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Good practices for smart specialisation in energy

Methodological insights and identification of valuable knowledge

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Claire Nauwelaers
Isabelle Seigneur
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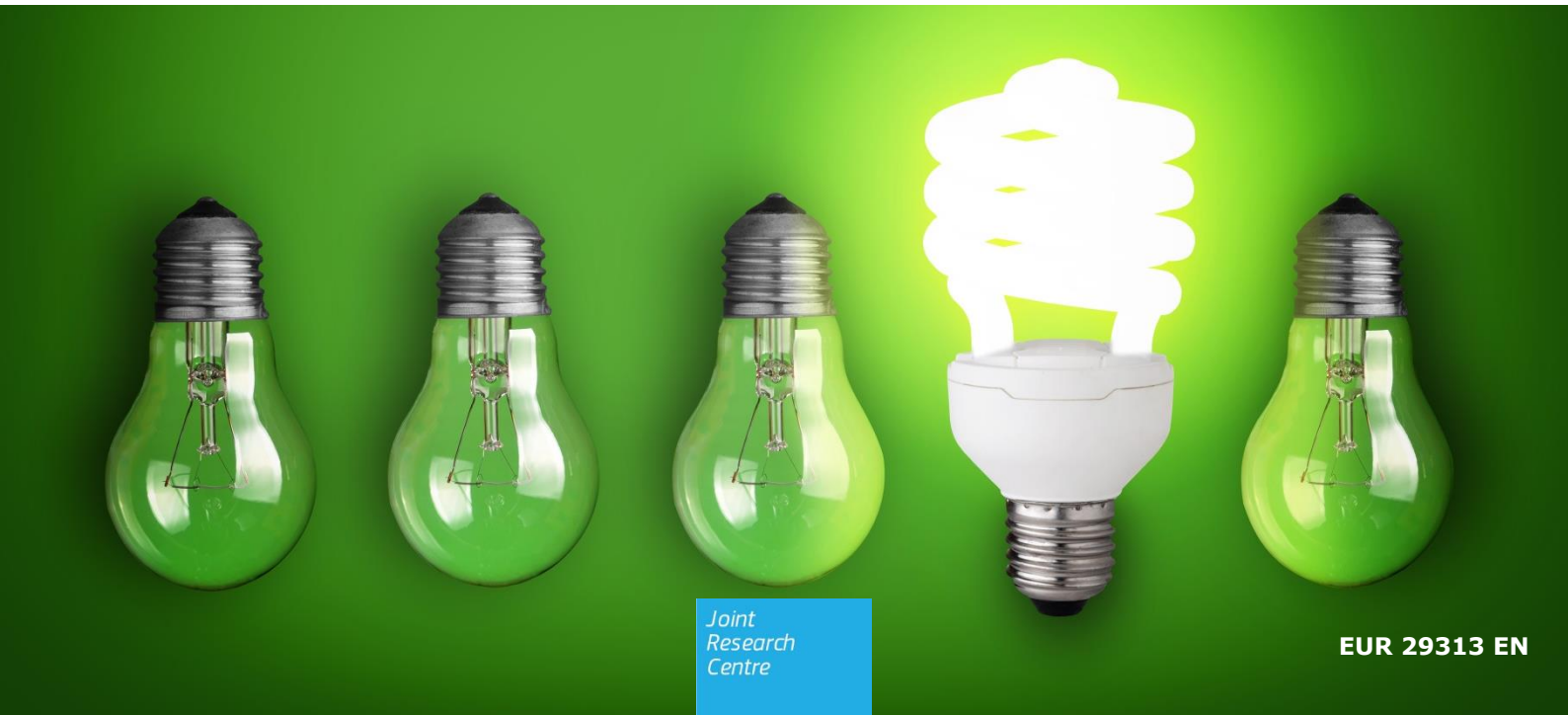

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Contents

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Good Practices for Smart Specialisation in energy:

Methodological insights and identification of valuable knowledge

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Abstract

The EU Member States and regions are currently implementing the priorities of their Research and Innovation Strategies for Smart Specialisation and their investments in sustainable energy from European Structural and Investment Funds under Thematic Objectives 4 and 7.

