



A framework for Member States to support business in improving its resource efficiency

An Analysis of support measures applied in the EU-28

A framework for Member States to support business in improving its resource efficiency

Final Report

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Abstract: In order to support businesses in improving their resource efficiency, Member States use a variety of approaches, ranging from voluntary to regulatory measures. This study assesses the scope of application of ten relevant measures and provides good practice cases of these ten measures across Member States. Through pre-filling information and eliciting feedback from Member State officials, this study found a wide range of examples of measures, varying from country to country and region to region, and also in the lessons learnt that can be drawn from their application in the Member States.

Beyond EPR schemes, no support measure has been replicated by all Member States –EPR coverage seems being driven by the legal obligations to transpose EU Directives into national law. Many of the support measures investigated could be more systematically adopted, building on the lessons learnt from where they have proven to be a success. This necessitates identifying ways of transferring and adapting knowledge to other Member States in their respective context(s). Using EU funding to finance international best practice exchange seems promising to continue enabling Member States to help their businesses improve their resource efficiency.

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1. Introduction

1.1. Project background

When a firm is considering investing to improve resource efficiency, all the factors that influence the decision-makers within that firm become part of the picture. Some key lessons in this context are that:

- a. There are many factors that influence decision-makers' choices to invest in resource efficiency or not.
- b. These factors can be categorised in different ways and include:
 - Market signals and other institutional factors (including relevant policy frameworks);
 - Internal organisational factors;
 - Value chain relationships with suppliers and clients;
 - Behavioural factors (for instance risk preference);
 - Technological factors; and
 - Financial considerations (including availability).

The literature points out how, in the presence of multiple factors which block or dis-incentivise investment in resource efficiency, a measure which removes one blocking factor will not necessarily change the firm's action. To bring about change, it will often be necessary to examine all major influences on choice and look at those choices within the framework of conditions that individual decision makers inside the firm are facing. This approach stresses the importance of the perceptions of decision makers in the face of incomplete information and uncertainty about the future. Investment decisions based on this uncertainty are – in practice within business – based on various rules of thumb (heuristics) or gut-feels (see e.g. Gigerenzer 2002).

By adopting a more realistic understanding of how decisions are made by firms, support measures to influence those decisions can be made much more effective. The interplay between site and company decisions and the wider policy framework is also critical to understand what drives resource efficiency. The figure below presents an illustration of the context for site based measures and how they are affected by company measures and in turn by market forces, regulatory measures from institutions as well as social drivers (purchasing), all within a wider context of environmental resources and environmental quality.

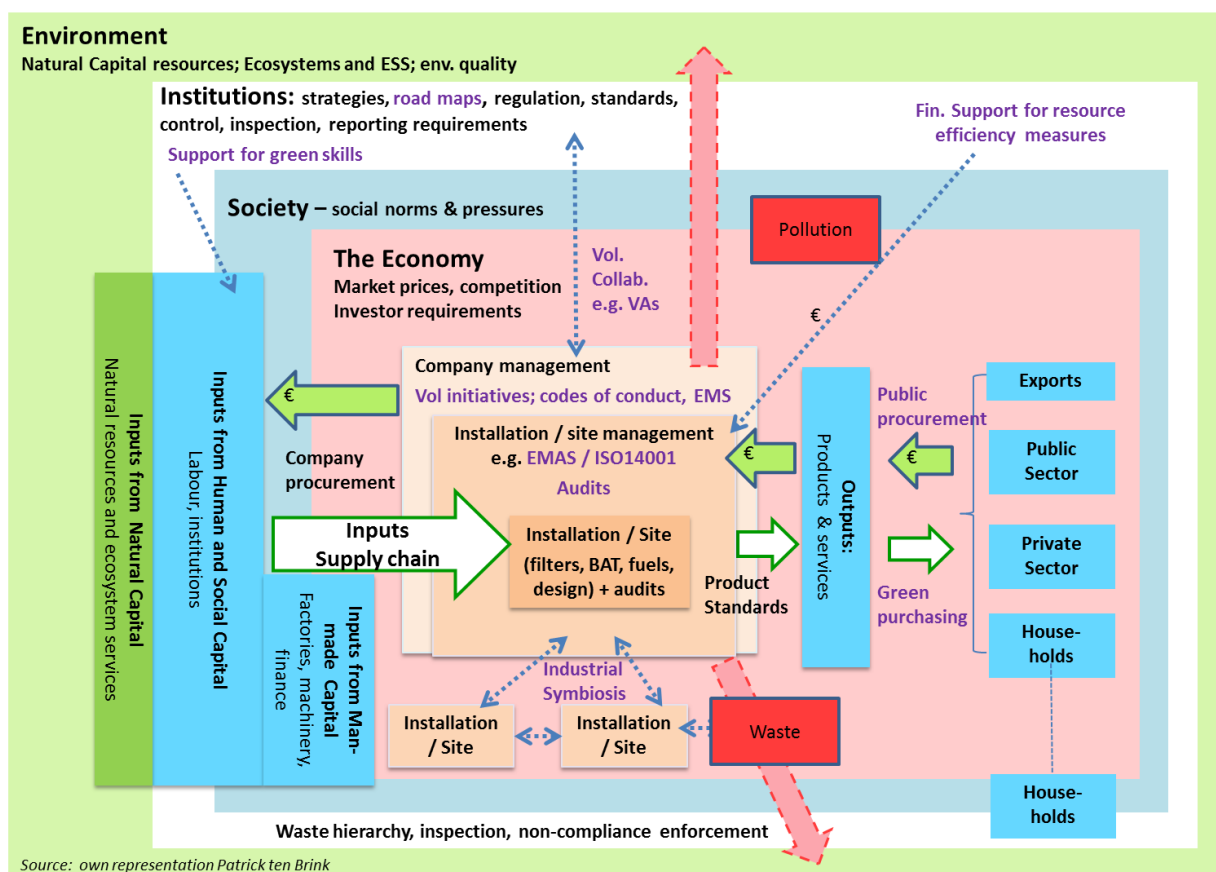


Figure 1: Simplified illustration of factors affecting resource efficiency decisions in firms

Source: Own representation P. ten Brink building on ten Brink, Russi, Mazza (2012) and ten Brink et al. (2011)

A good understanding of the potential drivers and barriers of resource efficiency decisions and their determinants can facilitate design and implementation of effective support measures. Frequently, this will require a combination of support measures applied simultaneously.

The Commission's Green Action Plan on SMEs (small and medium-sized enterprises) (European Commission 2014a) highlights the need to improve resource efficiency in European SMEs and identifies a number of SME-specific measures, including: providing SMEs with practical information/advice/support on how to improve resource efficiency; supporting efficient technology transfer mechanisms; facilitating SME specific access to finance for resource efficiency; and supporting eco-innovation.

The level of upfront costs of any type of investment and the anticipated pay-back period are particularly important for SMEs, which are generally more sensitive to any additional financial costs resulting from green business activities compared to large enterprises (Rademaekers et al. 2011). When it comes to bank financing, SMEs and especially very young small businesses face difficulties in obtaining the collateral or guarantees required by banks, which often consider SME financing as a risky business (Hyz, 2011).

SMEs also face more severe constraints in the resources they can allocate to investigating, decision making and funding of resource efficiency investments, frequently with higher proportionate opportunity costs of the decision making processes and higher perceived risks from unfamiliar investments.

In addition, lack of governmental support and encouragement (through the provision of funding opportunities, training, effective taxation policy, import duty, etc.) is widely recognised as another important barrier for the uptake of environmental investments (Calogirou et al. 2010). Another shortcoming refers to the fact that most of the tools for environmental management (such as the Eco-Management and Audit Scheme EMAS) have been produced for larger companies, without taking into account the specificities of the SME sector (*ibid.*).

An understanding of the range of factors or barriers simultaneously influencing SMEs is particularly important for judging the suitability of application of measures to improve resource efficiency. For example, even the best audit of an SME's opportunities for resource efficiency may lead to nothing, unless other barriers such as capacity and financing are also removed by Member State (or other organisations') actions.

1.2. Project aim and project logic

Member States use a variety of approaches to support business in improving their resource efficiency, ranging from voluntary to regulatory measures. An analysis of current support measures and how they are employed in different Member States can contribute to advancing the implementation of EU and Member States' policy in this area. This study forms part of DG Environment's ongoing work to implement its Resource Efficiency agenda. The aim is to identify key support measures that can be taken forward in Member States to support the achievement of EU resource efficiency and circular economy objectives. It does so by looking for examples at good practice that offer lessons for how to more systematically support resource efficiency.

This study will a) assess the scope of application in the EU Member States of 10 of the most important measures that countries can put in place to support or inspire businesses (with a specific, but not exclusive, focus on SMEs and primarily in the industrial/manufacturing sectors) to become more resource efficient, and b) provide best practice cases and outline lessons learnt of the current efforts in Member States to support the resource efficiency efforts of businesses.

In order to achieve the project aim, the study was set out according to the following methodology (see separate Annex document containing detailed information on all below issues):

1. *Develop a Conceptual Framework to*
 - a. Simplify the very large number of rather complex issues and factors relevant to the potential impact of policy support measures to improve resource efficiency in businesses; and
 - b. Focus the work and help develop criteria for the selection of measures to investigate in this study.
 2. *Establish a long-list of relevant support measures from literature review*
 3. *Design criteria for short-listing ten support measures for further study*
 4. *Short-list ten support measures for further study*
 5. *Establish a questionnaire template for the pre-filling of relevant information on support measures for inquiring responses from Member State officials. The questionnaire was designed for easy use by repeating the same structure per each of the ten measures:*
 - a. Brief description of the measure, partly with examples;
 - b. Question Qa on scope of application of the measure in the country – the classification offers the following scores: “No national policy in place for the support measure“, “A little use of this support measure” (some cases evident), or “Wide use of this support measure” (widespread examples or systematic support provided); it was pre-filled based on the information used to pre-fill the questionnaire per Member State;
 - c. Question Qb on pre-filled example(s) with objectives, launch year, target groups, budget;
 - d. Question Qc on effects and lessons learnt; and
 - e. Question Qd on literature / interviewee recommendations.
- In addition, the questionnaire also provides project context in an introduction and asking for respondent information, interest in obtaining full report)
6. *Pre-fill the questionnaires based on reviewing*

- a. Grey literature on EU level (comparing/analysing support measures across several EU MS, ideally EU-27);
- b. Websites of relevant institutions, e.g. ministries, chambers of commerce, efficiency agencies, business associations, NGOs;
- c. Media, newspapers, online magazines; and
- d. Scientific literature

Through pre-filling, the questionnaire aims to minimise the time and efforts of respondents to “simply” correct, where necessary, the information prefilled and complement where desired.

The survey was conducted through email (including the questionnaire and a two-page project description) sent by the Commission Services to all Member State (MS) contacts from the European Semester lists, asking for feedback to the pre-filled questionnaire.

We then followed up with MS officials regarding outstanding questions (where needed in order to reduce extra effort for MS respondents). Telephone interviews were only undertaken in order to clarify outstanding questions or in order to get feedback if the MS did not respond by the initial deadline. For Luxembourg, the Member State’s response did not provide additional information but confirmed the pre-filled information.

7. Analyse the information obtained

Based on the information obtained from pre-filling and Member States responses:

- Country reports were written, which contain a visual presentation of the scope of application of the ten measures in the respective MS in a radar diagram. In order to keep the country reports as relevant, interesting and as brief as possible, the most interesting cases were presented, including objectives, target groups, budget allocated and, where available, lessons learnt.
- The most relevant and interesting good practice examples per support measure were highlighted (see chapter 2)
- Overall lessons learned were condensed (see chapter 3).

A disclaimer for the remaining inherent subjectivity of classifying the scope of application

The classification of the scope of application of a measure as “No national policy in place for the support measure“, “A little use of this support measure” (some cases evident), or “Wide use of this support measure” (widespread examples or systematic support provided) in a country (whether in certain regions of or in the entire country) is thus based on documents and literature analyses, and, very importantly, on the expert feedback provided by the Member State officials surveyed. This leaves a certain level of subjectivity to the classifications undertaken because

- a) We may have missed relevant additional information;
- b) We may have concluded a different scope of application from the information obtained than others would have;
- c) Member State officials entered a more official interpretation of the scope of application;
- d) Member State officials were not aware of the option to change the score of the scope of application that we provided as part of the pre-filling and therefore did not change it.

Nonetheless, as many Member State officials either commented on the score of the scope of application that we pre-filled or changed it, we view this as a reason to believe that the scoring has largely been noticed and approved by (many of) the Member State officials responding to the questionnaire. Therefore, we consider both the scores provided and in particular the good practice examples as providing a relevant, but of course not comprehensive, picture of the Member States’ activities supporting resource efficiency in businesses.

2. Application of the ten support measures in the EU

In this section, we present the scope of application of the ten measures across the EU-28, selected good practice examples and lessons learnt from these examples. The ten support measures are:

1. Support for industrial symbiosis
2. Incentivising external audits to support resource efficiency
3. Improving financing
4. Supporting voluntary agreements and initiatives
5. Providing targeted resource efficiency information and advice to companies
6. Building resource efficiency related skills and capacity within a company/business
7. Improving company accounting and reporting practices
8. Development of non-legal standards for products and services
9. Measures supporting extended producer responsibility (EPR) for materials/ products
10. Other non-legislative support measures promoting Circular Economy/resource efficiency

If not stated otherwise, the Member States respondents provided (most of) the information based on which we compiled the text on good practice examples and overall lessons learnt in this section. A separate Annex document to this report contains, inter alia, a list of Member State respondents and a full list of references for all country related information as part of country reports for the EU-28.

2.1. Support for industrial symbiosis

Measures that support industrial symbiosis aim to enable the sharing among industries of services, utility and by-products/resources (including reuse of waste from one industry by another industry) in order to add value, reduce costs and make environmental improvements. This may include financial support for technology parks/clusters, and/or virtual support for networking and skills.

State support for industrial symbiosis is widely used in two Member States (7%; Finland and Portugal) and used a little in the majority of Member States (20 MS, 71%) (see Figure 2). In six Member States (22%) there is no national policy in place.

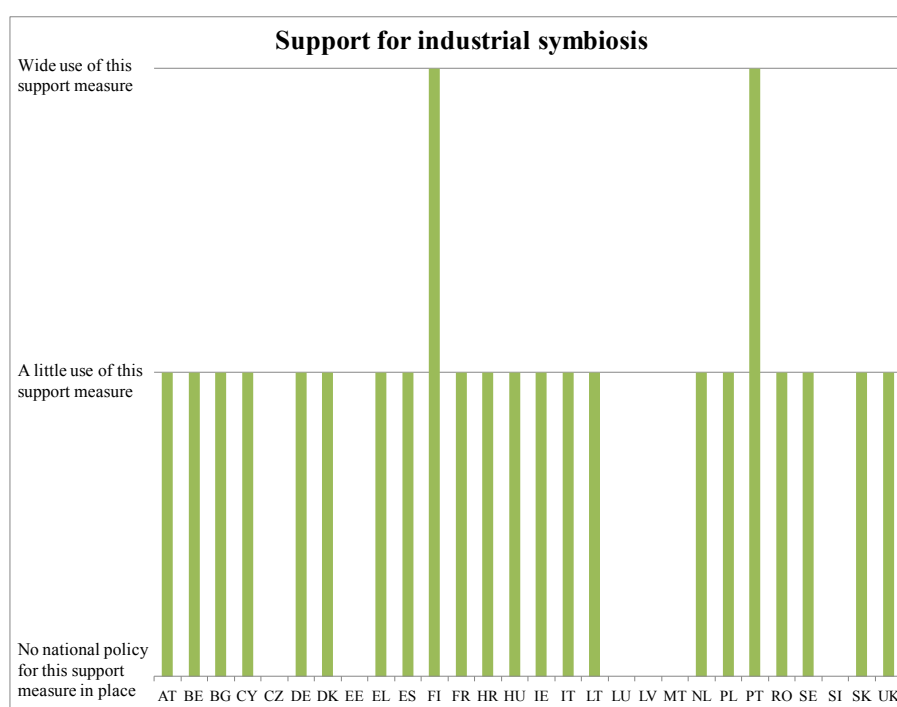


Figure 2: Scope of application of support measure 1 across the EU-28

2.1.1. Good practice examples

In the following section, we provide selected good practice examples for this support measure from five different Member States (see Figure 3; the full list can be found in the separate Annex document): Finland and Portugal (with wide use of this measure); Austria, Ireland and the UK (with a little use).

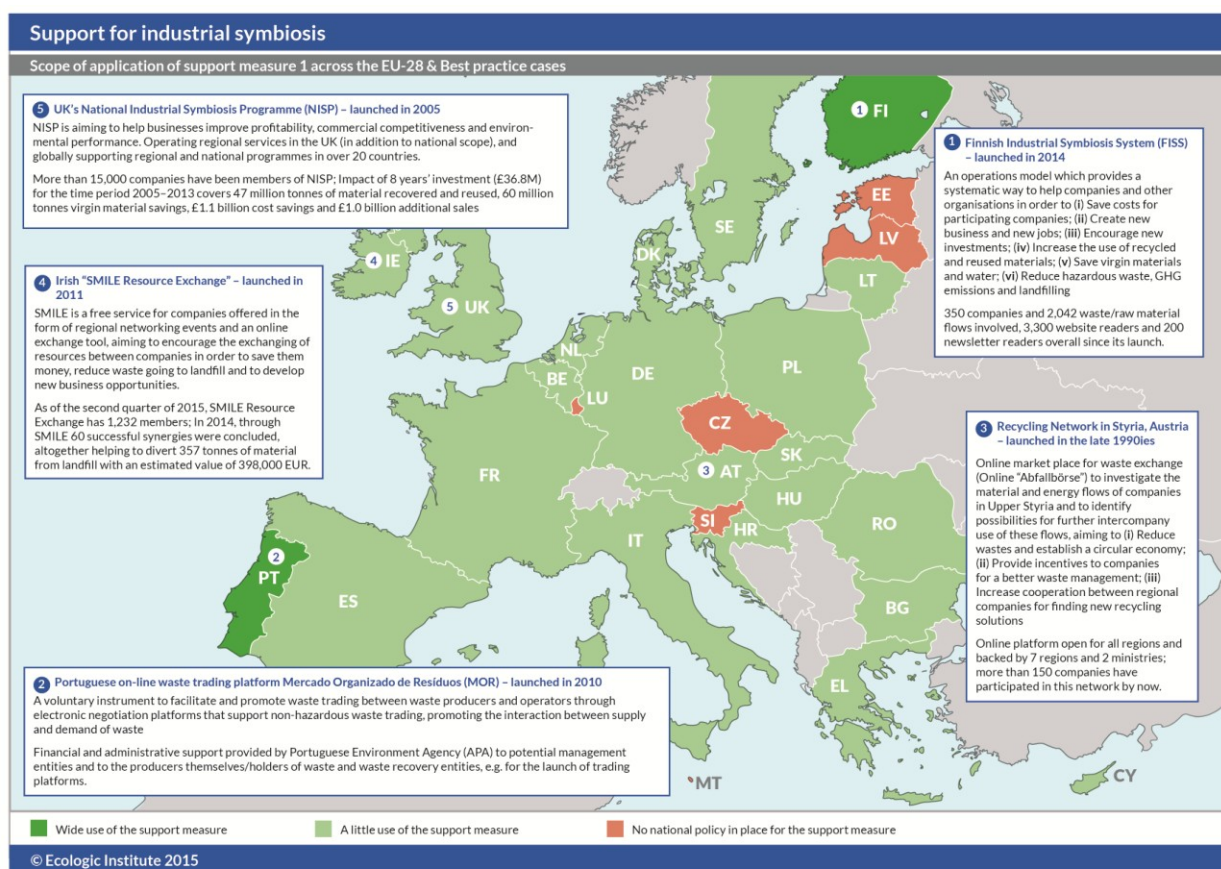


Figure 3: Good practice examples and scope of application for support measure 1 across EU-28

Finland's government undertook a pilot project in 2013-2014 to test how the British National Industrial Symbiosis Programme (NISIP) model could be applied to Finland. Based on the experiences collected in the pilot project, the Finnish Industrial Symbiosis System (FISS) was developed and put into practice in October 2014. FISS is an operations model that provides a systematic way to help companies and other organisations create partnerships and new business opportunities through more efficient use of raw materials, technology, services and energy. FISS' objectives are: (i) Cost savings for participating companies; (ii) Creating new business and new jobs; (iii) Encouraging new investments; (iv) Increasing the use of recycled and reused materials; (v) Saving virgin materials and water; and (vi) Reducing hazardous waste, GHG emissions and landfilling. In mid 2015, 350 companies and 2,042 waste/raw material flows were involved and FISS had 3,300 website readers as well as 200 newsletter readers overall since its launch.¹

The state-owned company Motiva Oy is responsible for the coordination and development of FISS. The Ministry of Employment and Economy, the Ministry of the Environment and SITRA commonly funded both the pilot stage and FISS implementation. The European Regional Development Fund funds regional projects implementing individual symbiosis.

In **Portugal**, there is wide use of support for industrial symbiosis in the form of an on-line waste trading platform enabling the participation of interested parties nationwide with a specific focus on

¹ See also FISS – Finish Industrial Symbiosis System (n.d.). Creating Growth via Industrial Symbiosis. URL: www.industrialsymbiosis.fi, accessed 14 August, 2015

industrial waste and waste that can be utilised as a resource. The Mercado Organizado de Resíduos (MOR - Organised Waste Market) was implemented in 2010 and all companies willing to buy or sell waste can participate (except for hazardous waste). MOR is a voluntary instrument that aims to facilitate and promote waste trading as well as enable its recovery and reintroduction in the economic circle, decreasing the demand for primary raw materials and promoting industrial symbiosis. It operates on electronic negotiation platforms that support non-hazardous waste trading, promoting the interaction between supply and demand of waste. Waste producers and operators have access to these platforms in order to initiate orders to buy or sell waste. Managed by private entities, the platforms ensure transparency, provide universal and equal access to all potential users, ensure the timeliness and accuracy of the information circulating within the system, and are subject to confidentiality regarding transactions. (AEP 2011, APA 2013, Mota Mafalda 2010)

The Portuguese Environment Agency (APA) is entitled to provide a set of financial and administrative incentives both to potential management entities (of the waste market) and to the producers themselves/holders of waste and waste recovery entities. Specifically, APA can provide support to the launch of trading platforms (funding from the revenues of the Waste Management Fee - TGR), registration fee reductions in SIRAPA (the Portuguese Environment Agency's Integrated Registration System) up to 50%, and potential exemption from licensing of recovery of non-hazardous waste operations, in order to stimulate the creation of trading platforms and foster adherence to these.²

In **Austria**, the regional government of Styria established a Recycling Network in the late 1990s in order to investigate the material and energy flows of 31 companies in Upper Styria and identify possibilities for further intercompany use of these flows. To support intercompany cooperation, an online market place for waste exchange (Online "Abfallbörse") was established. The programme, which is still running, has the following objectives: (i) Reduce wastes and establish a circular economy; (ii) Provide incentives to companies for better waste management; and (iii) Increase cooperation between regional companies and find new recycling solutions. The platform is open to all regions and backed by 7 regions and 2 ministries. More than 150 companies have participated in this network to date.

The **Irish** government provides support for Industrial Symbiosis through the "SMILE Resource Exchange."³ This support measure was launched locally in 2011 and nationally in 2014, and aims to encourage the exchange of resources between its members in order to save them money, reduce waste going to landfill and to develop new business opportunities. SMILE is a free service for companies. Potential exchanges are identified through regional networking events and an online exchange tool. SMILE is now available nationwide and operates more strongly in some regions of Ireland: Cork, Dublin, Clare, Limerick and Kerry. As of the second quarter of 2015, SMILE Resource Exchange has 1,232 members. In 2014, through SMILE 60 successful synergies were concluded, altogether helping to divert 357 tonnes of material from landfill with an estimated value of 398,000 EUR (EPA 2015).

In 2005, the **UK** government set up the National Industrial Symbiosis Programme (NISP), aiming to help businesses improve profitability, commercial competitiveness and environmental performance. The NISP now also operates regional services in the UK (in addition to national scope), and globally supports regional and national programmes in over 20 countries. More than 15,000 companies have been members of NISP in the UK. The Impact of 8 years' investment (36.8 million £) for the time period 2005-2013 (state funding for NISP was terminated in 2013) covers (Manchester Economics and Scott Wilson Business Consultancy 2009):

- Material recovered and reused: 47 million tonnes
- CO₂ savings: 42 million tonnes
- Virgin materials savings: 60 million tonnes
- Hazardous waste savings: 2.1 million tonnes

² APA – Portuguese Environment Agency, Organised Waste Market. URL: <http://www.apambiente.pt/index.php?ref=16&subref=84&sub2ref=670>, accessed 21 September, 2015

³ Smile Resource Exchange (n.d.). What is Smile? URL: <http://www.smileexchange.ie/about-us>, accessed 12 August, 2015

- Cost savings: 1.1 billion £
- Additional sales: 1.0 billion £
- Jobs created: 10,007

2.1.2. Lessons learnt from the application of the support measure

From the application of this support measure in the above five Member States, the following lessons learnt could be derived.

For the **Finish** FISS, a web portal (www.industrialsymbiosis.fi) enables companies to get information and contact other participating companies through **regional facilitators**. The regional facilitators use a **common national database**, SYNERGie, which enables the identification of new symbiosis opportunities also between regions. The database also enables reporting of impacts and achievements on a regional or national level. Furthermore, an industrial symbiosis map on the web portal shows a wide range of existing symbiosis in Finland, their locations and the **benefits of each symbiosis**. This can be used to get ideas for symbiosis and also to find potential partners, while at the same time it serves as an incentive for participation. The development of new symbiosis requires co-development and expert co-operation. To find the right expertise an **“expert pool”** has been formed, from which companies can find the right expertise needed. The TUORE Expert Network can also be utilised in building new industrial symbiosis.

In relation to the **Portuguese** MOR, at the time of its introduction in 2010, there were still quite underdeveloped waste management structures and not very sophisticated flows in the waste market, so the development of the **organised waste market** (MOR) contributed to a paradigm shift of the concept of waste into secondary material. The MOR played a fundamental role in **facilitating waste recycling and recovery operators to directly access** industrial waste (secondary raw materials), bypassing the licenced waste management entities and thus closing the loop of industrial symbiosis systems. It also increased the value of industrial waste by creating opportunities of resource circulation between seller/buyer. MOR increased **competitiveness on the demand side** of waste and forced the conventional waste management entities to optimise their operation and use of industrial waste.

Among the success factors identified in the case of the Recycling Network in Styria (**Austria**) are an **initial analysis of residues** of individual companies that allow for **improved match-making** between supply and demand of waste as (secondary) input material. The establishment of an **online waste exchange** (“Abfallbörse”) was seen as a crucial factor for this success. The online marketplace split up different waste streams: glass, rubber and plastics, and construction waste. The construction waste platform is the most successful and is financed by 7 regions and 2 ministries, as well as the chamber of commerce.

For the **Irish** SMILE programme, the following success factors have been identified: (i) A **team is provided free of charge** to assist in facilitating exchanges; (ii) **Regional events** are held which bring together interested regional companies, where many potential exchanges are identified at these events; (iii) A **mentoring system** is being developed which should see the environmental good practice from within a multinational company in Cork being shared with groups of SMEs – SMEs are thus engaged through **interaction with a multinational company**; and (iv) In 2014, a **team of technical consultants** was engaged by SMILE Resource Exchange to enhance the identification of potential resources and to support the exchanges. This approach has proved worthwhile to date and has been successful in other countries.

As regards the **UK’s** NISP, specific factors for the success of this support measure encompass (i) a **facilitated process with practitioners experienced** in (and credible among) industry (actors); (ii) provision of **quality data managed by practitioners**; (iii) a **model for cross-sector engagement** of all sectors and all company sizes; and (iv) a **holistic approach to resources**, i.e. including materials, energy, water, staff expertise and capacity, etc.

In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied:

In **Cyprus**, a scheme to encourage clusters and business partnerships in green and advanced technology investments was launched in 2015, targeting largely SMEs from industry and business in

order to promote technology and processes that will enhance resource efficiency, reduce pollution and waste, and contribute to appropriate waste management and recycling. The **provision of appropriate information** to industry and business **on opportunities** for creating partnerships and clusters and **on the benefits of advanced technology** was identified as one relevant success factor, helping targeted companies to overcome the current economic climate.

Financed by the **German** Federal Environmental Foundation (Deutsche Bundesstiftung Umwelt), the development of an Intercompany Network for Recycling Materials in the Heidelberg-Pfaffengrund Industrial Region was supported financially in the period 1996 to 1999 with approximately 97,000 EUR (195,000 DM)⁴ (DBU 1997). This regional project was set up to support SMEs in the search for solutions in the area of waste management, to increase intercompany cooperation in order to support a circular economy, and to increase transparency as regards the potential of intercompany flows of residues. This project proved successful through achieving cost reductions of up to 50% within 2 years, establishing a common interim storage facility for waste paper and pooling of wastes that require monitoring. Consequently, the Pfaffengrund network could be expanded to the neighbouring Rhine-Neckar region. Relevant success factors encompassed (i) **data collection** of waste flows and optimisation processes within the individual companies as a first step; (ii) investigating intercompany solutions and encouraging **communication and cooperation** between companies; (iii) **concluding a confidentiality clause** between the participating companies and the institute undertaking the waste flow analyses (Institut für Umweltwirtschaftsanalysen, IUWA) to establish trust and security in the network; and (iv) establishing the “Working group Pfaffengrund,” which functioned as **contact point** for the participating companies and facilitated communication.

In order to promote the use of organic urban waste for biogas production in **Croatia**, a concept for the creation of an Industrial Symbiosis for the waste streams in Zagreb was established. An agreement was concluded between a biomethane production company, the waste management company ZCH Čistoća, the City Gasworks Company as well as the Urban Public Transport Company for the City of Zagreb. Launched in 2011, the Industrial Symbiosis concept aimed to (i) establish a joint waste management and renewable energy production (heat and biofuels) based on the least cost principle for public money; (ii) decrease production costs; (iii) reduce landfilling and greenhouse gas emissions; and (iv) raise the likelihood and increase possibilities of benefiting from EU funds. The roughly 1.2 million EUR UrbanBiogas project officially ended in April 2014 and aroused investor interest (two have signed letters of interest). A key success factor identified was the **initiation and financial support** through the “Intelligent Energy for Europe” **programme of the European Commission**. Furthermore, **commitment from relevant local actors** (local biomethane production company, the waste management company ZCH Čistoća, the City Gasworks of Zagreb and the City Office for Energy, Environmental Protection and Sustainable Development) helped secure investor interest and use of compressed biomethane in the City’s busses.

The ECOREG project “Application of the principles of industrial ecosystems in regional development” was launched by the Ministry of Environment and Forests as a pilot project to test the applicability of industrial symbiosis in **Romania**. The initiative is part of LIFE+ **EU Programme**, which **supports it financially** and thus enabled its implementation. The idea behind the project is to help operators identify innovative methods to reuse waste resulting from other industries, aiming to reduce the consumption of natural resources by 2 to 5% for all involved partners; to reduce the waste production by 5 to 20% for each partner and increase recycling. The pilot project was implemented between 2009 and 2011 in Suceava County with an overall budget of 880,000 EUR. 200 companies were involved, resulting in 114 synergies including 13 categories of waste, recycling more than 550,000 tonnes of waste, saving more than 130,000 tonnes of CO₂, following the replacement of virgin materials with alternative resources.⁵ Furthermore, case studies are available online (http://www.nisp-ecoreg.ro/studii_de_caz.aspx).

