



Eco-Innovation in Europe

A Policy Brief from the Policy Learning Platform on
Environment and resource efficiency

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**Interreg
Europe**



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Summary

The policy brief explores the concept of eco-innovation and the way it is understood in EU policy making. It describes the link between eco-innovation, the circular economy and resource efficiency. The policy brief also makes an overview of the EU strategic documents addressing the topic of eco-innovation as well as other resources such as platforms and indicators. The brief focuses on several horizontal challenges for regions with regards to eco-innovation and explains the way Interreg Europe projects contribute to stimulating eco-innovation. Finally, it features several good practices on eco-efficiency and provides a set of recommendations for regions and Managing Authorities.

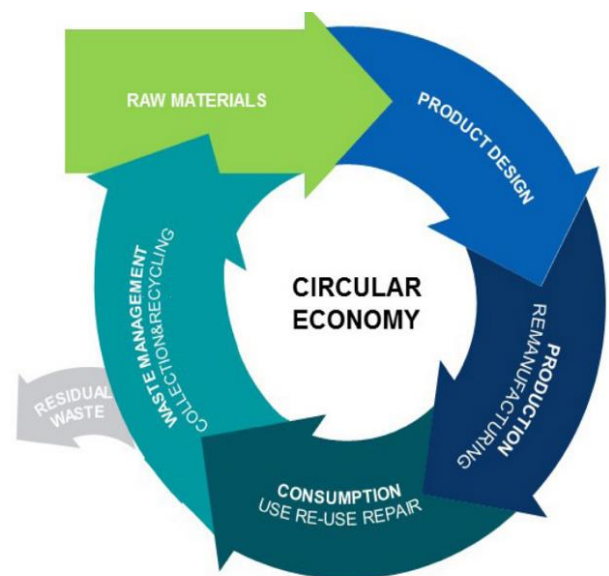
Introduction: What is eco-innovation?

There is a general recognition that production-consumption trends are putting excessive and unsustainable strain on the environment. Resource input costs are becoming volatile. EU policymakers are therefore eager to promote **eco-innovation**.

Eco-innovation has a broad scope. It is a response to a range of **societal challenges** (climate change, resource-intensive production, pollution, etc.) but there is also a strong business case for eco-innovation¹.

According to the (2011) [Eco-Innovation Action Plan \(EcoAP\)](#)², **eco-innovation** is 'any form of innovation resulting in or aiming at significant and demonstrable progress towards the goal of sustainable development, through reducing impacts on the environment, enhancing resilience to environmental pressures, or achieving a more efficient and responsible use of natural resources'. Eco-innovation may be technological or non-technological.

More recently, the goal of creating a **circular economy** has come to prominence as a systemic response to environmental constraints. According to the Eco-Innovation Observatory (2018), 'Eco-innovation is the change implemented to achieve the aims of the EU Circular Economy agenda'. The overarching idea is to 'decouple' growth from resource use, thereby protecting the environment, reducing pollution, reducing business costs and developing our economies.



Source: Graphic based on 'COM(2015) 614 final'

PART I - Policy context

As the word cloud on the cover page indicates, eco-innovation is one of a family of terms that refer to the multi-faceted search to reconcile growth with environmental limitations. Over the past decade or so, international institutions and prominent entrepreneurs have embraced this agenda. The OECD Green Growth Knowledge Platform³, established in 2012, offers a wealth of information on a wide range

¹ UNEP

² <https://ec.europa.eu/environment/ecoap/en>

³ <http://www.greengrowthknowledge.org/about-us>

of eco-innovation topics, including dozens of projects. In 2014 the UN's Environment Programme published 'The Business Case for Eco-Innovation'⁴, which it followed up with Implementation Manuals. An interesting takeaway from this work is the high-growth potential of eco-innovative enterprises.

A wide range of policy instruments are today being deployed by governments to stimulate eco-innovation, including regulation, tax incentives (at EU and national level) and supporting eco-innovation in SMEs and through a range of partnerships at regional level.

The EU Policy Context (2014-2020)

Eco-innovation became a major policy goal with the Lisbon Treaty and the 2006 Environmental Technologies Action Plan (ETAP⁵). The EC has since progressively intensified its support to eco-innovation, which today cuts across the activities of several Directorates General (DGs) and is being mainstreamed in their main programmes and initiatives. ETAP draws the attention to the mechanism of Technology Platforms and Environmental Technology Verification (ETV), which validates the environmental merits of a technology using an objective methodology.