This working paper is part of the policy support provided by the Smart Specialisation Platform on Energy (S3PEnergy)[1] to EU regions and Member States in the implementation phase of their Smart Specialisation Strategies. In order to guide their work, the S3PEnergy has elaborated an inductive approach to identify good examples on smart specialisation and energy priorities implementation and on the use of Cohesion Policy funds for sustainable energy.

The paper is organised in three main sections. The first describes a method for the identification of good practices, including the definition of a good practice in the frame of smart specialisation and energy, and the criteria used to identify good examples (under three categories: necessary, relevant and optional criteria). The second section elaborates a pilot exercise to put in practice this methodology and includes an initial catalogue of 11 demonstration cases of good practices. The third section draws the main lessons learnt from this pilot exercise whereas the conclusion provides insights to practitioners of smart specialisation.

Keywords

Regional innovation policy, smart specialisation, good practices, energy policy, Thematic Smart Specialisation Platform on Energy

[1] http://s3platform.jrc.ec.europa.eu/s3p-energy

1 Introduction

The smart specialisation concept (S3) has established a new approach for knowledge-based regional development in order to help governments in their decision-making processes concerning long term innovation strategies and smart allocation of resources. It underpins the Cohesion Policy, since Smart Specialisation Strategies (S3) have been set as a pre-condition (ex-ante conditionality) for using Thematic Objective[2] (TO) 1 of the European Structural and Investment Funds (ESIF) on Research, Innovation and Technological Development in the programming period 2014-2020. These strategies aim at assuring a more effective use of ESIF in the field of research and innovation (R&I).

As a result of this requirement, S3 have been adopted in all Member States (MS) at national or regional level; accordingly, priorities for R&I have been identified across the EU. Clean energy is one of the main priorities for many EU regions and MS. To date, two out of three S3 of all regions and Member States (with priorities in the database) have given priority to the regional innovation capacities and potential linked to energy transition actions, meaning a direct effect in both Low Carbon Economy and R&I. This aspect raises the need for effective ways and means to implement S3 priorities in the field of energy which could be tackled with this question: *How can practitioners of smart specialisation combine policy action in R&I and energy?*

To answer this question, the thematic Smart Specialisation Platform on Energy[3] (S3PEnergy) of the Joint Research Centre (JRC), with the support of an independent expert on science, technology and innovation policy, have elaborated an inductive approach based on the collection of good practices framed in the implementation of energy priorities. The goal of this initiative is to set up an initial catalogue of good practices aiming at facilitating the exchange of knowledge between stakeholders engaged in the implementation of S3 energy priorities and in the Cohesion Policy use for sustainable energy.

The S3 approach, in particular the dedicated thematic Energy S3 Platform, can provide relevant assistance to the EU regions and MS that are currently implementing their priorities of S3 (TO1) and their investments in sustainable energy (under TO4 and 7). As a bottom-up process engaging especially industry, the research, development and innovation community and public authorities, it can enable regions to develop and implement their energy transition strategy (European Commission, 2016b).

In this framework, identification and sharing of good practices contribute to spreading knowledge and promoting cooperation among practitioners. In this regard, the smart specialisation platform (S3Platform) has played a knowledge-facilitator role among regions across the EU. Some of these contributions have taken place through the development of peer-review methodologies ("Peer Reviews for Strategy Design"[4]), guidance materials such as the handbook on "Implementing Smart Specialisation Strategies" (Gianelle *et al.*, 2016[5]) and/or identification of success stories (European Commission, 2016a, *Smart Stories*[6]).

This work is part of the policy support provided by the S3PEnergy to which aims at contributing to an effective use of ESIF by promoting the identification, sharing, adaptation and implementation of good practices in the domains of innovation and low carbon economy. This contribution is based on the selection of accurate criteria which gives methodological support to the establishment of coherent baselines for the nomination of good practices.

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2 The 11 Thematic Objectives of the ESIF are laid out in Article 9 of EU Regulation No 1303/2013.
3 http://s3platform.jrc.ec.europa.eu/s3p-energy
4 http://s3platform.jrc.ec.europa.eu/s3-design-peer-review
5 http://s3platform.jrc.ec.europa.eu/s3-implementation-handbook
6 http://s3platform.jrc.ec.europa.eu/smart-stories

It should be noted that the range of covered good practices does not pretend to provide an exhaustive overview on the diversity of initiatives at play throughout the European Union in the domain of energy and S3. Instead, the idea is to showcase different categorisation of combined policy actions.