⁴ Based on the exchange rate of 1 EUR = 1.95583 DM fixed by the German Federal Ministry for Finances; see http://www.bundesfinanzministerium.de/Content/DE/Downloads/Europa/uebersicht-euro-umrechnung.pdf?__blob=publicationFile&v=3.

⁵ ECOREG (n.d.). Pilot project on Industrial Symbiosis – studii de caz (case studies). URL: http://www.nisp-ecoreg.ro/studii_de_caz.aspx, accessed 08 October, 2015

ecoreg.ro/studii_de_caz.aspx) hence enabling interested companies to turn to these cases for supporting own symbiosis activities.

The **Swedish** state supports the Industrial Symbiosis network in Norrköping (Norrköping/Handelö region) in order to reduce waste landfilling, greenhouse gas emissions and fossil-resource dependence, as well as to reduce costs for businesses. Participating companies include E.ON, Agroetanol, Svensk Biogas, Econova (a company specialised in producing usable products from industrial and domestic waste streams), Colmec (tire industry), Holmen Paper and others. Among the success factors identified were: (i) **strong support** of the environmentally motivated **municipality**; (ii) the business development department of the municipality promotes the development of synergies around steam, e.g. by giving priority to new industries that have a demand for steam; and (iii) **innovative capabilities and entrepreneurial mindsets of local enterprises**.

Across the examples obtained from literature review and Member State responses, the following aspects could be identified as key success factors for supporting industrial symbiosis among businesses in the EU:

- ★ Supporting data analysis to identify the potential for synergies and improve match-making between supply and demand.
- ★ Concluding, where necessary, confidentiality clauses between the participating companies and those providing support for or undertaking data analysis.
- ★ Providing information that is relevant to companies, for instance in the form of (free) on-site visits, accessible (online) high quality databases and online information offers – and in so doing respecting confidentiality clauses and concerns of companies involved. In order to ensure relevance of the information, experienced and credible practitioners (e.g. expert pools, teams of technical consultants) should provide or add to the information and advice.
- ★ Promoting the economic benefits achieved by industrial symbiosis settings through distributing information on relevant case examples.
- ★ Offering online and offline match-making opportunities (e.g. web platforms, regional facilitator events) to encourage and foster direct exchange between companies, both in terms of a) improving access to waste/material flows for creating synergies, and b) making use of potential mentoring options between SMEs and larger companies to make use of and replicate best practices.
- ★ Developing commitment among relevant local and regional actors (municipalities, utilities, key industry partners, networks) to support intercompany networks or public-private partnerships (PPPs) for industrial symbiosis.
- ★ Establishing local/regional contact points for supporting management and communication within intercompany networks.
- ★ Financial and administrative support through EU funding programs (e.g. LIFE+).

2.2. Incentivising external audits to support resource efficiency

The aim of external resource efficiency audits is to provide support to businesses to help them identify and make resource efficiency improvements based on on-site identification of relevant resource and output (emissions, waste) flows and related saving potentials. These saving potentials can originate from reducing material and energy input costs as well as from reducing waste management and compliance costs. Governments may provide incentives for such audits, e.g. by offering government payments or vouchers, providing tax rebates for companies that have been audited for resource efficiency, or including resource efficiency audits as one beneficial criterion for Green Public Procurement processes.

State support to incentivise external audits to support resource efficiency is widely used in three Member States (11%; Czech Republic, Germany and Ireland) and used a little in eleven Member States (39%) (see Figure 4). In 14 Member States (50%) there is no national policy in place.

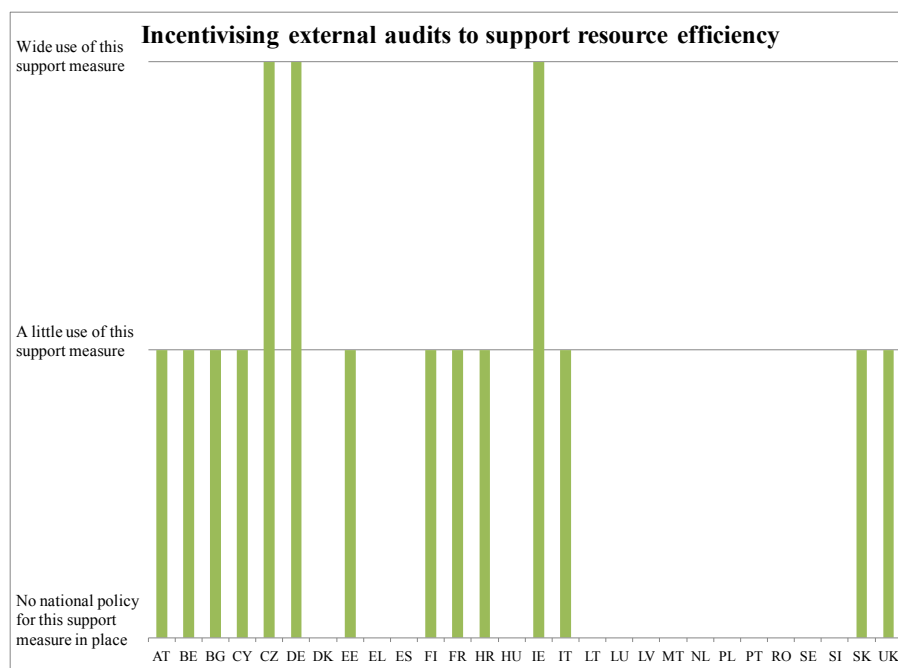


Figure 4: Scope of application of support measure 2 across the EU-28

2.2.1. Good practice examples

In the following section, we provide selected good practice examples for this support measure from five different Member States (see Figure 5; the full list can be found in the separate Annex document): Germany (with wide use of this measure); Austria, Croatia, Italy and UK (each with a little use).

Financial support for external audits is a widely used support measure in **Germany**. A very successful example is the state support for PIUS-checks, which were initiated in 2000 in the federal state of North Rhine-Westphalia and are run by the Efficiency-Agency (EFA) of this federal state. By analysing relevant material flows and the current level of production technology, EFA aims to provide recommendations on how to optimise production in SMEs, primarily by implementing new production equipment or by organisational changes. All sectors are targeted, but the measure has been particularly successful in the metal processing, metal finishing and food processing industries. The costs for conducting an audit amount to between 10,000 and 15,000 EUR. Up to 70% of these costs can be covered by national funding programmes. The EFA handles the application for funding for the audit costs as well as for the implementation of the proposed measures. This measure has a high uptake by businesses and has proven to be effective. More than 550 PIUS consultations in businesses have been conducted by the EFA since the launch of the PIUS-checks in 2000. The average investment induced by the PIUS checks amounts to 82,000 EUR, while average annual costs savings of around 50,000 EUR resulted from the investments into resource efficiency improvements – hence, the payback time of these investments is lower than two years (Engelmann, Liedke & Rohn 2013). The associated resource savings encompassed on average 5,020 of m³ water, 260 MWh of energy and 46 tonnes of CO₂ (Jahns 2012, p. 14). By 2010, investments of approximately 36 million EUR were induced by the PIUS-checks, while annually approximately 10.4 million EUR could be saved through the improved production processes (i.e. material savings).⁶ Other federal states started copying the concept, e.g. Baden-Württemberg, Hesse, Rhineland-Palatinate.

⁶ European Commission (n.d). PIUS-Check. URL: http://ec.europa.eu/environment/archives/sme/cases/piuscheck_en.htm, accessed 31 August, 2015

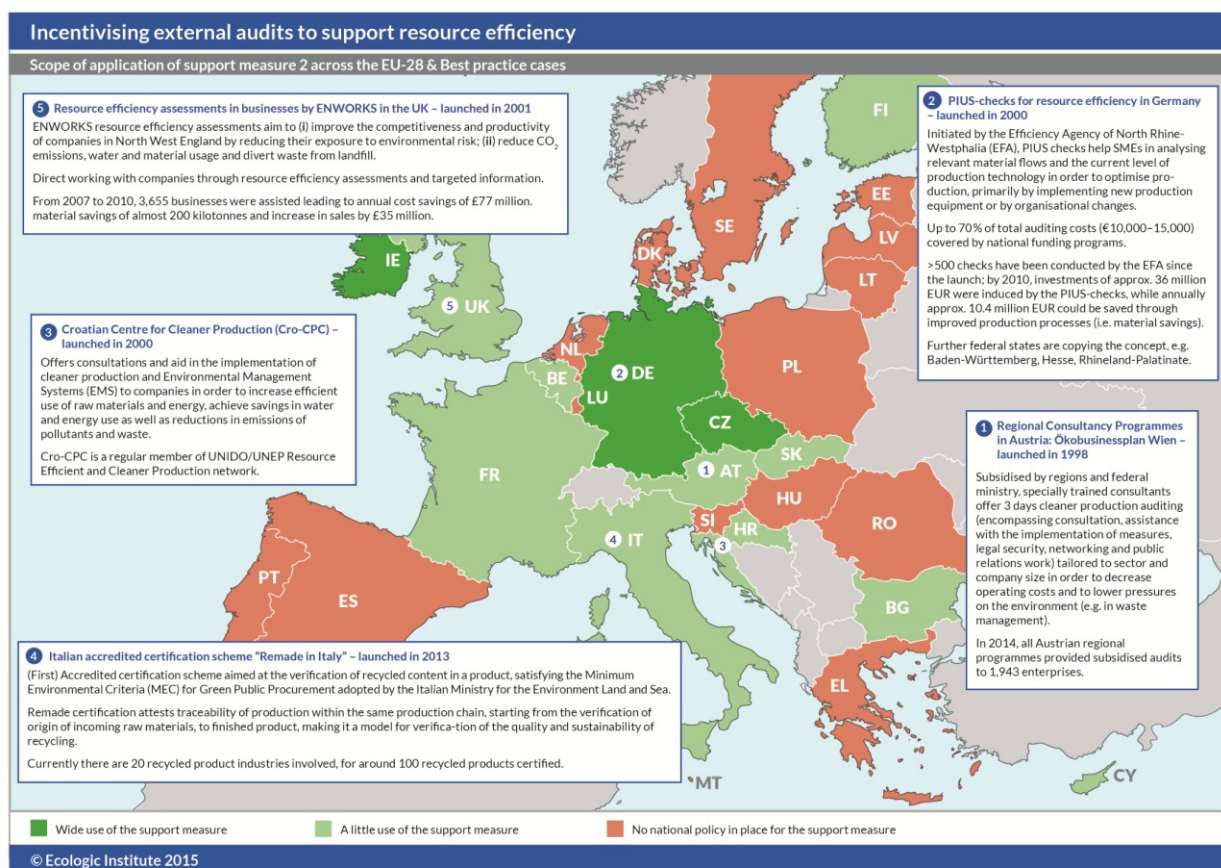


Figure 5: Good practice examples and scope of application for support measure 2 across EU-28

On the national level, the Ministry for Economy and Energy grants audit and advice vouchers through the programme “BMW Innovation Bonus (go-Inno)” since 2011. With one of its focuses on resource efficiency (module “go-efficient”), the programme facilitates expert advice on improving resource and material efficiency in form of a subsidy (50% of costs or up to 80,000 EUR per voucher) for external consultation by selected consultants. The programme aims to decrease the raw material and overall material use of small and medium-sized enterprises (SMEs) and is available for all sectors. Moreover, businesses in Germany that want to introduce EMAS are supported by sector guidelines since 1995, and SMEs can receive financial support. Since 2009, material efficiency is a core indicator under EMAS. The various guidelines and the EMAS procedure, including internal and external audits, help organisations to identify their resource efficiency potential.

To leverage the idea of resource efficiency, a regional consultancy programme was started by the **Austrian** Ministry of Environment. Specially trained consultants offer 3 days audits in the framework of the regional consultancy programmes. These programmes are subsidised by regions and the federal ministry. The first of these programmes was the Ökobusinessplan Wien⁷, launched in 1998. Federal subsidies for this kind of programmes are being provided since 2001. Targeting all sectors, Ökobusinessplan Wien aims to help companies to decrease operating costs, inter alia, in the area of waste management and to lower pressures on the environment. For each sector and company size, tailored cleaner production auditing is provided. The offer encompasses professional, financially supported consultation, assistance with the implementation of measures, legal security, networking and public relations work. In 2014, all Austrian regional programmes provided subsidised audits to 1,943 enterprises. The federal contribution was more than 1 million EUR, the total value of the consultancies approximately 4.5 million EUR.

⁷ Wien AT (n.d). Der ÖkoBusinessPlan Wien. URL: <https://www.wien.gv.at/umweltschutz/oekobusiness/>, accessed 14 September, 2015

Since 2000, the **Croatian** Centre for Cleaner Production (Cro-CPC, <http://www.cro-cpc.hr/>) offers consultations and aid in the implementation of cleaner production and Environmental Management Systems (EMS) in industrial companies. Objectives of the measure are a more efficient use of raw materials and energy, savings in water and energy, as well as a reduction in the emissions of pollutants and waste at source. The Croatian Government and UNIDO (UN Industrial Development Organization) jointly founded Cro-CPC in the year 2000. Cro-CPC is a regular member of UNIDO/UNEP Resource Efficient and Cleaner Production (RECP) network. Although the services of Cro-CPC are in principle available for all sectors across the nation, at present there is no clear strategy to systematically establish activities on the national level. (Eco SCP Med 2013)

The certification scheme ‘Remade in **Italy**’ (<http://www.remadeinitaly.it/>) is the first accredited certification scheme in Italy and in Europe specifically aimed at the verification of recycled content in a product. The Remade certification satisfies the Minimum Environmental Criteria (MEC) for Green Public Procurement adopted by the Italian Ministry for the Environment Land and Sea. The Remade certification attests traceability of production within the same production chain, starting from the verification of origin of incoming raw materials, to finished product, making it a model for verification of the quality and sustainability of recycling. The measure was launched in 2013, targeting manufacturers of recycled goods and is available on the national level. Currently there are 20 recycled product industries involved, for around 100 recycled products certified.

In the **UK**, the most prominent example for incentivising audits is ENWORKS’ work on resource efficiency assessments in businesses. ENWORKS resource efficiency assessments aim to (i) improve the competitiveness and productivity of companies in North West England by reducing their exposure to environmental risk and (ii) reduce CO₂ emissions, water and material usage and divert waste from landfill. These goals are to be achieved through directly working with companies, including the supply of resource efficiency assessments, and targeted information. Launched in 2001, the measure targets all interested companies, although support was prioritised to areas thought to have the greatest effect. From 2007 to 2010, 3,655 businesses were assisted, leading to annual cost savings of 77 million £, material savings of almost 200,000 tonnes and an increase in sales by 35 million £. (GHK 2011)

2.2.2. Lessons learnt from the application of the support measure

From the application of this support measure in the above five Member States, the following lessons learnt could be derived.

The **Austrian** regional consultancy programmes offer best practice stories of the different programmes, which are **easily available online**.⁸ Concerning ÖKOPROFIT (see also section 2.5), the programme encompasses **offers for different company sizes and sectors**, e.g. module “ÖkoBonus” is targeted at companies with a high need for energy and resources and with up to 50 employees; the module “ÖKOPROFIT” is targeted at companies with 80 to 120 employees. This allows interested business to **quickly find and make use** of relevant stories and tailor-made advice.

Interestingly, the PIUS-checks in North Rhine-Westphalia are more widely used by businesses than the “go-Inno” vouchers in all of **Germany**. One success factor of the PIUS programme is its **regional implementing organisations**, which are **widely known and trusted** by the regional industry. The implementation of the concept in other federal states shows its potential to be replicated. In general, the incentives for audits in Germany are **well targeted to the needs of SMEs** (e.g. by offering assistance for the application process or advice on financing options).

Most all of the activities to implement cleaner production in the **Croatian** industry have been done with the **support from international donors** (UNIDO, Norwegian government, etc). Apart from that, the Czech Republic supported the Cro-CPC by **offering training for the staff and carrying out demonstration projects**. This shows that **knowledge transfer** from countries that have more experience with the introduction of resource efficiency measures can be a key to success. By means of

⁸ Available at http://www.publicconsulting.at/uploads/regionalprogramme_digitaleversion_060313.pdf

initial outside support, financial savings of around 85 million HRK per annum were achieved, which equals approximately 11.6 million EUR.⁹

The Remade in **Italy** certification scheme was developed with the involvement of a large variety of relevant stakeholders. **Stakeholder engagement** may represent a strategic engine for the circulation of knowledge and for facilitating implementation of public policies. The certification process costs around 1,500 EUR. Such **cost is lower than other product certifications** and may be a very advantageous investment for businesses interested in green economy (competitive advantage, performance indicator).

Specific success factors of ENWORKS' resource efficiency assessments in the **UK** encompass, inter alia, (1) the **sub-regional delivery of business support** through a **core network of local organisations** having a **track record of delivering high-quality** and effective environmental advice to businesses with in-house teams of qualified environmental auditors; (2) Provision of a **group of specialised consultants** to provide sub-regional delivery partners with additional capacity when needed and **with specialist skills** whose permanent embedding in each organisation through new staff would not be cost effective; (3) integration of ENWORKS into the mainstream business advice and support service as a **one-stop contact point for any business** with a query about environmental issues and business performance, which helped to reduce the previous lack of coordination of advice structures and the inconsistent and incoherent quality of advice; (4) **providing firms with information updates** on, for example, environmental legislation and regulations, good practice, business case studies, policy developments, etc.; and (5) **integration of marketing and communications** through, for example, the ENWORKS conference, presence on relevant steering groups and committees and the ENWORKS website.

In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied:

Support for company auditing according to the European Environmental Management and Audit Scheme (EMAS) was mentioned as a relevant support measure both in **Cyprus** and in the **Czech Republic**. Launched in Cyprus in 2004, there are currently 75 organisations registered in the national EMAS register. State support **promoting the benefits** of management and auditing schemes compared to any initial investments (i.e. pointing out the potential for identifying and realising cost savings through the annual external auditing of the system) and **engaging business and organisations** were highlighted as success factors of this support measure. In the Czech Republic, companies can apply for a financial support for EMAS auditing since 1998, for instance through financial aid from the State environmental fund or regional support. 26 companies are registered in the national EMAS database (as of 3 July 2015). **Consideration of EMAS as one criterion in public tenders** was identified as the most attractive incentive.

In **Finland**, the state owned company Motiva Oy Ltd. develops and promotes material efficiency audit tools in order to identify potential resource (material and energy) savings in production processes, save costs and create a widely accepted and used audit model for all industrial sectors. This measure was started in 2009 with piloting projects, and allocates annually 200,000 EUR. Altogether 15 Material Audit projects have been initiated to date, reaching a total cost savings potential of 11 million EUR. Within the scope of pilot case studies, the audit was conducted in different companies and revealed an average yearly savings potential of several hundred thousand EUR.¹⁰ Specific factors for success encompass (i) **extensive training** of new expert companies; (ii) conducting **pilot case studies**; (iii) **profitable and useful auditing cases** for metal industries; and (iv) **state subsidies** (Finnish Ministry of Employment and Economy) for companies to perform a Material Audit.

⁹ For the currency conversion from Croatian Kuna into Euro, the European Central Bank Average Exchange rate over the last 10 years was applied (<https://www.ecb.europa.eu/stats/exchange/eurofxref/html/eurofxref-graph-hrk.en.html>).

¹⁰ Motiva (2014). Material Audits Bring Savings. URL: http://www.motiva.fi/en/areas_of_operation/material_efficiency/material_efficiency_audit_tools_for_companies/material_audits_bring_savings, accessed 14 August, 2015

The **French** Environment and Energy Management Agency (ADEME) provides financial and technical help to companies willing to integrate the principles of eco-design in their business. This support has been deployed in several French regions. In the Bourgogne Region, the ADEME and the Conseil regional de Bourgogne have been supporting companies since 2006, with all industrial sectors of the region being part of the target audience (engineering, plastics processing, stone processing, etc.). A similar example exists in the Lorraine region. In the Bourgogne region, this measure seems to be successfully implemented. In 2009, the partners of the ADEME (the Region, the national government and Oséo) decided to create a **dedicated resources centre**, with the aim to support companies willing to integrate Eco-design into their business at each stage of their project.

In **Ireland**, the state's current Green Business Initiative (<http://greenbusiness.ie/>) has been in place since 2011, aiming to help companies using less water, energy and raw materials to manufacture a product or provide a service, particularly targeting businesses in the Food & Drink sector. Between 2011 and 2013, 340,000 EUR was spent on the scheme. Since 2011, 700 active members in 1,144 businesses have engaged with the Green Business Initiative and 180 Resource Efficiency Assessments were carried out.¹¹ Typical savings per company assessed amount to 37,000 EUR per annum (70% energy savings, 20% on waste, 10% on water), with a potential benefit-to-cost ratio of 4:1 in 2014.¹¹ Specific factors for success include (i) **free on-site Resource Efficiency Assessments (REAs)** carried out by experts; (ii) provision of up to 5 days of **consultant support, including write up of reports**, for businesses; (iii) all work carried out by Green Business being **100% confidential**; (iv) **site reports are specific and detailed** and concentrate on **“no and low cost”** improvement actions; (v) **follow up** with the firm after approximately 6 months to see how the firm is progressing with the identified savings, thus providing an incentive for their implementation; (vi) follow up information used as **case studies, providing further implementation incentives, and demonstrating benefits** to other firms; and (vii) a liaison was set up between the Irish Business representative organisation (IBEC) which has 7,500 business members, Green Business and the Irish Environmental Protection Agency EPA with the role of promoting resource efficiency to the IBEC membership and other stakeholders in Ireland.

Across the examples obtained from literature review and Member State responses, the following aspects could be identified as key success factors for incentivising external audits among businesses in the EU:

- ★ Financially or otherwise supporting (incentivising) external auditing, e.g. establishing external auditing as a beneficial criterion for audited companies in public tendering processes.
- ★ Concluding, where necessary, confidentiality clauses between the audited companies and the auditors.
- ★ Providing information that is relevant to companies, of high quality and tailored to the needs of different company sizes and sectors – and in so doing respecting confidentiality clauses concluded and concerns of companies involved. In order to ensure relevance of the information, experienced and credible practitioners (e.g. specialised consultants) should provide or add to the information and advice.
- ★ Creating easily (online) available repositories of best practice cases to enable quick retrieval of relevant information for different company needs and, thus, to encourage replication.
- ★ Fostering (the development of) trusted regional implementing organisations or networks targeted to the needs of different company sizes and sectors (for SMEs, for instance, offering assistance for the application process or advice on financing options). The organisation or network ideally could act as a one-stop contact point for any business with a query about environmental issues and business performance.

¹¹ Green Business Achievements (n.d.). URL <http://ctc-cork.ie/wp-content/uploads/2015/04/GB-Infographic.pdf>, accessed 21 October, 2015.

- ★ Promoting the economic benefits (cost savings) achieved by external auditing through conducting pilot case studies and involving companies and company networks in distributing information on profitable and useful auditing cases.
- ★ Investigating and concluding financial support and knowledge transfer from international donors experienced in introducing resource efficiency measures.

2.3. Improving financing

Financial support can be an effective way to encourage resource efficiency in businesses that might not otherwise have the capacity to make resource efficiency improvements. Inter alia, the following types of financing, which can offer improved support for resource efficiency:

- Encouraging private equity funding (e.g. through setting up green bonds for resource efficiency measures of companies);
- Encouraging public-private partnerships (PPPs);
- Low-interest loans to SMEs for investments in resource efficiency;
- Improving SME access to funding by pooling loan demands of groups of SMEs to create larger loan demands that may be more readily approved by banks/lending institutions.

State financial support to improve financing for companies to foster resource efficiency is widely used in five Member States (18%; Bulgaria, Denmark, Germany, Malta, and Poland) and used a little in 17 Member States (61%) (see Figure 6). In six Member States (21%) there is no national policy in place for this support measure.

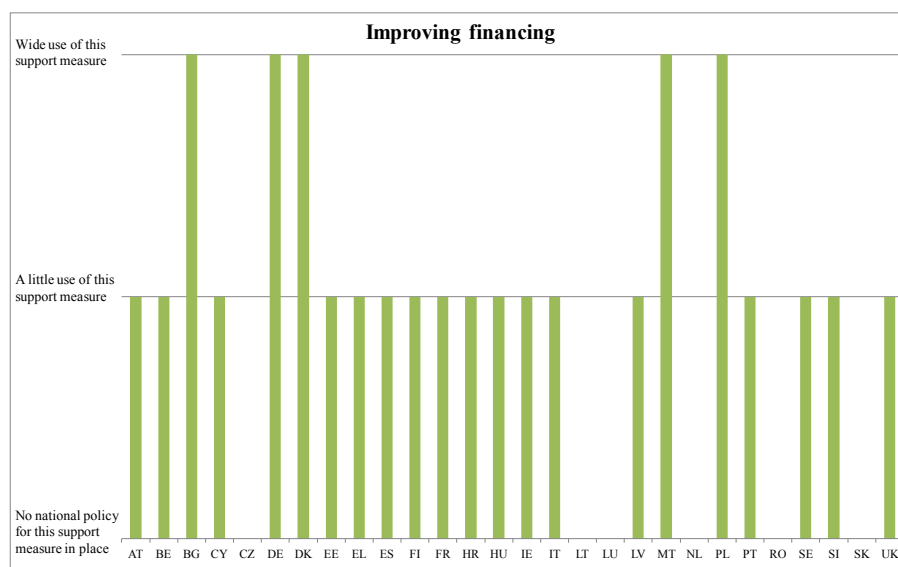


Figure 6: Scope of application of support measure 3 across the EU-28

2.3.1. Good practice examples

In the following section, we provide selected good practice examples for this support measure from five different Member States (see Figure 7; the full list can be found in the separate Annex document): Bulgaria and Malta (each with wide use of this measure); Croatia, Latvia, and Slovenia (each with a little use of this measure).

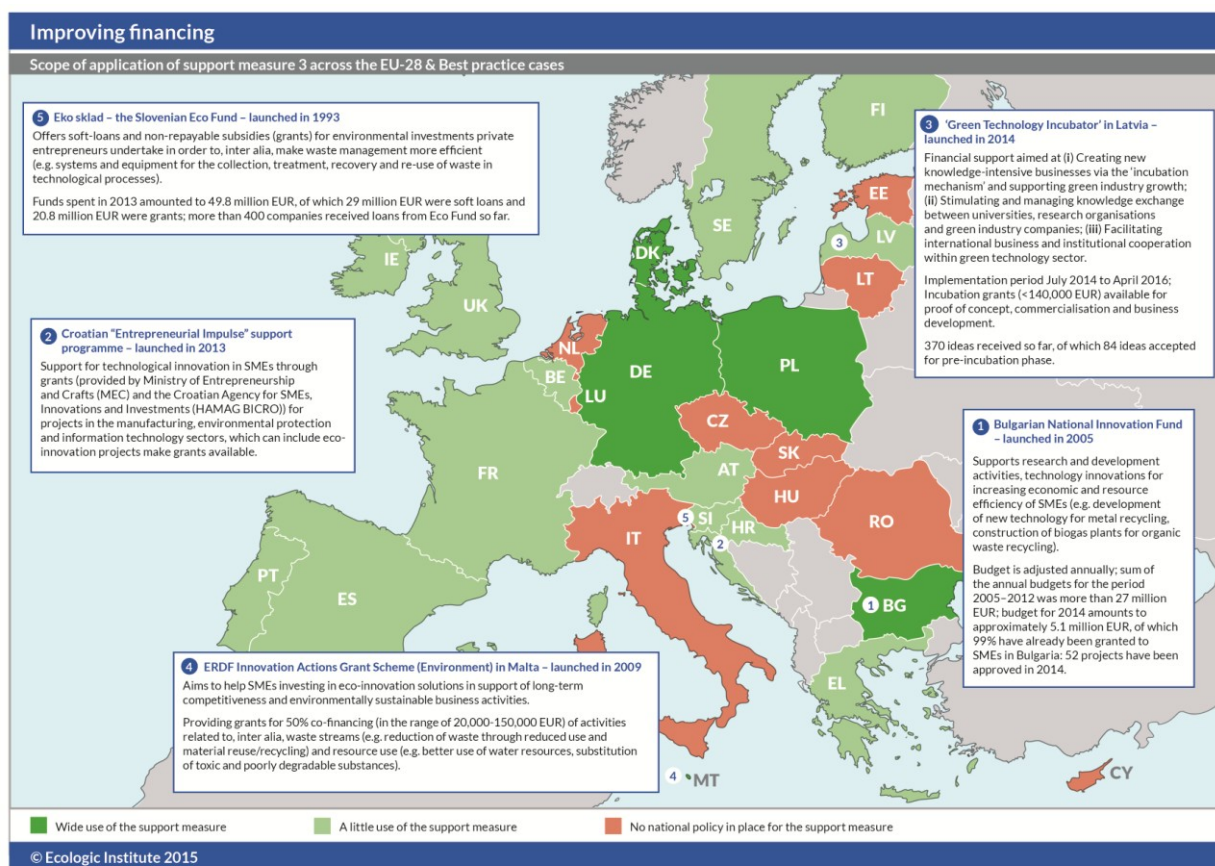


Figure 7: Good practice examples and scope of application for support measure 3 across EU-28

There is wide use of this support measure in **Bulgaria**, a prominent example being the National Innovation Fund. The overall goal of the National Innovation Fund is to support research and development activities and technology innovations for increasing economic efficiency of SMEs. Promoting resource efficiency in SMEs (e.g. development of new technology for metal recycling, construction of biogas plants for organic waste recycling) is among its objectives. The Fund was established in 2005 and targets all sectors nationwide. The budget is adjusted annually, with the sum of the annual budgets for the period 2005 – 2012 around 27 million EUR.¹² The overall budget for 2014 amounts to approximately 5.1 million EUR, of which 99% have already been granted to SMEs in Bulgaria.¹³ In 2014, 52 projects have been approved.

Several examples were found for the use of financing instruments to support resource efficiency in businesses in **Malta**. These were largely based on financial support from EU-level funds. For instance, the European Regional Development Fund ERDF Innovation Actions Grant Scheme (Environment) aims to help SMEs investing in eco-innovation solutions in support of long-term competitiveness and environmentally sustainable business activities, by providing grants for activities related to, inter alia, waste streams (e.g. reduction of waste through reduced use and material reuse/recycling) and resource use (e.g. better use of water resources, substitution of toxic and poorly degradable substances). Grants were in the form of co-financing, to a maximum 50% of total costs and were generally expected to be in the range of 20,000 to 150,000 EUR (Malta Enterprise 2012). Grants could be used for plant,

¹² Ministry of Economy of the Republic of Bulgaria (n.d.): National Innovation Fund, URL: <http://www.mi.government.bg/en/themes/nacionalen-inovacionen-fond-19-287.html>, accessed on 18 May, 2015; ERAWATCH (2012). Support - Measure National Innovation Fund, URL: http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/bg/supportmeasure/support_0043, accessed on 13 August, 2015

¹³ Bulgarian Small and Medium Enterprises Promotion Agency (BSMEPA) (2014.). URL: <http://www.sme.government.bg/?p=19605>, accessed on 18 May, 2015

machinery, equipment and costs related to the attainment of environmental certification. Call 1 of the Grant Scheme was launched in January 2009 with the last payment for Call 4 carried out in February 2014. Currently, the aid scheme for the period 2014-2020 is still being discussed. This support measure was available to eligible SMEs in line with the eligibility and selection criteria published by the Intermediate Body. A total of 13 projects were awarded grants amounting to a total of over 642,000 EUR.

