Investment in research, development and innovation (RDI) has been identified as a key factor to improve competitiveness and ensure long term economic growth and employment in Europe. But finding private funding sources for RDI projects can be difficult due to their risky nature and uncertainty on markets, and difficult financial assessment. For this reason, the European Commission and the European Investment Bank have joined forces to set up the **Risk Sharing Finance Facility (RSFF)** [14]. RSFF is an innovative scheme to improve access to debt financing for private companies or public institutions promoting activities in the field of RDI. RSFF is built on the principle of credit risk sharing between the European Community and the EIB and extends therefore the ability of the bank to provide loans or guarantees for investment with a higher risk and reward profile. The RSFF has a EUR 2bn capital cushion, EUR 1bn from the EIB and the same amount from the Commission's 7th Research Framework Programme (2007 – 2013), enabling the Bank to lend more than EUR 10bn for this kind of investment. By mid-2010 already EUR 6bn had been committed. RSFF financing is available for promoters and entities of all sizes and ownerships, including corporations, midcaps, small and medium-sized enterprises, special purpose companies, public-private partnerships and joint ventures, research institutes, universities and science and technology parks. However, so far small companies have rarely used RSFF.

A European **Environmental Technology Verification (ETV)** [15] scheme has been developed to prove performance of innovative environmental technologies. ETV should support the market access of new technologies and will generate independent and credible information on new environmental technologies, by verifying the performance claims put forward by technology vendors A pre-programme has been initiated to test the ETV scheme. ETV is expected to be in full operation in 2011/2012.

11 http://ec.europa.eu/cip/eip/eco-innovation/index_en.htm
12 http://www.proinno-europe.eu/
13 http://ec.europa.eu/environment/life/
14 http://www.eib.org/products/loans/special/rsff/
15 http://ec.europa.eu/environment/etv/index.htm

Since 2004, 36 **European Technology Platforms (ETPs)** [16] have been established to bring together industry stakeholders and to define research priorities. ETPs are industry-led forums involving industries, research centers, users, NGOs and other stakeholders. Their aim is to identify and implement long-term visions and strategic research agendas in key technological domains requiring strong cooperation between research. Thus they define strategic innovation paths influencing SMEs and other stakeholders in the respective technological domain. There is no specific ETP on eco-innovation. However, sustainability and eco-innovation are included as cross-cutting issues in the activities of many ETPs in different technological domains.

The **Enterprise Europe Network (EEN)** [17] helps small business to make the most of the European marketplace. Working through local business organizations, EEN aims to support SMEs in developing business in new markets, sourcing or licensing new technologies, accessing EU finance and EU funding. 572 member organizations across the EU and beyond ensure local network links to SMEs through the regional EEN offices. Members include chambers of commerce and industry, technology centers, universities and development agencies. EEN offers consultancy and partnering events through their regional offices and central access to information on European funding possibilities and to technology offers from foreign countries through an internet database.

Since the internet has become a convenient source of information also for SMEs, key information has been bundled in specific **SME internet portals**. The European Commission provides a central access through the "European Small Business Portal" [18] to SME relevant information on small business policy, legislation, funding and support schemes.

4.3 Transnational initiatives in the Baltic Sea Region

A specific part of the European framework which is relevant for SPIN is set by European and transnational initiatives targeting the Baltic Sea Region (BSR).

The **EU Baltic Sea Region (BSR) Strategy** [19], adopted in 2009, aims at creating more intensive cooperation between the BSR countries and shaping the region into a regional cooperation model for the whole EU. The implementation of the strategy is financed from different EU funds in the area including the Baltic Sea Region Programme. The strategy recognizes four key challenges for the region:

- to enable a sustainable environment,
- to enhance the region's prosperity,
- to increase accessibility and attractiveness and
- to ensure safety and security in the region.

A key motivator behind the strategy has been the deteriorating state of the Baltic Sea. Following from this fact, the focus of the environmental aspect of the strategy is on pollution control and ecosystem management issues.

The work of Baltic 21 is focused on seven economic sectors agriculture, energy, fishery, forestry, industry, tourism and transport as well as on spatial planning and education. These sectors have developed own action programmes (**Baltic 21 Action Programmes**) on how to support sustainable development in the BSR within the framework of the Agenda 21 for the Baltic Sea Region.

A more detailed review of these BSR activities and national measures in the SPIN partner countries is provided in the SPIN background study on Sustainable Consumption and Production in the BSR ("SCP in the Baltic Sea Region – Supporting SCP and eco-innovation in SMEs" by UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production).

16 http://cordis.europa.eu/technology-platforms/

17 http://www.enterprise-europe-network.ec.europa.eu/index_en.htm

18 http://ec.europa.eu/small-business/index_en.htm

19 http://eu.baltic.net/Baltic_Sea_Region_Strategy.7428.html?

» 5 Results of the country studies

This section contains a brief summary of results from the individual country studies emphasizing similarities and differences in the participating countries. A tabular overview on the individual country reports for detailed reference is provided in the annex to this report.

5.1 Overview on SME sector

All provided data confirm that the countries use the recommended EU definition for SMEs. Hence, the structure is based on the number of employees (< 250) and the annual income (< 50 €m) which gives rise to micro-, small and medium SMEs. Only Denmark and Estonia claim to partly use the more limited definition that an SME has less than 100 employees.

In all countries, the vast majority of companies are SMEs. In Denmark they count for 92 % of all enterprises and in all other countries which provided data they build 99 % of the entrepreneurial infrastructure. There are differences in the substructures, but the tendency is towards micro SME (< 10 employees). The range is here from 84 % micro SME in Finland to 96 % in Lithuania with the other countries in between.

As far as data are available, SMEs add to a high percentage to the GDP. It covers a spectrum from almost 50 % to about 70 %, mostly in low technologies and services. The industrial sectors with highest SME involvement are different ones from country to country.

This particularity of the entrepreneurial landscape – a vast majority of micro SMEs being responsible for a good share of economic growth – has to be kept in mind. It is the background for specific problems and demands, arising from a lack of man power within an individual SME.

Concerning the innovation awareness in SMEs the situation is not yet optimal, but some data is encouraging: At least 30 % of the SMEs have introduced innovative technologies during the last 3 years. In general, SMEs are less innovative than big companies although the situation might be different in specific industry sectors with short innovation cycles and high SME share.

Regarding SMEs' impact on the environment, there is almost no data available. A general estimation of the European Commission is, that SME count for about 70 % of industrial pollution [20]. 68 % of Polish SMEs believe that their impact is insignificant, whereas 50 % of the Lithuanian SMEs are aware of environmental problems within their enterprises.

5.2 Framework situation for SMEs

In most of the countries a national strategy or agenda concerning innovation and environment exists. All countries which provided data are at least aware of the issue.

In all countries the downturn of the global economy poses also a great problem for SMEs.

To support SMEs all countries which provided data state that support programmes and initiatives on a governmental level exist. This is not necessarily linked to environmental issues, but mostly to innovation as such.

In most of the countries, national laws are linked to respective European framework regulation. If reported at all, the degree of enforcement of new laws and regulations is often low. Often only cases where these laws were violated are listed. Many of the SMEs are not aware of and fail to implement the respective regulations.

5.3 SME needs

As stated, a huge variety of SMEs exists throughout the reporting countries. Since needs vary between different economic sectors and even more clearly, between individual companies, it is hardly possible to formulate general statements about their needs. On this background, the following section summarizes the more general needs which were collected in the country reports.