A good practice in implementing smart specialisation strategies (S3) in the field of energy is defined as a practice that is effective in addressing a given problem and/or in reaching a certain goal, and that provides sources of inspiration for others confronted with similar problems and/or aiming at similar goals.

The practice is:

- Relevant to S3: the topic is included (under) the smart specialisation domain(s)
- Funded by ESIF (at least partly) in the 2014-2020 period
- Being implemented (i.e. not at design stage only)
- Innovative: embeds product, process, organisational, system innovation or social innovation. It is going beyond the regional state-of-the-art (adaptive innovation is valid)
- Framed along the S3 concept: based on development and exploitation of critical mass of knowledge and economic activity in the region
- Involving at least three out of the four types of actors: business, research, public authorities, civil society (quadruple helix cooperation)
- Outcome-oriented: expected impacts are at least spelled out, possibly quantified and/or monitored. It includes a definition of success corresponding to S3 and/or Energy goals.

2 Method for collection and drafting of good practices

This chapter discusses the concept of good practice (section 2.1) and how it translates in specific criteria for the present purpose (section 2.2). It then describes how the target group for the pilot cases has been defined (section 2.3) as well as the practical process followed to gather and report on the information collected in the good practice cases (section 2.4).

2.1 Definition of good practices

The use of good practices is very common in international organisations and the approach is applied to a wide variety of subjects (e.g. territorial cooperation, rural development, gender mainstreaming). Compiling and diffusing good practices is a method that complements the definition of conceptual frameworks and rules of the game, by providing concrete applications of these.

Examples of these applications are included in the context of the European Structural and Investment Funds. The regulation (EU) no 1303/2013 (Common Provisions Regulation) provides references to how the dissemination of good practices can contribute for instance to assure the code of conduct on partnerships and multilevel governance (art. 5), guidance for beneficiaries in combining available funding instruments (art. 13) and investment needs for policy areas and thematic objectives (art. 37).

Taking the example of "good practice guides", they are often elaborated based on the collection of several cases judged in positive manner but without a clear framework definition of the good practice categorisation. Depending on the context and thematic applications, a good practice should be defined on the basis of a detailed range of pre-identified criteria needed to determine and justify the exploration and selection.

Box 1. Examples of definitions of good practices used in international organisations and programmes
The **FAO**[7] definition is: "A good practice is a practice that has been proven to work well and produce good results, and is therefore recommended as a model. It is a successful experience, which has been tested and validated, in the broad sense, which has been repeated and deserves to be shared so that a greater number of people can adopt it."
For **UNICEF**[8] "Good Practices are well documented and assessed programming practices that provide evidence of success/impact and which are valuable for replication, scaling up and further study. They are generally based on similar experiences from different countries and contexts."
In the field of gender mainstreaming, the **European Union** has defined good practices as "Any experience or initiative with techniques, methods or approaches that produce effects and results coherent with the definition of gender mainstreaming. They are considered to be effective in delivering gender mainstreaming as a transformative strategy, and therefore deserving to be disseminated and proposed to other organisational contexts"[9].
In the context of **Interreg Europe programme**[10] a good practice is defined as "an initiative (e.g. methodologies, projects, processes, techniques) undertaken in one of the thematic priorities which has already proved success and which has the potential to be transferred to a different geographic area. Proved success is where the good practice has already provided tangible and measurable results in achieving a specific objective."

7 www.fao.org/capacitydevelopment/goodpractices/gphome/en/
8 https://www.unicef.org/innovations/index_56532.html
9 http://eige.europa.eu/gender-mainstreaming/concepts-and-definitions
10 https://www.interregeurope.eu

There are two common strands in the concept of good practices. In general, good practices should:

- Demonstrate **success** in reaching intended goals. This translates in the concept of **effectiveness**, which considers "how successful an action has been in achieving or progressing towards its objectives" (European Commission, 2017a, *Better regulations guidelines*);
- Present a **learning** potential for other actors than the one involved in the cases. This questions the transferability of the practice to another environment: to achieve this, the influence of the framework and success conditions for the good practice should be identified and reflected upon when its applicability in a new environment is envisaged.