A number of governmental financial support programmes exist in **Croatia**, which cover measures to increase resource efficiency in businesses. The Ministry of Entrepreneurship and Crafts (MEC) aims to support technological innovation in the SME sector. Through an “Entrepreneurial Impulse” support programme, the ministry and the Croatian Agency for SMEs, Innovations and Investments (HAMAG BICRO) make grants available to projects in the manufacturing, environmental protection and information technology sectors, which can include eco-innovation projects. The measures stimulating the eco-innovations are not directly focused on specific technological areas.

Improving the financing of **Latvian** enterprises through the “Green Technology Incubator” mechanism can be considered one of the most significant support measures in Latvia to support resource efficiency in business. The immediate objectives of financial support are: (i) creation of new knowledge-intensive businesses via the ‘incubation mechanism’ and support to green industry growth; (ii) stimulation and management of knowledge exchange between universities, research organisations and green industry companies; and (iii) facilitation of international business and institutional cooperation within the green technology sector, particularly with Norwegian partners. The implementation period is from July 2014 to April 2016. Any project/enterprise can participate in the Green Technology Incubator if it develops a product, technology or process contributing to, inter alia, production of green (energy efficient) products and materials for buildings, waste management or eco-design. Incubation grants (<140,000 EUR) are available for proof of concept, commercialisation and business development. For Incubation grants (3rd stage), the available total financing is approximately 450,000 EUR.

This support measure has been applied a little more than a year in the business environment of Latvia and it enjoys a positive uptake. Some 370 ideas were received so far, of which 84 ideas have been accepted for a pre-incubation phase. Until March 2016, there will be approximately 15 – 20 companies within the incubation phase. However, while the current use of this measure is limited, the potential for its expansion in the future is significant.

An interesting example of this support measure for **Slovenia** is the Eko sklad – the Slovenian Eco Fund. Through the Eko sklad, the government offers soft loans and non-repayable subsidies (grants) for environmental investments that private entrepreneurs (as well as municipalities and other legal entities) undertake in order to, inter alia, make waste management more efficient (e.g. systems and equipment for the collection, treatment, recovery and reuse of waste in technological processes).¹⁴ Launched in 1993, the Fund is still running, not targeted at specific sectors. The financial resources for Eco Fund’s soft loans are repayments of loans approved in past years (revolving fund). Activities are further co-financed by domestic and foreign banks (Slovenian Investment and Development Bank and European Investment Bank (EIB)). Total funds spent in 2013 amounted to 49.8 million EUR, of which 29 million EUR were soft loans and 20.8 million EUR were grants. There are more than 400 companies who received the loan from Eco Fund so far (Bijedić 2013).

2.3.2. Lessons learnt from the application of the support measure

From the application of this support measure in the above five Member States, the following lessons learnt could be derived.

According to the **Bulgarian** Executive Agency for Promotion of Small and Medium Enterprises the absorption of the National Innovation Fund funds in 2013 has increased. Overall, 82% of the budget

¹⁴ Eco Fund (n.d.). Eco Fund, Slovenian Environmental Public Fund. URL: <https://www.ekosklad.si/information-in-english>, accessed 08 October, 2015

that has been approved is already used, which is above average of the previous sessions, where only about half of the funds were absorbed. Just for comparison, Bulgarian EU fund absorption is still very low: the country ranks 23rd by EU funds absorption among the EU-28.¹⁵

A part of the financial support through the **Croatian** “Entrepreneurial Impulse” support programme is specifically targeted at SMEs. **Financing through international programmes** plays an important role for the realisation of resource efficiency projects in Croatia.

The success factors of the **Latvian** Green Technology Incubator encompass (i) the **concentration of relevant and needed competencies** (in technologies, finances, in start-up business and venture capital sector, and in international networking) in decision making (through the **board of directors**); (ii) **involvement of independent representatives** of stakeholders in decision making (three board members are representing interests of shareholders; two board members are independent persons representing interests of stakeholders – venture capitalists, investors); and (iii) a **motivated and competitive core team** of the incubator with clear tasks. However, through the first year of its application, it has become apparent that the “Green Technology Incubator” should be focused on results (developed business models; made prototypes, etc.) rather than on processes, in order to minimise administrative procedures, and that the incubator could be more flexible to make decisions. **Minimising formal procedures and administrative processes** could increase the effectiveness of the incubator and other start-up business support mechanisms.

The main success factor for application of measures to improve financing for resource efficiency for businesses in **Malta** was that the grant scheme used **financing from the EU ERDF fund**. EU funding seems to be an important source of support for resource efficiency-related support measures in Malta, possibly due to the small size of the country, which may place limits on the desirability of making large business support investments. While the ERDF scheme was able to support enterprises to address environmental sensitive issues through co-funding, a rather limited uptake and the fact that the participating enterprises linked the investment to their productive capacity seems to indicate that in the case of SMEs, the funding provided (albeit being the maximum allowed) was still insufficient to address market failure. The importance of EU co-funding also holds true of the BOV (Bank of Valletta) JEREMIE Financing Package, which aimed (amongst other non-resource efficiency-related objectives) to provide financial support for investment in green technology from 2007-2013, and was also co-financed **using EU funds**. A key success factor was the **complementarity** of the JEREMIE Financial Instrument **with the products offered** by the selected Financial Intermediary. In addition, the selected Financial Intermediary made an effort to **increase awareness of the JEREMIE Financial Instrument**.

The soft loans provided through the **Slovenian** Eco Fund have a **rather modest interest** rate of 3-month EURIBOR + 1.5%. The **range of loans**, from 25,000 to 2 million EUR or up to 90% of eligible investment costs, makes them attractive to companies of various sizes. The **repayment period can last up to 15 years and includes a grace period** of up to one year; for purchase of certain equipment and vehicles, repayment period is up to 5 years (Bijedić 2013).

In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied:

The **Austrian** domestic environmental support (Umweltförderung im Inland, UFI) programme for area resource management supports investments in resource efficiency measures. For investments in production processes (to significantly reduce resource use within existing production processes while maintaining the functionality of the product), up to 30% of the investment costs can be covered and for investments in innovative services, up to 20% of overall costs (e.g. Chemical Leasing). Launched in 2010, the measure aims to improve resource efficiency, support the voluntary implementation of resource efficiency measures and support the switch to bio-based resources and materials. Maximum

¹⁵ Novinite News Agency (2015), URL:

<http://www.novinite.com/articles/166719/Bulgaria+23rd+in+EU+by+EU+Funds+Absorption#sthash.Z3QVRFMi.dpuf>, accessed on 13 August, 2015

subsidy per project is 500,000 EUR. The programme sets an **incentive** for the **voluntary implementation** of environment protection measures that **do not pay off within reasonable periods** of time.

The **Estonian** Green Investment Scheme, launched in July 2010, aims to assist businesses in implementing environmentally friendly projects (modern technologies, alternative ways of producing energy, more renewable energy sources, saving measures in energy production, etc). The Ministry of Environment and the Environmental Investment Centre (EIC) signed an administration agreement that gives EIC the rights to trade with the CO₂ units and implement the Green Investment Scheme in Estonia by allocating grants from the income. All money from the trading must be channelled to environmentally friendly projects that lower the emission of CO₂ and other greenhouse gases. 21 deals have been concluded in order to sell 72.6 million Assigned Amount Units for 388 million EUR.¹⁶ The deals have been concluded with the Republic of Austria, the Kingdom of Spain, the Grand Duchy of Luxembourg and Japanese corporations. Specific factors for success include that the projects are **coordinated by the state (EIC)** and **negotiated closely with quota buyers** to find good solutions for Estonia. Also, **Estonia's small size** has helped to implement these projects quite effectively.

In **Germany**, the KfW Bank (German government-owned development bank) launched the Green-Bond-Portfolio in 2015, under which KfW plans to purchase green bonds in the amount of 1 billion EUR, aiming to help financing suitable projects in the fields of resource efficiency, renewable energies, waste management, (waste) water management, biodiversity and non-polluting transport systems. A further aim of the measure is to contribute to the development of the Green Bond market. Specific factors for success encompass (i) **definition of minimum requirements** for the quality of green bonds in cooperation with the Federal Environment Ministry, particularly in regard to the transparency of the projects which are to be financed; (ii) **detailed and regular reports on the financed projects** in order to strengthen the trust of the market participants in the green bonds; (iii) **involving external experts** and making public their opinions; and (iv) **gradually raising the minimum requirements** to meet even higher quality standards.

Since 2005, the **Greek** Inter-Ministerial Committee for Public-Private Partnerships (ICPPP) evaluates and selects PPP projects and provides funding to public entities, inter alia, for waste management. The initiative is co-financed through the Joint European Support for Sustainable Investment in City Areas (JESSICA). To date, approximately 70 tenders were approved under the initiative, out of which 13 concerned the development of waste treatment facilities. **EU funds contributed significantly** to the funding of the PPPs.

The **Finnish** Funding Agency for Innovation, “TEKES,” provides grants and loans to companies, especially through the “Green Growth Programme,” aiming to create long-term benefits for the economy, to identify potential new growth areas for the sustainable economy, to increase energy and material efficiency of production and service chains over the entire life span of products, and to support the growth and access to international markets of SMEs. Grants and innovation loans only cover a certain percentage of the overall project costs. 25 successfully realised projects under the Green Growth Programme have been presented in a brochure on the website. Specific factors for success include (i) **public funding in the early stages of projects**, where it is difficult to find private funders; (ii) **support for technological and also service-related, design, business and social innovations**; and (iii) loans have a **low rate of interest and are without collaterals**.

The **Polish** E-KUMULATOR: Ecologic Accumulator for Industry (Ekologiczny Akumulator dla Przemysłu) supports entrepreneurs in the field of low-carbon, resource-efficient economy to improve resource efficiency in their industrial activities. Some specific objectives are: to reduce the consumption of primary raw materials in industry by 1 million tonnes every year and to reduce air pollution (strongly related to the IED standards). Projects that may receive support include those concerning recycling waste for use as fuels, reducing basic resource use and reducing harmful emissions. The E-KUMULATOR was launched in 2014 and is planned for continuation until 2023,

¹⁶ Environmental Investment Centre (n.d.). Green Investment Scheme. URL: <http://www.kik.ee/en/green-investment-scheme>, accessed 19 October, 2015

with an allocated budget of 250 million EUR for the Polish territory. It is anticipated that by the end of 2017, over 80 million EUR will be spent on new investments.¹⁷ Success factors encompass (i) a **broad public consultation preceding** the preparation of the programme and (ii) **adaption of the offer to real market needs**, thereby addressing the main concerns of Polish entrepreneurs, such as competitiveness and compliance with EU regulation. Support will be allocated in the form of preferential loans, and the **partial redemption of the loan** is tied to efficiency of investment made.

The **Swedish** Agency for Economic and Regional Growth (NUTEK) funds an Environment-driven Business Development programme, aiming to stimulate product and business development from sustainability perspectives as well as to strengthen the competitiveness of domestic SMEs. The programme ran from 2001 to 2004, co-financing 28 million SEK (approximately 2.8 million EUR) in total for a wide range of projects. 390 SMEs participated in the programme investing approximately 50 million SEK (approximately 5 million EUR) in terms of time and money. Through this programme, about 60 products and services have been made more environmentally sound and over 100 companies have ensured a system of continuous improvement. Specific factors for success include **phone calls from NUTEK to SMEs** in order to encourage submission of project proposals – NUTEK received and assessed 161 project ideas. For 54 proposals, a **preliminary study** was conducted, **co-financed** by NUTEK through a grant of 80,000 SEK (approximately 8,000 EUR). The preliminary studies helped to identify committed companies and minimise the risk of project failures and delays. The **programme was run with the involvement of various actors**: regional development organisations, municipalities, consultants, universities and other research institutions.

Across the examples obtained from literature review and Member State responses, the following aspects could be identified as key success factors for improving financing for businesses to improve resource efficiency in the EU:

- ★ Designing financial mechanisms to (i) minimise formal procedures and administrative processes, (ii) have low/modest interest rates, (iii) include a range of loans in order to make them attractive to companies of various sizes, and (iv) offer a reasonable grace period, loan redemptions and repayment period in order to mitigate (too) long payback periods.
- ★ Defining (and gradually increasing) minimum requirements for eligibility and quality of projects applying for financial support, and issuing detailed and regular reports on the financed projects in order to increase transparency.
- ★ Ensuring relevant and needed competencies (in technologies, finances, in start-up business and venture capital sector and in international networking) and involvement of independent representatives of stakeholders in decision-making procedure of the funding institution.
- ★ Involving companies in the preparation of call programmes (e.g. through public consultations) in order to as best as possible adapt the offer to real market needs. This includes making phone calls to businesses (SMEs, for instance) to encourage and support submission of project proposals.
- ★ Co-funding preliminary studies helping to identify committed companies and to minimise the risk of project failures and delays.
- ★ Keeping the administrative processes and application procedures for companies simple.
- ★ Financial and administrative support through EU and international funding programs (e.g. ERDF, European Investment Bank).

¹⁷ PARP (Polish Agency for Enterprise Development) (n.d.). Poland's getting greener - Polish eco start-ups and technologies. URL: http://www.web.gov.pl/eng/ecosystem/675_4630_polands-getting-greener-polish-eco-start-ups-and-technologies.html, accessed 08 October, 2015

2.4. Supporting voluntary agreements and initiatives

The aim of voluntary agreements or initiatives is to encourage resource efficiency in groups of businesses by creating shared goals. In this way, businesses may become more motivated and committed to take steps towards greater resource efficiency. Governments might support such agreements/initiatives e.g. by encouraging the development of codes of conduct/covenants (between businesses, or between businesses and government), offering support for the development of voluntary product labelling, voluntary corporate disclosure or voluntary collaboration between actors along a supply chain, or by hosting meetings/discussions between businesses.

State support for voluntary agreements and initiatives is widely used in eight Member States (28%; Finland, Germany, Greece, Italy, Luxembourg, Spain, The Netherlands, and the UK) and used a little in ten Member States (36%) (see Figure 8). In ten other Member States (36%) there is no national policy in place for this support measure.

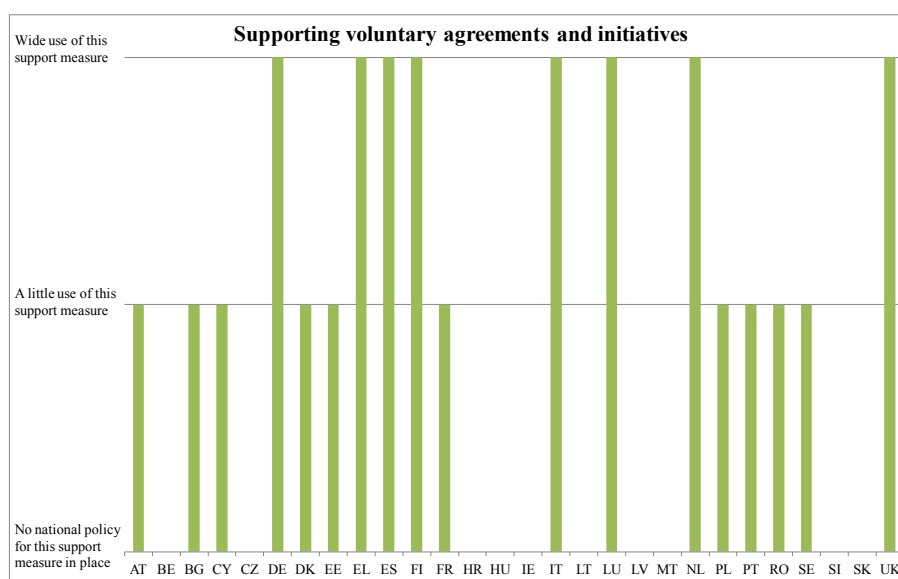


Figure 8: Scope of application of support measure 4 across the EU-28

2.4.1. Good practice examples

In the following, we provide selected good practice examples for this support measure from six different Member States (see Figure 9; the full list can be found in the separate Annex document): Italy, Luxembourg, Spain, The Netherlands, and the UK (each with wide use of this measure); Romania (a little use of this measure).

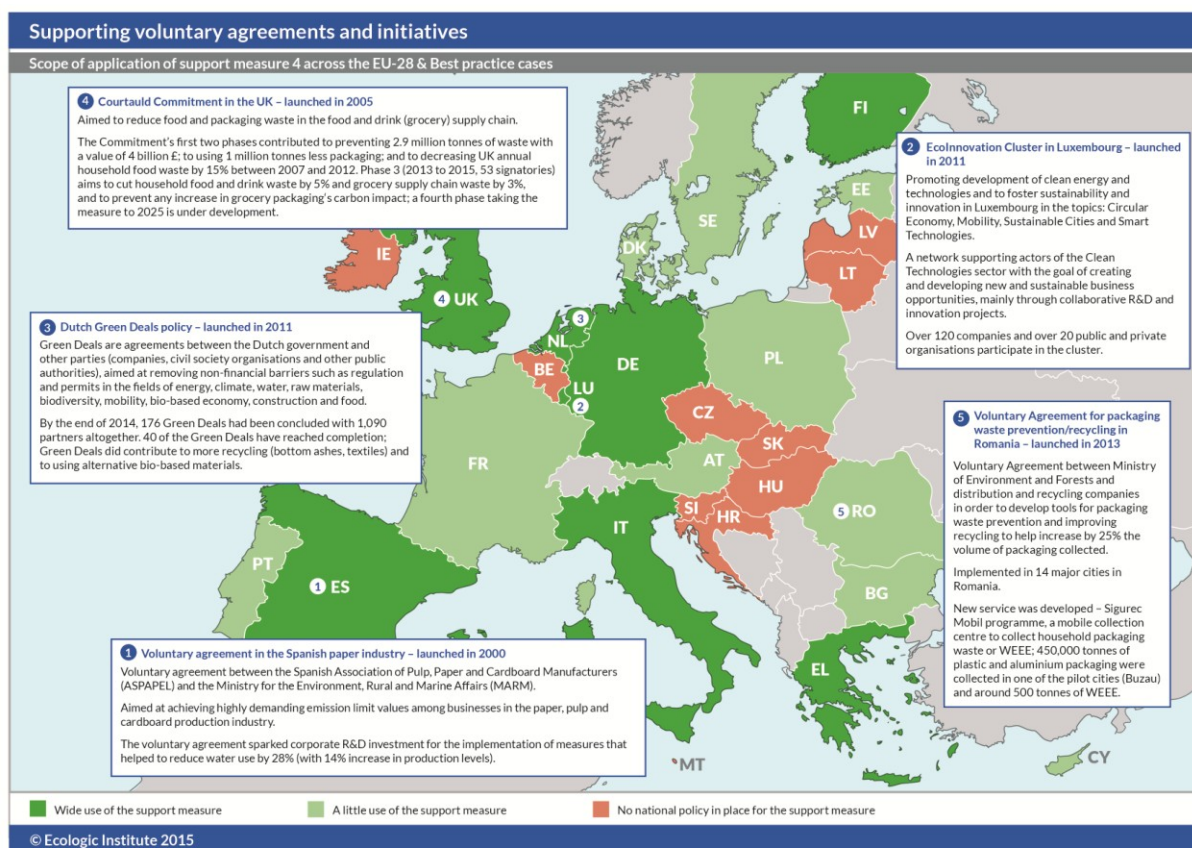


Figure 9: Good practice examples and scope of application for support measure 4 across EU-28

The **Italian** Ministry of Environment is committed to involving the private sector in efforts to improve resource efficiency. In this context, the Ministry is currently working on the definition of a national voluntary scheme, called “Green Made in Italy” that, by adopting the methodology PEF - Product Environmental Footprint of the European Commission, is aimed at promoting the competitiveness of Italian products in a context of growing demand for high environmental performance on national and international markets. Under this Italian Environmental Footprint Programme, a diagnostic tool based on the LCA (Life Cycle Assessment) methodology will be developed that helps companies to identify ‘carbon management’ procedures and low-carbon technologies to improve resource efficiency of the production processes. Launched in 2012, this programme has already received 200 participants from (large and small) companies and other actors.

The EcoInnovation Cluster of **Luxembourg** was launched in 2011, aiming to promote the development of clean energy and technologies and to foster sustainability and innovation in Luxembourg. The Cluster focuses on the following topics: Circular Economy, Mobility, Sustainable Cities and Smart Technologies. The Luxembourg EcoInnovation Cluster is a network that supports the various actors of the Clean Technologies sector with the goal of creating and developing new and sustainable business opportunities, mainly through collaborative R&D and innovation projects. The Cluster’s specific objectives are to: (i) diversify the activities of Luxembourg companies, thus allowing them to gain and develop new capabilities in the field eco-technologies; (ii) contribute to the development of new environmental solutions in the field of eco-technologies and sustainable construction; (iii) raise public awareness for the uptake of “green technologies”; (iv) build PPPs in order to develop new collaborative projects of common interest; and (v) encourage networking between public and private actors on the national and international level.

The membership of the Luxembourg EcoInnovation Cluster is open to companies, public research institutes and organisations that are active in the field of eco-innovation technologies. Many organisations as well as private companies have become members of the cluster. Over 120 companies and over 20 public and private organisations participate in the cluster, actively pursuing its objectives.

The national administration in **Spain** uses voluntary agreements as a strategic tool to go beyond legal commitments to implement circular economy principles, promote business competitiveness and encourage resource efficiency. The Spanish Ministry of Agriculture, Food and Environment (MAGRAMA) participates in and promotes these voluntary commitments with business associations of various sectors as well as with social enterprises. A good number of agreements have emerged in the past years. One prominent example is the voluntary agreement between the Spanish Association of Pulp, Paper and Cardboard Manufacturers (ASPAPEL) and the predecessor to the MAGRAMA, the Ministry for the Environment, Rural and Marine Affairs (MARM). The voluntary compromise of the pulp and paper industries aims to achieve highly demanding emission limit values among businesses in the paper, pulp and cardboard production industry that release process waters into public waterways. The first voluntary agreement was signed in 2000 and was renewed in 2005. Among other things, the voluntary agreement sparked corporate research and development (R&D) investment for the implementation of measures that reduce the environmental impact of pulp and paper production processes. Through these measures, water use could be reduced by 28% (with 14% increase in production levels) (OECD 2015).

The **Dutch** government gives support to voluntary agreements through the Green Deals policy. Green Deals are agreements between the Dutch government and other parties. These parties may be companies, civil society organisations and other public authorities. In a Green Deal the central government helps to remove bottlenecks for green plans, mostly with a view to remove non-financial barriers such as regulation and permits. Through the Green Deals approach government facilitates society to bring opportunities for a greener economy to fruition themselves, and hence becomes an enabler for new collaborative partnerships that aim at promoting a greener economy. The Green Deals started from the theme of energy, but also cover themes such as climate, water, raw materials, biodiversity, mobility, bio-based economy, construction and food. The first Green Deals have been concluded in 2011. By the end of 2014, 176 Green Deals had been concluded with 1,090 partners altogether. 40 of the Green Deals have reached completion. In the first two years (2011/2012) the most covered themes were energy, bio-based economy and raw materials. The green deals concluded in 2013/2014 were more strategic in nature and also involved a larger number of parties. Results and achievements from these Green Deals encompass, inter alia: erecting 15,000 charging posts for electric vehicles; making 8,100 homes energy efficient; constructing seven LNG tanking stations for lorries and ships and two bunker stations; developing a method for incorporating sustainability in the tendering process for engineering projects; sharing knowledge and experience on factoring biodiversity into investment decisions; and establishing a Community of Practice as a spin-off for the financial sector. For a number of Green Deals, the envisaged actions could not be completed fully because (i) projects turned out to be technically infeasible, (ii) business cases could not (yet) be proven, (iii) funding was insufficient; (iv) wrong parties were involved, or (v) the licence could not be granted. (Directorate-General for Industry & Innovation, 2015)

In the **UK**, the Courtauld Commitment was launched in 2005 by the UK government's Waste and Resources Action Programme (WRAP) to reduce food and packaging waste in the food and drink (grocery) supply chain. The Courtauld Commitment has operated in three phases to date: Phase 1 ran from 2005 to 2009, and had three targets: to stop the growth in packaging waste by 2008, to cut packaging waste by 2010 and to identify ways to tackle food waste. Phase 2 ran from 2010 to 2012 and began the move from weight-based targets to new metrics that considered wider environmental impacts. This phase had three targets: to cut the carbon impact of grocery packaging by 10%, to cut household food and drink waste by 4% and to cut supply chain waste by 5%. Phase 3 started in 2013 and runs until the end of 2015. It has three targets: to cut household food and drink waste by 5%, to cut grocery supply chain waste by 3% and to ensure there is no increase in the carbon impact of grocery packaging. A fourth phase taking the measure to 2025 is under development.

Phase 1 had over 40 signatories, with 92% of the UK supermarket sector represented. Phase 2 had 53 signatories including major UK retailers and many of the leading brands in food and drink sale and

manufacture,¹⁸ which have over 90% coverage of the UK food and drink (grocery) market. Phase 2 helped businesses to (1) reduce costs; (2) improve the resource efficiency of products and their packaging; (3) better position organisations for a carbon-constrained future; (4) deliver against consumer expectations; and (5) help drive innovation in the sector. The Commitment's first two phases contributed to preventing 2.9 million tonnes of waste with a value of 4 billion £; to using 1 million tonnes less packaging; and to decreasing UK annual household food waste by 15% between 2007 and 2012 (DEFRA 2014). Grocery packaging weight was reduced by 10.7% (in the 2nd phase). In addition to the business benefits, in Phase 2, a 3.7% absolute reduction in total household food waste was achieved (270,000 tonnes per annum) against a target of 4% (92% of the target was achieved). However, avoidable household food waste reduced by 5.3%. This will have saved consumers 700 million £ and local authorities 20 million £ a year in 2012. The carbon savings associated with the reduction in avoidable household food waste amounted to around 930,000 tonnes CO₂eq a year.¹⁹ Phase 3 has 53 signatories (as at October 2014). In 2013, a third phase of the Commitment was launched, aiming to prevent a further 1.1 million tonnes and bring the reduction of household food waste to 20% of the 2007 levels.²⁰

In 2013, a voluntary agreement with regard to packaging waste prevention and recycling was signed in **Romania** between the Ministry of Environment and Forests and its distribution and recycling companies to develop tools for packaging waste prevention and improve recycling. The agreement's goal is to increase the volume of packaging collected by 25%. The project is now implemented in 14 major cities in Romania and its deployment will continue progressively in other cities. In the framework of this agreement, a new service was developed, Sigurec, which aims to improve recycling solutions around the country. One of its activities involves offering vouchers to clients in several supermarkets in Romania (Carrefour and Cora in 12 Romanian cities) when bringing end-of-life home appliances or plastic packaging: for example, for a recycled refrigerator, the customer receives a voucher of around 20 EUR, a few eurocents are offered for plastic bottles (1 eurocent) or glass (2 eurocents) and 2.5 EUR for 1 kg of mobile phones. Another Sigurec solution is the Sigurec Mobil programme: the collection centre can be contacted via an application in order to collect household packaging waste or waste electrical and electronic equipment (WEEE). Through the installation of containers, 450,000 tonnes of plastic and aluminium packaging and around 500 tonnes of WEEE were collected in one of the pilot cities (Buzau).²¹

2.4.2. Lessons learnt from the application of the support measure

From the application of this support measure in the above six Member States, the following lessons learnt could be derived.

In the case of the **Spanish** voluntary agreement in the paper sector, **setting objectives per unit of production terms** instead of as a function of pollutant concentration was key to incentivise the adoption of the best available technologies by manufacturers. Furthermore, the fiscal incentives on investments offered by the MAGRAMA allowed ASPAPEL members to **commit to the reduction of emissions**, the phasing out of Chlorine gas (Cl₂) in the whitening processes and the elaboration of annual reports. The voluntary agreement is considered by the businesses in the sector as key to initiate improvements of environmental management.

¹⁸ WRAP 2012. Courtauld Commitment 2 Signatories. Available at URL: <http://www.wrap.org.uk/sites/files/wrap/CC%20Ph%20signatories%20list%2012%20Mar%202012.pdf>, accessed 06 August, 2015

¹⁹ WRAP (n.d). Courtauld Commitment 2. URL: <http://www.wrap.org.uk/node/9297/>, accessed 08 October, 2015 (measure 4)

²⁰ WRAP (n.d). Courtauld Commitment 3. URL: <http://www.wrap.org.uk/node/14621>, accessed 08 October, 2015 (measure 4)

²¹ See also The Diplomat Bucharest (2015). Recycling in Romania: waste of space? URL: <http://thediplomat.ro/articol.php?id=5901>, accessed 19 October, 2015

At least 200 entities (public entities, companies, research institutions) signed voluntary agreements and participated in calls for funding promoted by the **Italian** Environmental Footprint Programme. The Programme succeeded in promoting carbon management procedures, low-carbon technologies and **best practices** in production processes within the Italian goods and services private sector. It provided an **effective tool for data collection** and **scientific and technical information necessary** to ensure active participation in the testing programme of the European Commission on the PEF.

The EcoInnovation Cluster of **Luxembourg** seems to be a success, as many organisations have become members. It offers an interesting example of a **networking and sharing platform** joining very diverse types of businesses (ranging from SMEs to large global companies), public authorities and research institutes operating in a concentrated territory.

Central to all **Dutch** Green Deals are the actions by entrepreneurs themselves: exploring, establishing and strengthening ‘innovative activity’ with other parties. Cooperation is often needed to effectively achieve the products and to put them on the market (networking). Companies indeed appreciate that the Green Deal approach offers additional benefits, in particular by **providing new business opportunities through cooperation with non-usual partners**, by **enabling new experiments outside the box** and because of the **direct interaction with one contact point within the central government**. Green Deals prove to function as a catalyst in the process. Companies indicate among others that a Green Deal increases the commitment among the parties involved and accelerates the licensing procedure. The Green Deals also include many actions as to adapting regulation and other actions such as labels, certification and quality systems and the strengthening of the role of the central government as launching customer. Many deals also include activities with a view to explore and establish new financing arrangements and investment funds through combining provincial and private resources (directed towards demonstration and upscaling). Almost all products and services targeted by the Green Deals **fall within the stage in which the first practical applications take place and in which the first steps are taken towards upscaling**.

Furthermore, unsuccessful Green Deals provide learning experiences so that per Green Deal the **lessons learnt are documented** thus enabling a) other parties to make use of them, and b) the state to make improvements to the Green Deal Approach. The **Green Deal Board** has been increased in size **to ensure that it represents all green growth domains**, thus facilitating the Green Deal Approach by more effectively challenging and promoting it, e.g. through suggesting new Green Deal initiatives.