20 DG ENTR (2004): Public Policy Initiative to promote the Uptake of environmental Management Systems in small and medium-sized Enterprises – Final Report of the BEST Project Expert Group.

5.3.1 Financing

Access to capital is the most important issue in all countries which provided data, including lack of financial resources for start up as well as lack of finance for development, for capacity building, marketing, sales and commercialization of products and services.
Interestingly, Finland regrets the lack of innovative financing instruments as well as Estonia particularly needs better access to venture capital. In Germany, the current public discussion has caused energy efficiency to be perceived as the more important issue compared to material efficiency. Hence here, the innovation effort and financial support of SMEs is currently focused on energy efficiency.

5.3.2 Competences

There are differences in the needed competences which were mentioned in the participating countries. Qualification of personnel is important in most countries which provided data. It is as well stated that SMEs are busy with so many different issues that innovation and environment, let alone environmentally friendly innovation is no issue for most of them. One report even quotes: 'Estonians are not used to think green'. As for Poland, an insignificant role of R&D in most SMEs causes a not yet satisfying innovation performance. Therefore competences, skills and experiences in this area are often missing and there is no standardized awareness or approach concerning environmental innovations.

5.3.3 Business and Market

Even if the SMEs do not consider environment and innovation as such, they have to grow in order to stay in business. Therefore they start considering internationalization to get access to more markets, particularly SMEs from the smaller countries. This includes compliance with the European laws and standards i.e. ISO standards etc. Here, environmental aspects were introduced as a side effect in many cases.

Danish SMEs start to see environmental issues as business opportunities. For Lithuanian companies it was also reported that they consider environmental protection or sustainable development issues mainly due to changing business and market requirements. This shows that the demand side can lead to change SMEs environmental behaviour.
In Germany, although being a leading market for environmental technologies, some subsidies to certain large industries (e.g. energy supply from coal and nuclear power) have a potentially harmful impact on the environment and at the same time disturb the markets and hinder the market penetration of sustainable innovations[21].

5.3.4 Intellectual Property Rights (IPR)

If there is anything reported at all, IPR does either play no big role in SMEs or is a cost factor. Potential IPR issues are often not recognized or not dealt with by SMEs. No precise data is available on environmental innovation and IPR.

Whereas for instance Estonia states that its SMEs are aware of IPR issues, in Lithuania SMEs do not seem to face IPR issues as a major problem for their innovation activity.

It should be noted that the protection of IPR by patents or other means depends on the industry sector. For some sectors with short innovation cycles it has been observed that SME often would try keeping their know-how secret and bring innovations quickly to the market rather than applying for patents.

5.4 Barriers

The identified barriers to introduction of innovations for sustainable production in SMEs are in the following areas.

5.4.1 Financing

As long as data were provided, the main concern is access to capital. Many of the R&D oriented companies have faced difficulties in obtaining the necessary capital to do further development. A second problem, stated by Lithuania, is the lack of information on eco-innovation. Germany and Estonia mention long pay-back periods which cause problems in liquidity for SMEs and reduce willingness to invest. Sweden seeks a better coordination of existing funding programmes as well as a better commercialization effort as such to

21 Umweltbundesamt: Environmentally harmful subsidies in Germany, 2008.

increase the performance of SMEs in this sector. Finland reports good support for technology oriented SMEs, i.e. no particular barriers. An interesting point was raised in the Estonian report: Here, some funding institutions consider eco-innovation explicitly as too risky and refuse funding.

5.4.2 Competences

The countries which provided data list some areas were competences are most missing:

- lack of awareness of environmental impacts of their business activities,
- lack of competences in the environmental area/ sustainability issues,
- lack of information on modern managerial and technical solutions,
- lack of resources,
- lack of qualified personnel.

Details of missing competences are given only in some cases and they differ very much from country to country. If this is to be generalized at all, awareness, information and training seem to be an issue in all reports. Finland particularly states lack of competences in making business out of technology and need support for commercialization and marketing of products or services. The use of labels and the branding of new products are still not used on a broad base amongst SMEs, as reported by Sweden for instance.

5.4.3 Business and Market

Access to markets and business is assessed differently: Lack of standards is mentioned by Germany and Sweden as well as insufficient public procurement. Tax burden or bureaucracy are considered being obstacles in several countries. Interestingly, also lack of demand is particularly mentioned by Poland and Estonia. More generally, missing incentives hinder a better performance of SMEs regarding innovation performance. Finland regrets missing resources to enforce the respective regulations.

5.4.4 Intellectual Property Rights (IPR)

Almost no data were provided on this issue. Costs and awareness problems were mentioned.

5.4.5 Other barriers

Here, some national aspects are mentioned. Apart from the already mentioned barriers, the more general phenomenon of insufficient commercialization efforts ("innovation gap" between research and market) appears obviously also in the field of environmental innovation.

5.5 Incentives

The identified working incentives to introduction of innovations for sustainable production in SMEs include the following measures.

5.5.1 Regulatory and normative framework

As long as data were provided, key problem is the enforcement of legal requirements to make them working incentives. Sweden particularly reports that legislation has a significant impact on the SME business.
In general, mostly guidelines to new approaches related to environmental problems and environmental policy are provided. In most countries, new laws and regulations became mandatory in the last years. Estonia states specifically, that national environmental regulations have become more demanding and a tax for usage of natural resources was as well raised recently.
Finnish SMEs are often active in fields which are now about to become more regulated. This first mover advantage helps them to be successful on an international market as well since environmental topics are global by definition.
Poland and Estonia state that EU regulations became a trigger for national activities.
Estonia developed in 2009 a National Strategy for Developing a Greener Economy which aims at a sustainable society and supports respective activities with a considerable funding.

5.5.2 Market-oriented schemes

Estonia invested unused pollution certificates into innovation projects. Additionally, it created a new scheme of innovation vouchers.
Germany presented two important market-oriented measures to improve eco-innovation performance: environmental taxes and emission trading scheme. Lithuania provides some subsidies in this field. As a possible incentive to improve R&D and innovation in SMEs, Sweden discusses the removal of taxes on R&D activities.
Denmark states the importance of sustainability issues not only in manufacturing, but also when choosing sub-contractors and suppliers.
A new initiatve offered by the Danish government aims at public-private partnership in the field of environmentally friendly technology ("Environmental technology – for improvement of environment and growth. Action plan to promote eco-efficient technology 2010 – 2011").

5.5.3 Public procurement

Even if some countries are aware of the issue, they do not yet sufficiently take advantage of their Green Public Procurement (GPP) potential. Estonia formulated GPP as a strategic goal, and invests unused pollution certificates into innovative environmental projects. Lithuania has the ambitious goal of 25 % green public procurement by 2011, and Sweden regrets that in general, public procurement is not supporting sustainable innovations, but rather existing solutions. Denmark offers an internet portal and guidelines to help public procurers performing better. Very recently, in Germany the first Federal State (North Rhine-Westphalia) initiated a regulation that obliges its Ministries to respect green public procurement when purchasing computers, paper, cars and other goods and services.

5.5.4 Financial and institutional support measures

All reports state that a range of support and funding initiatives is available. Most of these measures focus on innovation, less on environment. Nevertheless, in particular areas like clean production or wind energy, specific initiatives do exist in most of the reporting countries.

Interestingly in Poland, fees and fines which result from the Polish Environmental law feed into an environmental fund which is used preferentially for funding environmentally friendly tasks.
To raise awareness of Lithuanian SMEs regarding IPR issues, there are tax incentives and funding available to support these activities.