For the purpose of the present task, a good practice is defined as follows:

"A good practice is a behaviour, initiative or action that is effective in addressing a given problem *and/or in reaching a certain goal. A good practice provides sources of inspiration for others confronted with similar problems and/or aiming at reaching similar goals. Applying this conceptual framework to the domain of the smart specialisation approach and strategies, good practices should address the effectiveness of ESI funding, including its synergies with other types of funding, in policy actions related to research and innovation. The goal is to identify favourable niches of R&I from and with local capacities and resources."*

2.2 Criteria for good practices selection in the domain of smart specialisation in energy

The criteria for selecting good practices related to the implementation of smart specialisation priorities in the field of energy include three categories (**Table 1**):

1. **Necessary Eligibility criteria**. Corresponds to a practice falling into the defined scope of this exercise. These criteria represent the delimitation between practices and good practices.
2. **Necessary Relevance criteria** (is the practice a good practice according to S3 fundamentals?)
3. **Optional quality criteria** (does the practice present remarkable features which are thought to enhance its effectiveness?)

Table 1: Criteria for good practices in the context of the S3PEnergy

Necessary
Part of S3
Use of ESIF
Implemented
Relevant
Framed along the S3 concept
Innovative character
Minimum 3 out of 4 "pillars" of the quadruple helix involved

Outcome-oriented
Optional
Clear relevance to national and/or regional energy strategy
Interactions between responsible agencies and/or authorities from different domains
Synergetic use of several funds
Ambitious (transformative ambition and high impact potential)
Inter-regional cooperation dimension
Leading to private investments (leverage effect)
Sustainability beyond funding period
Transferability of the practice
Including a monitoring system

Source: own elaboration.

The first two types of criteria are used to identify the cases that qualify as good practices. The criteria of the latter type have been defined based on knowledge acquired through work on smart specialisation strategies: they are not required *ex ante* for the selection of cases, but are used to describe the cases and facilitate search according to those specific dimensions (see section 2.4).

Explanation of necessary eligibility criteria

- **Part of S3**: the topic is included (under) the smart specialisation domain(s) and priorities listed in the strategy;
- **Use of ESIF** for funding actions (in 2014-2020 period) under T01 (Strengthening research, technological development and innovation) and/or T04 (Supporting the shift towards a low-carbon economy in all sectors) or To7e (Promoting sustainable transport and removing bottlenecks in key network infrastructures);
- **Implemented:** i.e. not at design stage only but with clear evidence of action (e.g. projects, pilots, activities)

Explanation of necessary relevance criteria

- **Framed along the S3 concept**: based on development and exploitation of critical mass of knowledge and economic activity in research organisations and companies in the region;
- **Innovative character**: presence of product, process, organisational, system innovation or also social innovation. Thus not mere application of well-known technologies or techniques; going beyond the regional state-of-the-art (adaptive innovation is valid);
- **Minimum 3 out of 4 "pillars" of the quadruple helix involved:** this refers to the involvement of research organisations, businesses, public authorities at various levels and civil society;

- **Outcome-oriented**: expected impacts are at least spelled out, possibly quantified and/or monitored. It includes a definition of success along various dimensions linked to S3 and energy strategy targets (economy, energy performance consumption / production / reduction / greening…, social…). Quantitative if possible otherwise qualitative.

Explanation of optional quality criteria

- **Clear relevance to national and/or regional energy strategy**: contributes to achieve goals set in those strategies, and is consistent with other programmes, projects and initiatives which are targeting the same goal;
- **Interactions between responsible agencies and/or authorities from different domains** (R&D&I and energy): as the case crosses over at least two policy domains, joint consideration is being given from the responsible bodies from the relevant fields;
- **Synergetic use of several funds**: public funding for the case makes smart use of various public funds, a.o. ESIF (including Interreg), Horizon 2020, European Fund for Strategic Investment (EFSI), national, regional or local funding programmes…;
- **Ambitious**: it is not limited to a single one-off project but is an integrated bundle of activities with transformative ambition and high impact potential. It may be seen in many cases as a programme rather than as an individual project. It is characterised as multi-sector/multi-activity (a.o. technology development, training, awareness-raising, capacity building, infrastructure, trade…);
- **Inter-regional cooperation dimension**: it has linkages with actors in other regions or countries in order to increase its effectiveness;
- **Leading to private investments**: it creates a leverage effect on private funds by incorporating businesses;
- **Sustainability beyond funding period**: it is not overly dependent on public funding and includes, when relevant, a strategy for continuation beyond the public subsidy period;
- **Transferability of the practice**: it draws lessons from implementation and disentangles the specific context conditions in view of the uptake of lessons by other regions/countries;
- **Including a monitoring system**: a systematic (and systemic when relevant) review of results and outcomes achieved is present along with the deployment of the practice, with a view of drawing lessons for the future.