The **Romanian** voluntary agreement with regard to packaging waste prevention and recycling was first launched in two cities and has now been implemented in 12 other major cities. The project can be easily implemented elsewhere, due to its attractiveness. The **voucher system** allows consumers who deliver their end-of-life products to be compensated for their action, and recyclers (or producers, indirectly through participation in extended producer responsibility EPR systems) can increase the collection and use of recyclable materials, thus increasing their output and potential gain from the sales of materials (or use for own production purposes).

According to the information obtained and analysed, two main aspects served as success factors for the Courtauld Commitment in the **UK**: i) **coordination and support by WRAP**, a government funded organisation with expertise in waste reduction. WRAP provides support and guidance to signatories, providing regular updates, website tools, data and evidence, research and resources to support the delivery of the targets. Many of these tools and publications are available on WRAP’s website. WRAP also promotes change by facilitating forums, workshops and meetings to encourage the adoption of best practice across the entire grocery sector. Signatories provide data to WRAP on their progress **on a confidential basis**. WRAP analyses data confidentially, under the terms of the agreement, and reports the total impact from all the signatories. Much of the data submitted to WRAP is required to meet legal obligations. ii) **Working in partnership is crucial to the success of the Commitment**. WRAP works in partnership with leading retailers, brand owners, manufacturers and suppliers’ influential industry bodies, local authorities, community-based organisations and many others who sign up and support the delivery of the targets, e.g. the British Retail Consortium (BRC) and the Food and Drink Federation (FDF), the Dairy association.

In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied:

In 2004, the **Austrian** Federal Ministry of Agriculture, Forestry, Environment and Water Management launched the **klimaaktiv** initiative for active climate protection as part of the Austrian climate strategy. The programme fosters a competitive low-carbon economy based on efficient and sustainable use of resources, the protection of the environment and the establishment of innovative green technologies and high quality production practices. **klimaaktiv** follows an innovative governance idea for market transformation towards green markets, with the aim to raise the share of renewables and of energy efficient products and services. Essential for the market transformation approach is an active and comprehensive inclusion of all relevant market players and stakeholders. **klimaaktiv** uses its extensive networks to promote the building of social capital for change in the direction of a sustainable society. Within the four thematic fields (1) building & renovation, (2) energy saving, (3) renewable energies and (4) mobility, **klimaaktiv** helps clarify new solutions, establish standards of quality, deepen the knowledge and competence of key players and advise companies, local authorities and private households. Resource efficiency is directly addressed in the **klimaaktiv** programme **Nawaro Markt** (market for renewable materials). In the other programmes, energy efficient and sustainable products and services are the main focus. 190 Austrian companies and organisations support **klimaaktiv** as signed **klimaaktiv** partners. 11 large-scale enterprises are signed **klimaaktiv** pakt2020 partners, who have committed themselves to reach the 2020-goals in their own company. The website received 1.6 million hits in 2014 and 35,000 persons subscribed to the various **klimaaktiv** newsletters. Specific factors for success include (i) a **long term programme** (over the last eleven years, **klimaaktiv** has continuously built a large network of active people and companies: 12,000 people attended further education programmes, 12,500 companies have implemented measures to mitigate CO₂ advised by **klimaaktiv**); (ii) **strengthening and complementing existing initiatives**; (iii) establishing **standardised tools and trainings** based on high quality standards; and (iv) using **standards to improve the effectiveness of various issued grants**.

The **Danish** Ministry of Environment and Energy and the Danish Confederation of Industries, acceded to by **Plastindustrien** (Plastic Industry Federation) and **Emballageindustrien** (Paper and Board Federation) signed an agreement in 1994 on the recycling of transport packaging, aiming to collect and recycle 80% of the volume of transport packaging by the year 2000, either through direct re-use or material recovery. The agreement ended in 2011. The **results of analyses, monitoring, annual reports, developments and statistics** are **circulated** among all parties and the Agreement Working Group and are **open to public scrutiny**, largely via government-published statistics and bulletins.

In **France**, several voluntary agreements and initiatives have been deployed to support resource efficiency in business. Along with other initiatives, such as **ARPEGE** (Atelier de réflexion prospective sur l'écologie industrielle), the **Institut de l'Economie Circulaire** is a key player in France for fostering voluntary collaboration among business stakeholders in the field of resource efficiency. Its aim is to promote the concept of a circular economy. The Institute was founded in February 2013. Among its founding members, there are NGOs such as the **Fondation Nicolas Hulot**, companies such as **La poste**, **Gaz réseau distribution France**, and business associations such as the **French federation of recycling industries** and the **French Cement Association (SFIC)**. Many business stakeholders/eco-organisms/business associations have become members, among which **Coca-Cola Enterprise**, **ECOFOLIO**, **Ecologic France**, **GrDF**, **Greenflex**, **La Poste**, **Le Relais**, **Nexity**, **Paprec group**, etc. French experiences in this field show that this measure helps to spread the concept of resource efficiency and increase collaboration among stakeholders. In the case of the **Institut de l'Economie Circulaire**, specific achievements include organising workshops, seminars, producing position papers, monitoring legislative developments on the circular economy and communication/outreach.

In 1999, the **Estonian** government signed voluntary agreements (VA) with industry to improve the environmental performance of businesses and make resource use more efficient. The VAs are bilateral – between one firm (or group of firms) and the Ministry of the Environment. VAs have not included any subsidies or other financial elements from the administration side. In the frame of the VA, the company usually takes an obligation to reduce its emissions into the environment through implementing environmental management systems, best available technologies and sustainable production and consumption techniques. In turn, the Ministry takes on the obligation to provide the firm(s) with information related to its activity and involve the company in the process of developing relevant legislation. Since 1999, 11 contracts were signed. The VAs have raised the awareness of companies and motivated them to make investments into resource efficient solutions. Voluntary

agreements with companies have had some success, but have not resulted for cooperation between companies (symbiosis).

Since 1996 (renewed in 2001), a voluntary agreement on the waste management for office paper including books, forms, copy paper, labels, envelopes and posters is in place in **Sweden**. The costs of the scheme are covered by the value of waste paper collected and sold as secondary raw material, due to the **high market value of collected waste paper** in Scandinavian countries.

Across the examples obtained from literature review and Member State responses, the following aspects could be identified as key success factors for supporting voluntary agreements to improve resource efficiency in businesses in the EU:

- ★ Working in partnership with relevant companies and institutions in the sectors targeted by the voluntary commitment.
- ★ Ensuring and maintaining confidentiality of information provided by the companies.
- ★ Designing the agreements to (i) be long term and (ii) strengthen and complement existing initiatives.
- ★ Founding the agreement's targets on criteria and indicators relevant to the targeted sectors and companies (e.g. setting objectives per unit of production terms instead of as per unit of emissions concentration).
- ★ Providing and establishing standardised tools and trainings to improve the effectiveness of the delivery on the agreements' objectives.
- ★ Promoting best practices linked to the sectors/companies within the scope of the voluntary agreement(s).
- ★ Providing a networking and sharing platform joining diverse types of companies (ranging from SMEs to large global companies) and offering relevant data, scientific and technical information. This includes making the results of analyses, monitoring, annual reports, developments and statistics available to all parties and open to public scrutiny.
- ★ Offering and encouraging (i) cooperation with non-usual partners and (ii) new experiments outside the box in order to develop new business opportunities.
- ★ Establishing a central contact point within the central government as a one-stop-shop for communication and management of the voluntary agreement(s).
- ★ Targeting voluntary agreements at the stage in which the first practical applications take place and in which the first steps are taken towards up-scaling.

2.5. Providing targeted resource efficiency information and advice to companies

The provision of targeted information/advice to companies on resource efficiency can help to encourage improvements. Online information on improving resource efficiency, support for sharing of best practices between companies, virtual or 'in person' support and advice programmes, and financial support for implementing advice all have the potential to help. Although audits (see measure 2 Incentivising external audits to support resource efficiency) will be an important foundation to base targeted resource efficiency advice on (e.g. in relation to which measures could be effective to reduce material/energy needs of a company), they are not covered under this measure, which covers a much wider range of information and advice and does not necessitate a systematic (auditing) procedure for obtaining information to generate advice and provide information.

State support for the provision of targeted resource efficiency information and advice to companies is widely used in six Member States (22%; Austria, Finland, France, Hungary, Ireland and the Nether-

lands,) and used a little in the large majority of Member States (18 MS, 64%) (see Figure 10). In four Member States (14%, Bulgaria, Czech Republic, Romania, Slovakia) there is no national policy in place for this support measure.

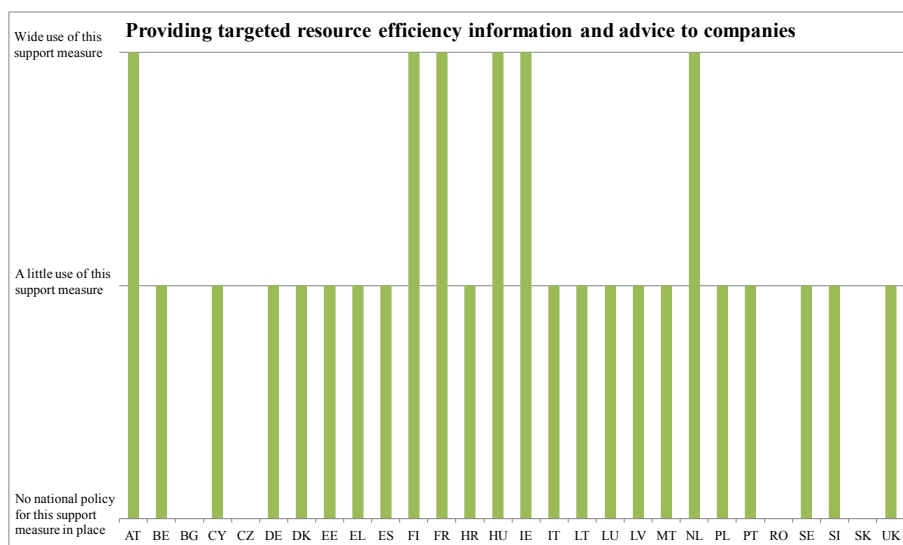


Figure 10: Scope of application of support measure 5 across the EU-28

2.5.1. Good practice examples

In the following section, we provide selected good practice examples for this support measure from five different Member States (see Figure 11; the full list can be found in the separate Annex document): Austria, Finland, Hungary and Ireland (each with wide use of this measure); Denmark (with a little use of this measure).

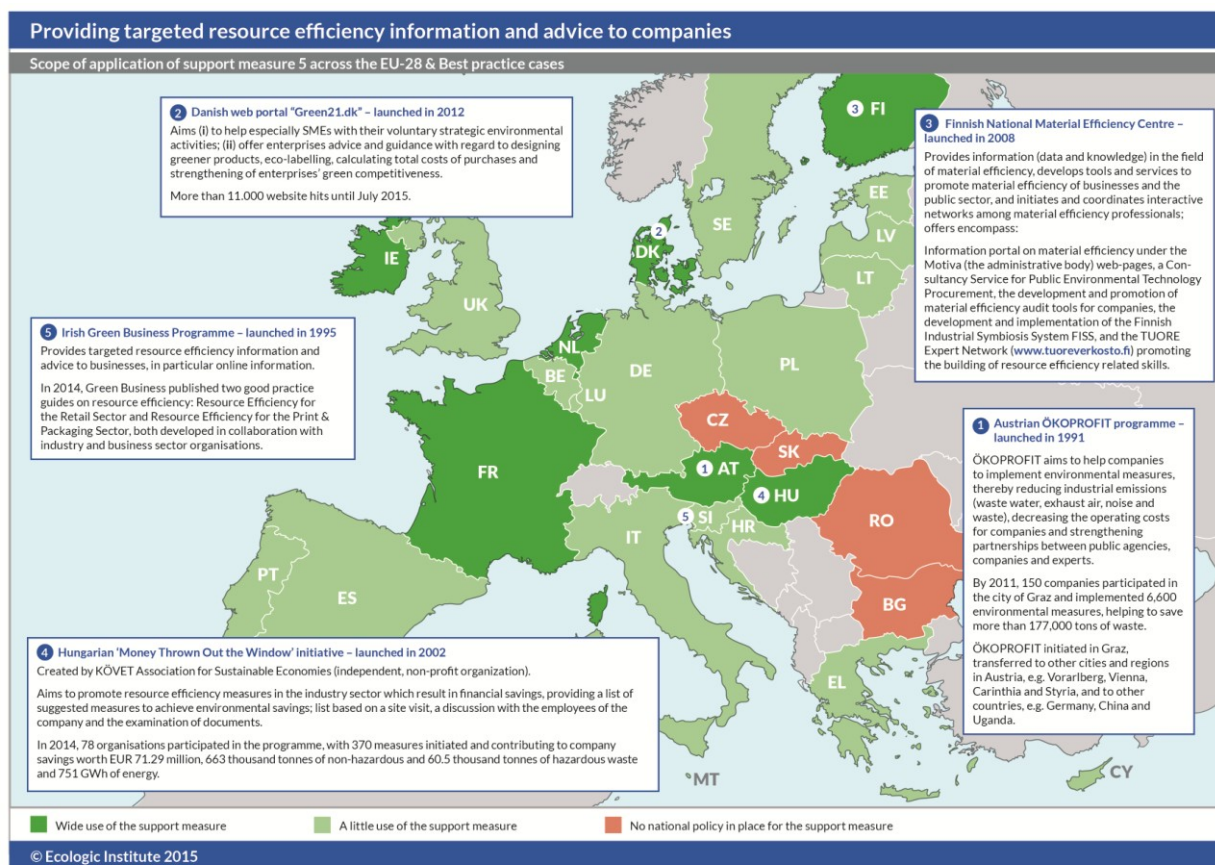


Figure 11: Good practice examples and scope of application for support measure 5 across EU-28

The **Austrian** ÖKOPROFIT programme was launched in 1991 and is still ongoing, aiming to help companies to implement environmental measures, thereby reducing industrial emissions (waste water, exhaust air, noise and waste), decreasing the operating costs for companies and strengthening partnerships between public agencies, companies and experts. By 2011, 150 companies participated in the city of Graz and implemented 6,600 environmental measures, helping to save more than 177,000 tonnes of waste (Umwelt GRAZ 2011). ÖKOPROFIT was initiated in Graz, but has since then been transferred to other cities and regions in Austria, e.g. Vorarlberg, Vienna, Carinthia and Styria. In addition, the ÖKOPROFIT concept was also successfully transferred to other countries, e.g. Germany, China and Uganda.

The **Finnish** National Material Efficiency Centre, established in 2008, provides information (data and knowledge) in the field of material efficiency, develops tools and services to promote material efficiency of businesses and the public sector and initiates and coordinates interactive networks among material efficiency professionals. Funded by the Ministry of Employment and Economy with 500,000 EUR per annum, the Centre operates nationwide. Its offers to businesses since 2008 encompass:

- An information portal on material efficiency under the Motiva (the administrative body) web-pages;
- A Consultancy Service for Public Environmental Technology Procurement;
- The development and promotion of material efficiency audit tools for companies;
- The development and implementation of the Finnish Industrial Symbiosis System FISS; and
- The TUORE Expert Network (www.tuoreverkosto.fi) promoting the building of resource efficiency related skills.

In **Hungary**, the main support measure is the so-called “Money Thrown Out the Window” initiative (*Ablakon Bedobott Pénz*, <http://www.ablakonbedobottpenz.hu/index.php>), which was created by the KÖVET Association for Sustainable Economies, an independent and non-profit organisation. Launched in 2002, the initiative’s objective is to promote resource efficiency measures in the industry sector that result in financial savings. The companies that apply for this initiative receive a list of suggested measures to achieve environmental savings. The list is based on a site visit, a discussion with the employees of the company and an examination of documents. Targeted sectors include fisheries and forestry, mining and quarrying, manufacturing, electricity and water supply, construction, the commercial sector, hotels and restaurants, transport logistics and real estate. The support measure is available for a wide range of organisations and companies. In 2014, 78 organisations participated in the programme, with 370 measures initiated and contributing to company savings worth 71.29 million EUR (22.1 billion HUF), 663,000 tonnes of non-hazardous and 60,500 tonnes of hazardous waste and 751 GWh of energy.

The **Irish** Green Business Programme provides targeted resource efficiency information and advice to businesses, in particular online information relevant to companies in specific sectors all over Ireland, in formats which they find useful. Various information that covers many different sectors has been produced since 1995, with a series of 133 documents now available online dating from 2002 onwards. In 2014, Green Business published two good practice guides on resource efficiency: *Resource Efficiency for the Retail Sector* and *Resource Efficiency for the Print & Packaging Sector*. Both of these guides were developed in collaboration with industry and business sector organisations. Moreover, in the last three years, Green Business has hosted 29 Resource Efficiency Seminars. These seminars are aimed at promoting the message that ‘Green Business’ is ‘Smart Business’ and that resource efficiency has a crucial part in sustaining business.

One interesting **Danish** example for the state supported provision of targeted information and advice on resource efficiency for companies is the web portal “Green21.dk.” Launched in 2012, this web portal aims to (i) help especially SMEs with their voluntary strategic environmental activities and (ii) offer enterprises advice and guidance with regard to designing greener products, ecolabelling, calculating total costs of purchases and strengthening of enterprises’ green competitiveness. Gree21.dk has had more than 11,000 website hits since July 2015.

This portal targets all sectors and is available nationwide. It features 11 green tools to help especially small and medium-sized enterprises (SMEs) with their voluntary strategic environmental initiatives. A

new tool is the “Green Entrepreneurship House,” which offers physical facilities (e.g. a workshop and demonstration facilities), guidance and competency-development, mentors and contacts to experienced companies. Its objective is the acceleration and support of green entrepreneurs in Denmark. Launched in 2013, the Green Entrepreneurship House has had 371 entrepreneurs participating in different activities, until July 2015. A further example is a paperback case collection (accessible as a free online document) published by the Ministry of the Environment, showing the potential of resource efficiency in selected industries.

2.5.2. Lessons learnt from the application of the support measure

From the application of this support measure in the above five Member States, the following lessons learnt could be derived.

Success factors for the application of the **Austrian ÖKOPROFIT** programme encompass **cooperation between the regional industry, public administration and external experts**; participation of a number of companies in common workshops, which include expert presentations, **practical examples**, interactive work and **exchange of experiences**; **individual consultation by experts** supporting the companies in the implementation phase; **formulation of company-specific measures** and saving targets which controlled via (environmental) performance indicators. Furthermore, companies who successfully participate **receive the label “ÖKOPROFIT Company”** at the end of the programme and **join the “ÖKOPROFIT Club”**, a network of companies that aim to continue improving their energy and resource efficiency. In addition, **ÖKOPROFIT serves well as preparation for EMAS certification**.

The **Finnish** National Material Efficiency Centre presents **a central contact point for information and advice** on material efficiency, which eases processes of information search, retrieval.

The website of the **Hungarian** “Money Thrown Out the Window” initiative hosts a **large database listing companies** that undertook environmental saving measures under the initiative (see at: <http://www.ablakonbedobottpenz.hu/megtakaritas.php>). The database provides information on each company, indicating types of measures, achieved environmental savings and key economic information. This **database provides useful information for other companies** for their own measures.

The **Irish** Green Businesses online information is **targeted to specific sectors**. Some **guides** have been **written together with the representative organisations** for particular sectors (e.g. print and paper, retail) and are **promoted by these sectoral organisations** to their members. All work carried out by Green Business is **100% confidential and information is not shared** with any third party. In order to be practical and encouraging, the **site reports are specific, detailed and concentrate on “no and low cost”** improvement actions. Furthermore, Green Business **follows up** with the firm after approximately 6 months to see how the firm is progressing with the identified savings, thus providing an incentive for their implementation. The results from this **follow up** are **used as case studies**, providing further implementation incentives, and demonstrate benefits to other firms. An additional factor of success of the Green Business programme can be seen in the cooperation with the EPA and the Irish Business representative organisation (IBEC), which has 7,500 business members. This cooperation aims to promote resource efficiency to IBEC members and other stakeholders in Ireland. Its achievements include developing relationships with other players involved in Resource Efficiency. The liaison is believed to have increased attendance at regional workshops and participation.

The **Danish** Green21.dk web portal’s different information offers are **well targeted to the needs of SMEs**. For example, a main objective of the paperback case collection was to break with the perception of SMEs not having enough resources to take environmental friendly initiatives. Therefore, **varied and innovative examples of successful cases** of resource efficiency initiatives from different industries were presented – with **concrete examples of economic savings**. Apart from that, advice on how to take the initial steps towards resource efficiency are given, as well as advice on which governmental funds can be applied.

In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied:

The **Belgian** independent research and technology organisation VITO has a special programme (SMEs find VITO!) that provides SMEs with **low threshold support** in relation to sustainable innovation. Thanks to the support of the Flemish government (and EFRD), SMEs benefit from an important financial contribution towards the costs of feasibility studies, tests at lab scale, pilot tests or tests within a company relating to the living environment or energy. The financial contribution from the Flemish government (and EFRD) may cover up to 66% of research costs, on average 20,000 to 25,000 EUR per project. The support is available for all SMEs in Flanders. In 2014, VITO supported 77 SMEs in their sustainable innovation plans. In total, VITO offered support to 89 projects concerning innovative and sustainable products and processes.²² Various Flemish SMEs have worked with VITO-KMO (VITO-SME) to take specific steps towards the achievement of more sustainable business operations. VITO-KMO has helped others to launch sustainable products and concepts. **Administrative affairs are taken care of by VITO** and not by the SME, **VITO applies for the financial contribution** from the Flemish government.

In **Cyprus**, targeted information on resource efficiency is provided in particular to the tourism industry aiming to encourage tourist establishments to implement measures to increase their resource efficiency and improve waste management. Launched in 2014, this measure targets hotels and other tourist establishments. Hotels implementing resource efficiency measures particularly through voluntary schemes such as the ECOLABEL and EMAS report a decrease in the use of water, energy, paper and packaging products, chemicals, etc. Intense and continuous **stakeholder engagement** was a key success factor particularly given the costs of initial investments.

The Interreg IVB project “PRESOURCE – Promotion of Resource Efficiency in Central European SMEs” (www.presource.eu, ended in November 2014), has developed tools and schemes to support resource efficiency in SMEs in **Italy** and other countries in Central Europe. In the context of PRESOURCE the “EDIT Value Tool” was developed, a need-driven holistic tool that enables the identification of the most effective opportunities for improving resource efficiency in SMEs across all business levels and with a life cycle approach. The tool is available in 6 different languages. In Italy, the National agency for new technologies, Energy and sustainable economic development (ENEA) is the national contact point to support intermediaries and SMEs in the utilisation of EDIT Value Tool to identify the most effective opportunities for improving resource efficiency and the overall sustainability performance. **Pilot applications** of the EDIT Value Tool in 18 SMEs showed that it is manageable and effective in promoting resource efficiency in SMEs. EDIT Value is based on both a **quantitative and qualitative analysis**, thus pointing out the priorities that can guide the most effective actions. The EDIT Value Tool focuses primarily on opportunities for improvements and innovations within the given enterprise; suitable instruments for improvements and innovations are assigned to these opportunities only after completion of an initial analysis, thus ensuring a need-driven approach.

The **Maltese** “Investing in Water” project aims to help businesses and hotels reduce their water consumption by providing expert advice to enterprises on water saving opportunities and how to achieve them. Enterprises can also receive individual consultations to identify the most relevant solutions for their individual circumstances. The project beneficiaries are businesses and hotels. The project is **funded through the EU LIFE+ programme**. In early 2012, the Investing in Water project concluded water audits with around 40 enterprises from various sectors, identifying water saving opportunities and potential solutions. In 2013, the Malta Tourism Authority, Malta Hotels and Restaurants Association and Malta Business Bureau signed an agreement to recognise the water saving initiatives taken by hotels through the Investing in Water project as **meeting ECO-Certification award criteria**, thereby facilitating the award of the label to those hotels.

In **the Netherlands**, the **EU Life+ funded** REBus project (jointly undertaken by Rijkswaterstaat, the executive agency of the Dutch Ministry of Infrastructure and the Environment and WRAP) supports businesses and public organisations to develop resource efficient business models (REBMs) both for

²² VITO (2015). 77 SMEs signed a contract with VITO last year. URL: <https://vito.be/en/news-events/news/77-SMEs-signed-a-contract-with-VITO-last-year>, accessed 08 October, 2015

implementation on the supply side and for the demand-side procurement (business and public procurement). The focus is on electrical products (ITC), textiles, furniture, carpeting and construction. The most popular business models to date relate to incentivised return, hire/lease, and replacing waste contracts by contracts for recycling. For construction business models including maintenance, finance, and life-cycle-based business models including shadow pricing and Life-Cycle-Costing. The project aims to deliver 30 REBMs with a range of large and small company pilots, achieving 15% resource savings over the project's lifetime. Launched in mid-2013 and still ongoing, in cooperation with Green deal Circular Procurement more than 35 organisations participated in the programme and committed to at least 2 pilots each. Around 60 pilots are under development and 15 pilots receive support through REBus. More than 80 are still in start-up phase. With this approach, Rijkswaterstaat reaches out to some 200 key-players in sectors such as office furniture, IT and textile and achieve significant change.

The UK's Waste & Resources Action Programme (WRAP) offers a wide range of tools and publications to help businesses use resources more efficiently, reduce waste and save money. Advice by telephone was provided on request, until recent budget cuts. Firms were approached **on the basis of their primary interest** – cost-savings, rather than environmental benefits. In a sectoral approach (WRAP sector guides), relevant sector firms were identified, approached and, where they declined participation, the experts in the state funded coordinating organisation were able to put forward **evidence-based counter-arguments on the benefits of participation**. The implementing body worked with **large companies, whose influence on smaller companies** (particularly their suppliers) has been found to be the most influential factor in firms changing their resource efficiency.

Across the examples obtained from literature review and Member State responses, the following aspects could be identified as key success factors for providing targeted advice to improve resource efficiency in businesses in the EU:

- ★ Fostering cooperation between regional industry, public administration and external experts.
- ★ Designing expert advice to (i) be targeted at different sectors and include practical examples; (ii) promote exchange of experiences; (iii) give individual advice supporting the companies in the implementation phase; and (iv) formulate company-specific measures and saving targets.
- ★ Incentivising participation in advice programmes, e.g. through labelling participants at the end of the programme, using such labels as a beneficial criterion for public tendering processes or as meeting existing certification criteria and making the companies who participated part of a network of companies.
- ★ Establishing a central contact point acting as a one-stop-shop for easy/low threshold retrieval of relevant and targeted information and advice, including (i) offers to take over administrative affairs and applications for possible financial contributions and (ii) evidence-based counter-arguments on the benefits on participation in advice programmes.
- ★ Encouraging and fostering the establishment of a database listing companies that undertook environmental saving measures as part of the programme, indicating the types of measures, the achieved environmental savings and key economic information in order to provide useful information for other companies for their own measures.
- ★ Inviting co-authorship of sectoral advice from representative sector organisations and/or from larger businesses with influence on smaller companies through supply chains.
- ★ Encouraging representative organisations for particular sectors/larger businesses to promote the advice to their members/suppliers, including the promotion of the economic benefits from profitable and useful best practice cases with concrete examples of savings.
- ★ Concluding, where necessary, confidentiality clauses between the companies advised and those providing the advice.
- ★ Financial and administrative support through EU funding programs (e.g. LIFE+).

2.6. Building resource efficiency related skills and capacity within a company/business

If a company lacks the skills to improve its resource efficiency, it will be trapped in using existing methods. Governments use various skill and capacity building tools to remove this barrier, e.g. by encouraging the inclusion of resource efficiency issues in curricula for vocational training or further education. Skills related to resource efficiency (sometimes called ‘green skills’) can be defined as any knowledge, abilities, values and attitudes that are needed to develop and support a resource-efficient society. They are useful in all sectors, not just for ‘green jobs’, since they can help to adapt products, services and processes to environmental challenges and regulations.

Building resource efficiency-related skills and capacity within a company is established in most of the 28 EU member states. The measure is widely used in two member states (Bulgaria and Spain, 7%) and used a little in 19 member states (68%). Seven member states do not have a national policy regarding this measure in place (25%).

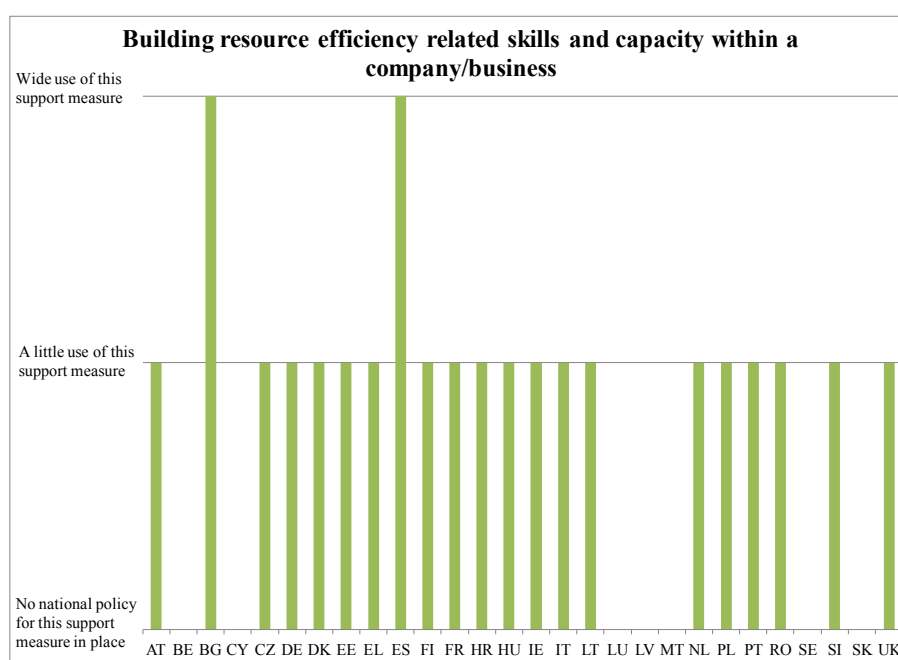


Figure 12: Scope of application of support measure 6 across the EU-28

2.6.1. Good practice examples

In the following section, we provide selected good practice examples for this support measure from four different Member States (see Figure 13; the full list can be found in the separate Annex document) Bulgaria and Spain (with wide use of this measure); the Netherlands and Germany (with a little use of this measure).