5.5.5 Awareness raising and demonstration measures

The reports list some measures in these fields, including awards, demonstration projects and training programmes. Sweden and Lithuania particularly mention their demonstration projects. All reporting countries provide training programmes, information and networking for SME, yet not always particularly focusing on environmental innovation.

5.5.6 Strategic planning and foresight

In Germany, earlier measures like an ambitious energy and climate programme fed into an overall policy action plan regarding environmental technologies. It comprises technologies for potential lead markets in the fields of water, resource efficiency and climate protection within the framework of the High Tech Strategy of the Federal Government.

Estonia uses its Estonian Environmental Strategy to bundle the different efforts.

Unfortunately, more data is not available from the other countries.

5.5.7 Other incentives

Improved impact assessment as well as particular incentives for companies to green their innovations are on the agenda of all countries which provided data. Other measures included are an incubation programme and mobility incentives in Estonia as well as a list of possible incentives for innovation from Poland, but these measures are not neccessarily linked to environmental issues.

» 6 Conclusions and recommendations

This section presents preliminary conclusions and recommendations based on the results of the analyzed country reports as well as discussions with the SPIN project partners and Advisor Board, e.g. at the project meeting in Vilnius in May 2010. They should be seen as a basis for further discussion with the project partners and the Advisory Board at the SPIN meeting in Berlin in December 2010.
Afterwards the conclusions and recommendations should be revised and further developed during the course of the project, also taking into account updated information from the partner countries and results from the SPIN SME workshops.

6.1 Conclusions on SME needs

Major SME needs identified in the country studies are

- Access to capital to finance the introduction of innovations for sustainable production, particularly after the R&D phase for demonstration, marketing and SME capacity building
- Qualified personnel with good knowledge on market trends and emerging innovations and anticipated benefit of applying sustainable innovations
- Direct access to information/consultancy on relevant legislation and standards, markets and emerging innovations and relevant support programmes (= one-stop-shop)
- Capacity building and networking with external experts from research and innovative suppliers from own country or foreign countries to increase the innovation capacity and dissemination of innovations
- Internationalization via European projects helps to broaden the view of SMEs and to support access to new markets

6.2 Conclusions on barriers

Relevant barriers to applying innovations for sustainable production in SMEs which have been identified in the country studies are

- Most of the observed barriers are particularly relevant for micro SMEs, whereas the medium-sized SMEs are usually in a different position when it comes to finances, competences, availability of time and capacities
- Although environmental legislation and action plans set ambitious targets they often lack enforcement because of limited knowledge of SMEs on applicable law and limited control measures
- SMEs have limited awareness of their actual environmental impact and existing options to make the company's activities more sustainable. In typical SMEs of 10 to 15 employees the actual innovation capacity and know-how is often limited to one or a few key persons.
- Because of limited capacity and time to acquire up-to date and comprehensive information on available innovations (including from neighboring industry sectors) SMEs are not fully informed on potential benefits and opportunities of innovations. Associated risks of investment are usually overestimated by the SMEs.
- "Innovation" is often an abstract term for SMEs, R&D organizations often speak a different language than SME and are often not linked to each other (experienced e.g. in DK, PL, SE)
- Investments in sustainable innovations are sometimes limited by long-term payback periods which are beyond the scope of the short-term financial planning of typical SMEs (but many sustainable innovations even have short payback periods).
- Limited access to finance and information and risk aversion may result in SMEs being innovation followers behind the large enterprises (but with large differences between industry sectors, in some sectors SMEs are innovation forerunners).

- These barriers in turn also affect the suppliers of sustainable innovations. Specific barriers for SMEs who want to introduce sustainable innovations to the market are:

- SMEs willing to introduce innovations to the market are often lacking venture capital to support up-scaling and demonstration on industrial scale, marketing and first penetration to the market

- Access to markets is sometimes hindered by insufficient information about the demand side, regulatory and administrative burdens and misleading incentives (e.g. tax relief for heavy polluting industries).

- IPR issues are often not considered by SMEs but it seems that they are no specific problem for introduction of innovations for sustainable production

6.3 Conclusions on incentives

Working incentives to support innovations for sustainable production in SMEs have been identified in the country studies:

- Legislation and expected profits are the strongest incentives to implement sustainable innovations in SMEs.

- A large variety of support measures and incentives exists in the participating countries. However, this variety of instruments makes it difficult for SMEs to get to know and get access to appropriate support schemes, especially on European and transnational level.

- Many SME support programmes are focused on supporting innovations in general but only some are focused on innovations for sustainable production.

- Knowing the benefit of innovations is more important for SMEs than knowing their environmental impact (sell the benefits for the SME not for the environment)

- Close-to-SME network points which are usual contact points of SMEs (e.g. industry associations, SME support services) can provide convenient information and consultancy on innovations, funding programmes etc. directly to the SMEs. This supports credibility and wide dissemination of this information and will reach more SMEs than information and funding sources which are scattered and difficult to access.

- Networking of SMEs with innovators and R&D experts can be supported through dedicated industry workshops or funding schemes (e.g. innovation voucher to support contacting R&D experts and knowledge access for SMEs). This helps to create new contacts and to build up innovation capacity of SMEs.

- In initial innovation phases (creative process to find ideas for implementing innovations), support for process implementation is needed (consultancy) to create demand for eco-innovations

- Incentives to raise venture capital from companies and private persons (e.g. through tax relief measures) or dedicated public venture capital foundations help to overcome the financing gap from R&D to market penetration

- Demonstration on industrial scale and reference plants are important for technology validation to increase credibility and enable access to new markets

- Green Public Procurement has a large potential to support both demonstration/reference plants and bridge the financing gap if sustainability criteria would be obligatory to consider for awarding public contracts. However, potentials are not yet sufficiently exploited and potential drawbacks (e.g. administrative burdens and market restrictions) should be avoided. Sustainable consumption could be a general strategy to support private green procurement.

- Market-oriented incentives (e.g. tax schemes, tradable permits) are both effective and flexible measures to reach set targets and support the uptake of sustainable innovations in the market.

- Legislation – if properly enforced – as well as accepted industry standards and labeling can be a strong incentive which actually force introduction of innovations for sustainable production. But legislation should not be too strict (allow flexibility) and too quick (allow transition).

- Harmonized legislation and norms as well as transnational information and support services support the access to international markets for SMEs.

6.4 Recommendations for the SPIN Action Plan

The SPIN Action Plan should translate the findings on the SME needs, existing barriers to innovations for sustainable production and experience on working incentives into a transnational action plan to reduce barriers and create new transnational incentives to effectively support uptake of innovations for sustainable production in SMEs of the Baltic Sea Region.

Although the presented conclusions are still preliminary it seems that joint action in the BSR could help particularly in the following areas:

- Increasing awareness of SMEs and within their supply chains is crucial for stimulating demand for sustainable innovations

- Access to finance introduction of innovations for sustainable production from private and public capital sources (particularly after R&D phase for upscaling, demonstration and market introduction)

- Building-up competence and capacity for linking sustainability and innovation in SMEs and enable easy and direct access to relevant information for them.

- Support access and penetration of international markets by SMEs through building up international networks and information services across borders and through harmonization of regulatory framework

Preliminary findings and suggested activity areas need to be discussed in more detail together with project partners and Advisory Board for developing a common understanding and setting priorities. Furthermore, ongoing work of the SPIN project should be used e.g. for validation of the SME needs during SME workshops and for updating information from the SPIN partner countries.