Several years later, the European Union reconfirmed its commitment in promoting innovation by adopting the [Innovation Union Flagship Initiative](#) in 2010 as one of the flagship initiatives of the European Union within the Europe 2020 Strategy. It addresses societal challenges related to clean energy, green transport and resource efficiency. This initiative generated the [Eco-innovation Action Plan](#)⁶ (EcoAP) in 2011, which supports a number of key concrete actions:

- Environment policy and regulation for promoting eco-innovation (e.g. REACH);
- Demonstration projects and partnerships for eco-innovation (Horizon 2020);
- Standards and performance targets for key goods, processes and services to reduce their environmental footprint;
- Finance and support services for SMEs (ETAP and Cohesion Policy);
- International cooperation;
- European Innovation Partnerships (Water Efficient Europe).

EcoAP is supported by a dedicated internet platform, the [Eco-innovation Action Plan Community Platform](#). This platform is a useful one-stop shop for the EcoAP Community, including **policy-makers on different governance levels, Member State representatives, the business sector, researchers and civil society**. It also includes country reports, information on policy and funding instruments, a number of eco-innovation and circular economy indicators, etc.

In parallel, in 2011 the European Commission adopted the [Resource Efficient Europe Flagship Initiative](#) which was at the origin of the [Roadmap for a Resource Efficient Europe](#) shaping EU's **strategic framework in resource efficiency**. Among others, they both call for changing consumption behaviour and production patterns as well as turning waste into resource. They also underline the role of natural capital and ecosystem services, a common topic within the Interreg Europe projects.

An important strand of EU policy stimulating innovation has been the development of [Green Public Procurement \(GPP\)](#). The goal is to harness some of the EUR 2 trillion of annual local government spending to support eco-innovation. Further information can be found on the DG Environment webpages⁷. In Part II below, which focuses on Interreg Europe's own projects, you will find an example of an Interreg Europe good practice in this area.

⁴ https://wedocs.unep.org/bitstream/handle/20.500.11822/10613/BCForEI_EN.pdf?sequence=1&isAllowed=y

⁵ https://ec.europa.eu/environment/ecoap/sites/ecoap_stayconnected/files/pdfs/etap_action_plan.pdf

⁶ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Innovation for a sustainable Future - The Eco-innovation Action Plan (Eco-AP) /* COM/2011/0899 final */

⁷ http://ec.europa.eu/environment/gpp/index_en.htm

As the eco-innovation agenda has progressed, EU policymakers have realised that local and sectoral eco-innovation will not be enough⁸. So, the idea of a **systemic approach**⁹ to eco-innovation has been gaining ground. Systemic refers to the need to consider entire value chains, to look at waste as an output but also an input for a new industry (symbiosis), in short, this recently emerging vision is of a **circular economy**. In 2015 the EC published its **Circular Economy Package and Action Plan**¹⁰ with new legislation on raw materials, plastics, water reuse, eco-design, food waste, packaging (e.g.: the Extended Producer Responsibility (EPR)).

Funding for eco-innovation

Because of its solid policy backing eco-innovation has been well integrated into the EC funding mechanisms.

One part of **Horizon 2020 (2014-2020) (Directorate General Research and Directorate General Grow)** is structured around 7 societal challenges (several of which are relevant for eco-innovation), and a number of cross-cutting Focus Areas, including Circular Economy. This can be seen as an increasingly directional approach to innovation support and Horizon 2020 has and is providing considerable support for eco-innovation related activities, especially under the work programmes for 2018, 2019 and 2020. With regards to Horizon 2020 we need to mention the work of the [European Institute of Innovation and Technology \(EIT\)](#) managing the Knowledge and Innovation Communities (KICs). KICs relevant to eco-innovation include the [EIT Climate-KIC](#), the [EIT InnoEnergy](#) and [EIT Raw Materials](#). H2020 has an eco-innovation Twitter webpage: https://twitter.com/EU_ecoinno

[LIFE programme](#) supports eco-innovation under its environment and resource efficiency strand covering areas like reducing waste and using natural resources more efficiently, preventing pollution, managing waste water, rivers, seas and coasts, and improving the urban environment.

Directorate General Regional and Urban Policy & Directorate General Employment, through the 2014-2020 **European Structural and Investment Funds** (ESIF, including ERDF) support eco-innovation under Thematic Objective (TO) 1 on research and innovation but also TO 3 on SME competitiveness and TO6 on environment and resource efficiency. ERDF supports the development of regional innovation ecosystems and regional smart specialisation strategies, which may be constructed around green technology.