In **Bulgaria**, the Human Resources Development Operational Programme invests in the human resources of those enterprises that contribute to sustainable environmental development and reduce negative impacts on the environment. Running from 2014 to 2020, the programme will fund the acquisition of adequate knowledge and skills for employees, aiming to preserve jobs and occupy new ones. One focus of the programme is on the introduction of new “green” and resource-efficient technologies. More specifically, the programme will target the improvement of existing skills (e.g. in regard to energy efficiency, renewable energy, waste treatment, water treatment, etc.) of employed people at enterprises by financing training events and will assist in adapting new jobs in response to rapid changes and the requirements on the labour market. Furthermore, the provision of internships and apprenticeships in “green” enterprises to unemployed youth will be encouraged. Incentives for employers to introduce innovative, more productive and “greener” models for work arrangements in enterprises, including for ensuring health and safety at work and for improving the social climate in

enterprises will be provided. The measure is part of the implementation of European Structural and Investment Funds in Bulgaria.²³

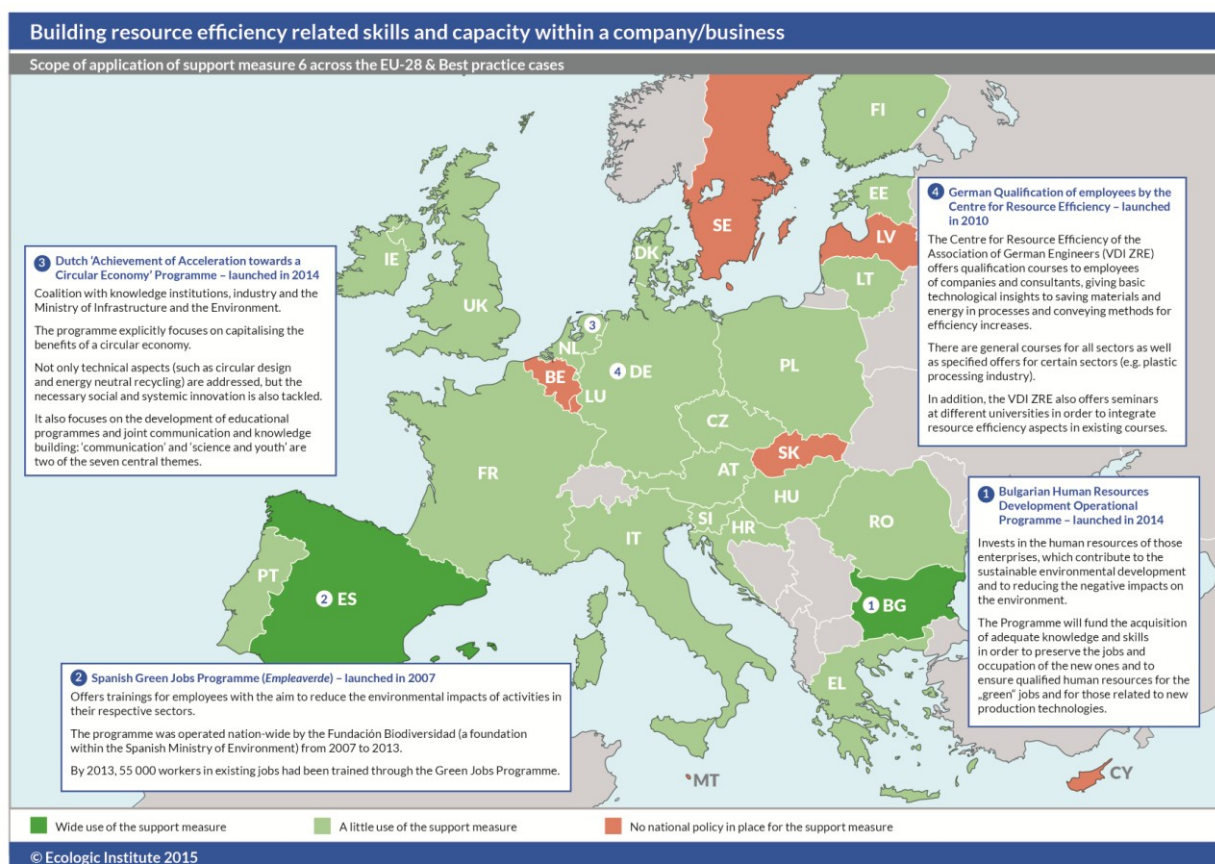


Figure 13: Good practice examples and scope of application for support measure 6 across EU-28

Spain promotes the development of green skills through the Green Jobs Programme (*Empleaverde*). As part of the programme, trainings for employees are offered with the aim to reduce the environmental impacts of activities in their respective sectors. The programme was operated nationwide by the Fundación Biodiversidad (a foundation within the Spanish Ministry of Environment) from 2007 to 2013. A budget of 17.1 million EUR was allocated to the measure (12.7 million EUR were contributions from the European Social Fund). By 2013, 55,000 workers in existing jobs had been trained through the Green Jobs Programme (OECD 2015)²⁴.

A further interesting example for building resource efficiency related skills in companies can be found in the **Netherlands**. The programme 'Achievement of Acceleration towards a Circular Economy' (*Realisatie van Acceleratie naar een Circulaire Economie* – RACE) explicitly focuses on capitalizing on the benefits of a circular economy. The Ministry of Infrastructure and the Environment (I&M) in autumn 2014 entered into a coalition with knowledge institutions and industry to set up a programme that explicitly focuses on capitalizing the benefits of a circular economy (RACE).²⁵ Within RACE, not only technical aspects (such as circular design and energy neutral recycling) are addressed, but the necessary social and systemic innovation is also tackled. It also focuses on the development of

²³ European Commission (2015). Operational Programme Human Resources Development. URL: http://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/bulgaria/2014bg05m9op001, accessed 6 August, 2015

²⁴ European Commission (2001). Going green in Spain. URL: <http://ec.europa.eu/esf/main.jsp?catId=46&langId=en&projectId=242>, accessed 20 August, 2015

²⁵ MVO Nederland (2014). Nieuwe Samenwerking brengt winst Circulaire Economie dichterbij. URL: <http://mvonederland.nl/publicatie/nieuwe-samenwerking-brengt-winst-circulaire-economie-dichterbij>, accessed 1 October, 2015

educational programmes and joint communication and knowledge building: ‘communication’ and ‘science and youth’ are two of the seven central themes. In fact, RACE is the result of translating the starting points of the Green Deal ‘the Netherlands as a circular hotspot’ into an actionable program. It consists of among others of the following work packages: ‘raising public awareness around the topic of circular economy’ and ‘involving young people in the transition towards a circular economy’. More than 100 businesses are associated with RACE and indicated as a circular Best Practice. In addition, an online platform (www.CirculairOndernemen.nl) was launched in June 2015, and already more than 500 participants registered. Nearly 50 businesses completed the Circo-programme, aimed at Circular Design.

In **Germany**, the Centre for Resource Efficiency of the Association of German Engineers (VDI ZRE) qualifies employees of companies and consultants. The offered qualification courses give basic technological insights to saving materials and energy in processes and convey methods for efficiency increases. There are general courses for all sectors as well as specified offers for certain sectors (e.g. plastic processing industry).²⁶ The measure was launched in 2010 and is available nationwide.

In addition, the VDI ZRE also offers seminars at different universities in order to integrate resource efficiency aspects in existing courses.²⁷ The offer of seminars at universities include a generic ‘Resource Efficiency’ teaching module as well as tailored seminars such as a ‘Sustainable Manufacturing’ Summer School or a ‘Sustainability and Quality Management’ course. Furthermore, the VDI ZRE offers support for universities in setting up study courses on resource efficiency, e.g. for a master course on climate and resource-friendly design and construction at the Technical University of Braunschweig.

2.6.2. Lessons learnt from the application of the support measure

In most EU Member States that promote the development of resource efficient skills, the support focuses on the company level. In few cases (e.g. Germany) university courses are offered. In general, very little information on lessons learnt and success factors for this support measure could be gathered. Of the above-mentioned four Member States, only Germany provided information on lessons learnt. In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied.

One success factor that could be identified is the **engagement at the personal level and trust in the trainers**. In **Germany**, experienced practitioners who have already successfully implemented resource efficiency projects in SMEs carry out the qualification courses for employees.

A further success factor is the **linking of the skill development with other measures**. In **Finland**, one specific feature of TUORE Expert Network – which promotes the building of resource-efficiency skills in companies – is its interlinkage with other support measures, such as support for industrial symbiosis, provision of targeted resource efficiency information and development of non-legal standards for products and services. In **Austria**, company members can take part in EMAS implementation workshops to receive training on how to stepwise and systematically introduce EMAS. Similarly, in the **UK**, the trainings within the “Halving Waste to Landfill” voluntary agreement were part of a package of measures aiming at changes in practice and expertise in the construction and demolition sectors. Thus, the trainings were assisted by and contributed to wider effects.

In some cases, **online tools are used** to offer support for companies in building resource efficiency-related skills. This facilitates dissemination and offers low budget options to support businesses, e.g. in form of online training material. For example, in **Greece**, the web-portal EnviroHelp for Business offers **tailor-made** educational material and practices. Regarding the structure of this report, it has to be noted that support activities like these are difficult to distinguish from support measure 4 –

²⁶ VDI (n.d.). Qualifizierung Ressourceneffizienz. URL: <http://www.ressource-deutschland.de/qualifizierung-re/>, accessed 6 September, 2015

²⁷ VDI (n.d.). Bildung und Weiterbildung. URL: <http://www.ressource-deutschland.de/instrumente/bildung-und-weiterbildung/>, accessed 10 August, 2015

Providing targeted resource efficiency information and advice to companies. In some Member States (e.g. Spain and Bulgaria), EU funding programmes supported the realisation of the measures.

Across the examples obtained from the literature review and Member State responses, the following aspects could be identified as key success factors for building resource efficiency-related skills and capacity within a company/business in the EU:

- ★ Engaging at the personal level with company members.
- ★ Employing experienced trainers who have practical knowledge of company processes.
- ★ Targeting teaching contents and materials to specific sectors, regions or types of companies.
- ★ Linking skills development with other support measures to support resource efficiency in businesses.
- ★ Financial support through EU funding programs (e.g. European Social Fund, European Structural and Investment Fund).

2.7. Improving company accounting and reporting practices

Existing accounting and business reporting rules can fail to capture and illustrate progress on resource efficiency. Sometimes they can reinforce practices that reject investments in resource efficiency with longer pay-back times. Changes to accounting and reporting practices that better allow resource efficiency measures to be seen as beneficial for business may help businesses to change. These could include integrated environmental, economic and social accounting (environmental profit and loss (EP&L)), Governments can support change, either through supporting work by accounting bodies, or through prompting change in reporting practices.

This measure is only used in four member states: in Denmark and Finland there is wide use (7%), and in Austria and Germany there is a little use of this support measure (7%). In the vast majority of Member States (24 MS), there is no national policy in place (86%).

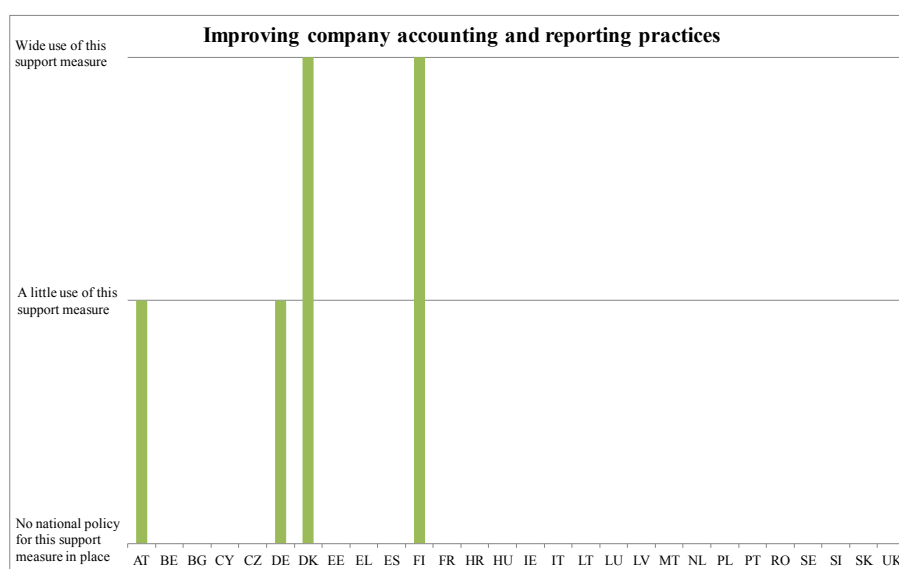


Figure 14: Scope of application of support measure 7 across the EU-28

2.7.1 Good practice examples

Interesting good practice examples can be found in Denmark and Germany (see Figure 15; the full list can be found in the separate Annex document) – each presenting a different approach to improving company accounting and reporting practices.

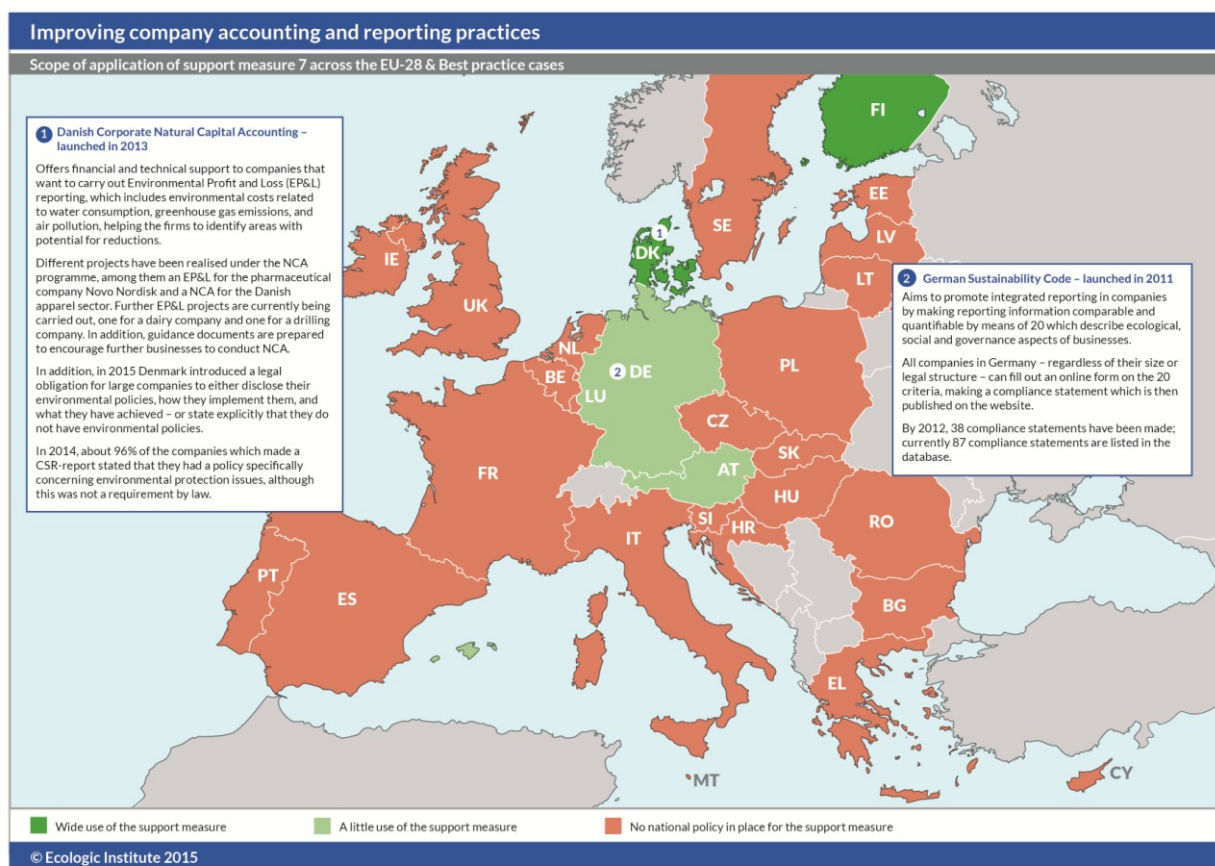


Figure 15: Good practice examples and scope of application for support measure 7 across EU-28

In **Denmark**, the state supports integrated reporting by offering financial and technical support to companies that want to carry out EP&L reporting – also referred to as Corporate Natural Capital Accounting (NCA). In the company reports, environmental costs related to water consumption, greenhouse gas emissions and air pollution are listed, helping the firms to identify areas with potential for reductions. Different projects have been realised under the NCA programme, among them an EP&L for the pharmaceutical company Novo Nordisk (Danish Ministry of the Environment 2014) and a NCA for the Danish apparel sector. Further EP&L projects are currently being carried out, one for a dairy company and one for a drilling company. In addition, guidance documents are prepared to encourage further businesses to conduct NCA. A budget of 200,000 EUR is allocated to this measure, which was initiated in 2013.

In addition, in 2015, Denmark introduced a legal obligation for large companies to report whether they have a corporate environmental policy in place. More precisely, companies must either disclose their environmental policies, how they implement them and what they have achieved – or explicitly state that they do not have environmental policies. This measure was part of an amendment to the Financial Statements Act and provides a basis for the EU Directive 2014/95/EU on disclosure of non-financial and diversity information by certain large undertakings and groups.

In **Germany**, the German Sustainability Code (*Deutscher Nachhaltigkeitskodex*) improved accounting rules at the company level. There are 20 criteria of the Sustainability Code, which describe ecological, social and governance aspects of businesses, aiming to make reporting information comparable and quantifiable. All companies in Germany, regardless of their size or legal structure, can fill out an online form on the 20 criteria to create a compliance statement which is then published on the website.²⁸

²⁸ See <http://www.deutscher-nachhaltigkeitskodex.de/>

2.7.1. Lessons learnt from the application of the support measure

Improving accounting and reporting practices in companies is by far the least widespread support measure in the EU Member States, with only four states having such a measure in place. This indicates a low awareness for the potential benefits of integrated reporting among businesses and policy-makers in the EU. Moreover, these findings suggest that companies interested in integrated reporting are largely left to their own devices, without having a central contact point for information and advice.

From the application of this support measure in the above two Member States, the following lessons learnt could be derived.

One precondition for the successful implementation of integrated reporting is that **companies see its potential as a strong tool for communication, risk management and improving resource efficiency**. In **Denmark**, the inclusion of the environmental aspect in the Danish Financial Statements Act helped companies to **raise internal awareness** and realise the potential benefits of this obligatory reporting action. In particular, the comply-or-explain model has shown to be successful since very few companies have chosen not to have a policy on environmental protection – although it is not required by law to have a policy, only to report on it. In fact, about 96% of the companies, who made a Corporate Social Responsibility (CSR) report, reported that they had a policy specifically concerning environmental protection issues.

The Danish concept of giving financial and technical support to companies for carrying out an EP&L is transferable to States where (1) the benefits of integrated accounting practices are known and (2) there are companies that are interested and motivated to conduct an EP&L, with the capability to allocate a substantial budget to the initiative.

In order to enhance the **transparency and comparability** of existing reporting practices which feature environmental aspects, the offer for companies to publish their environmental achievements (online) based on established criteria as done in **Germany** with the Sustainability Code seems to be one way forward. In order to specifically support SMEs in the application of the Code, a **targeted guide** was developed (Rat für Nachhaltige Entwicklung 2014). Moreover, the Sustainability Code **offers publicity and thus gives an additional incentive** to companies.

In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied:

In **Finland**, the integration of sustainability issues in company accounting and reporting practices is facilitated through the Sustainability Reporting Award Finland. The Award has offered Finnish businesses and other organisations an opportunity to enhance their reputation as one of the Corporate Responsibility leaders in the country. Representatives of independent experts audit companies (Deloitte, Ernst & Young, KPMG and PwC) evaluate the reports of the participating companies. There are three competition categories: general, SMEs and the public sector. The Sustainability Reporting Award Finland, which was launched in 1996, presents a low-cost support measure (funding of 5,000–10,000 EUR is provided annually). The award has proven to be a successful instrument in Finland, as an **improved quality of the reports** has been achieved and the **number of interested companies has increased**. Similar to the Sustainability Code in Germany, the Finnish Award **offers publicity to the companies**. There are special themes in different years, which raise the attention of businesses to emerging themes.

Integrated Reporting is supported in **Austria** through the National Accounting Matrix including Environmental Accounting (NAMEA). It shows material flows (use of materials, use of energy, air emissions and waste) as well as environmental protection expenditures and environmental taxes together with economic data (gross value added, production value and working population) within the Austrian economy. Air emissions or waste generation, for example, are linked to gross value added. NAMEA is a satellite account whose purpose is to extend the System of National Accounts (SNA) by including environmental data. It provides a comprehensive overview of economic and environmental aspects at economic sector level, and of private households, in a standardised framework. This means a shift in focus from commonly used economic indicators to environmental relevant data of a particular economic sector. Although this measure is not directed at companies, it can be seen as a first

step to change perception and to allow resource efficiency measures to be seen as beneficial, both for society in general and for businesses.

Across the examples obtained from the literature review and Member State responses, the following aspects could be identified as key success factors for improving company accounting and reporting practices to improve resource efficiency in businesses in the EU:

- ★ Clearly conveying and draw attention to the benefits of integrated reporting for companies.
- ★ Offering assistance in form of standardised procedures and/or elements for integrated reporting, thus making reporting activities comparable and providing guidance (e.g. through providing this information and guidance online).
- ★ Supporting current integrated reporting activities and incentivise future integrated reporting activities through increased visibility (e.g. through website, print media, an awarding ceremony, etc.) and give publicity to good practice examples.

2.8. Development of non-legal standards for products and services

Standards for products and services can help producers with greener products to differentiate them from less environmentally-friendly alternatives, as well as allowing consumers to make more informed purchasing choices. Common voluntary (e.g. sector-wide) standards such as minimum efficiency standards, requirements for use of recycled materials in new products, or application of eco-labels, can therefore help to generate and spread resource efficiency improvements.

Developing non-legal standards for products and services is well established across the EU: in seven Member States, the measure is widely used (25%; Germany, Denmark, Finland, France, Italy, Spain and Sweden) and in 12 Member States it is used a little (43%). In nine Member States, there is no national policy in place regarding the development of non-legal standards (32%).

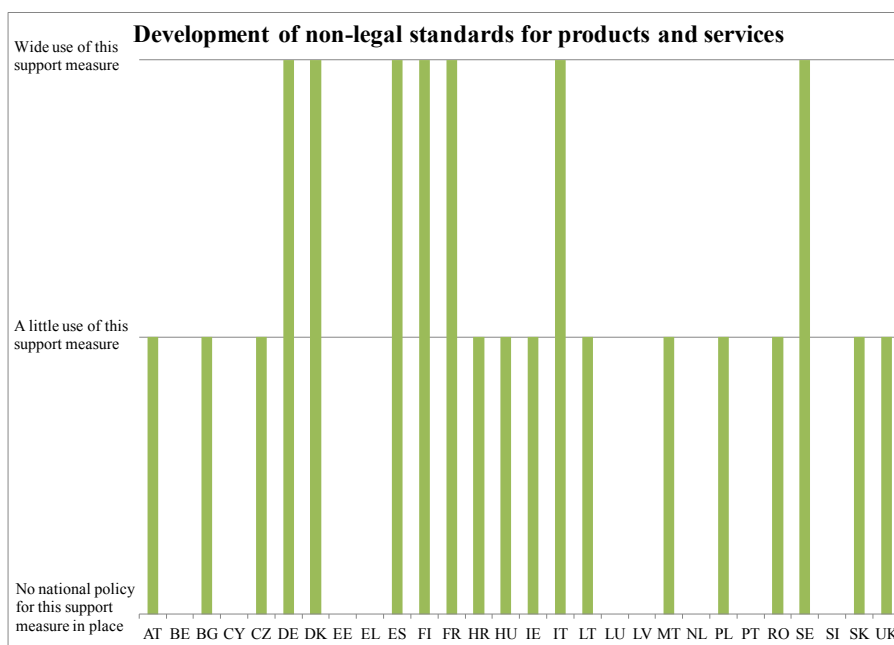


Figure 16: Scope of application of support measure 8 across the EU-28

2.8.1. Good practice examples

In the majority of Member States, voluntary eco-labels or certifications are used to help producers differentiate their environmentally friendly products from alternatives, as well as allow consumers to

make more informed purchasing choices. In the following section, a selection of good practice examples is presented (see Figure 17; the full list can be found in the separate Annex document).

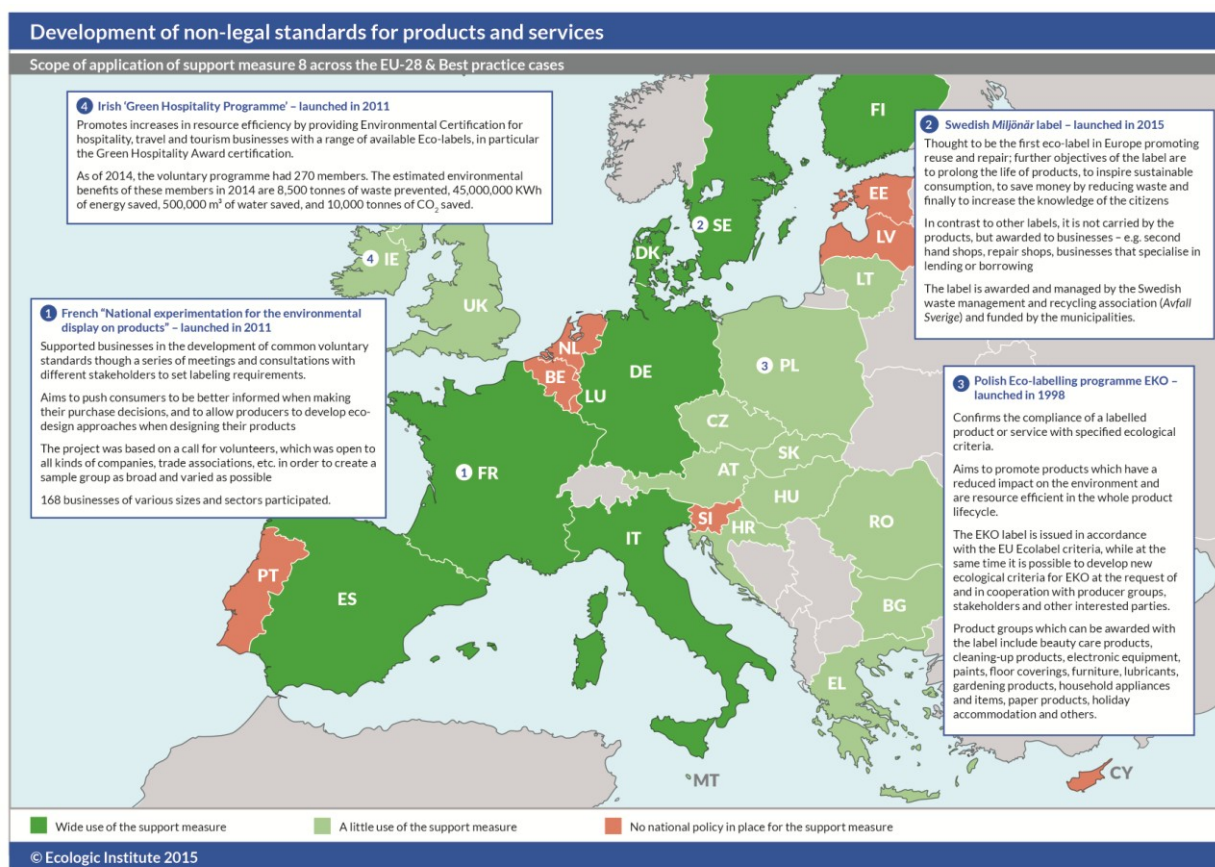


Figure 17: Good practice examples and scope of application for support measure 8 across EU-28

Through the “National experimentation for the environmental display on products,” the **French** government supported businesses in the development of common voluntary standards, which aim to improve the information available to consumers regarding the environmental impacts of products. The project, which ran from July 2011 to July 2012, was based on a call for volunteers, which was open to all kinds of companies, trade associations, etc. in order to create a sample group as broad and varied as possible. The goal was both to push consumers to be better informed when making their purchasing decisions and to allow producers to develop eco-design approaches when designing their products. 168 businesses of various sizes and sectors participated.²⁹

A very interesting recent instrument in **Sweden** (launched in January 2015) is the *Miljönär* label by the Swedish waste management and recycling association (*Avfall Sverige*), which is thought to be the first eco-label in Europe promoting reuse and repair. Further objectives of the label are to prolong the life of products, to inspire sustainable consumption, to save money by reducing waste and, finally, to increase knowledge of citizens. In contrast to other labels, it is not carried by the products but awarded to businesses (e.g. second hand shops, repair shops, businesses that specialise in lending or borrowing). The *Miljönär* Label combines economic and environmental arguments: certified businesses give consumers the opportunity to save money while at the same time reducing waste and, thus, saving natural resources and the environment. Moreover, the instrument tackles the specific problem in Sweden that, while waste collection and recycling are well established, there are still high

²⁹ Ministère de l'Écologie, du Développement durable, et de l'Énergie (2013), Expérimentation de l'affichage environnemental. URL: <http://www.developpement-durable.gouv.fr/Bilan-au-Parlement-de-l.html>, accessed 10 August, 2015

amounts of generated wastes. Municipalities fund the measure, which is available nationwide.³⁰ Among the companies awarded with the label so far, one specialises on the exchange of children's toys and another offers tools for lending.³¹

In **Poland**, the eco-labelling programme EKO (*przyznawania oznakowania ekologicznego EKO*) promotes products that have a reduced impact on the environment and are resource efficient throughout the product lifecycle. The ecolabel certificate "EKO" confirms the compliance of the product and service with specified ecological criteria. It is issued in accordance with Commission Decisions establishing the ecological criteria for the award within the European Ecolabel (EU Ecolabel - criteria). At the same time, it is possible to develop new ecological criteria for EKO at the request of and in cooperation with producer groups, stakeholders and other interested parties. Launched in 1998, the measure targets producers, manufacturers, importers, service providers, wholesalers and retailers. Product groups which can be awarded with the label include beauty care products, cleaning products, electronic equipment, paints, floor coverings, furniture, lubricants, gardening products, household appliances and items, paper products, holiday accommodation and others. The ecolabel EKO is a registered trademark by the Polish Centre for Testing and Certification (PCBC S.A.) and is issued only by this organisation. 17 years worth of activity have contributed to placing on the market environmental friendly products and extending the cooperation with industry in the scope of developing new ecological criteria. The measure is self-financed without need for national or European funding.

In **Ireland**, the "Green Hospitality Programme" promotes increases in resource efficiency by providing Environmental Certification for hospitality, travel and tourism businesses with a range of available eco-labels, in particular, the Green Hospitality Award certification. As of 2014, the voluntary programme had 270 members. The estimated environmental benefits of these members in 2014 are:

- 8,500 tonnes of waste prevented;
- 45,000,000 KWh of energy saved;
- 500,000 m³ of water saved; and
- 10,000 tonnes of CO₂ saved.

This amounts to average additional savings for participating hotels of 70,000 EUR per hotel per annum.

2.8.2. Lessons learnt from the application of the support measure

The following lessons learnt could be derived from the application of this support measure in the above four Member States, as well as from the information obtained for the other Member States where this support measure is being applied:

Resource efficiency aspects can be integrated in eco-labels in different ways. One approach is to adopt a **life cycle perspective**. This is, for example, done by the EU Ecolabel, as well as the Nordic Ecolabel and the Good Environmental Choice Label applied in **Scandinavian countries**. These labels cover the following environmental issues: energy usage, climate aspects, water usage, source of raw materials, use of chemicals, hazardous effluents, packaging and waste. The Blue Angel label in **Germany** takes another approach, where the sub-category "conserves resources" has been introduced to **mark products whose production used fewer resources in comparison to alternative products on the market**.³²

³⁰ Geater, Marianne (2015). Sweden launches unique waste prevention tool. URL:

<http://www.eupackaginglaw.com/waste-management/sweden-launches-unique-waste-prevention-tool-106051.htm>, accessed 10 August, 2015

³¹ See <http://miljonär.se/>

³² The Blue Angel Environmental Label Jury (n.d.). The Blue Angel. Our Label for the Environment. URL: https://www.blauer-engel.de/sites/default/files/pages/downloads/our-label-environment/be-8-seitiger-eng-web_0.pdf, accessed 14 August, 2015

A number of barriers were identified in different Member States, hindering businesses from using eco-labels or other voluntary standards. Especially in Eastern European countries, a low interest from the business sector in environmental certificates hinders the spread of eco-labels. Reasons for this are a lack of information on the benefits of the labels, as well as a lack of consumer awareness for greener products and recognition of the labels. At the same time, there is limited public budget available to promote eco-labelling and to make it more known. Furthermore, long administrative procedures to obtain an eco-label discourage companies.