Based on the background studies for the 4 selected industry sectors and the feedback collected from SMEs in theses sectors, specific recommendations for the 4 sectors should be included in the SPIN Action Plan.

It is recommended to consider existing and emerging policy initiatives in the BSR which could provide useful links to make the SPIN Action Plan operational. Furthermore, expected results from parallel INTERREG projects in the BSR could provide synergies for implementation of the SPIN Action Plan, e.g. the projects JOSEFIN and BASIC.

An active dialogue between the SPIN project team, the addressed policy makers (represented by the Advisory Board) and the target group of the proposed actions, the SMEs in the Baltic Sea Region (represented in the SME workshops), should be established. This should make the SPIN Action Plan attractive for policy makers and effective for the SMEs in the Baltic Sea Region at the same time.

» 7 Annex: Overview table of the country reports

This is a tabular summary of key information compiled from the SPIN country reports of the individual countries for quick reference. Please check the full country reports for detailed information.

	Denmark (DK)	Estonia (EE)	Finland (FI)	
Report version	20.10.2009 update: 08.11.2010	15.04.2010 update: 08.09.2010	31.03.2010	
Author	DTI Danish Technological Institute Contact person: René Archer Grøn	PP4 University of Tartu Contact person: Antti Roose, Kadri Reinsoo	VTT Contact person: Jukka Hyvönen	
1. Overview of SME sector				
Definition	SME definition (employees <100) is used	by no. of employees according to EU definition medium (250)/small (50)/micro (10) + annual income, sometimes SME definition (employees <100) is used	by no. of employees according to EU definition medium (250)/small (50)/micro (10) + annual income	
Number/size	Micro enterprises (< 10 employees) represent 92 % of the total number of enterprises SMEs (< 100 employees) account for 39 % of employment;	SMEs represent 98,7 % of the total number of enterprises and account for 64 % of employment (< 100 employees) Number of employees slightly increasing ■ 1 % medium-large (>100) ■ 13 % small ■ 86,5 % micro	SMEs represent 99,8 % of the total number of enterprises and account for 62,8 % of employment; ■ 0,2 % large ■ 0,8 % medium ■ 99 % small	

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	29.03.2010	March 2010 update: 02.11.2010	update: 29.11.2010	March 2010 update: 25.07.2010
	UBA Contact person: Daniel de Graaf (UBA) André Greif (PtJ)	Institute of Environmental Engineering, Kaunas University of Technology Contact person: Valdas Arbaciauskas	Central Mining Institute (GIG) Contact person: Wlodzimierz Sokol	IVL Swedish Environmental Research Institute Contact person: Magnus Klingspor, Uwe Fortkamp
1. Overview of SME sector				
	by no. of employees according to EU definition medium (250)/small (50)/micro (10) + annual income sometimes German SME definition (employees < 500) is used	by no. of employees according to EU definition medium (250)/small (50)/micro (10) + annual income	by no. of employees according to EU definition medium (250)/small (50)/micro (10) + annual income	by no. of employees according to EU definition medium (250)/small (50)/micro (10) + annual income
	SMEs represent 99,2 % of the total number of enterprises and account for > 66 % of employment; ■ 1,4 % medium ■ 7,7 % small ■ 90,9 % micro	SMEs represent 99 % of the total number of enterprises and account for 74 % of employment; rapidly growing number; ■ 5 % medium ■ 21 % small ■ 74 % micro	SMEs represent 95 % of the total number of enterprises and account for 69 % of employment ■ 1 % medium ■ 3 % small ■ 96 % micro	SMEs represent 99,8 % of the total number of enterprises and account for > 63 % of employment; ■ 0,8 % medium ■ 4,7 % small ■ 94,2 % micro

	Denmark (DK)	Estonia (EE)	Finland (FI)	
Role in economy	The services sector is dominant in the Danish economy representing 73 % of the total value added in 2005. Within this services sector, community, social and personal services accounted for the highest share of services value added1 (37 %) in 2005, reflecting the prominence of the public sector in Denmark. In 2005, 30 % of the stock of enterprises that had experienced high growth in employment and 25 % of the stock of enterprises with high turnover growth were less than five years old.	Mainly low-technology SME, low share of high-tech employment	SMEs contribute 48,7 % of total turnover SMEs by activity area (micro enterprises not included): ■ 43 – 68 % in industry ■ 36 – 62 % in services	
(eco-)innovations	37 % of all enterprises are innovative (no SME specific data)	Survey: 43 % of small enterprise (10 – 49 employees) are innovative compared to 85 % of large companies SME mainly carry out process innovation and to a minor extent product innovation Visibility and importance of green companies is small	SMEs involved in innovation activities: ■ 43 % (10 – 19 employees) ■ 54 % (20 – 49 employees) ■ 60 % (50 – 99 employees) ■ 68 % (100 – 249 employees) Finland is one of the most research-intensive countries in the world (national spending 3,7 % of GDP)	

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	SMEs contribute 48,7 % of total turnover and 47,2 % of net value-added (GDP??) Relative number of SME in certain economic branches differs only slightly (lowest in energy supply 97 %) Employment share (from 16 % energy supply to 93 % construction sector) and turnover (from 8,5 % energy supply to 87 % construction sector) vary significant from sector to sector	SMEs contribute 64 % of GDP (increasing), 58 % of total exports; SMEs by activity area: 13 % industrial production, ■ 31 % service ■ 35 % trade; SMEs by industrial sector: ■ 42 % wood ■ 14 % textile, leather ■ 12 % chemicals ■ 12 % food	SMEs contribute 47 % of GDP (steady) SME mainly operate in wholesale trade and retail trade, services and industrial production	SMEs contribute 55,5 % of net value-added (GDP??) SME have been identified as an important driver of the Swedish economy
	more than 50 % of the large companies already use technologies for recovery of kinetic and process energy, but only 20 % of the small ones	40 % of SMEs are involved in innovation activities; eco-design/life-cycle concept rarely used but focus on specific environmental aspects;	■ No SME specific data available ■ 30 % of companies have introduced eco-innovations in the last 3 years ■ Eco-innovation in SME mainly in the sector of environmental protection, measuring instruments, renewable technologies, components used in water, sewage and waste and application of IT-technologies. In other industries eco-innovative solutions are mainly developed by large enterprises ■ Eco-innovative consumer products: SME mainly in market niches (ecological toys and productpackaging)	

	Denmark (DK)	Estonia (EE)	Finland (FI)	
Enironmental impact		No data available, Few big companies make up vast majority of environmental pollution		
2. Framework situation				
Regulation/legislation	National Innovations System for improving innovation in industrial and market organised economies A large part of the environmental regulation that is significant for Danish environmental technology companies is laid down at EU and international level.	R&D policy: Knowledge based Estonia Sustainable Estonia 21 strategy Motive to use environmental friendly solutions is legislation and profitability	According to a survey for 16 % of innovations environmental factors and for 9 % regulations, standards and legislation had great significance to the origin of the innovation	
market/business drivers	linked innovation and entrepreneurship policies With "Danish solutions for global environmental challenges", the Government launched five partnerships (PPP) that address prime key environmental challenges.	Estonia has been hit hard by recent economic crisis Estonia is currently in the transition from the environmental infrastructure development phase to the application of legal regulations Little demand for green products In 2006 app. 121,4 million Euro were spent on environmental costs.		