2.3 Identification of regional pilot cases for good practices

The first step of this pilot phase was to elaborate an inventory of regions known for having included R&I priorities in the energy field as part of their S3. Since the search of the Eyes@RIS3 database using the key word "energy" generates more than 120 regions including energy-related priorities in their S3 (Jiménez Navarro *et al*., 2016), a more targeted search has been implemented. This additional filter aimed at identifying EU regions with an active role in the implementation of innovative actions, rather than those merely including energy priorities in the strategic document. This step involved a concise screening of EU projects and reports, EU events and conference presentations,

contributions to EU consultations and participations in activities carried out by the S3 Platform on Energy[11].

The candidates were defined at national or regional level, depending on the level at which S3 is defined. Other cases can also include practices implemented at local level (typically, cities or municipalities) provided that urban action represents a driver of regional smart specialisation.

The major difficulties in finding regional initiatives that qualify as good practices in S3 implementation in energy are threefold:

1. First, ensuring that the practices include an innovation component (many practices target regulations, funding and incentive schemes, investments, measurement activities, awareness-raising activities, etc. without an innovation component (European Commission, 2017b, *Good practice in energy efficiency*);
2. Second, ensuring that the practices are linked to S3;
3. And third, making sure that there is public investment from ESIF in the initiative (e.g. many H2020 projects are targeting innovation for energy, but their implementation as initiatives at the regional level is not known).

2.4 Process for information collection and drafting of good practices

This section describes the process followed to create an initial catalogue of good practices in S3 implementation in energy. It uses a questionnaire including keywords, notably on energy topics, to allow to feed a "search function" in a possible forthcoming online database. The first set of good practices has been built based on direct contacts with candidate case owners (more than 20 regions where contacted).

A two-phase process

The construction of the database of good practices in S3 implementation in energy takes place in two phases:

- First, a pilot phase (the subject of this paper) during which around 10 cases are collected and drafted, based on direct contact with candidate case owners (21 regions were found during the search described in section 2.3). The collection process is based on a Word questionnaire sent out to candidate regions.
- Second, a (forthcoming) full-scale phase in which the cases are collected by the S3PEnergy following an open call for expression of interest. The pilot cases are used as examples for this phase and the pilot questionnaire is constantly available online. The S3PEnergy can in the future create a database including a search function, using keywords, and promotes it towards regions involved in the S3 Thematic platform and beyond.

Experts are involved in all the process of drafting the cases in order to ensure quality and consistency of the material collected. The language used is English.

[11] Smart Region Conferences 2016 and 2017; Open Days 2016; S3P Energy Workshops; S3PEnergy partnership activities; Interreg Europe projects BIO4ECO, BUILD2LC, SET-UP and S34growth; Vanguard initiative pilot in Advanced Manufacturing for Energy Related Applications in Harsh Environments; H2020 project MORE-CONNECT; Response to Commission consultation on S3; Report from Spatial Foresight (2017)

The questionnaire

The questionnaire used in the pilot phase (appended in ANNEX 1 and available online[12]) includes the following items:

- Identification: name, references, contact, energy topic;
- Description: short summary, S3 domain, challenge addressed and objective, type of innovation, history, governance, stakeholders, beneficiaries, implementation, funding sources, results, future perspectives;
- Highlights: most successful and most problematic issues, lessons learned, ideas for transfer of good practice.

The keywords

In order to establish a search function for the database, the questionnaire includes keywords, which cover the elements included in the questionnaire as well as the optional selection criteria (the necessary selection criteria are not mentioned as they should be present in all cases). A list of keywords is appended in ANNEX 2.