Practical

- **For funding opportunities, create your own word cloud for the search words and check the [EC's search tool](#)**
- The [European Resource Efficiency Knowledge Centre \(EREK\)](#) is a recent initiative of the European Commission dedicated to resource efficiency (a concept closely related to eco-innovation) aiming to help European companies, especially SMEs, save energy, material and water costs. EREK provides tools, information and business opportunities demonstrating new and better ways to be resource efficient and benefit from circular economy business models which turn waste into assets.

⁸ Systemic Eco-Innovation, EU 2014.

⁹ <https://publications.europa.eu/en/publication-detail/-/publication/55e72481-95f2-46be-8cc7-bb564450939b>

¹⁰ http://ec.europa.eu/environment/circular-economy/index_en.htm

Funding of eco-innovation in 2021-2027: Horizon Europe and Cohesion Policy

Looking to the future, the EU spending programme for the next budgetary period is currently being discussed.

The current draft proposals give the eco-innovation/circular economy/decoupling agenda even greater support and an even larger share of the funding under the main programmes such as [Horizon Europe](#). Horizon Europe will have 3 Pillars, including 'Global Challenges and Industrial Competitiveness', which is earmarked to receive EUR 52.7 billion, over half the total research and innovation budget. The new programme will emphasise the mission-oriented policy support meaning setting precise goals and aiming to achieve them through funding research. Many of the **missions** (replacing the current societal challenges) will have an eco-innovation/circular economy dimension.

Regional Development and Cohesion is going in the same direction. A significant share of European Regional Development Fund and Cohesion Fund investments will go towards innovation, support to small businesses, digital technologies and industrial modernisation. It will also go to the shift towards a low-carbon, circular economy and the fight against climate change¹¹. In addition, the post-2020 period has been analysed in one of the platform's articles on [Environment in the post-2020 Cohesion policy](#).

The [LIFE+](#) programme has been a major source for funding for eco-innovation. In the upcoming programming period after 2021 the Commission intends to allocate EUR 5.450 billion to projects supporting the environment and climate action which is an increase by EUR 1.950 billion. This funding is split as follows: Nature and biodiversity (EUR 2.150 billion); Circular economy and quality of life (EUR 1.350 billion); Climate change mitigation and adaptation (EUR 0.950 billion); Clean energy transition (EUR 1 billion).

PART II - Focus on Regions

There are many examples of regional eco-innovation projects, supported under all the above EU programmes over recent years. These projects also take place in the regions. For example, EASME, the EC's Executive Agency for SMEs, has funded several interesting projects¹² focusing on regional and city level and has a data hub rich with eco-innovation project stories and ideas¹³.

At the same time, regions face multiple challenges for implementation of eco-innovation in practice and additional efforts are needed. The role of the regions is to create policies and adopt measures which overcome these barriers and turn them into drivers. We chose to focus on several horizontal challenges relevant to the regional level of governance.

Institutional support and funding for eco-innovation on regional level

Practice has demonstrated that regions, especially in bigger Member States, are the right governance level to provide support to companies and organisations for adopting eco-innovative solutions. This is because regions dispose of significant budgets – both own budget and ESIF. They are also close to the SMEs and can impact the company ecosystem in an efficient manner. However, many regions do not possess the drive, the political commitment or the resources to provide this support. This is due to many reasons including eco-innovation not being high on the national agenda, insufficient regional budgets, competing priorities, insufficient human resources in the regional administrations, etc. Even though a multitude of tools have been developed and are freely available, hands-on, proximity support is hard to

¹¹ https://ec.europa.eu/regional_policy/en/newsroom/news/2018/05/29-05-2018-regional-development-and-cohesion-policy-2021-2027

¹² https://www.unece.org/fileadmin/DAM/ceci/documents/2018/CICPPP/Presentations/Vincenzo_Gente.pdf

¹³ <https://sc5.easme-web.eu/?theme=green#>

replace. Lack of innovative funding schemes (including regional ones) is also a bottleneck for companies, especially SMEs.

Knowledge and access to data within SMEs, regional authorities and citizens

Eco-innovative solutions for companies are often complex and also technology- and knowledge-intensive. While big companies may afford the investments in human resource related to eco-innovation, SMEs need access to competent solutions. Regional authorities are often short of skills and know-how for adopting eco-innovative solutions or for stimulating SMEs in adopting these. For example, Green Public Procurement (GPP) is a complex organisational approach which needs legal basis, knowledgeable public servants, a market for green products, etc. The Policy Learning Platform published a [Policy brief on Green Public Procurement](#) in May, 2018.