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	No data available, EC: SME account for ~70 % of environmental impacts	50 % of SMEs are aware of environmental problems in their enterprises	■ Between 75 and 90 % of SME believe that their impact on the environment is insignificant, ■ Many SME are not aware of their environmental impact, but between 2008 and 2010 awareness rose signifivantly ■ Often non-compliance to environmental laws by SME	No SME specific data available; During the last 25 years the share of the total pollution which originates from industry is steadily decreasing compared to pollution from traffic, energy production and households.
	2. Framework situation			
	Recovery Plan consists of 9 activity areas for a new small business policy Labour and industrial law includes several exceptions for SME (e.g. less strict dismissals protection, reduced employees participation...)	■ National strategy for Development of Small and medium-sized business ■ Lithuanian Strategy for Innovations 2010 – 2020	Requirements of EU environmental policies	■ Some exceptions for SME exist, e.g. facilated auditing process for SME ■ Specially in micro enterprises rules and regulationsare regarded as obstacle ■ Environmental permits are given depending on size and type of operation ■ Systemic and sustainable thinking is not widely implemented in legislation and regulations
	economic upturn since 2005 came to a sudden end with global financial crisis, 2010 only slow recovery; SME operate under difficult conditions which are worsened by the restrictive loan policy of banks; governmental aid: short-time work money; Environmental issues are considered less important by some companies during the crisis but environmental sector is less affected than other sectors and the crisis offers the chance to analyse and gain energy and material efficiency potentials	Business conditions for SME became worse in 2009 Most important problems for SME are personnel costs, insolvent customers and shortage of qualified work force.	Environmental friendly innovations are mainly seen as "secondary effects" of performance improvements / economical aspects SME show limited technology investments Mainly incremental innovations and organisational changes	Drivers for innovation are a better satisfaction of (new) demands. Such needs can be generated by legislation or by opportunities for increased efficiency.

	Denmark (DK)	Estonia (EE)	Finland (FI)	
Financial aspects	"Knowledge kupons"? → funds are used up Loans longer than three years have been used by nearly 6 out of 10 SME's surveyed in Denmark (50 %).	Many national and county tools (both company- and systemorientated) that support the start-up and development of eco-innovative enterprises exist 3 most important institutions/programmes: Enterprise Estonia with its subprogrammes Credit and Export Guarantee Fund KredEx Local entrepreneurship centres and consultancy centre	■ Tekes (Finnish Funding Agency for Technology and Innovation) ■ Academy of Finland (prime funding agency for core research) ■ Sitra – Finnish innovation Fund ■ Finnvera (Finnish financing company)	
Enforcement degree	According to the OECD, Denmark's environmental policies have not always been strong enough to counter the pressures exerted on the environment from transport, agriculture, fisheries and other economic activities, as well as from consumption patterns.	In 2009: 3776 environmental violences were registered in Estonia by the state environmental inspectorate		
3. Methodology				
	statistical information by OECD publication and Statistical Yearbook	Statistical information, studies and interviews; Report was reviewed by two external experts	The report on needs is based on a survey conducted by researchers from Turku School of Economics and was granted by Tekes.	

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	Variety of existing financial support schemes for R&D and innovation but difficult to finance the first penetration to the market (lack of venture capital)	■ Various sources of financial support: tax reductions, credits, subsidies, consultation and training, establishment of business incubators and technologyparks ■ National support in accordance with the Law on Development of SME ■ EU structural support ■ Nordic Environment Finance Corporation (currently not available) financed cleaner production investments in LT,LV,ES and RUS ■ Innovation vouchers to encourage cooperation between SME and research institutions (SME buys R&D expertise or knowledge from research institutions) 2010 – 2013	■ Smaller enterprises less frequently use external sources of funding (credits and public funds) → size of enterprise is connected with the activities enterprise takes to gain public funding	■ Financial aspects are important for innovation in SME. External funding can be a problem. ■ Vinnova funds needs-driven research ■ Other authorities that fund SME are Swedish Agency for Economic and Regional Growth and for the energy sector the Swedish Energy Agency ■ Law on public procurement
	examples for enforcement are given only for cases violating the law, i.e. as enforced penalties	Uptake of environmental legislation by SME difficult due to multiple amendments, lack of competences and capacity and financial resources		Degree of enforcement is relatively high in Sweden, specific measures depend on size and environmental impact To some extent the system is based on self-declaration
		3. Methodology		
	Based on literature survey and background information on relevant funding programmes, support measures, institutions and policy initiatives and interviews	Statistical information and studies by Lithuanian Statistics Department, national programmes, etc. SME needs identified by SWOT-analysis, small survey	studies SWOT analysis	Literature survey, interviews

	Denmark (DK)	Estonia (EE)	Finland (FI)	
4. SME needs				
Finances		Access to capital is the most important question for all entrepreneurs at the moment: Lack of financial resources for start up Lack of finance for development Although Enterprise Estonia covers all stages in enterprise development funds are limited Need for venture capital	■ Financing tools for R&D of products and services do exist, but not for marketing, sales and commercialisation of products and services ■ Lack of innovative financing tools	
Competences	■ human resources ■ knowledge building & -dissemination ■ ICT and ■ entrepreneurship are seen as the main drivers of innovation	Need for know-how and competence Lack of experience to work with academic community and scientific institutions Difficult to find highly professional personnel Need for engineers, marketing specialists Need for motivation of employees Lack of cooperation with scientific institutions, public sector... "Estonians are not used to think green"	■ Skilled workers ■ Information on market, customer feedback ■ International cooperation ■ Making business out of technology	

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
4. SME needs				
	Material consumption is the largest cost factor in the manufacturing sector (44 % compared to only 1,8 % for energy) The current public discussion has caused energy efficiency to be perceived as the more important issue compared to material efficiency (SME survey: 58 % have /will take measures to increase material efficiency, 64 % have / will take measures to increase energy efficiency)	■ Different financial options exist, but are not applied by SME ■ Financial support for capacity building	■ Financial factors (including high cost of R&D works and technologies, limited access to capital) ■ High risk of investments in new technologies ■ Lack of funding for R&D ■ Existing economic conditions ■ Existing programs only slightly stimulate innovative behaviour ■ Difficulties in obtaining external financing of high risk ventures ■ Insufficiently and inadequately directed public support	The financing of start-up companies is difficult. Access to financing and competences is important for development projects. Capital: ■ No obstacle 64 % ■ Small obstacle 27 % ■ Large obstacle 9 %
	Necessary competences are only listed as missing items See 5.2	■ Need for information dissemination on eco-innovations and proactive approach ■ Need for closer interdisciplinary cooperation ■ Need for technical assistance ■ Need for capacity building activities (short- and longterm training programmes) ■ Need to strengthen information output about eco-innovations and their benefits	■ Lack of market knowledge ■ Enterprises are occupied by other activities ■ Need to use different unique combinations of competitiveness instruments ■ Limited extent of SME activity formalisation ■ More than half of SME do not employ workers with higher education ■ Difficulties to find adequate workers ■ Enterprises most active in innovation are those managed by several persons ■ Competitive pressure has a positive impact on innovation activities Future needs: ■ Involvement in investment activities ■ Planning expansion on new markets ■ Having a separate R&D unit ■ Undertaking cooperation	Lack of time Unclear division of responsibilities within the company Lack of competence Communication between SME and research performers is needed. Willingness to introduce new products: ■ Yes 40 % ■ No 60 % Willingness to introduce new production processes: ■ Yes 20 % ■ No 80 % Possibility to find suitable employees: ■ No obstacle 40 % ■ Small obstacle 32 % ■ Large obstacle 28 % Willingness to introduce new organisation ideas: ■ Yes 20 % ■ No 80 %