Various existing, successful examples for eco-labels and certificates give insight to how these barriers might be overcome. For example, **Italy** initiated a number of agreements, incentives and activities to promote the European Ecolabel amidst Italian SMEs. The **initiatives targeted certain regions** of Italy (e.g. the project “Ecolabel for tourism in Trentino”; promotion activity by the Regional Environmental Protection Agency in Sicilia, a regional regulation in Puglia). In 2014, Italy achieved the highest numbers of products awarded with the European Ecolabel (19,480 products, 344 licences) among EU Member States.³³

One central success factor of the well-functioning labelling systems in the EU is the **involvement of relevant stakeholders**, which helps to overcome the barrier of lack of awareness and knowledge of eco-labelling. This is demonstrated by a survey conducted after the experimentation for the environmental display on products in **France**. The survey showed that after taking part in the project, 78% of the participating companies thought that the experimentation allowed them to better understand the environmental performances of their supply chain/of the value chain, and 73% thought that eco-labelling is a potential source for competitive advantage. Specific factors for success include the fact that this experimentation involved a **series of meetings and consultations with different stakeholders** (National Committee for Sustainable Development, Grenelle Environment Forum, ministries, the AFNOR ADEME platform [French standardisation body/French agency on environment and energy management], the French National Consumer Council, etc.) **in order to set labelling requirements**. This intensive collaboration across very diverse stakeholders was key to engendering positive feedback from the stakeholders and the positive impacts of the experimentation in terms of streamlining resource efficiency concerns into business operations.³⁴ Similarly, in **Germany**, one strength of the well-known Blue Angel label is its **dynamic development** under the involvement of relevant stakeholders. The specific standards for products and services developed by the German Federal Environment Agency are **continuously adapted according to the latest technological state of the art**. This is achieved with the **help of environmental and consumer organisations as well as producers**.³⁵ Another example is the labelling programme EKO in **Poland**, which is characterised by a **close cooperation with producer groups and other interested parties**, e.g. for the development of new ecological criteria.

Regarding the recognition of labels, **Denmark** presents a successful example. There are **only two officially approved eco-labels** in Denmark, and their high level of awareness and credibility makes them an attractive choice for businesses. For interested companies, a central website provides **clearly structured and easily accessible information** for both labels,³⁶ e.g. on how to apply for licenses to label products. For the Nordic Ecolabel, **application forms can be completed electronically and submitted via email**, which facilitates the application process for companies.

A further success factor for the acceptance of eco-labels by companies as well as consumers is a **capable, trusted and credible awarding organisation**. Good practice examples can be found e.g. in

³³ European Commission (2015). EU Ecolabel. Facts and Figures. URL:

<http://ec.europa.eu/environment/ecolabel/facts-and-figures.html>, accessed 8 October, 2015

³⁴ Ministère de l'Écologie, du Développement durable, et de l'Énergie (2013), Expérimentation de l'affichage environnemental. URL: <http://www.developpement-durable.gouv.fr/Bilan-au-Parlement-de-1.html>, accessed 10 August, 2015

³⁵ The Blue Angel Environmental Label Jury (n.d.). The Blue Angel. Our Label for the Environment. URL: https://www.blauer-engel.de/sites/default/files/pages/downloads/our-label-environment/be-8-seitiger-eng-web_0.pdf, accessed 14 August, 2015

³⁶ See www.ecolabel.dk/inenglish/.

Poland and Sweden. The ecolabel EKO is a registered trademark by the **Polish** Centre for Testing and Certification (state-owned company) and is issued only by this organisation. The Good Environmental Choice label in **Sweden** is managed by a renowned environmental NGO (the Swedish Society for Nature Conservation).³⁷

Across the examples obtained from literature review and Member State responses, the following aspects could be identified as key success factors for developing non-legal standards for products and services to improve resource efficiency in businesses in the EU:

- ★ Adopting a holistic approach for the design of the requirements for labels/certificates, encompassing all stages of the life cycle of products and services.
- ★ Involving relevant stakeholders (e.g. producer groups, consumer organisations, environmental NGOs) in the development and revision of the criteria for the label, e.g. through meeting and consultations, or through the establishment of an advisory council.
- ★ Ensuring the credibility of, as well as the trust in, the awarding organisation, e.g. by making the label requirements and awarding procedures transparent, involving stakeholders, choosing an organisation independent of making profits (e.g. a state agency, NGO).
- ★ Providing targeted, easily available and accessible information on certification criteria and application processes.
- ★ Keeping administrative procedures to obtain the eco-label simple.
- ★ Limiting the number of officially accepted labels in order to avoid a flood of different labels which unsettles consumers and diminishes their trust in eco-labels.

2.9. Measures supporting extended producer responsibility (EPR) for materials and/or products

One of the aims of applying extended producer responsibility (EPR) to materials and products is to reduce the amount of waste generated and to encourage the use of specific types of waste as a resource/raw material. Together, waste regulation, EPR and other economic instruments can help to support more circular supply chains between the production and end-of-life phases of a product. Governments may, in some cases, take steps to offer additional, non-regulatory support for the application of EPR.

State measures supporting extended producer responsibility (EPR) for materials and/or products are widely used in 20 Member States (71%) and used a little in three Member States (11%, Ireland, Latvia and Slovenia) (see Figure 18). In five Member States (18%, Estonia, Malta, Poland, Portugal and the UK) there is no national policy in place for this support measure.

³⁷ European Commission (2015). Swedish Eco-label offers detailed certification schemes. URL: http://ec.europa.eu/environment/ecoap/about-eco-innovation/good-practices/sweden/swedish-ecolabel_en.htm, accessed 10 August, 2015

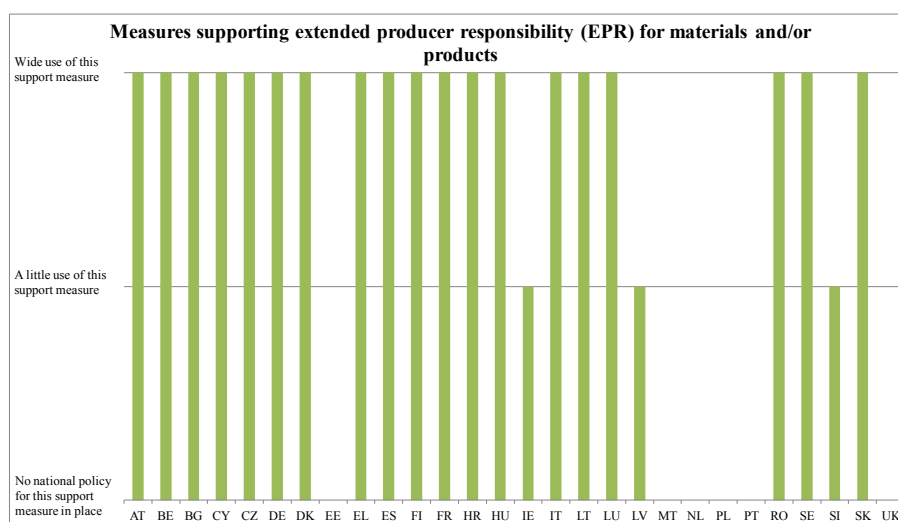


Figure 18: Scope of application of support measure 9 across the EU-28

This support measure has been widely used in by far the greatest number of respondents of all ten measures investigated across the EU-28. This finding is interesting in its own right, as it might reflect difficulties of the questionnaire design, i.e. the above text briefly explaining the scope of the measure. While the scope in this brief explanatory text was kept broad intentionally to allow Member State respondents to reflect on and add any relevant support measures in relation to EPR, it might not have been made explicit enough because the large majority of examples obtained refer to the national legislation transposing the relevant EU Directives laying down principles of EPR (the batteries, end-of-life vehicles, WEEE and also the packaging Directive). The fact that five Member States did not report any national policy in place might indicate that they indeed looked for additional measures beyond the existing national EPR schemes, related to the previously mentioned EU Directives.

At the same time, because of the legal obligation for transposition of the Directives into national law, every Member State does have EPR schemes in place for at least the four waste streams targeted by the above-mentioned Directives (see BIO et al. 2014) – and, therefore, information is more easily available. Although very helpful in the first place due to saving the respondents time in responding to the questionnaire, the pre-filling might also have kept the respondents’ focus too much on what was prefilled – and, hence, not providing additional examples. However, some Member States reported to have additional national EPR schemes in place, for instance Bulgaria for waste tyres and waste oils and Cyprus for waste tyres.

Altogether, this finding might also reflect that EPR is mostly fostered through regulation-based EPR schemes and that there are only few support measures beyond this that focus on businesses. In the section below on good practices, we provide interesting examples that make a direct link to businesses.

2.9.1. Good practice examples

In the following section, we provide selected good practice examples for this support measure from five different Member States (see Figure 19; the full list can be found in the separate Annex document): Belgium, Greece, Luxembourg and Hungary (each with wide use of this measure) as well as Ireland (with a little use of this measure).

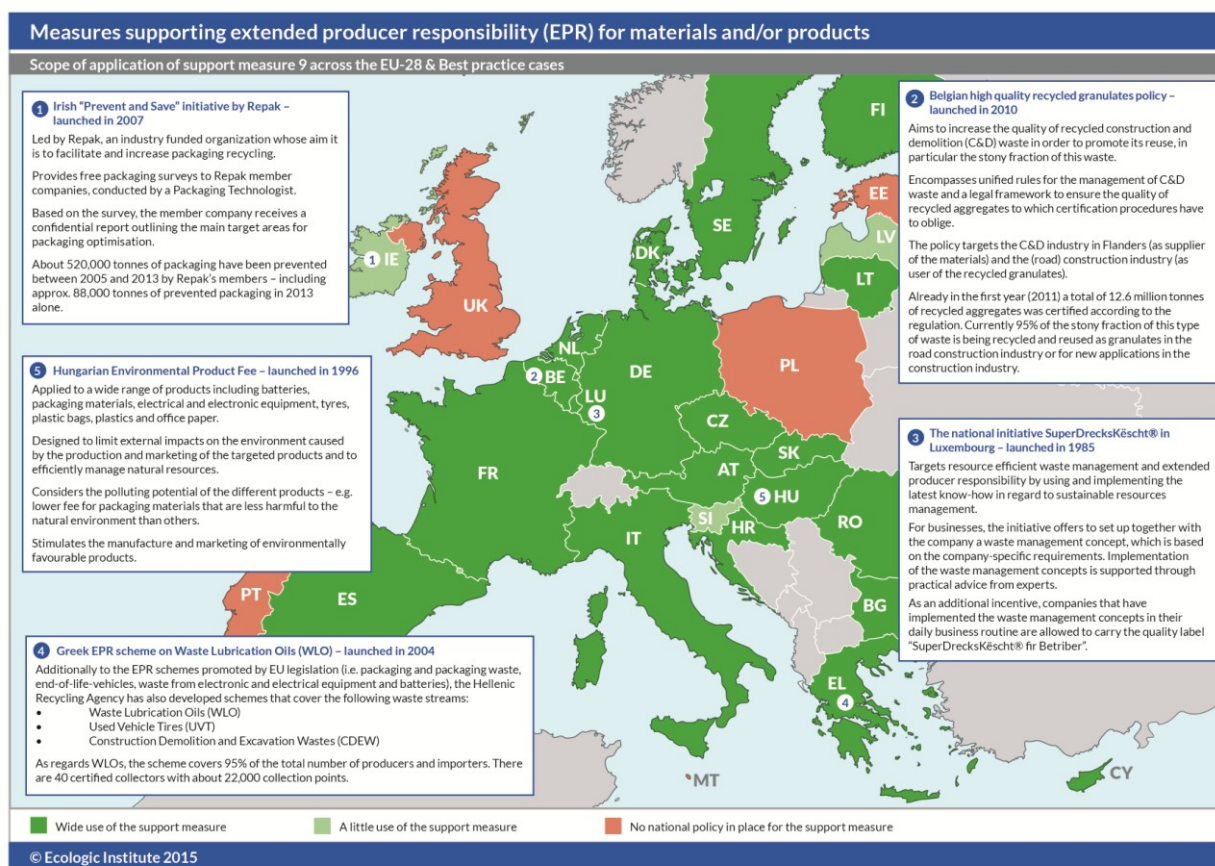


Figure 19: Good practice examples and scope of application for support measure 9 across EU-28

The **Belgian** “High Quality Recycled Granulates Policy” aims to increase the quality of recycling and reuse of construction and demolition (C&D) waste, in particular the stony fraction of this waste. Generally, recycled aggregates were only used for low-grade applications (e.g. as embankments and foundations). By establishing a high and constant quality guarantee, the policy promotes the use of the recycled aggregates in higher-grade applications. Some elements of this policy have existed for about 25 years. Certificates for recycled granulates were introduced in the 1990s. In the following years the Flemish Waste Management Agency (OVAM) outlined the framework and objectives of the policy through the subsequent implementation of plans for the management of C&D waste. In recent years, diverse initiatives have been taken to guarantee the quality of recycled granulates, such as the introduction of unified rules for the management, recycling and testing of recycled granulates or the introduction of a mandatory demolition inventory for commercial buildings with a surface area bigger than 1,000 m³. In April 2015, a new plan was launched to increase the recycling and reuse of the stony fraction even further and to significantly increase the recycling and reuse of non-stony fractions such as plaster and roof bitumen; decreasing the environmental and material impact of construction (OVAM 2015).

The policy targets the C&D industry in Flanders (as supplier of the materials) and the (road) construction industry (as user of the recycled granulates). Already in the first year (2011), a total of 12.6 million tonnes of recycled aggregates were certified according to the regulation.³⁸ Currently 95% of the stony fraction of this type of waste is being recycled and reused as granulates in the road construction industry or for new applications in the construction industry. Almost 14 million tonnes of recycled and certified granulates originating from this waste have been produced in Flanders in 2013 and have been reintroduced into the materials cycle.

³⁸ De Groene Zaak (2015). Governments going circular. A global scan by De Groene Zaak, Dutch Sustainability Business Association. URL: www.govsgocircular.com, accessed 15 May, 2015

In **Greece**, in addition to the EPR schemes that are promoted by EU legislation through the provision of targets (i.e. packaging and packaging waste, end-of-life-vehicles, waste from electronic and electrical equipment and batteries), the Hellenic Recycling Agency has also developed schemes that cover the following waste streams:

- Waste Lubrication Oils (WLO)
- Used Vehicle Tires (UVT)
- Construction Demolition and Excavation Wastes (CDEW)

Respectively for WLO, UVT and CDEW, the schemes were launched in 2004, 2004 and 2010. As regards WLOs, the scheme covers 95% of the total number of producers and importers. Specifically, the scheme covers 50 producers of oil, 76 importers of oil and 44 importers of vehicles. There are 40 certified collectors with about 22,000 collection points.

Another non-regulatory support measure for the application of EPR is the national initiative SuperDrecksKëscht® in **Luxembourg**, which targets resource efficient waste management and EPR. SuperDrecksKëscht® is a brand under which the Ministry of Sustainable Development and Infrastructure leads different actions in the frame of the national waste management. The initiative started as early as in 1985 and its main objective is to use and implement the latest know-how, in order to realise the most effective sustainable resource management in the ecological and economic sense. All relevant stakeholders are targeted: administrations and, in particular, municipalities, the private sector, the general public (consumers, children, schools etc.) (SuperDrecksKëscht 2015). For businesses, the initiative offers to jointly set up a waste management concept, based on company-specific requirements. The concepts include waste prevention and separate waste collection – both usually leading to economic benefits. Experts, who can give practical advice, supervise the implementation of the waste management concepts. As an additional incentive, companies that have implemented the waste management concepts in their daily business routine are allowed to carry the quality label “SuperDrecksKëscht® fir Betriber,” which is certified in accordance with the internationally accepted ISO 14024:2000 standard³⁹.

Hungary follows a different approach: EPR is prompted through an environmental product fee,⁴⁰ which is applied to a wide range of products including batteries, packaging materials, electrical and electronic equipment, tyres, plastic bags, plastics and office paper. The taxable entity depends on the product in question, but can include users, buyers, distributors and manufacturers. Introduced in 1996, the fee is designed to limit external impacts on the environment caused by the production and marketing of the targeted products. Its main objective is to prevent pollution caused by these products and to efficiently manage natural resources. Therefore, the environmental product fee considers the polluting potential of the different products. For instance, for packaging materials that are less harmful to the natural environment than others, a lower environmental product fee is applied.

An interesting example for a non-regulatory support measure for the application of EPR is the “Prevent and Save” initiative in **Ireland**, led by Repak, an industry-funded organisation whose aim it is to facilitate and increase packaging recycling. A central part of the “Prevent and Save” initiative is the provision of free packaging surveys to Repak member companies. The survey is conducted by a packaging technologist, and based on it, a confidential report is compiled and submitted to the member company with recommendations outlining the main target areas for packaging optimisation⁴¹. Considerable achievements have been made by means of the initiative (EPA 2015):

- In 2013, approx. 88,000 tonnes of packaging have been prevented by Repak’s members.
- In the period between 2005 and 2013, in each successive year on average an additional 11,000 tonnes of prevented packaging have been achieved.

³⁹ SuperDrecksKëscht fir Betriber (2014). Ecological waste management based on the SuperDrecksKëscht® model. URL: https://www.sdk.lu/images/PDF/Broschuere/Betriber-bro_EN.pdf, accessed 7 October, 2015

⁴⁰ Legal obligation regulated by the LXXXV. Act of 2011.

⁴¹ Prevent and Save (n.d.). About us. URL: http://www.preventandsave.ie/About_Us.html, accessed 8 October, 2015

- In total, approx. 520,000 tonnes of packaging have been prevented between 2005 and 2013.
- Cost savings of member companies related to decreased purchases of packaging materials amount to approx. 213 million EUR between 2006 and 2013.
- In addition, supply chain savings⁴² during this period amounted to approx. 93 million EUR.

2.9.2. Lessons learnt from the application of the support measure

From the application of this support measure in the above five Member States, the following lessons learnt could be derived.

The approach in Flanders (**Belgium**) was very effective, because it was combined with another governmental action: the **creation of a market for recycled materials** through product specifications, standards and regulation. In addition, the government introduced **economic incentives**, such as higher rates for dumping debris at landfills, and imposed several **restrictions** on the dumping of unsorted construction and demolition waste. These measures all focused on optimising recycling rates to lower the pressure on natural resources, while the management system and regulations ensured high quality recycled materials. Further success factors were the **experience and expertise of the OVAM** and the **involvement of the C&D sector in setting up the policy**.⁴³

In **Greece**, the collection of waste lubricant oils (WLOs) increased from 34,000 tonnes in 2004 (40.4% of production) to 39,000 tonnes in 2008 (67.1% of production) and then gradually dropped to 23,000 tonnes in 2012 (44.7% of production). In addition, the collection of used vehicle tyres (UVTs) increased from around 27,000 tonnes in 2004, to 52,000 tonnes in 2008 and then dropped to 31,000 tonnes in 2012. For the same years the recovery rates (thermal recovery, recycling, export or reuse) respectively were 20,000, 52,000 and 31,000 tonnes. The decrease of the collection of WLOs and UVTs after 2008 (in terms of absolute amounts and on the case of WLOs also in terms of collection rates) indicates that the economic downturn in the country might have a significant effect, both in terms of amounts of waste collected and collection rates. However the magnitude of this effect is uncertain.

Regarding its specific offer for businesses, the strength of the SuperDrecksKëscht® initiative in **Luxembourg** is its **provision of practical advice and monitoring on site**. Advisors support companies by regular visits and training for their staff. The programme is considered highly successful in light of its **clear focus**, innovative design, replicability, representativeness and effectiveness.

Hungary's environmental product fee is perceived as an effective environmental management tool, which has favourable effects on domestic waste management processes. The regulatory advantage of this tool is its ability to **stimulate the manufacture and marketing of environmentally favourable products** and to restrict environmentally undesirable products. The generated revenue **provides funding for the State** in order to achieve EU targets related to recovery, and it supports the development of domestic waste recovery. Since the introduction of the environmental product fee, numerous changes have been made to the legislation on the fee, e.g. concerning liabilities related to packaging. The most recent changes were made in 2015, when the fee was extended to additional products, including soaps, washing powders and cosmetic products. Furthermore, the recent changes introduced six new 'pollution categories' according to the degree of the pollution of the specific products. The main aim of these changes was to create a **more transparent and simplistic system**, which would **reduce administrative burdens**.

The "Prevent and Save" initiative in **Ireland** has been a very effective programme, as evidenced by the amount of packaging saved. Quite often, the **packaging surveys**, and in particular the **confidential report** compiled and sent to member companies with **recommendations** outlining the main target areas for packaging optimisation, **lead to a reduction in procurement costs combined with a**

⁴² Savings made in logistics, production and fees by avoiding the requirement for packaging.

⁴³ De Groene Zaak (n.d.). Creating a market for high quality recycled aggregates. Global scan best practices.

URL: <http://www.govsgocircular.com/cases/creating-a-market-for-high-quality-recycled-aggregates/>, accessed 7 September, 2015

reduction in Producer Responsibility fees after the recommendations were implemented. This indicates that one of the **incentives for reduction comes from the fee structure** in the Producer Responsibility Organisation.

In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied:

Latvia uses tax exemption incentives in order to promote extended responsibility of producers and importers. Companies engaged in the manufacture, import or trade of vehicles, hazardous goods (including electrical appliances) and packaging receive an exemption from payment of the natural resources tax if they have established and apply a waste management system. The objective of this measure is to promote the efficient and economic use of natural resources, limit environmental pollution, as well as promote new and environmentally friendly technologies. **The system's advantage lies in the fact that the waste manager, upon receiving an exemption from payment of the natural resources tax, has the obligation to collect and recover a certain amount of environmentally hazardous products, vehicles and packaging put on the market after their use.** By applying these principles, waste separation is promoted and the number of separate collection points is increased.

In **Romania**, the pioneer organisation “Eco-Rom Ambalaje” was established in 2003 to develop an Integrated Management System and implement and monitor the objectives of the Romanian packaging waste legislation.⁴⁴ It had started with 81 member companies in 2004 and recorded 2,849 members by late 2013. The organization provides prevention plans for generated waste which are free of charge for companies and offers technical guides for waste prevention on its website. The organisation successfully implemented the Green Dot Scheme in Romania and induced investments of its member companies in waste collection & sorting, and in the separate collection infrastructure⁴⁵. One important factor for its success is that the activities of the organisation are based on partnerships with producers of packaged goods, waste collectors and recyclers, as well as with local authorities and citizens. Additionally, the organisation assumed responsibility to **inform the population about the importance of separate collection of waste packaging**. ECO-Rom provides an **interface between public interest and industry** and moderates **dialogue** between its clients. Among other initiatives, educational programmes were launched in primary schools (Green Recycling Laboratory and ECOlimpiada). Nationwide, 9 million inhabitants have access to Eco-Rom recycling solutions. The Eco-Rom initiatives have been successful: the collection of packaging waste improved from 800 tons in 2006 to approximately 40,000 tons in 2013. Moreover, by 2014 (i.e. ten years after Eco-Rom Ambalaje started operating) about 2.6 million tons of packaging waste have been recycled by the organization. This is estimated to correspond to savings of 5.2 million tons of natural resources (crude oil, wood, feldspat, sand bauxite and iron ore).⁴⁶ **Stakeholder engagement and targeted communication with citizens** have proven to be success factors of the measure.

The **German** packaging waste scheme makes producers responsible to take back and care for the treatment of packaging that ends up in private households. Businesses are obliged to participate in one of several authorised waste management and recycling systems (‘dual system’), i.e. they pay a Producer Responsibility Organisation for the collection, sorting and treatment of their packaging. To make the producers pay for collection, sorting and treatment of their packaging gives companies an **incentive to reduce their packaging material**. In the German system, a reduction of costs was

⁴⁴ Two possibilities were given to Romanian companies who place household packaging on the market: be part of the Integrated Management System or have their own waste management system.

⁴⁵ Eco-Rom Ambalaje (2014). Population recycled 55% more waste due to industry investments. URL: <http://ecoromambalaje.ro/population-recycled-55-more-waste-due-to-industry-investments/?lang=en>, accessed 14 October, 2015

⁴⁶ Eco-Rom Ambalaje (2014). 10 years in the recycling business. Bucharest, June 17, 2014. URL: <http://ecoromambalaje.ro/bilant-de-10-ani-in-reciclare-2/?lang=en>, accessed 14 October, 2015

achieved through **competitive tendering**⁴⁷. A success factor for the system is the high degree of **separation of waste by the consumers, which was promoted through information campaigns**.

Similarly, when waste separation was introduced in Lithuania, the state's support for circular supply chains included information campaigns. The **Lithuanian** "Product or Packaging Waste Management Programme" supports EPR schemes, while **at the same time educating society and municipal employees in waste management system creation and maintenance**. Launched in 2004, the programme aims to reduce the environmental impacts of electronic equipment waste, taxable products and packaging waste by subsidising the creation and maintenance of waste managing systems. It is designed to assist private entities and municipalities nationwide. Financial support derives from the Lithuanian Environmental Investment Fund. The programme has financed several projects aiming to reduce electronic equipment, taxable products and packaging waste as well as to **use waste as a resource**.⁴⁸ It has contributed in improving the overall waste management in Lithuania, reportedly increasing the reuse, recycling and recovery rate of waste in Lithuania, reaching up to 35% in 2013. The programme period 2004-2013 was deemed successful by Lithuanian authorities, which prompted the continuation of financial support for the following years up to 2020.

In **Austria**, the long history of the battery collection scheme, which started in 1990 as a voluntary system, helped setting up appropriate collection systems and routines. Additionally, the battery scheme and the WEEE EPR scheme are **strongly interlinked** so that the collection of waste batteries and accumulators from WEEE is improved (BIO et al. 2014).

With the EPR scheme for WEEE in **Sweden**, public authorities are responsible for the collection points (such as recycling centres). The system is **convenient for households**, who can return the WEEE without charge at the same collection points as other waste. After safe treatment in the recycling stations, recycled parts are turned back to the producers (Elretur n.d.).

Going beyond EU-legislation, producers of paper products in **Finland** are responsible for the collection and recycling of waste paper. They arrange free-of-charge transport for discarded paper products from collection facilities. In **Slovakia**, several EPR schemes were set up: for WEEE in 2004, for end-of-life vehicles in 2002, for batteries and accumulators in 2014 and for packaging material in 2002 (amended through Waste Law Nr. 223/2001, entering into force in 2014). The main issue for the packaging EPR is to improve selective collection in the whole territory. Before the new law, producers could fulfil the targets by recycling packaging inside the business. Since the 2014 waste law, they have to fulfil targets set for recycling of household packaging. Hence, the introduction of **EPR puts pressures** on the recycling sector to **build up new capacities and technologies** in all sectors.

Under the **Dutch** National Waste Management Plan (Landelijk Afvalstoffen Plan LAP) EPR has extensively been regulated for separate collection of certain household wastes in order to promote the closing of circles in transition to a circular economy. Launched in December 2014, household and municipal wastes are targeted under EPR. This plan is in effect nation-wide. A budget of 2 million EUR for the year 2015 was earmarked to promote the circular economy through assisting and fostering EPR schemes, inter alia through the capacity building measure RACE (see section 2.6) – hence, EPR is part of the approach, but not the main part. The ambition is to reduce the amount of non-separated household waste from 250 kg per capita to 100 kg per capita in 2020. The Dutch waste and recycling industry is cooperating in an additional program focussed on more & better recycling (www.vang-hha.nl). **Cooperation and capabilities of the local government**, the **motivation of citizens** to help with collecting wastes separately and the **cooperation of value-chain stakeholders** were identified as specific factors for success.

⁴⁷ Duale Systeme (n.d.). Daten und Fakten. URL: <http://www.recycling-fuer-deutschland.de/web/recycling/dl=daten-fakten>, accessed 10 August, 2015

⁴⁸ One example for a project financed by the Product or Packaging Waste Management Programme is the 'Plastic products from granulate, regranulate and plastic waste production' project. With this project the capacity of plastic packaging recycling was increased in Lithuania, while saving a significant amount of new raw materials for avoided/reduced plastic production.

In general, Member State responses often focused on factors which improve waste management and increase collected wastes through EPR, e.g. through establishing a wide net of collection points to be easily reached by consumers, or by designing the system in a cost-effective way (see also BIO et al. 2014). While these aspects can help foster a circular economy by providing companies with recycled waste that can be used as resources, often a direct link to resource efficiency increases in businesses is missing in the schemes (e.g. an incentive for companies to actually reuse the recycled waste). Therefore, we focused on success factors for measures that link EPR and resource efficiency improvements as well as circular economy approaches in companies.

Across the examples obtained from literature review and Member State responses, the following aspects could be identified as key success factors for measures supporting extended producer responsibility (EPR) for materials and/or products.

- ★ Incorporating incentives for companies to reduce waste generation and to use recycled materials – such as economic incentives (e.g. through the fee structure, higher rates for dumping debris at landfills, exemptions from environmental tax) or legislative restrictions (e.g. for dumping of unsorted wastes).
- ★ Explicitly adopting as an objective of the initiative or scheme the reduction of resource use, waste generation and/or the use of waste as a resource.
- ★ Involving targeted sectors in establishing the policy.
- ★ Accompanying measures to establish a market for recycled materials, e.g. through product specifications, standards and regulation.
- ★ Providing practical advice, preferably direct, and on-site and tailored to the needs of different company sizes and sectors.
- ★ Promoting transparency and simplicity of the system, low administrative burden for companies.
- ★ Ensuring, where possible, confidentiality of information provided by the companies.
- ★ Interlinking schemes.
- ★ Designing accompanying information campaigns for consumers and offering possibilities for communication between consumers and producers/waste managers.

2.10. Any other non-legislative support measures promoting a Circular Economy and resource efficiency

There are undoubtedly many non-legislative measures in use that do not fit into any of the previous categories, but nevertheless provide support for the creation of a circular economy and improvements in resource efficiency. Examples could include support for re-use and repair, measures to prevent the (premature) obsolescence of products, provision of extended warranties/guarantees or schemes to support alternative business models such as leasing, shared ownership or exchange of services.

Any other non-legislative support measures promoting a Circular Economy and resource efficiency are widely used in two Member States (7%; Ireland and Lithuania,) and used a little in 14 Member States (50%) (see Figure 20). In 12 Member States (43%) there is no national policy in place for this support measure.