Collaboration between different actors on regional level

Eco-innovation benefits enormously from close collaboration between relevant actors on regional level such as regional policy makers, research institutions located in the region, the regional representations of national business associations, clusters, industrial symbiosis synergies, etc. Insufficient collaboration between these actors is a common weakness hampering eco-innovations. Lack of sufficient collaboration is due to different institutional agendas, lack of regional leadership, etc.

Demand of eco-efficient products and services

Companies which are in a good position to engage in eco-innovation face a situation where there is uncertain demand for products and services which are eco-innovative, being more energy and material efficient and which are with an extended life, reusable and easily repairable due to improved design. The uncertain demand might be due to low awareness among consumers as well as insufficient demand from public buyers. This challenge is relevant to the regional governance level because of the leverage the regions can have on demand of goods and services through awareness raising and through Green Public Procurement.

We provide a list of Interreg Europe projects because several are working on eco-innovation and have relevant experiences to exchange. Interregional learning is a practical vector for spreading the adoption of good practice in all Europe's regions. Projects involve the development of action plans for transfer and mainstreaming, taking into account barriers and opportunities.

Zoom on Interreg Europe

The Interreg Europe programme is currently supporting a number of eco-innovation related projects, mainly under its Environment and Resource Efficiency Topic.

[CESME](#) (2016 – 2020) and [CircE](#) (2017 – 2021) explore how best regional and local authorities and business development agencies can **design support packages to assist SMEs to enter the circular economy**.

[SYMBI](#) (2016 – 2020) and [TRIS](#) (2016 – 2020) have a clear focus on **industrial symbiosis** as an opportunity for more sustainable regional company ecosystems. Industrial symbiosis is the use by one company or sector of by-products, including energy, water, logistics and materials, from another. Simple examples include the use of food waste from the catering sector to feed farm animals, or the use of non-toxic industrial waste to produce energy through incineration¹⁴.

¹⁴ https://ec.europa.eu/environment/ecoap/about-eco-innovation/experts-interviews/20140127_industrial-symbiosis-realising-the-circular-economy_en

[RETRACE](#) (2016 – 2020) is promoting the **systemic design approach (SDA)**. The SDA creates a set of relationships in which a system output (waste) becomes the input for another one in order to obtain zero emissions (waste). Besides a link to industrial symbiosis (industrial system design) RETRACE also explores how eco-innovation can improve product design, to reduce the weight of products, extend their life or make them easier to reuse and recycle.

[BIOREGIO](#) (2017 – 2021) addresses the **bio-based circular economy**. It explores regional capacities (knowledge gaps) and the recycling of biomaterials. The project has a particular focus on the sharing of technological know-how between partners.

The EC is promoting the use of **Green Public Procurement** to increase the uptake of eco-innovative solutions by creating a more stable demand for sustainable products. GPP plays an important part in several Interreg Europe projects, including [GPP4Growth](#), [CircPro](#) and [GPP-STREAM](#).

Different and **innovative aspects of waste management** are tackled in four projects: [INTHERWASTE](#) (waste management in European Heritage Cities), [COCOON](#) (policy instruments for landfilling), [ECOWASTE4FOOD](#) (eco-innovation for food waste reduction), [WIN-POL](#) (intelligent systems for waste management), [CONDEREFF](#) (focus on construction and demolition waste).

Many of these projects have already identified good practices in eco-innovation. Three examples of Good Practices originating from Interreg Europe projects are showcased in more detail below. The first good practice comes from the Programme Topic Research and Innovation demonstrating that eco-innovation is addressed both under Thematic Objective 1 and Thematic Objective 6.

Thematic Objective 1: RESEARCH & INNOVATION - The collaboration 'arena': improving public eco-innovation support in Östergötland, the East Sweden Business Region: [SUPER](#)

The [SUPER project](#) is addressing a lack of regional support services and limited collaboration between stakeholders and practitioners. It has put in place a collaborative coordinating approach, called an 'arena'. The purpose of the arena is to **boost eco-innovation** as part of the region's smart specialisation strategy.