	Denmark (DK)	Estonia (EE)	Finland (FI)	
Business & Market	companies start considering environmental issues as important to their business	Need to find a (international) market for products or services (42 % of SME) Need to guarantee the quality of the product Lack of marketing experience Lack of long-term strategies Need to establish new solutions	■ commercialisation of inventions ■ the development of inventions to products ■ the marketing of innovations ■ knowledge and foresight of environmental regulation and international contracts	
IPR		Estonian enterprises are less aware of how to use IPR, only 11,2 % of small and 19,2 % of medium-sized enterprises protect their IP and only 2,8 % (small) and 3,4 % of medium-sized enterprises apply for a patent Sufficient possibilities for state support in order to finance IPR activities exist But entrepreneurs do not have sufficient information about patenting IPR issues are unclear, complicated and time-consuming for SME, even so that awarenss for the issue increased considerably	Resources to protect the patent (large enterprises vs. small enterprises)	

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	A review of the OECD revealed that about 35 % of German subsidies were potentially harmful to the environment. In 2006, according to the Federal Environment Agency, subsidies in Germany in the amount of 42 billion € have to be classified as environmentally harmful.	Companies consider environmental protection / sustainable development issues mainly due to changing business and market requirements Existing tools are not fully utilised (e.g. EMS often exist only on paper and do not result in real change of management effectiveness or improved environmental performance)	Insignificant role of R&D units in SME (only 5 % co-operated with research units during the last two years)	■ Uncertainties of needs among potential customers ■ Inadequate knowledge of relations between investments and benefits ■ Lack of competence and poor articulation of demand ■ Lack of standards. ■ Scepticism against new and unknown solutions environmental tools used: ■ ISO 14001 6,6 % ■ EMAS 0,2 % ■ Eco-labelling 4,3 % Cooperation with other enterprises on a regular basis: ■ Yes 61 % ■ No 39 % Reason for missing cooperation: ■ No need or no benefits 30 % ■ Difficult to find partners 5 % ■ Demands to much time and effort 4 %
	Specific support is given to SMEs in order to improve their performance regarding IP by the "SME patent initiative", which supports about 800 SMEs per year.	IPR issues are far from Lithuanian SME needs.		■ Protection of intellectual property is of vital importance for SMEs with cost intensive innovations. ■ Many SMEs are lacking the financial strength ■ It is important not only to look at patents, but also at specific know-how, trademarks, image etc. ■ IPR issues are especially important for the global market, but also expensive.

	Denmark (DK)	Estonia (EE)	Finland (FI)	
5. Barriers				
Finances	Many of the development oriented companies have faced difficulties in obtain the necessary capital to do further development.	■ Unpaid bills, Liquidity issues (39 % of SME) ■ Lack of finance from sources outside enterprise ■ Innovation costs too high ■ Long pay-back time ■ Markets dominated by established enterprises ■ Uncertain demand for innovative goods or services ■ Difficult to get funding as criteria are "classically economical" (profit, sales...) and not "green" criteria and time-consuming application ■ funding institutions hesi tate to take too much risk and therefore sometimes avoid or refuse innoative projects	not much because of high level of public support for technology oriented SMEs	
Competences	SMEs may be able to compensate for lack of resources, if they were to enter into networks: companies would be more focussed on doing sustainable innovations if they were member of a business network for companies doing sustainable innovations.	■ Inadequate skills of employees (30 %) ■ Labour shortage (38 %) ■ Micro-companies did not find competence issues as problematic as medium-sized companies ■ Lack of qualified personnel ■ Lack of information on technology ■ Lack of information on markets ■ Inertia of entrepreneurs or officials mind ■ Little interaction between companies and universities ■ Entrepreneurs have no experience with working with scientific literature and conducting e.g. patent search	■ Lack of cooperation ■ lack of competences in making business out of technology ■ need support for commercialisation and marketing of products or services	

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
		5. Barriers		
	■ Lack of investment capital ■ Difficult access to loans and risk capital ■ Long payback periods	■ No financing sources for innovation development ■ Lack of information on eco-innovations and their benefits	cp table 8 about 47 % identify high labour costs as a problem, 40 % do the same with high rates for loans, 35 % assume access to financial ressources in general a problem	■ SME have to invest more in innovations ■ Weak point is commercialisation ■ Investment in resource efficiency can be improved ■ Existing financial instruments are not used well ■ Better coordination between different programmes is necessary ■ Lack of internal and external financing ■ Too high costs ■ Difficult to get loans
	■ about three quarters of the small and medium-sized enterprises are hindered by internal and external barriers in the development of their innovation activities	■ Lack of awareness of environmental impacts of their business activities, lack of competences in the environmental area ■ Lack of information on modern managerial and technical solutions ■ Lack of resources ■ Lack of suitable training programmes	■ Limited internal potential of an enterprise (including lack of strategic planning, lack of innovative culture, employees' reluctance towards changes). ■ Information factors (including, lack of information concerning technology, lack of potential partners, lack of public support or protection of intellectual property) ■ Lack of knowledge about available public support ■ lack of incentives from the state ■ Insufficient infrastructure of intermediation	■ Difficult to find the right way to contact research providers ■ Need for better support to find right competences ■ Lack of information about ongoing research

	Denmark (DK)	Estonia (EE)	Finland (FI)	
Business & Market	customer demand is important sustainability has to be an issue when choosing subcontractors	■ High tax burden (41 % of SME) ■ Burdensome legislation and bureaucracy (39 % of SME) ■ Markets dominated by established companies ■ Uncertain demand for innovative goods and services ■ Estonia is still in the development phase, low level of innovativeness (investments are made to comply with legislation and not to promote innovative technologies) ■ Estonian market system is still very young → lack of market experience ■ Competition is too high to bring out a new product ■ Estonian environmental technologies companies are relatively young → products and solutions are not mature enough	■ bureaucracy ■ lack of resources of authorities to enforce the regulation is a barrier for the adoption of their innovations	
IPR		■ Companies are not aware of how to use and protect IP ■ Too expensive patent fees ■ Missing link between IPR specialist and entrepreneur ■ Long patenting process	The expenses of patenting is a barrier for SMEs.	
Other		■ Difficulty in finding cooperation partners for innovation ■ Gap between scientific research and doing business ■ No need to innovate due to prior innovations ■ Non-existence or incom patibility of standards	■ lack of national "demo plants" to experimental work and to get references for international markets	