The keywords are selected by the respondent to the enquiry, except for the following additional two types of keywords, which are chosen by the expert and added in the final version of the case:

- Type of action
- Highlights

In most cases, the selection of several keywords under one type is allowed, this is indicated in the questionnaire.

Energy topics

The cases cover a variety of energy sub-domains, which are used as keywords. The S3 Platform Energy categorisation (see ANNEX 3) has been used as a basis: it is actually a mix between energy technologies –according to the SET-Plan[13] categorisation- and application sectors.

One more category, namely "Strategy for low carbon economy", has been added during the pilot phase in view of the cases submitted by regions, several of which being more accurately described by such a broad strategic approach rather than by technology or application-oriented topics.

[12] http://s3platform.jrc.ec.europa.eu/s3-energy-good-practices

[13] The European Strategic Energy Technology Plan (SET-Plan) aims to accelerate the development and deployment of low-carbon technologies. It seeks to improve new technologies and bring down costs by coordinating national research efforts and helping to finance projects. See https://ec.europa.eu/energy/en/topics/technology-and-innovation/strategic-energy-technology-plan

3 Results from the collection of good practices pilot exercise

As a result of applying the above methodology: 21 regions were contacted during the summer 2017, and 11 valid pilot demonstration cases of good practices were received from 9 regions in 5 countries (4 FI, 3 FR, 2 ES, 1 NL, 1 PT). More cases may be identified by the S3PEnergy in the future, following the same methodology.

A few cases submitted were discarded because they were not funded by ESIF (which is one eligibility criteria for inclusion of cases in the database, see section 2.2). All the other proposals met the necessary criteria to be included in the database.

Overall the process worked according to expectations and the questionnaire needed only one modification: one quality criterion, "sustainability" was dropped since it was not possible to assess this element from the cases proposed. One hurdle in this process of collecting good practices examples is the requirement to write all cases in English and to provide web references to material in English (in several cases this is not available. In one case for instance, the input provided had to be translated from the original language.

The good practice cases collected are listed in **Table 2** below, together with a short summary of the practice and the relevant energy topic. The full cases' descriptions are available in ANNEX 4 and have also been uploaded online to a specific section of the S3PEnergy website[14] (see **Figure 1**).

These results were also presented during the European Week of Regions and Cities (EWRC) 2017, in the workshop organised by the S3PEnergy (see event website[15] for power point presentation).

These cases cannot be considered as representative of the diversity of ESIF-funded, S3-consistent energy initiatives across regions: they are most visible initiatives, submitted by regions which are particularly active in this field, in five EU15 Member States (no cases were submitted from the EU13 MS[16]).

[14] http://s3platform.jrc.ec.europa.eu/s3-energy-good-practices

[15] http://s3platform.jrc.ec.europa.eu/-/s3penergy-in-the-european-week-of-regions-and-cities-ewrc-2017?inheritRedirect=true&redirect=%2Fs3p-energy

[16] Five contacts were taken, out of 21, in EU13 MS.