During the development of its Smart Specialization Strategy, the East Sweden Business Region identified eco-innovation, environmental technology and other solutions to sustainability challenges as regional strengths. To build and coordinate activities in this field, a **regional support arena** was set up as a meeting place for stakeholders and practitioners. These included the Region of Östergötland, the County Administrative Board, Linköping University, Almi Företagspartner AB, East Sweden Energy Agency and the cluster initiatives Cleantech Östergötland and Vreta Kluster. The arena set itself the task of supporting eco-innovation **by attracting more resources in the form of financing and projects**, and by coordinating strategic reflection to generate new initiatives and projects.

SUPER has no dedicated budget but **all its activities are financed via members' own resources or project funding**. The arena is now a well-established component in the region's smart specialization architecture and has become a hub for networking, information sharing and coordination. It has helped a large number of companies (more than 100) to develop more sustainable solutions and eco-innovations. The arena has improved the uptake of environmentally sustainable innovations by SMEs in Östergötland and has supported the commercialisation of regional eco-innovations in international markets.

What is the arena's key success factor? In a word: complementarity. The arena brings together complementary skills and resources to overcome innovation and market-related barriers to eco-innovation. The arena has facilitated learning, brought continuity to support activities and has co-financed several projects. It is a good illustration of what a region can do to help companies to 'eco-innovative'.

<https://www.interregeurope.eu/super/library/>

Thematic Objective 6: ENVIRONMENT & RESOURCE EFFICIENCY - Good practice on Green Public Procurement (GPP): Energy efficient street lightning in Nicosia's villages: [GPP4Growth](#)

[GPP4Growth](#) addresses a knowledge gap. Eco-innovative solutions are often either off the radar of **local authorities or adequate technical expertise is lacking. Yet local authorities have significant public procurement activities.**

The Cypriot municipalities of Alonas and Polystipos adopted a GPP practice for street lighting with the goal of improving energy efficiency and reducing GHG emissions. They asked the Cyprus Energy Agency to evaluate the status of street lighting and to prepare the technical specifications for a tender procedure. The Cyprus Energy Agency is a non-profit organisation that works with public administrations to provide technical advice on how to promote energy efficiency through GPP.

As a result, a tender was published in 2016 with the aim of reducing the electricity use of the two municipalities. The contract was to replace 195 conventional street lighting bulbs (101 HPS/70W and 94CFL20/21W) with LED lighting technologies (43W and 10W). The total approximate cost was EUR 100,000 and the contractor would be responsible for maintenance work for 10 years. Even though the solution is not innovative per se, it is quite innovative for these particular municipalities and there is potential for its use elsewhere.

Market research was carried out prior to publishing the tender. The Cyprus Energy Agency discussed the feasibility of the tender with potential suppliers and governmental authorities. The tendering procedure was successful and the contract with the supplier was signed in August 2016. The total cost of the contract was EUR 93,365.

The replacement of traditional bulbs with LED technology will result in a 44% reduction in electricity bills for both municipalities, will improve the lighting of streets (reducing the risk for accidents), and will reduce GHG emissions and promote energy efficiency in the area.

The main problem was public authorities' limited experience in applying green criteria to tenders and in responding to company inquiries about technical specifications. To address this issue, the municipalities outsourced the development of the tender to the Cyprus Energy Agency.

This good practice will be useful for regional and local authorities that do not have the necessary in-house capacity for engaging in Green Public Procurement. GPP also creates demand for eco-innovative products/services in a context in which companies are hesitating to develop eco-innovative products/services because they are **uncertain about demand for them. A wider take-up of GPP by local governments in their procurement activities could go some way to encouraging companies to develop new products/services in this field and in others.**

<https://www.interregeurope.eu/gpp4growth/library/>

Thematic Objective 6: ENVIRONMENT & RESOURCE EFFICIENCY - Good practice on national and local awareness campaigns to promote participation in reuse and recycling at home and in public spaces, The Edinburgh Remakery, [RETRACE](#)

[RETRACE](#) is a circular economy model that addresses the problem of citizens and businesses **lacking the skills and information that would enable them to adopt more eco-innovative behaviour.**

The RETRACE project promotes 'systemic design' as a means to transition to a circular economy.

The Edinburgh's first 're-use hub' is supported by Zero Waste Scotland in order to change the scale and economic influence of re-use shopping in Scotland and **empower citizens to learn repair skills.** Fostering 'reuse and repair hubs' is a starting point for this approach to be spread across the region as part of the Circular Economy strategy, 'Making Thing Last' promoted by the Scottish Government.