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	■ financial, informational, technological and organisational obstacles ■ regulatory barriers (like lack of binding laws, technical norms and regulation, obsolete or exaggerated regulations) ■ missing incentives by environmental regulation (e.g. tax relief) ■ administrative deficits ■ lack of enforcement ■ extensive permit procedures ■ lack of standardised solutions.	Most serious problem in 2009 was personnel costs (67,8 %), in 2008 it was availability of qualified work force (72,3 %) Insolvent customers Availability of credit possibilities Decreased profitability	■ Limited demand for a new products ■ Law and administrative functions	■ Uncertainties of needs among potential customers ■ Inadequate knowledge of relations between investments and benefits ■ Lack of competence and poor articulation of demand ■ Lack of standards ■ Public procurement is today not supporting innovative solutions from SME, due to regulations and long term contracts. ■ need to strengthen international networks to facilitate export of new solutions ■ branding of products is not a common for all SME. ■ The use of environmental labelling and management schemes is restricted among Swedish SME,
	In an empirical study carried out in Hamburg 26 % of the SME named IP-management as an innovation barrier.	IPR issues are far from Lithuanian SME needs.		■ Lack of competence and thus support in this area
	Eco-innovation activity is strongly dependent on the type of industrial sector. Hence, barriers can be material or energy costs in production, material and energy intensity, immatureness, low quality as well as lack of demonstration or reference objects and existing plants hindering the implementation of new technologies.	■ Lack of human resources ("no additional capacities") ■ Reactive instead of proactive approach in terms of environmental aspects ■ Weak cooperation be tween SME and other stakeholders especially research organizations ■ Limited product development activities	■ Limited potential of R&D area (including low expenditures, conservatism of scientists, passive attitude of scientific institutions towards enterprises),	■ Lack of time

	Denmark (DK)	Estonia (EE)	Finland (FI)	
6. Incentives				
Regulatory & normative	The national innovations system provides guidelines to new approaches related to environmental problems and environmental policy.	■ EU regulation is a trigger ■ National environmental regulation have recently become more demanding ■ Tax for usage of natural resources (not evaluated yet) ■ Energy label for new houses and apartments ■ 2 companies have EMAS, 200 ISO 14000 ■ Estonian corporate income tax: is supposed to support R&D investments and raise number of patents in the next years	Finnish SMEs are often already active in markets which are about to be regulated. Hence, they have the first mover advantage and with this they go often international more easily.	
market-oriented schemes		Sale of unused pollution quotas → invest in 21 environmental projects (e.g. CHP, wind park)		

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
6. Incentives				
	Implementation of new laws concerning energy saving is mandatory for new buildings. In recent years, new laws effectively pushed SMEs towards eco-innovation in the areas: ■ Waste treatment and recycling ■ Renewable energies and energy efficiency ■ pollution control ■ product design A couple of other initiatives exist: ■ Labelling and standards ■ Reference to Best Available Technologies in authority decisions and permits ■ Implementation of voluntary European approaches (EMAS and ISO 14.000)	Integrated pollution prevention and control permits → positive impact Key problem is the enforcement of legal requirements as they are subject to frequent changes	■ EU regulation is a trigger ■ Polish Environmental Protection Law ■ national guidelines are available	■ Legislation has a significant impact on the SME business. ■ new directives, but also permits create the need for improvement, e.g. REACH,
	Two important measures to improve eco-innovation performance are Cap & Trade and Eco Tax as well as the initiative "market incentive programme" for renewable energies.	Subsidies, micro-credits, financial guaranties and risk capital funds → information on effectiveness is not available	Fees and fines which result from the Polish Environmental law feed into an environmental funds and are given out again preferentially funding environmentally friendly tasks.	■ difficulties to provide venture capital especially for innovative and new started enterprises → The Energy Agency sees a need for further work in this area, in order to provide loans to such companies at an early stage. ■ A possible incentive to improve R&D and innovation in SME that is discussed at the moment to remove tax on R&D.

	Denmark (DK)	Estonia (EE)	Finland (FI)	
Public procurement	a new internet portal exists to guide public procurers and a campaign was launched to support the idea	Estonian strategic goal: green public procurement → not reality as it is not demanded by the customers		
financial/institutional support	since 2006 a Globalisation Strategy exists: In addition to already existing programmes, further funds have become available to develop new programmes, mainly aimed at supporting enterprises with high growth potential. "Environmental technology – for improvement of environment and growth. Action plan to promote eco-efficient technology 2010 – 2011." The action plan allocates DKK 90 million over two years for the testing, development and demonstration of environmental technology applied to water, waste, and air.	■ Funding programmes with specific focus on eco-innovation do not exist, but there are programmes supporting innovative SME and separate ones supporting environmental development ■ Estonian Development Fund: the only risk capital fund in Estonia (EDF will become a shareholder) ■ Innovation shares (vouchers) programme: support in getting better access to specialist → has worked successful ■ Technology investment programme ■ Energy technology programme (development of subsectors: oil shale, renewable energies, liquid biofuels)	National science, technology and innovation policies has been assigned to an expert body, **the** Research and Innovation Council **which handles about 80 % of public funding.** **A wide range of support initiatives exist, including loans and grants, training, development etc., but not specifically focussed on environmental issues.**	

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	Germany does not yet sufficiently take advantage of its GPP-potential. But in the area of construction there are best practice examples concerning sustainable construction in public buildings. For public construction projects of the federal government a certification according to sustainability criteria have become obligatory ("Gütesiegel Nachhaltiges Bauen – Silber").	National Green Public Procurement Implementation Programme (target 25 % in 2011) → information on effectiveness is not available	9 % of GDP for public procurement, equalling 14.000 € for about 58.000 enterprises, but only 10 % of the public procurements explicitley state "green" criteria.	■ In general, public procurement is not supporting sustainable innova--tions, but rather existing solutions. There are considerations to improve this situation and work for innovation procurement.
	a broad range of support and funding initiatives is available, both at Federal and at Federal State level.	Nordic Environment Finance Corporation (currently not available) financed cleaner production investments in LT,LV,ES and RUS in form of soft loans → effective; Innovation vouchers (since 2010) to encourage cooperation between SME and research institutions (small credits for SME to buy R&D expertise or knowledge from research institutions) → there was a great interest in the first call	Fees and fines which result from the Polish Environmental law feed into an environmental funds and are given out again preferencially funding investments and other environmentally friendly tasks. a couple of loan and grant schemes for SMEs are provided Structural funds are widely used to support SMEs on the base of five operational programmes.	■ There are a number of support measures for SME from the Swedish Agency for Innovation Systems, Vinnova: Research and Grow, Win now ■ EUREKA/EUROSTARS ■ SMINT –pre studies for SME for technological cooperation in EU programmes ■ The Swedish Agency for economic and regional growth provides a number of support measures, e.g. the programme on environmentally driven markets ■ Also, a number of venture capital funds exists. ■ Moreover there are a number of institutions and networks that support SME in their work for sustainable innovations. for example: Incubutars like STING, CINNS, Environmental technology networks like ASSET, Sustainable Business Hub, Swedish Environmental Technology (SET), The Enterprise Europe Network

	Denmark (DK)	Estonia (EE)	Finland (FI)	
Awareness & demonstration		■ In general measures are designed more universally than specifically ■ Awareness raising measures for some specific sectors exist (e.g. agriculture), some sectors are too small for this ■ Almost all public institutions offer advisory services ■ Environmental award of the year (by Ministry of environment) ■ 2009 was year of innovation in Estonia		
Strategic planning/ foresight		■ EU strategies (e.g. ETAP) and over 90 different Estonian strategies related to environmental technology sector in Estonia (but most of them are not or just loosely bound) ■ Sustainable Estonia 21 ■ Knowledge-Based Estonia ■ Estonian Environmental Strategy		