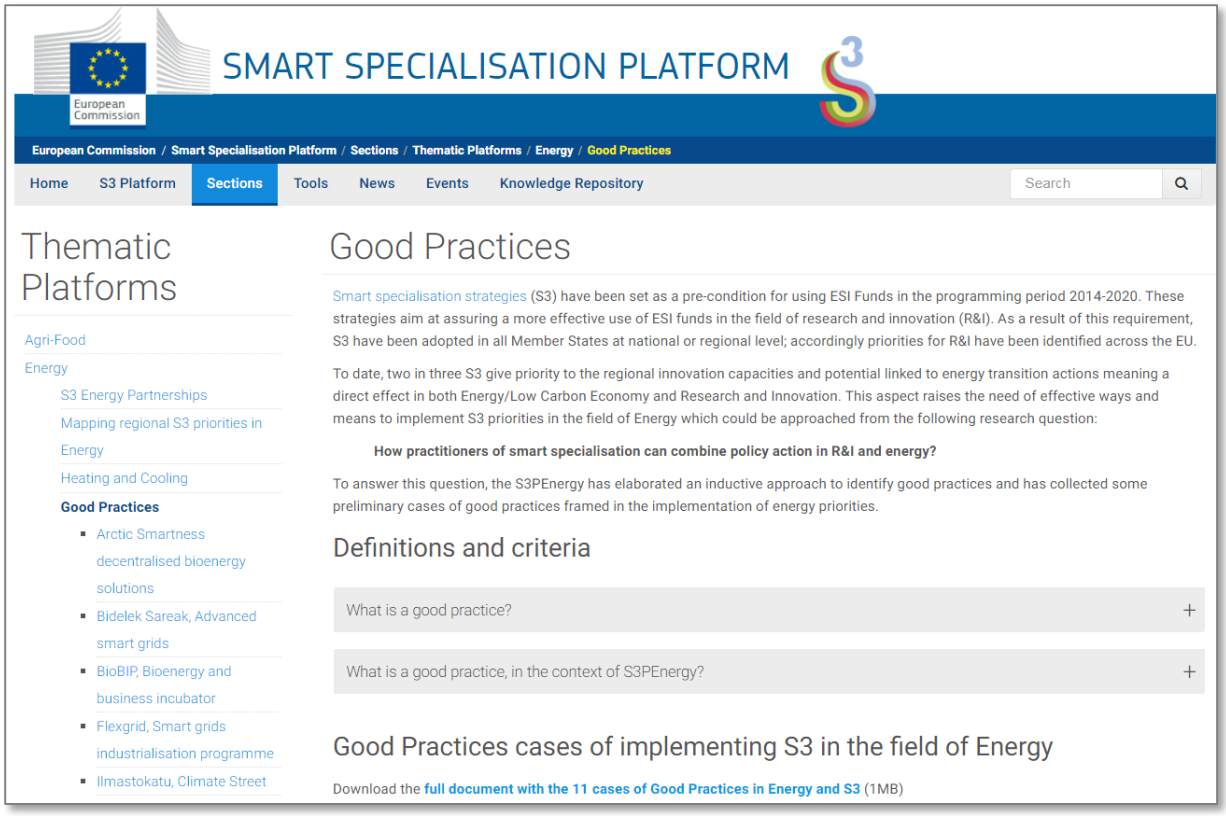

Figure 1: Screenshot of the Good Practices section in the S3PEnergy webpage

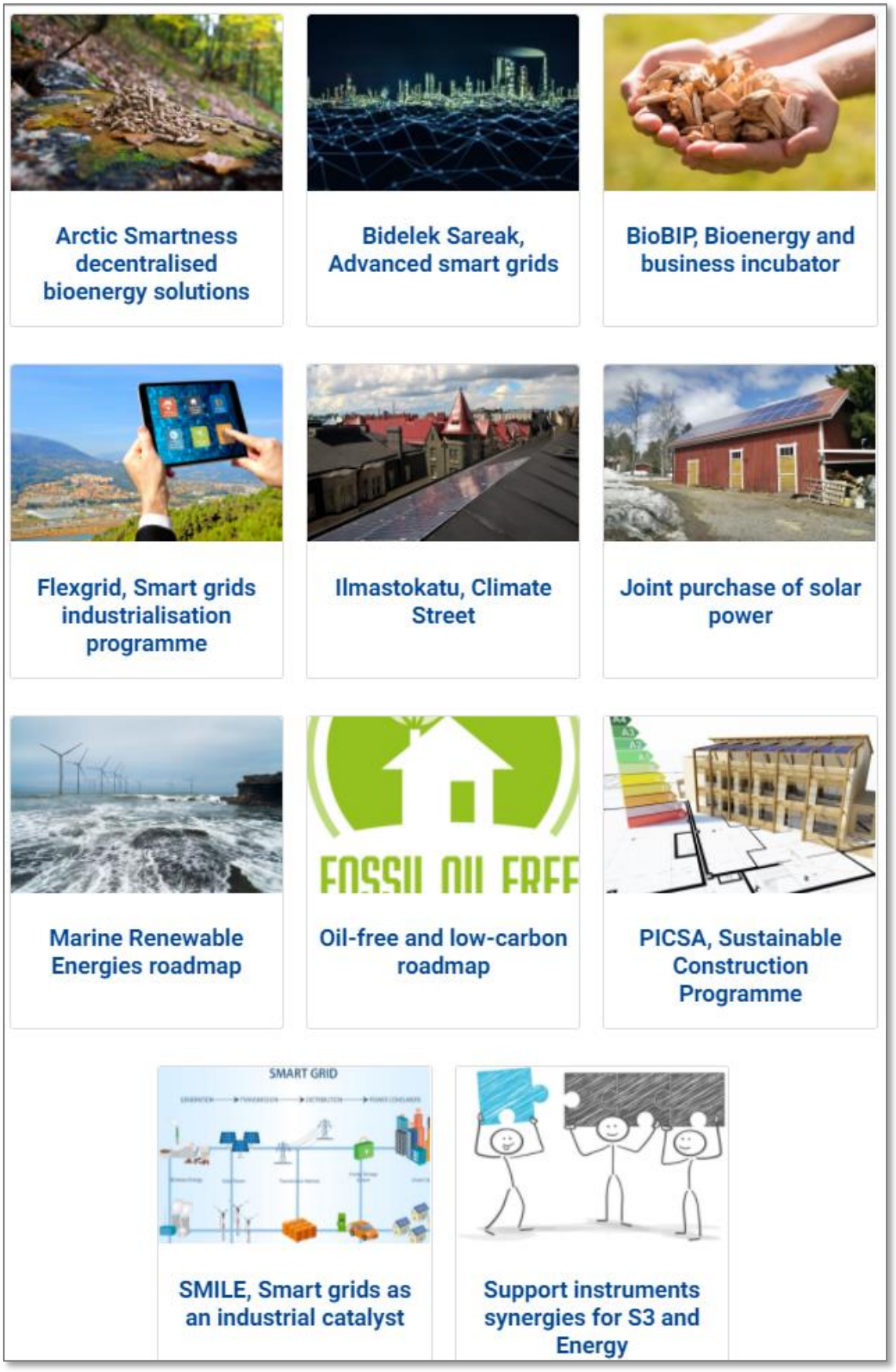

Figure 1 bis: Screenshot of the Good Practices section in the S3PEnergy webpage

Table 2: Summary of pilot good practices cases collected in implementing S3 in the field of energy

Good Practice	Region (Country) and S3 domain	Energy Topic
1. Arctic Smartness decentralised renewable energy solutions The Arctic smart rural community cluster is actively working on decentralised bioenergy solutions in rural Lapland. The cluster is established as Arctic Specialisation (S3) strategy implementation activity. The Arctic Smart Specialisation Programme of Lapland aims at sustainable utilisation of arctic natural resources. The target is to decrease dependency on fossil fuels and create local supply for sustainable production of biofuels, heating and electricity by refining the biomass from forest and non-food agriculture sources. With modern technology, an individual farm or a whole village can be transformed to become almost energy-independent with moderate investments.	**Lapland (FI)** "Arctic industry and circular economy"/"Arctic smart rural communities"	Bioenergy Cogeneration/Combined Heat and Power Self-sufficient farms / communities