The Remakery is at the forefront of re-use as a key player of Scotland's economy and environment, encouraging to get better products by shifting from the model of buying products and throwing them

away after use. This Good Practice also influences the building sector in Scotland which is essential to prevent usable materials from going to landfill, alleviating the issue on scarce raw materials, while promoting local jobs.

Working in partnership with the University of Edinburgh and CHAI, The Edinburgh Remakery is one of five RE-use and Repair Hubs located throughout Scotland, which has been made possible with funding granted by Zero Waste Scotland.

Over the last year, the Edinburgh Remakery has coached over 1,000 people on repair skills from woodworks to computer repair. Also develops several activities from:

- Offering a free weekly repair lecture to the public.
- Charging businesses for delivering them a repair training.

In the last year, they've tripled their diversion of waste from 70 to 250 tonnes. The organisation has also helped them sustain two jobs while providing free furniture to vulnerable people across Scotland.

This Good Practice is also interesting for other regions because it approaches re-use and repair hubs as education centres among the Scottish community and fosters research centres, universities, and communities in a transition towards a Circular Economy. It is an approach that can reinforce research centres by giving them to communities to manage and providing them with tools for becoming part of the Circular Economy. The hubs plan to increase the scale of re-use for buyers, maintaining the value of these articles in local economies, generating local jobs, and preventing useful items from ending up in a landfill

<https://www.interregeurope.eu/retrace/library/>

PART III - WHAT COULD REGIONS DO NEXT?

Regions are in the position to influence significantly a shift to the circular economy and eco-innovation is a powerful tool for that:

- Regions can only focus on addressing those of the barriers to introducing eco-innovations which are **within their remits and means**. These include tackling behavioural lock-ins through communication and awareness raising and the *Edinburgh Remakery Good Practice* is a positive example in this regard); improving SME knowledge of eco-innovation potentials; and providing targeted funding support for eco-innovation.
- The regions can **improve the institutional framework (innovation ecosystems) for stimulating eco-innovation** on regional level. This could be done in collaboration with other regional and local actors from business and research. Support for eco-innovation should be tailored and innovative. It should deploy a set of tested instruments and approaches. A number of examples exist in the Interreg Europe projects. (see the Good Practice “*Collaboration arena “Business models and arenas for sustainable system solutions”*)
- Regions **can facilitate the uptake of specific eco-innovative systemic solutions such as Industrial Symbiosis**. As Industrial Symbiosis is territory-specific regional and local authorities are best placed to stimulate its uptake through networking, funding, identifying waste flows, etc. (see [SYMBI](#), [TRIS](#) and [RETRACE](#) projects and the [Policy brief on Industrial Symbiosis](#))
- Measuring the regional eco-innovation performance is important in terms of driving the regions ambitions and benchmarking them against other regions. While national level indicators are used for the purposes of the Eco-innovation Index, regions could explore if some of the

indicators are already used (or could be used) on a regional level to inform the regional level policy making. (see [Eco-Innovation Observatory](#) and [Eco-Innovation Index](#))

- Regions are in the position to **create local stakeholder networks** and partnerships for eco-innovation to explore possibilities for coordinated action. Networks are beneficial for SMEs and increase the mutual learning potential. It is possible to set up collaborative fora for eco-innovation, where these do not yet exist, including PPP, clusters, stakeholder networks or 'Arenas' as described in Interreg Europe's 'SUPER' project showcased above. The potential for engagement with more directional and mission-oriented EU policies may depend on the scale and degree of collaborative organization. (see the Good Practice "*Collaboration arena "Business models and arenas for sustainable system solutions"*")
- Some regional and local authorities may lack experience in Green Public Procurement (GPP). We refer such authorities to the [GPP4Growth Interreg Europe](#) project as one way to introduce green public procurement. Given the overall scale of public procurement in Europe, such measures have considerable potential to boost the eco-innovation market, providing entrepreneurs with demand security. Similarly, and potentially within the remit of regional authorities, consumer awareness raising is also a useful vector for stimulating demand.

Sources of further information:

- Eco-Innovation Observatory (2018), [Case studies and policy lessons from EU Member States for a product policy framework that contributes to a circular economy](#)
- Eco-innovation Observatory, 2019 [Eco-Innovate! A guide to eco-innovation for SMEs and business coaches](#)
- EIB (2018), [The EIB Circular Economy Guide, Supporting the Circular Transition](#)
- Resources under the [Eco-Innovation Observatory](#)
- Resources under the [EU page on eco-innovation](#)
- Resources under the [European Resource Efficiency Knowledge Centre](#)
- [UN Manual on Eco-innovation](#)