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	Here as well, a broad range of support and funding initiatives is available, both at Federal and at Federal State level. This includes education, awareness raising, networking, clustering, guidelines, personnel exchange and more.	■ LT achieved the basic capacity level for cleaner production defined by OECD ■ Institute of Environmental Engineering, Kaunas University of Technology → "cleaner production center" ■ Demonstration projects: Norwegian Cleaner Production Programme and World Environment Centre Pollution Prevention Programme –>lack of follow-up, lack of local experts, no multiplier effect ■ Training programmes within the Norwegian CP Programme → successful ■ Information dissemination by seminars, workshops and conferences		■ There are a number of training programmes and education possibilities, most of them target innovation or production efficiency in general, e.g. KK-stiftelsen, (www.produktionslyftet.se, in Swedish) ■ European LIFE+ programme ■ DemoEnvironment, support for demonstration of environmental projects Four groups of innovators have been identified: ■ Entrepreneurs professional in the specific branch of the innovation; ■ Specialists external to the university environment; ■ General technologists external to the university environment; ■ Students and researchers from the university environment.
	Framed by the High Tech Strategy of the Federal Government, earlier measures like an ambitious energy and climate programme fed into an overall policy action plan regarding environmentally technologies. It comprises technologies for potential lead markets in the fields of water, resource efficiency and climate protection.	There are several programmes to promote innovations in Lithuanian enterprises, including SME, which are joined under "Special Programme for Economic Growth and Increase of Competitiveness" Since 2010: Lithuanian Strategy for Innovations 2010-2020		At the moment the Royal Swedish Academy of Engineering Sciences (IVA) is leading a project on Innovation for Growth, where different issues are to foster innovation in Sweden are addressed. Stakeholders from both authorities and business are part of this project.

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Other	Several organisations have been established in Denmark in order to support and guide the SMEs in matters of sustainability, environmental and climate issues.	■ Support for enterprise incubators ■ Support for the involvement of innovation staff ■ Cluster Development Programme ■ Researcher mobility programme MOBILITAS ■ SPINNO		
7. Conclusions and Recommendations				
Conclusions on barriers		■ Most important barrier for adopting sustainable innovations in Estonian companies is development phase of the market Economical factors obstructing innovation activity in Estonia are: ■ Lack of finance from sources outside enterprise ■ Innovation costs too high ■ Markets dominated by established enterprises ■ Uncertain/small demand for sustainable innovative goods or services ■ lack of experience. ■ sustainable innovation is not considered and highly ranked in the context of innovation and competitiveness. ■ Innovation support mechanisms are not in particular environment- or sustainability–driven.		

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	An improved impact assessment of released regulations and laws as well as support programmes will increase their acceptance as well as potentially decrease costs for the target group	Important role of Kaunas University of Technology in terms of awareness raising and competence building Main forms of patent promotion are ■ tax incentives ■ financial assistance (e.g. compensation of patent related expenses)	Incentives for companies to green innovation: ■ Cost reduction ■ Strengthening the companies positive image ■ Investing in the development of green products and services as part of the competitive advantage of existing market or to develop a new niche ■ Restrictions resulting from environmental policies ■ Awareness of employees and managers ■ Quality of products and services ■ certificates pressure from external stakeholders is not effective	There are a number of institutions and networks that support SME in their work for sustainable innovations
7. Conclusions and Recommendations				
	■ Financial barriers and barriers in competence/ information are very relevant for SME in Germany. ■ Lack of information on new technologies, support possibilities and the surrounding conditions are as well of high relevance to SME.	■ Lack of developed innovations ■ No financing for innovation development ■ Internal barriers: lack of information, human resources and competence ■ Weakness of external driving forces ■ Lack of sufficient attention from industry, financial sector and governmental institutions	misleading press coverage and insufficiant contact with policy makers are a barrier for the development of SMEs Unstable system of legal regulations, tax system, lack of coherent labour regulations, lack of honest competition-grey zone, high labour costs, high rates of loans, unstable policy, activity of justice, access to financial resources, activity of revenue administration, corruption, construction and space planning regulations, lack of qualified employees, rate of PLN are considered to be the most hinderung factors. a SWOT analysis was performed, revealing also chances and threats	■ Lack of time is a main obstacle for innovation work in SME, lack of financing often another one. ■ The cooperation between researchers and SME needs to be improved ■ Many SME lack access to IPR competence ■ Public procurement is not supporting innovative solutions sufficiently. ■ A relevant number of SME see no direct need for improvements. ■ There are a number of supporting tools available today, but many SME do not make use of the available funding and support systems ■ It is difficult for SME to get an overview about the available support systems and tools.

	Denmark (DK)	Estonia (EE)	Finland (FI)	
incentives		■ EU funds: SMEs have made investments in the devel opment of the environ-mental infrastructure ■ The government contin-ues to support R&D (budget increasing) ■ Strategy for develop-ing a greener economy for period 2009-2013 to support renewable energy and energy efficiency ■ Income from the sales of pollution quotas will be used for supporting environmental and energy efficiency projects ■ Estonian Development Fund: foresight projects and venture capital investments into innova-tive Estonian companies ■ SMEs can get better access to know-how by Innovation shares pro-gramme by Enterprise Estonia. ■ Technology investment programme by Enterprise Estonia assists indus-trial enterprises to overcome financial short-age for new technologies ■ tax policy to steer consumption		

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	relevant incentives are set particularly by the regulatory and normative framework and also through existing financial and institutional support measure.	Several financing mechanisms in the frame of the EU structural funds are available to SME in LT Focus should be placed on innovation development	Creation of international and local networks like SPIN, ACT CLEAN and domestic networks seems to be very important for emphasis of SMEs needs, to hamper all barriers and to suggest necessary incentives for development of SMEs. improvement of quality and stability of legal regulations, tax systems, and coherence of labour regulations reduction of labour costs, access to financial resources for implementation of innovations, low rates of loans	■ SME have been recognised as important for innovation. Tools are created or adapted to fit the need of SME, which probably will show effect in near future. See section 6.

	Denmark (DK)	Estonia (EE)	Finland (FI)	
general		■ In Estonia proof for high and low innovativeness can be found in sustainable and eco-innovations ■ Environmental technologies of Western, Central Europe and Nordic countries are applied in Estonia. ■ Process innovation for enhancing effectiveness of production chain and processing dominates in the field of eco-innovation in Estonia. ■ According to market development model, Estonia is in the middle of the transition from the infrastructure development phase to the application of legal regulations. ■ EU directives driven innovations in the field of energy efficiency, water management, and waste management ■ newly available: "Seed Financing" in addition to a start-up fund ■ new initiative: Seed-Booster, **Development Fund's international business incubator**		

	Germany (DE)	Lithuania (LT)	Poland (PL)	Sweden (SE)
	Especially SME are short in management capacity, this leads to high opportunity costs and a trade-off against other important decision to be taken by the enterprise.	■ Periodic assessment of the effectiveness of legal requirements and market-orientated schemes ■ Simplified control of legal compliance for SME ■ Competence strengthening ■ Long- and short-term training programmes! ■ Information dissemination activities ■ Increased cooperation between business and research ■ Stronger external incentives to stimulate motivation and commitment of SME ■ External technical and financial support See also results of SWOT-analysis	Most important problems: ■ Low Polish innovativeness compared with EU countries ■ The dominance of investment in embodied technologies ■ A limited number of companies acquiring new technologies ■ Limited co-operation with external partners ■ Limited use of ICT ■ Difficulties in raising capital in ■ Lack of knowledge about available public support lack of incentives from the state ■ insufficient access to innovative and sustainable technologies ■ insufficiently qualified human resources	■ The situation for sustainable innovations for and from SME in Sweden is complex. It is influenced by national, EU and international conditions. Findings from investigations that have been checked for this report can be summarised as follows: ■ In many cases, either innovation is addressed, or sustainable development, but very seldom sustainable innovation. ■ Investments in R&D and innovations are important for many companies including SME