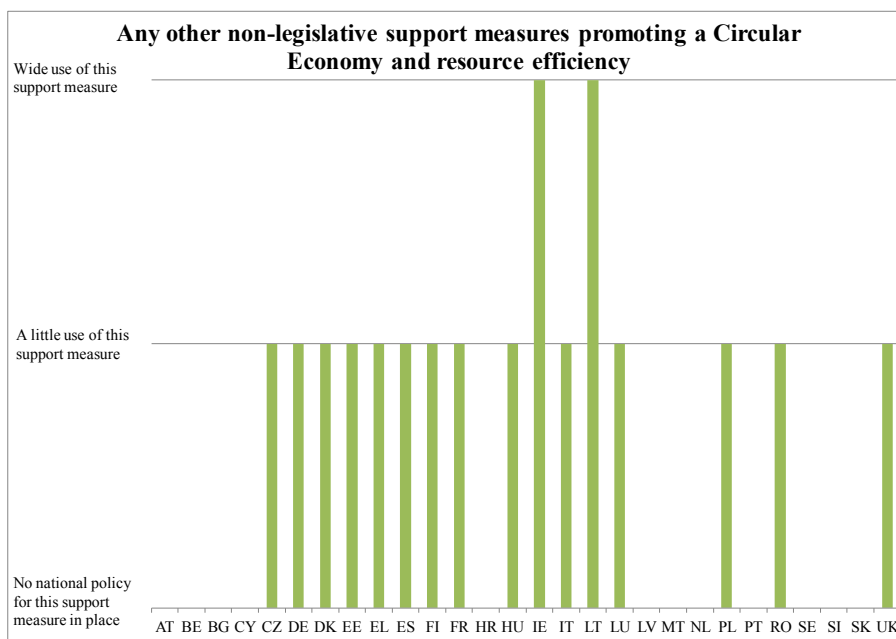


Figure 20: Scope of application of support measure 10 across the EU-28

2.10.1. Good practice examples

We identified relevant good practice examples for this support measure from four different Member States (see Figure 21; the full list can be found in the separate Annex document): Ireland and Lithuania (with wide use of this measure); Romania and the UK (with a little use of this measure).

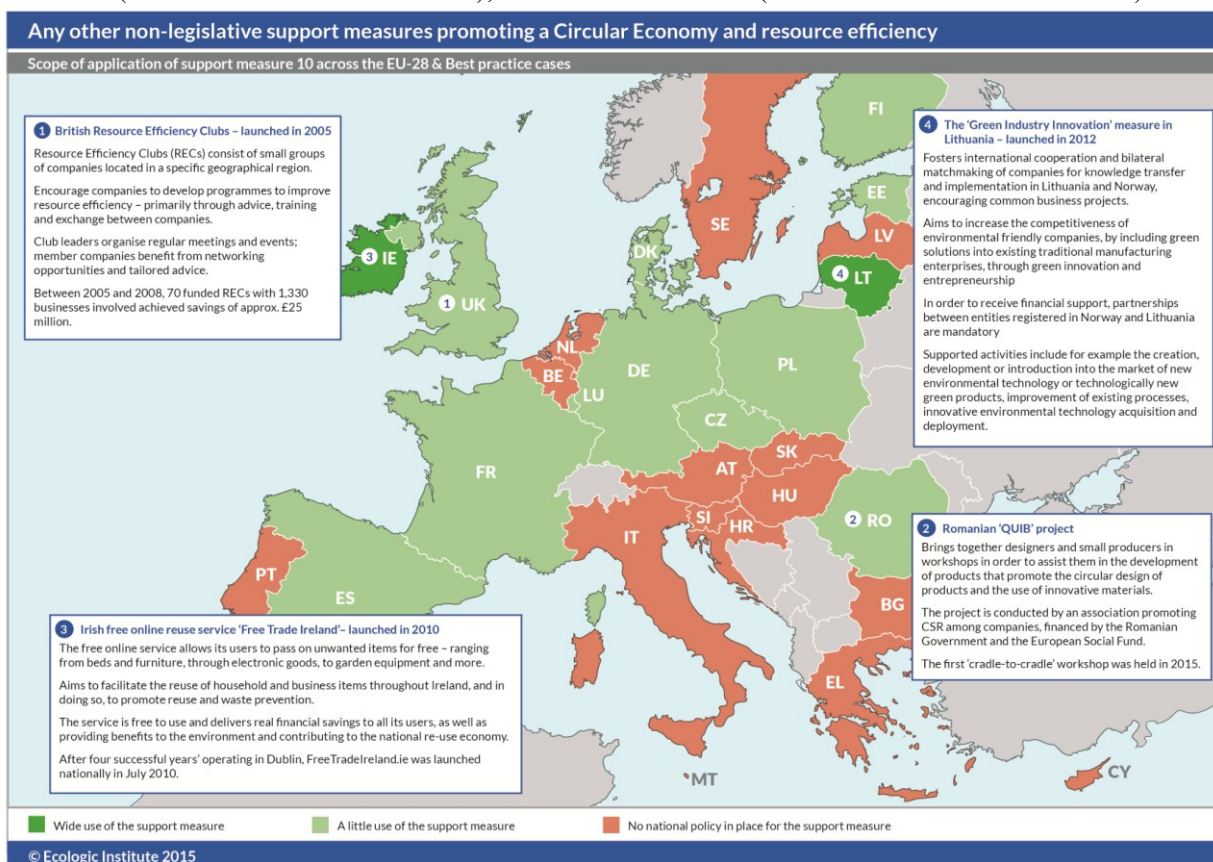


Figure 21: Good practice examples and scope of application for support measure 10 across EU-28

In **Ireland**, the government funded, free online re-use service “Free Trade Ireland” enables users to exchange unwanted items – ranging from furniture, through electronic goods, to garden equipment. Its aim is to encourage and facilitate the re-use of household and business items throughout Ireland, and

in doing so, to promote re-use and waste prevention (EEA 2011). The service is free and users benefit from financial savings. At the same time, the service provides benefits to the environment and contributes to the national reuse economy. FreeTradeIreland.ie was first launched in Dublin, and after four years of successful operation the service was upscaled to the national level in 2010.⁴⁹

In 2014, over 18,000 items were re-used through the service, and users saved about 680,000 EUR through avoided purchases (conservative estimate). It is estimated that FreeTradeIreland.ie diverted approximately 215,000 kg of quality materials away from landfill in 2014 and over one million kg in total since the service began. About 50,000 members are using the service, and in 2014, the site had over 630,000 visits⁵⁰. The return on investment remained high in 2014 with a 17 EUR return for every EUR invested by the EPA and Local Authorities (EPA 2015). Moreover, the website generates revenue from online advertising, which amounted to approximately 3,500 EUR in 2013 (EPA 2014).

The “Green Industry Innovation” measure in **Lithuania**, launched in 2012, encourages common business projects between entities in Lithuania and Norway. Its objective is to foster international cooperation and bilateral matchmaking of companies for knowledge transfer and implementation.⁵¹ Thus, the measure aims to increase the competitiveness of environmentally friendly companies, by including green solutions into existing traditional manufacturing enterprises, through green innovation and entrepreneurship. In order to receive financial support, partnerships between entities registered in Norway and Lithuania are mandatory. Supported activities include⁵²:

- Implementation of innovative environmental technologies,
- Improvement of existing processes,
- Development and commercialization of innovative eco-friendly technologies, as well as
- Development or improvement of green products and materials.

The **Romanian** “QUIB” project represents a local initiative to promote a circular economy. Within the project, workshops are designed and orchestrated that bring together designers and small producers to assist them in the development of products that promote the circular design of products and the use of innovative materials. The first ‘cradle-to-cradle’ workshop was held in 2015. An association promoting CSR among companies conducts the project, with financing from the Romanian Government and the European Social Fund.⁵³

Another interesting example is Resource Efficiency Clubs in the **UK**. The Clubs were developed in the mid-1990s (then known as Waste Minimisation Clubs) and consist of small groups of companies located in a specific geographical region, or a specific sector within a larger geographical area. The establishment of Resource Efficiency Clubs was funded by DEFRA with 5 million £ between 2005 and 2009. Club leaders organise regular meetings and events. Member companies benefit from resource efficiency advice and trainings (often by external experts), targeted one-to-one advice as well as networking opportunities.

Approximately 150 clubs were in operation between 1992 and 2004. About 5,000 companies participated during this period of time and overall achieved savings of approx. 56 million £ (GHK Consulting 2011). Next, between 2005 and 2008, a study of 70 RECs (Mattson, Read & Phillips 2010) showed that the 1,330 businesses involved achieved savings of 25 million £ in this time period. Moreover, 5.80 £ of cost savings were realised for every £ of allocated budget. Government funding ended in 2008. Despite the lack of financial support, about 30 Resource Efficiency Clubs were still operating in 2010, with member companies taking on the financing.

⁴⁹ Freetrade.Ireland (n.d.). About freetradeireland.ie. URL: <http://www.freetradeireland.ie/About.html>, accessed 14 October, 2015

⁵⁰ 26,000 unique visitors in 2014

⁵¹ Ministry of Economy of the Republic of Lithuania (2015). Green Industry Innovation Programme. URL: http://www.ukmin.lt/web/en/innovations/international_cooperation/green_industry_innovation_programme_nor_financial_mechanism, accessed 15 October, 2015

⁵² EEA Grants (n.d.) Green Industry Innovation. URL: <http://eeagrants.org/programme/view/LT09/PA21>, accessed 15 October, 2015

⁵³ Quib (2015). Despre Quib. URL: <http://www.quib.ro/>, accessed 15 October, 2015

2.10.2. Lessons learnt from the application of the support measure

From the application of this support measure in the above four Member States, the following lessons learnt could be derived.

“Free Trade **Ireland**” has benefited from the general increase in online trade, as well as from the general interest in upcycling. One success factor of the online re-use service is that the goods are being offered free of charge, as opposed to other commercial entities in this space who charge for the goods. Furthermore, the measure is supported through publicity: it is marketed via the Waste Prevention officers in local authorities and there is also a Community Reuse Network sponsored by the EPA as part of the National Waste Prevention Programme, which is a national umbrella body promoting reuse and representing community-based re-use organisations. All this activity promotes the circular economy and different re-use activities.

Regarding the “Green Industry Innovation” in **Lithuania**, the close cooperation with Norway enables companies to overcome the barriers of lack of knowledge and know-how in regard to green innovations and technologies. At the same time, the measure offers access to external funding (i.e. Norwegian grants). Similar cooperation measures between EU Member States to promote knowledge transfer and implementation appear to be highly beneficial.

In **Romania**, the “QUIB” project operates at the local level and is specifically targeted at small producers. The Romanian government and the **European Social Fund** share financing of this measure.

One success factor for the Resource Efficiency Clubs (RECs) in the **UK** is the long tradition of having these clubs for companies allocated in specific geographical regions. Cost savings achieved through the programmes that are developed in the RECs are an important motivational factor for companies to participate. Further success factors can be seen in the offer of **tailored and personal advice** for individual company members as well as the opportunities offered for direct exchange with other companies: “RECs enable local businesses to trade, access information, improve operations and share knowledge of issues. They also provide networking opportunities over the long-term and a sense of shared interests” (GHK Consulting 2011).

In addition, further lessons learnt emerged from the information obtained for the other Member States where this support measure is being applied:

In **Denmark**, the cross-institutional “Task Force for Increased Resource Efficiency” between the Ministry of the Environment and the Ministry of Business and Growth aims to identify and **overcome regulatory barriers for enterprises to increase their resource efficiency**. Its work will be based on studies of the experiences of companies, which will look into material flows, value chains and regulatory regimes. For each barrier identified, a solution team will be established to find the most effective way to overcome the barrier⁵⁴. Regulatory barriers may be an important factor hindering resource efficiency measures in companies. Therefore, the idea of the task force – i.e., to promote more efficient and up-to-date regulation and propose simplification of rules and regulations – appears to be a promising option for other Member States.

Estonia has increased waste sorting quality and awareness of citizens through 37 projects supported with an amount of 21.8 million EUR. Examples include waste collection centres, granulation of plastic waste, etc. Furthermore, the Environmental Investment Centre (EIC) uses environmental fees (fees for the right to use natural resources and pollution fees) as grants⁵⁵. The Environmental Charges Act stipulates the amount of the fees and the relevant Regulation of the Minister of the Environment provides guidelines for the use of the funds received from the fees. The amounts distributed as grants through EIC bear the common title of the Environmental Programme, which supports resource

⁵⁴ Grøn omstilling (n.d.). Danish Task Force for Resource Efficiency. URL:

<https://groenomstilling.erhvervsstyrelsen.dk/danish-task-force-resource-efficiency>, accessed 15 October, 2015

⁵⁵ Environmental Investment Centre (n.d.). Environmental Fees. URL: <http://kik.ee/en/kik/sources-financing/environmental-fees>, accessed 15 October, 2015

efficient solutions, resource audits, eco-labelling, environmental management system implementation, etc. It has encouraged companies to make small-budget resource efficient improvements.

The **Polish** project “Product of the Future” consists of annual award competitions and aims to promote and disseminate innovative products with a special focus on their environmental impact and energy performance. The project brings forward innovative ideas through promotional activities, e.g. publishing the winning products on the Innovation Portal website, promoting the products during fairs and innovation expositions, inviting the award winners to conferences, seminars, as well as to radio and television programmes. As an additional incentive for participation, winning products are granted additional points in the selection procedure for EU funding under the operational programme “Innovative Economy.” The measure has been successful in fostering the dynamic development of the awarded products: “The final products developed on the basis of competition applications, were launched on the Polish market and many of them later became an export product.”⁵⁶

Across the examples obtained from literature review and Member State responses, the following aspects could be identified as key success factors for further non-legislative support measures promoting a Circular Economy and resource efficiency in businesses in the EU:

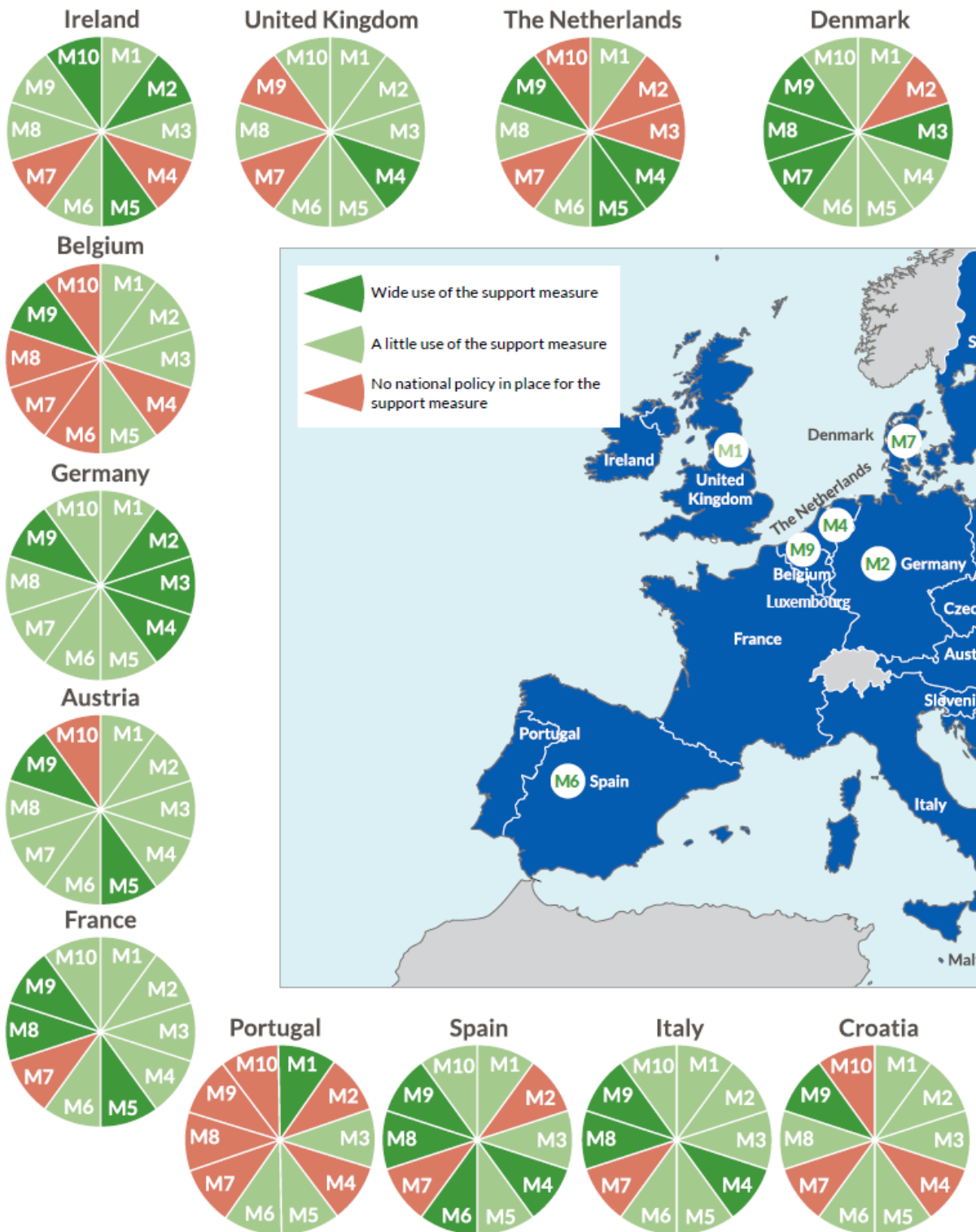
- ★ Targeting the regional or local level, particularly in order to encourage the resident SMEs to participate in the measure.
- ★ Clearly conveying the economic benefits that arise for companies (as well as for consumers) through participating in the measure.
- ★ Offering tailored advice to individual companies or sectors, preferably face-to-face.
- ★ Offering opportunities for direct exchange with other companies in a region or within a specific sector.
- ★ Using online tools to make the support easily available to the targeted companies.
- ★ Offering publicity for companies’ efforts and achievements in regard to resource efficiency improvements.
- ★ Incorporating a broad understanding of resource use, e.g. by involving value chains and material flows.
- ★ Enabling a low-cost access to knowledge.
- ★ Particularly for Member States with restricted financial resources, realising support measures through the use of external funding sources, such as the European Social Fund.
- ★ Diminishing regulatory barriers that are hindering businesses to incorporate resource efficiency improvements.

3. Overall synthesis and recommendations

Across the EU-28, there is a diversity of good practices for all ten support measures from many different countries, while the scope of application strongly differs both per measure and across the Member States (see Figure 22). According to the information retrieved, only two Member States have applied all ten support measures at least a little: Germany and Finland. In eight Member States, all but one or two support measures are used at least a little: Austria, Denmark, France, Ireland, Italy, Poland, Spain and the UK. Data for Bulgaria, Croatia, Greece and Hungary each indicate that there is no national policy in place only for three support measures.

⁵⁶ Polish Innovation Portal (n.d.): Polish Product of the Future. URL: http://www.pi.gov.pl/eng/chapter_86537.asp, accessed 7 September, 2015

Policy measures to support resource efficiency in business



– scope of application in the EU-28

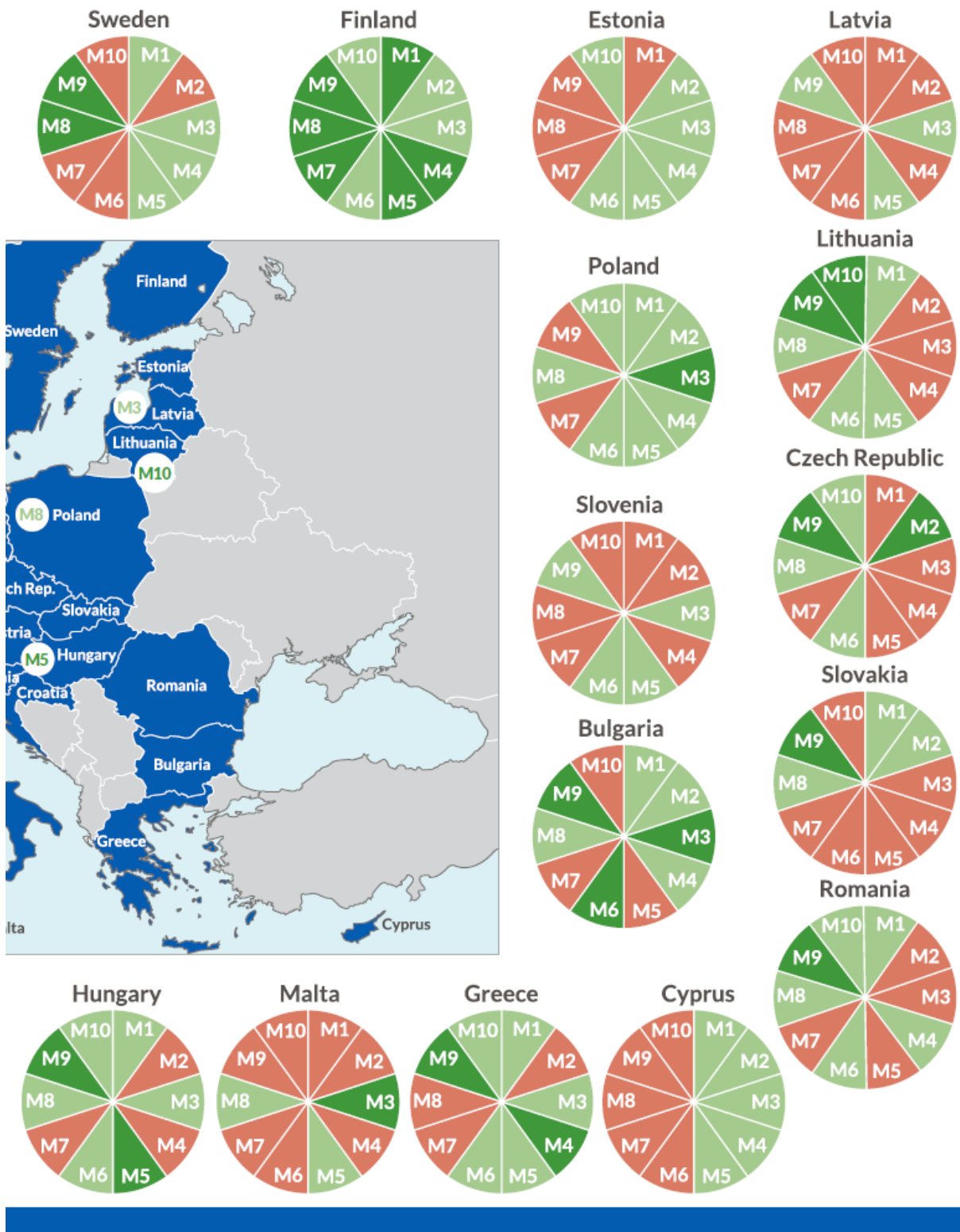


Figure 22: Good practice example and scope of application of the ten support measures across EU-28
M1 to M10 in the pie charts stand for measures 1 to 10

Legend for good practice examples (dark green = wide use; light green = a little use) for the ten measures (m1-10)

- M1 UK: National Industrial Symbiosis Programme (measure 1)
- M2 Germany: PIUS efficiency checks (measure 2)

Legend for good practice examples (dark green = wide use; light green = a little use) for the ten measures (m1-10)

M3	Latvia: Green Technology Incubator (measure 3)
M4	The Netherlands: Green Deals Policy (measure 4)
M5	Hungary: ‘Money Thrown Out the Window’ initiative (measure 5)
M6	Spain: Green Jobs Programme (Empleaverde) (measure 6)
M7	Denmark: Corporate Natural Capital Accounting (measure 7)
M8	Poland: Ecolabelling programme EKO (measure 8)
M9	Belgium: high quality recycled granulates policy (measure 9)
M10	Lithuania: “Green Industry Innovation” (measure 10)

For reasons of brevity, the above figure only shows one good practice example per each of the ten measures. Overall, the information obtained revealed several relevant examples per measure and we used this information to draw lessons learnt in the sections 2.1 – 2.10 above. Table 1 below shows that we were able to identify and use information on lessons learnt from interesting examples for all 28 Member States.

Table 1: Overview of examples used for lessons learnt analysis per support measure across EU-28

EU Member State	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
AT	X	X	X	X	X	X	X		X	
BE					X				X	
BG			X			X				
CY	X	X			X					
CZ		X						X		
DE	X	X	X			X	X	X	X	
DK			X	X	X		X	X		X
EE			X	X						X
EL			X			X			X	
ES				X		X				
FI	X	X	X		X	X	X	X	X	
FR		X		X				X		
HR	X	X	X							
HU					X				X	
IE	X	X			X			X	X	X
IT		X		X	X			X		
LT									X	X
LU				X					X	
LV			X						X	
MT			X		X					
NL				X	X	X			X	
PL			X		X	X		X		X
PT	X									
RO	X			X					X	X
SE	X		X					X	X	
SI			X		X					
SK									X	
UK	X	X		X	X	X				X

3.1. Pointers for promising support measures

Based on the information analysed in the context of this study, we found partially quantifiable information on the resource savings and also cost savings potential of some measure examples. Although this does not allow – and we do not intend to conclude on – any ranking of the ten measures for their resource saving effectiveness or business relevance, we believe that this information can draw attention of Member States to potentially relevant examples. Hence, this may provide pointers for potentially promising examples in terms of resource saving and cost saving potential.

Across most of the ten measures, we found quantifiable examples with relevant resource saving potential (mostly expressed in terms of material and CO₂ savings) and business potential (mostly expressed in cost savings, additional sales, and also inferred from numbers of participating companies) (see Table 2). Table 2 is not meant to be representative of all examples identified and analysed in section 2 above. In fact, we focused on selecting a maximum of two potentially relevant examples per measure that we consider interesting for Member State experts reading this study.

Table 2: Resource saving and business potentials of relevant good practice

EU MS	SuM	Example	Resource savings potential	Company coverage and business potential	Sectoral focus
UK	1	National Industrial Symbiosis Programme (NISP; 2005 - 2013)	recovering and reusing 47 million tonnes of materials saving 42 million tonnes of CO ₂ 60 million tonnes of virgin material 2.1 million tonnes of hazardous waste	~ 15,000 members 1.1 billion £ cost savings 1.0 billion £ additional sales ~ 10,000 jobs	all sectors interested
IE	1	SMILE Resource Exchange (since 2014)	357 tonnes of material diverted from landfill	1,200 members 60 synergies estimated value of materials diverted 398,000 EUR	all sectors interested
DE	2	PIUS-checks (since 2000)	5,020 m ³ water savings 260 MWh energy savings 46 tonnes CO ₂ savings	550 PIUS consultations average investment induced 82,000 EUR; by 2010: 36 million EUR investments induced total average annual costs savings ~50,000 EUR (by 2010, annual cost savings ~10.4 million EUR) payback < 2 years	all sectors interested (particularly successful in metal processing, metal finishing and food processing industries)
FI	2	Motiva material efficiency audits (since 2009)	<i>no information found</i>	15 Material Audit projects 11 million EUR total cost savings potential Annual average savings potential of several hundred thousand EUR	all sectors interested
SE	3	Environment-driven Business Development programme (2001-2004)	<i>no information found</i>	390 SMEs participated, investing ~ 5 million EUR ~ 60 products and services more environmentally sound > 100 companies ensured continuous improvements	SMEs from all sectors interested

EU MS	SuM	Example	Resource savings potential	Company coverage and business potential	Sectoral focus
LV	3	“Green Technology Incubator” (2014-2016)	<i>no information found</i>	370 ideas from businesses received 84 ideas accepted for a pre-incubation phase 15 – 20 companies within the incubation phase until March 2016	any company aiming at improvements in products, technologies or processes contributing to energy efficiency, lower emissions or lesser consumption of resources
NL	4	Dutch Green Deals policy (since 2011)	15,000 charging posts for electric vehicles erected 8,100 homes made more energy efficient 7 LNG tanking stations for lorries and ships and two bunker stations created	176 Green Deals concluded with 1,090 partners (end of 2014)	all sectors interested
RO	4	Voluntary agreement between packaging distribution and recycling companies and Environment Ministry (since 2013)	Sigurec mobile waste collection programme in pilot city Buzau 450,000 tonnes of plastic and aluminium packaging collected 500 tonnes of WEEE collected	implemented in 14 major cities in Romania	Distribution and recycling companies
AT	5	ÖKOPROFIT programme (since 1991)	~177,000 tonnes waste savings by 2011 (City of Graz)	150 companies participated, 6,600 environmental measures implemented by 2011 (City of Graz)	all sectors interested
HU	5	“Money Thrown Out the Window” initiative (since 2002)	663,000 tonnes non-hazardous waste savings 60,500 tonnes hazardous waste savings 751 GWh energy savings (2014)	78 organisations participated, 370 measures initiated in 2014 71.29 million EUR company savings in 2014	all sectors interested
ES	6	Green Jobs Programme (2007 – 2013)	<i>no information found</i>	55,000 workers in existing jobs have been trained within 6 years	all sectors interested
DK	7	Environmental component in Danish Financial Statements Act (since 2015)	<i>no information found</i>	~ 96% of the approx. 1,100 of the largest companies in Denmark who made a Corporate Social Responsibility (CSR) report reported that they had a policy specifically concerning environmental protection issues.	all sectors

EU MS	SuM	Example	Resource savings potential	Company coverage and business potential	Sectoral focus
FR	8	“National experimentation for the environmental display on products” (2011 - 2012)	<i>no information found</i>	168 businesses participated	all sectors interested
IE	8	Green Hospitality Programme (since 2009)	8,500 tonnes of waste prevented; 45,000,000 KWh of energy saved; 500,000 m ³ of water saved; and 10,000 tonnes of CO ₂ saved (2014).	270 members in 2014 ~70,000 EUR average additional savings per Hotel per year	Tourism & Hospitality sector
RO	9	Eco-Rom Ambalaje (since 2003)	~2.6 million tons of packaging waste recycled by 2014, corresponding to ~ 5.2 million tons of natural resources saved; 1.1 million tons of recycled paper-cardboard (savings of about 2.5 million trees); > 560 thousand tons of recycled plastic (savings of > 1.1 million tons of crude oil); ~ 500,000 tons of recycled glass waste (savings of > 600,000 tons of raw materials (sand, feldspat, soda)). ⁵⁷	2,849 members by late 2013	Sectors working in the packaging industry
BE	9	High Quality Recycled Granulates Policy (since 2010)	12.6 million tonnes of recycled aggregates were certified according to the regulation in 2011 Almost 14 million tonnes of recycled and certified granulates originating from C&D waste have been produced and reused in Flanders in 2013	<i>no information found</i>	Construction & demolition sector
IE	10	Free trade Ireland	Appr. 200,000 kg of	> 630,000 unique visitors to	Private

⁵⁷ Eco-Rom Ambalaje (2014). 10 years in the recycling business. URL: <http://ecoromambalaje.ro/bilant-de-10-ani-in-reciclare-2/?lang=en>, accessed 19 October, 2015

EU MS	SuM	Example	Resource savings potential	Company coverage and business potential	Sectoral focus
		(since 2010)	quality materials diverted away from landfill in 2013	the online service in 2014 Savings of > 1.4 million EUR for the users in 2013	households and all sectors interested
UK	10	Resource Efficiency Clubs (since 2005)	<i>no information found</i>	~5,000 companies participated between 1992 and 2004 and overall achieved savings of ~ 56 million £. 1,330 businesses participating between 2005 and 2008 achieved savings of 25 million £	all sectors interested

Data sources: as indicated in the good practice examples in section 2

SuM = Support Measure

Unsurprisingly, the support measure examples provided in Table 2 seem to indicate that regardless of the measure, a longer-term operation of the measure can increase its potential. Longer-term operation can increase the chances for and likelihood of attracting and reaching out to more companies, hence facilitating the creation of trust, relevant networks and of fostering wider diffusion of knowledge about the measures and good practice cases. This seems to hold, for instance, for supporting industrial symbiosis (with NISP running for 9 years), incentivising external audits (with PIUS-checks offered since 2000), for providing targeted advice (with ÖKOPROFIT available for more than 20 years) and for supporting extended producer responsibility (EPR) for materials and/or products (with Eco-Rom Ambalaje in operation since 2003).

Industrial symbiosis (measure 1), external auditing (measure 2) and advice provision (measure 5) support programmes seem most promising to attract companies' interest due to the measures' focus on identifying and realising material saving and sourcing potentials that are associated with cost savings and help cutting down payback-times.

For improving financing (measure 3) the information obtained indicates great interest among companies, i.e. many SMEs and larger companies participating in the calls, but there is hardly any data on environmental or business relevance for this measure, as this is very dependent on evaluation of individual funded projects.

Voluntary agreements (measure 4) have a variety of foci, both sectoral and thematic, so that the measure's potential seems to hinge in particular on the resource relevance of the targeted sectors/companies and their commitment to voluntary objectives.

For building resource efficiency-related skills and capacity within a company/business (measure 6), no information on the resource savings potential could be assessed. However, this should not be taken to consider this measure less effective. Rather, skills form the basis for the realisation of the other support measures and therefore targeting skill development is absolutely necessary and should be part of the measure mix in the Member States.

Most Member States do not have support measures for improving company accounting and reporting practices (measure 7) in place. One way to establish and foster this type of support measure more broadly could be to standardise the procedures for integrated reporting. Standards for Sustainability Reporting already exist, provided by the Global Reporting Initiative (GRI).⁵⁸ These standards can be adopted or used as a basis for the development of further standards by state agencies. Through the use of standards, reporting practices of different companies become comparable. In addition, by having

⁵⁸ See <https://www.globalreporting.org/standards/Pages/default.aspx>

agreed on a common method, clear guidance can be offered on how to integrate resource efficiency aspects in company accounting and reporting activities.

Although in many cases it is not quantified, developing non-legal standards for products and services (measure 8) has a high resource savings potential, as demonstrated by the Green Hospitality Programme in Ireland.

The information gathered for supporting extended producer responsibility for materials and/or products (measure 9) indicates that in existing EPR schemes, a direct link to resource efficiency improvements in businesses is often lacking. Similar findings have already been stated by a study on EPR schemes in the EU that was published in 2014 (BIO et al. 2014). In fact, the study found that in some cases the collective schemes could even dis-incentivise companies' efforts to lower the material intensity of their products, when the fees for eco-designed products and material-intensive products are the same. Yet, various good practice examples identified in this project demonstrate that EPR does have a high resource savings potential when it incorporates incentives for companies to reduce waste generation and to use recycled materials.

Other non-legislative support measures promoting a Circular Economy and resource efficiency (measure 10) can take on very different designs. They may complement other existing measures to support resource efficiency improvements in businesses, or they may per se have a considerable resource savings and business potential.

Overall, we intend to highlight that all ten measures identified are important and have the potential to effectively support businesses in improving their resource efficiency. In our view, the ten measures serve different, but complementary purposes and should therefore not be seen or selected in isolation, but in combination(s) of several of the ten measures in a policy mix. For instance, state financial support for intercompany networks, external auditing, project implementation through improving financing or targeted business advice could well go hand-in-hand, depending on the sector(s) in focus in a national economy. Furthermore, building up skills and capacities could help implementing resource efficiency thinking in a company on different levels and in different departments (e.g. technology development, operation of machines and equipment, internal skilling programmes, company accounting, management boards) and thus prepare the ground for a company to get involved in voluntary agreements, integrate resource efficiency issues into company accounting practices or make use of non-legal standards.

Therefore, while this study may point to some support measures promising quicker and easier gains (mostly in relation to identifying and exploiting resource and cost saving potentials), the complementary potential of the ten measures argues against a between-measure ranking. Moreover, the ten measures should be seen as a toolkit from which Member States can draw to design the best possible support to business resource efficiency in their respective national contexts.

This is to highlight that for transferring any of the measure examples, analysed in this study, to other Member States, the various socio-economic, political and cultural backgrounds of the interested Member States must be considered. It is beyond the scope of this study to analyse these aspects in depth. However, we can infer some indicative pointers for the transfer of the measure examples by looking at the lessons learnt from the measure's application in the examples. Based on the lessons learnt, we can highlight potential success factors for the measures application that, in turn, could act as pointers for making potentially successful use of the measures in various contexts – this will be done in the next section.

3.2. Lessons learnt from applying the support measures – success factors as pointers for transfer?

The analyses of the **lessons learnt** of the good practice examples (and further relevant examples) for each of the ten support measures reveals several aspects that seem relevant as **success factors** for application across several or all support measures (measures to which the success factors apply are listed in a box below the success factors).

When considering transferring the potentially relevant examples, it is important to also take into account the budgetary implications for the state, where implementing some measures needs larger up-front investments from state bodies than others (where available, figures provided in the Annex document on the allocated budget for some measures' implementation can give indications). In addition, the national economy's focus will also play a pivotal role when selecting which support measures to make use of. Based on the success factors we then provide **recommendations** that – where possible – relate the success factors to possible implications of and potential for transferring the success factors for measure application.

Success Factor I.

Ensuring confidentiality of the information and data obtained from companies, for instance through concluding, where necessary, confidentiality clauses between the participating companies and those providing support for or undertaking data analysis

m1 Support for industrial symbiosis

m2 Incentivising external audits to support resource efficiency

Found for measures

m4 Supporting voluntary agreements and initiatives

m5 Providing targeted resource efficiency information and advice to companies

m9 Measures supporting EPR for materials/ products

The information gathered shows that several good practice examples did benefit from confidentiality agreements and continuously building trust through treating information obtained confidentially, for instance through confidentiality clauses in agreements. This allows companies to more freely disclose relevant information (during and as follow-up to site visits) that in turn enable 1) much better targeted consultation and advice without fear of competitive disadvantages, as well as 2) better matchmaking for industrial symbiosis in intercompany networks. This finding confirms relevant factors highlighted by previous studies investigating opportunities arising for businesses from improving resource efficiency (see also AMEC and BIO 2013; University of Westminster 2006). However, while confidentiality agreements ensure better-targeted advice and, thus, suggest increases in resource savings compared to without access to confidential data, these agreements prevent wider use of this information for multiplication and diffusion to other companies. Therefore, such a business culture does limit transfer of know-how amongst businesses, in particular SMEs and, hence, inhibit resource efficiency improvements (see also Ecorys 2011). Nonetheless, as part of intercompany networks or through sectoral agreements on the use of confidential data, this barrier could be overcome.

Recommendation 1: Encourage sectoral or intercompany network confidentiality agreements to allow disclosure of relevant best practice cases across sectoral or intercompany partners

State support could rest on assisting those providing advice, audits and consultancy services through providing templates for and legal expertise on confidentiality agreements. Furthermore, state services could assist in establishing and fostering links with relevant sectoral experts that would have the expertise to understand and help design agreements relevant to the sectors/companies.

State support could provide assistance through legal expertise on sectoral or intercompany network agreements, as well as through linking sectoral experts who could guide conversations around sectoral or intercompany network confidentiality agreements.

Implications of implementing the recommendation: Budgetary requirement for personnel costs; need to identify within the state services relevant legal/thematic expertise and task the development of legal advice/templates; need to collect from state service staff relevant sectoral and intercompany network contacts and to follow up with them on sectoral or intercompany network confidentiality agreements.

Likely very high potential for transfer across the EU-28 as the confidentiality agreements needed to foster the support measures can be tailored to the national sectors to be put in focus.

Success Factor II. Provision of high quality information that is relevant and tailored to the needs of different companies, company sizes and sectors; making the information easily available and accessible

Found for measures For all ten support measures investigated

Whether for intercompany/industrial symbiosis networks, for external auditing or for resource efficiency advice, a key factor for success of the measures is to provide data and information that is of high quality (credible and robust, not least in relation to potential investment costs and cost savings), relevant for and also targeted at the respective company. The latter two aspects are closely interlinked with company size and sector – SMEs needing partly different types of advice (such as on administrative issues for grant application, on options for external environmental auditing, on access to credit or on credit pooling, e.g. through PPPs; see also Calogirou et al. 2010; Special Task Force on Investment in the EU 2015; Oakdene Hollins 2011) than larger firms, and different manufacturing sectors requiring advice adapted to the technologies and processes used in the respective sectors, e.g. paper sector, automotive sector, machinery and equipment sector, electrical sector (see also VDI ZRE 2014; Greenovate! Europe 2012; Allwood et al. 2011). In relation to measure 1, Supporting Industrial Symbiosis, relevant information needs to provide options for matchmaking along value chains and/or for cascading resource use in an intercompany network; therefore, information needs might become cross-sectoral and should be investigated if confidentiality agreements are withstanding (or ideally enable intercompany information exchange).

According to the information gathered in this project, high quality, relevant and targeted information most successfully benefit company resource efficiency improvements when it is made easily available and accessible, either through online offers that are regularly updated or (as well as and) through offering on-site visits and advice to companies. Many respondents considered information provision most promising and accessible through direct and personal contact undertaken or supported by experienced, credible and trusted practitioners (e.g. expert pools, teams of technical consultants, experienced trainers who have practical knowledge of company processes, company mentor-mentee systems).

Recommendation 2: Encourage and support the establishment of sectoral or intercompany expert networks, mentor-mentee programmes and consultancy pools

Through the activities undertaken in the context of Recommendations 1 and 2 above, state authorities could identify sectoral and thematic experts within state services and approach them for collecting names and contacts of relevant institutions and experts, as well as for following-up with them, pooling experts for regional or sectoral, intercompany and/or consultancy networks. These could be hosted through matchmaking events organised by state authorities for those seeking and giving advice, as well as through initiating mentor-mentee programmes within the business community and PPPs.

Recommendation 3: Set up online information offers for resource efficiency in business and link to expert networks, mentor-mentee programmes and consultancy pools

Furthermore, the state experts could compile draft information on relevant sectoral business resource efficiency information and run this by the expert networks for quality review, complementation and expansion. Once finalised, this information could be provided for free via a central online resource efficiency information hub (e.g. economic or environment ministries; joint efforts with chambers of commerce or business agencies). This online service should also show locally/regionally available expert networks and their contact details. The information must be kept up-to-date in order to adapt to new technological, legal and societal developments in order to maintain relevance. To increase its effectiveness, the online information should be combined with personal events such as on-site visits of experts or thematic workshop series.

Implications of implementing the recommendations: Significant budgetary requirement for personnel costs and for other costs (e.g. room rents and catering for events, web hosting costs, IT and design services); need to identify within the state services relevant thematic expertise as well as task a) the collection of relevant institutions and experts and b) the compilation of relevant information; need to follow up with the experts to encourage formation of pools of experts and mentor-mentee programmes and to validate and complement information.

Likely high potential for transfer across the EU-28 as the expert groups and information offers can be tailored to the national sectors to be put in focus.

Success Factor III. Promotion of the economic benefits achieved by the support measures through distributing information on relevant examples

m1 Support for industrial symbiosis

m2 Incentivising external audits to support resource efficiency

m3 Improving Financing

Found for measures m4 Supporting voluntary agreements and initiatives

m5 Providing targeted resource efficiency information and advice to companies

m7 Improving company accounting and reporting practices

m10 Other non-legislative support measures promoting Circular Economy/resource efficiency

When considering which information is relevant to companies (see point II above), spreading the word about economic benefits (in particular through concrete examples for cost savings) linked to applying measures to improve resource efficiency emerged as crucially important to convince companies that investing into resource efficiency improvements does pay off (see also AMEC and BIO 2013; VDI ZRE 2011). This is even more pertinent when a) this information comes from relevant peers (such as company networks, competitors, credible and trusted consultants) and b) implementing measures to improve resource efficiency is financially supported, e.g. through state funds or grants – and thus can be somewhat more relaxed towards the (time needed to achieve) return on investments. In this context, (databases of) best practice cases could provide both concrete information on the economic benefits and guidance on technologies and/or processes used – if confidentiality agreements are not withstanding or ideally enable sectoral or intercompany information exchange.

Recommendation 4: Foster presentation and multiplication of best practice cases through online and on-site expert information offers

State services could encourage and set reporting routines on potentially relevant best practice cases among their internal processes for information gathering and across their staff. Staff could then be tasked to follow-up with the respective best practice companies to collect additional relevant information and make it available online. Furthermore, in order to ease transfer of best practice examples, related information should also encompass aspects of co-funding secured (if any) and then link to a specific online information on European and national funding options for resource efficiency improvements in business. These online offers should be integrated with and make use of, as much as

possible, existing online platforms for exchange on best practice cases in business resource efficiency, such as GreenEcoNet,⁵⁹ PIUS,⁶⁰ Greenovate! Europe.⁶¹

When exchanging with the expert networks, state services could highlight and make (better) known the best practice cases offered online, asking experts to use and expand on such information when providing on-site advice.

Implications of implementing the recommendation: Potentially significant budgetary requirement for personnel costs for following up with best practice cases; need to convince companies of the added value of disclosing relevant information as best practice cases.

Likely high potential for transfer across the EU-28 as the best practice offers can be tailored to the national sectors to be put in focus.

Success Factor IV. Involving companies in the design of support measures (e.g. through consultations, advisory boards, participation in expert networks or mentor-mentee programmes)

m1 Support for industrial symbiosis

m3 Improving Financing

Found for measures m4 Supporting voluntary agreements and initiatives

m8 Development of non-legal standards for products and services

m9 Measures supporting EPR for materials/ products

Involving companies in support measure design emerged as a success factor for several support measures, because working in partnership is essential for building trust in and achieving commitment for voluntary agreements. In addition, when governments set up funding programmes, early-on consultation with businesses and industry helps to ensure that a) relevant topics can be identified and complemented, b) the thematic relevance of the funding offers for businesses can be increased and c) the interest in applications for funding be tested (as done for instance in the context of the European Commission's Call for ideas for large-scale demonstration projects under Horizon2020, European Commission 2015). Regarding the development of criteria and revision of eco-labels, it proved to be a success factor to involve—next to companies—other stakeholder groups as well (e.g. consumer organisations, environmental NGOs).

Recommendation 5: Set up support-measure-specific advisory groups and pre-test attractiveness and scope of support measures

For any support measure that the state considers implementing, state services could increase measure fit and relevance among the targeted actors through: 1) involving the expert networks mentioned under recommendation 3; 2) establishing measure-specific advisory groups (e.g. consisting of mentoring companies) who assess the relevance of the measure and the fit of the measures' specifications; 3) pretesting co-funding measures through pre-calls for project funding and calls for commitments to trigger innovation capacity and identify shortcomings of call specifications via competitive calls.

Implications of implementing the recommendation: Budgetary requirement for personnel costs for issuing competitive calls and for their evaluation; need for resources for project co-funding of

⁵⁹ See <http://greeneconet.eu/>

⁶⁰ See <http://www.pius-info.de/en/index.html>

⁶¹ See <http://www.greenovate-europe.eu/>

successful project proposals; other costs for venues and catering for advisory group and/or expert network meetings; state services need to be willing and ready to invite feedback of measure draft descriptions and be prepared to undertake revisions in order to accommodate feedback.

Likely high potential for transfer across the EU-28 as the advisory and pre-testings can be tailored to the national sectors to be put in focus.

Success Factor V. Establishing (or fostering establishment of) national and regional contact points that acting as one-stop-shop for supporting management, administration and communication

m1 Support for industrial symbiosis

m2 Incentivising external audits to support resource efficiency

Found for m3 Improving financing

measures m4 Supporting voluntary agreements and initiatives

m5 Providing targeted resource efficiency information and advice to companies

m6 Building resource efficiency related skills and capacity within a company/business

In many good practice examples across several support measures, the measures' application benefited from having a central and competent (national or regional) contact point (e.g. company networks, consulting networks or agencies) acting as a one-stop-shop for advice as well as for supporting management, administration and communication (see also Calogirou et al. 2010). In addition, central contact points can contribute to better interlinking and coordination between different support measures and also point out possible combinations of support options to companies, e.g. support for industrial symbiosis and respective programmes to improve needed skills, or matching financing options for external audits.

In order to make these contact points more relevant and accessible to regional SMEs, a web of regional, local or intercompany network-related contact points, ideally under the umbrella of the national contact point, could be established to reach SMEs across a country (for instance, the Efficiency-Agency in the German federal state of North Rhine-Westphalia runs several centres within the region). Furthermore, a national contact point, and its regional web of centres (here, the UNIDO network of cleaner production centres,⁶² such as in Croatia, could also host the online offers and databases of high quality, relevant and targeted information (see points II and IV above). In addition, the centre could take over the task of making good practice examples visible, e.g. by publishing them online or in printed brochures, by hosting events and awarding ceremonies. This would create publicity for companies' efforts and achievements in regard to resource efficiency; thereby, rewarding frontrunner companies and incentivising future activities of companies to improve their resource efficiency.

The national/regional centre(s) should be liaised with the "European Resource Efficiency Excellence Centre" to be established under the umbrella of the Green Action Plan for SMEs (European Commission 2014a). Thus, the national/regional centre(s) could be invited to make use of the information services provided by the European Resource Efficiency Excellence Centre as well as both benefit from and contribute to the "mapping of national strategies, programmes and actions in the field of resource efficiency and SME support" that the European Centre will undertake "in order to be able to refer SMEs to such initiatives when appropriate" (European Commission 2014c: 2).

⁶² See <http://www.unido.org/ncpc.html>.

Recommendation 6: Establish national and regional centres for improving business resource efficiency

State services could establish or commission the establishment and organisation of a national information centre. The centre should have the capacities to act as a one-stop-shop for providing target-group-specific advice on technological and administrative issues both online and on-site, administered by competent sectoral and administrative experts, i.e. a state-funded, business-expert-run organisation, ideally with stepwise expansion into relevant regions and/or intercompany networks of the Member State(s). Identifying and commissioning independent, neutral business experts as key staff of the contact point can also help reducing the potential fear of companies to be audited by state organisations, as this may also disclose information on legal compliance and expose companies to risks of prosecution.

The location of the national (and regional) centre(s) should reflect proximity to relevant sectors or some of their representatives, while at the same time enable easy geographical access to mentoring companies and expert networks.

Implications of implementing the recommendation: Significant budgetary requirement for personnel and other costs (infrastructure, etc.); need for access to knowledgeable and credible experts targeted at relevant sectors in the Member States, ideally originating from the activities undertaken in relation to recommendation 3 above; need for attractive conditions to win and keep experts and experienced staff.

Likely very high potential for transfer across the EU-28 as the centres' foci can be tailored to the national target sectors and as the plans to establish a European Resource Efficiency Excellence Centre (calls expected to be launched in late 2015) are synergistically supportive.

Success

Factor VI.

Targeting support at the piloting, practical application and up-scaling steps

m3 Improving financing

Found for measures

m4 Supporting voluntary agreements and initiatives

m5 Providing targeted resource efficiency information and advice to companies

In a few good practice examples across more than one support measure, success appears to hinge on targeting the piloting/pilot-testing of innovative resource efficient business solutions, their practical application and preparation for up-scaling. There is often a discrepancy between supply-side focused support for research and innovation and the demand-side support through which new technologies, processes and products could be taken beyond the so-called “Valley of Death”⁶³ (or rather the Valley of Hope towards scaling up and commercialisation) towards niche and, in the longer term, mass markets.

Recommendation 7: Focus powerful, financial support measures at the up-scaling and commercialisation stage of innovations

In order to assist companies bridging the gap from product and service development and piloting to commercialisation, state services could scrutinise existing funding mechanism and adapt them to the

⁶³ In order to move from a pilot, demonstration or test-series to up-scaling and commercialisation of production/services, a firm has to invest considerable financial resources. However, this stage in the innovation process usually is hardly funded through public support, hence creating a high risk profile for the companies that is sometimes referred to as “The Valley of Death” for innovations; see COWI (2009).

up-scaling and commercialisation needs of companies. This could be done in line with Recommendation 6 through involving expert network, establishing measure specific advisory groups and pretesting funding measures through pre-calls. Furthermore, state institutions could foster the demand side for environmentally-friendly and resource-light products and services through orienting the state's buying power towards sustainable or green public procurement; e.g. through laying down environmental and resource efficiency criteria that purchasing units must consider next to price.

Implications of implementing the recommendation: Significant budgetary requirements for (co-)funding of up-scaling and commercialisation processes and technologies; need to identify the best ways of providing such targeted financial support and adapt it to sectoral specificities (e.g. pre-commercial and public procurement rules helping public actors to foster business innovation through acting as first buyers of new innovative technologies and services from the demand side).

Likely very high potential for transfer across the EU-28 as the financial support can be tailored to the national sectors in need of state funding support.

Success Factor VII. Financial and administrative support and knowledge transfer from EU and international institutions

m1 Support for industrial symbiosis

m2 Incentivising external audits to support resource efficiency

m3 Improving financing

Found for measures

m4 Supporting voluntary agreements and initiatives

m5 Providing targeted resource efficiency information and advice to companies

m6 Building resource efficiency related skills and capacity within a company/business

m10 Other non-legislative support measures promoting Circular Economy/resource efficiency

Financial support from European institutions (European Commission funding programmes mainly) appeared to play a pivotal role in several Member States in initiating business resource efficiency improvements via various measures: supporting industrial symbiosis (helping setting up the Croatian Cleaner Production Centre through the “Intelligent Energy for Europe” programme of the European Commission; helping to implement the Romanian COREG project through LIFE+), co-funding national environmental funds in Greece and Malta (through ERDF schemes and the Joint European Support for Sustainable Investment in City Areas [JESSICA], which receives contributions from ERDF), co-financing the provision of targeted resource efficiency advice in Malta (through the “Investing in Water” project, co-funded via LIFE+), providing financial means for the Romanian QUIB project, a local initiative fostering circular economy among SMEs co-financed by the European Social Fund. In addition, implementation of activities of cleaner production in the Croatian industry benefited from the knowledge transfer from international donors (in particular UNIDO and the Norwegian government). Without the financial and administrative support and the transfer of knowledge, these projects and initiatives could not have been implemented in the first place. Hence, this support is key to building national capacities for business resource efficiency.

Recommendation 8: Make (better) known European financial support measures and integrate/match with national financing programmes

Both through the online information offers and via on-site advice provided through experts (associated with the national or regional centres), state services improve awareness of existing European (co-)funding programmes. Some key EU funds that could be useful for the Member States

to initiate resource efficiency improvement support measures are the ERDF (hereunder, for instance, the new Operational Programme “North West Europe”⁶⁴), the EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (SMEs) (COSME), Horizon2020, LIFE+.

Next to increasing efforts to better match (where promising and feasible) national funding initiatives with European programmes in order to allow full(er) cost coverage and create synergies for national innovation, state services could also focus efforts on improving the translation of European funding programmes to the national context, e.g. to relevant SME sectors or networks, both through online and offline advice.

Implications of implementing the recommendation: Significant budgetary requirements for providing better translation of European (co-)funding and for adapting national funding to better match and complement European (co-)funding; in doing so, gathering ideas from the national level on how to improve European (co-)funding to ease national transfer.

Likely very high potential for transfer across the EU-28 as the instrument can be tailored to the national sectors in need of EU and state funding support.

Success Factor VIII. Keeping the administrative burden for companies low

m3 Improving financing

m8 Development of non-legal standards for products and services

Found for measures m9 Measures supporting EPR for materials/ products

m10 Other non-legislative support measures promoting Circular Economy/resource efficiency

Good practice examples for several support measures indicate that keeping the administrative burden for companies to make use of the support measures low (e.g. related to formal procedures to apply for grants, to receive certifications or to register for support programmes) is key to success. Long administrative procedures form a disincentive for companies to participate in support programmes. Especially, SMEs have often limited time and personnel and are, therefore, deterred by elaborate application processes (see also Engelmann et al. 2013; Bastein et al. 2014). Simplifying these processes could enhance the number of participating companies. In regard to legislative measures, simplification could improve compliance.

Furthermore, financing mechanisms should be designed not only in a way to minimise administrative burden, but also to include a range of loans (sizes) and to have low interest rates in order to make them attractive to companies of various sizes. In addition, offering a reasonable grace period, loan redemptions and repayment period in order to mitigate (too) long payback periods will also help increase attractiveness of financing tools, in particular for SMEs.

Recommendation 9: Simplify application and registration procedures for support measures

For all existing state support measures at national, regional or local level that involve application, registration or other data submission by companies, state services should invest time to revise these procedures in order to make them less burdensome and time-consuming for companies (e.g. by

⁶⁴ European Commission (2015). North Western European countries join forces to invest in innovation, low-carbon technologies and resource-efficiency. URL: http://ec.europa.eu/commission/2014-2019/cretu/announcements/north-western-european-countries-join-forces-invest-innovation-low-carbon-technologies-and-resource_en, accessed 19 October, 2015

establishing a task force). Information on criteria for participation and on the steps involved in the application processes should be provided online, thereby making the procedures transparent. Where possible and appropriate, online tools can be used to reduce the effort for companies, e.g. by providing the option to download application forms or by enabling companies to submit applications online.⁶⁵ Similarly, simple procedures for companies should be considered when designing new support measures.

Administrative procedures can be further simplified through having one central contact point (see success factor V above). Through this central contact point, state services could establish an online database of funded projects and make it part of an existing or new information website that gives relevant information on eligibility and quality criteria for the submissions of project ideas seeking funding. This could tailor the information to SMEs and larger companies, providing information on different funding options and the funding mechanism at one glance and highlight differences and specificities in a tabular format, e.g. on funding rates, payback times, grace periods, etc.

Implications of implementing the recommendation: Budgetary requirements for personnel costs for identifying the potential to simplify administrative procedures of the respective support measures; gather expertise in or employ external experts to install and use online tools.

Likely very high potential for transfer across the EU-28 as the instrument can be tailored to the national sectors in need of EU and state funding support.

In order to complement and enhance the efforts of the Member States, further actions could be taken by the **European Commission**.

Placing integrated reporting practices on the agenda for Member State support measures

Established accounting and business reporting methods can fail to capture and illustrate progress on resource efficiency and even hinder investments in resource efficiency with longer pay-back times. Therefore, integrated accounting and reporting practices (e.g. EP&L) are important to increase efforts of companies to improve their resource efficiency, while at the same time they may raise awareness for resource scarcity and environmental problems. Yet, measures to improve company accounting and reporting practices are not in place in most Member States. It appears that, currently, companies interested in integrated reporting are largely left to their own approaches and networks, as offers of information and advice of financial incentives are largely lacking. Initiatives on the European level could help increase the awareness of the benefits of integrated reporting among political actors and encourage them to design support measures in this area. Therefore, we recommend that European institutions place the topic on the political agenda and organise events for the discussion and promotion of integrated/sustainable reporting practices. Furthermore, the EU could target funding programmes on initiatives that aim to improve company accounting and reporting.

Making existing funding programmes more compatible with national initiatives for resource efficiency improvements in businesses

In many cases, support measures by Member States to increase resource efficiency in businesses have been realised by means of external funding. European (co-)funding programmes (e.g. ERDF, LIFE+) have played a central role in building national capacities for business resource efficiency. Also, in some Member States, plans exist to initiate support measures by means of European funding sources.⁶⁶ We, therefore, recommend maintaining these programmes and, furthermore, improve their compatibility with national programmes. The latter could be achieved through a closer exchange between EU and national funding programme experts. The European Commission could foster such

⁶⁵ Confidentiality needs to have to be considered (see point 1. above).

⁶⁶ For example, Slovenia plans to support industrial symbiosis through ESI and other funding.

exchange by strengthening Member States representatives' input into ongoing processes, e.g. providing guidance provision for Member States on ERDF and Cohesion funding.

Encouraging knowledge transfer

The information gathered from Member State respondents included a number of successful examples of knowledge transfer between Member States. For instance, the Czech Republic had supported the Croatian Cleaner Production Centre by offering training for the staff and carrying out demonstration projects. Such partnerships and cooperation between Member States could be encouraged by the European Commission through the provision of platforms for meetings among several Member States and by fostering the formation of Member State expert groups – for instance via the processes around the European Semester exchange at the European level.

In its General Union Environment Action Programme to 2020 “Living well, within the limits of our planet” (7th Environment Action Programme, EAP7) the European Commission denotes the business sector as is “the primary driver of innovation, including eco-innovation” (European Commission 2014d: 33). Hence, the EAP7 calls for putting in place policy incentives that foster business investments in resource-efficiency and facilitate the uptake of new, emerging technologies by SMEs in particular. Furthermore, the EAP7 highlights the need to (i) step-up private research and innovation efforts that can help developing and taking up innovative, emerging technologies, processes and business model, as well as to (ii) develop training programmes preparing for green jobs. Thus, the EAP7 underlines the importance of many the support measures investigated in this study. As Article 3 of the EAP7 stipulates that “the relevant Union institutions and the Member States are responsible for taking appropriate action, with a view to the delivery of the priority objectives set out in the 7th EAP.” (*ibid.*: 11), Member States are responsible for co-implementation. Therefore, the processes around co-implementing the EAP7 could also be a promising vehicle to foster resource efficiency in businesses across the EU-28.

4. Conclusion

Through pre-filling information and eliciting feedback and additions from Member State officials, this study found a wide range of examples of measures to support businesses in improving their resource efficiency. Reflecting subsidiarity, these measures vary from country to country and region to region, and also vary in the lessons learnt that can be drawn from their longer-term or shorter-term application in the Member States. This also holds within one measure category, i.e. there are a variety of examples across Member States applying the same measure in different ways.

Therefore, Member States can benefit from looking at interesting examples from other Member States. Beyond EPR schemes, there is no single programme that has been replicated by all Member States – the EPR coverage apparently being driven by the legal obligations to transpose EU Directives into national law. However, it seems that many of the support measures investigated could be more systematically adopted, building on the lessons learnt from where they have proven to be a success – this is already taking place within some countries (for instance the PIUS-resource efficiency checks in Germany), but also between countries (for instance the Austrian ÖKOPROFIT programme). Therefore, identifying ways of transferring and adapting this knowledge to other Member States in their respective context(s) will be instrumental in fostering business resource efficiency across the EU.

Fostering the exchange of good practice examples and lessons learnt, both on Member State level and through facilitation by European institutions, could well serve this task and, hence, enable businesses, and especially SMEs, to improve both their environmental and their financial performance. In many cases, EU funding and support enabled Member States to initiate business resource efficiency support in the first place. Therefore, using EU funding to finance international best practice exchange, as well as maintaining and better integrating EU funding with national funding needs and mechanisms, seems promising to continue enabling Member States to help their businesses improve their resource efficiency.

Here, further research is needed to complement this study with in-depth analysis of the context conditions conducive to or impeding a transfer of effective support measures across Member States.

The approach applied in this study, namely the pre-filling of information to elicit feedback from Member State experts, proved successful as at least confirmation of prefilled findings could be obtained from all 28 Member States. Therefore, it is recommended to integrate this methodological approach within several consultancy project contexts, where relevant information can be obtained through desk research.

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