2. Bidelek Sareak, advanced smart-grid Bidelek Sareak is a public-private partnership between the Basque Energy Agency (EVE) and the Spanish Distribution System Operator (DSO), Iberdrola Distribución Eléctrica, to improve the electric distribution grid and customer services by means of the development of advanced Smart Grid technologies and its deployment in both cities and towns. It is a real life project, complying with Smart Grids full functionalities, unique because of its scope, size, technical requirements and innovation.	**Basque Country (ES)** "Energy: 8+1 strategic areas (power electronics as key enabling technology) around 3 main value chains: offshore, smart grids and resource efficient manufacturing"	Smart grids
3. BioBIP – BioEnergy and Business Incubator of Portalegre The BioBIP – Bioenergy Business Incubator Portalegre is a structure dedicated to incubating technology-based companies and projects focused on the field of bio-energy, in particular, the development of second generation biofuels and energy recovery from waste. The incubator has a high level of pilot scale demonstration facilities that allow incubating companies to develop new processes and projects.	**Alentejo (PT)** "Green economy, energy and smart mobility"	Bioenergy Hydrogen & Fuel Cell Energy storage other Energy Efficiency (in Industry, Transport, Services...)
4. Flexgrid, Smart grids industrialisation programme Flexgrid is a regional programme aimed at the large-scale deployment of smart grids on the territory of the Provence-Alpes-Côte d'Azur Region. With the objective to develop excellence in the smart grids sector at the regional level, in line with the S3 of Provence-Alpes-Côte d'Azur in the energy field, it contributes to fostering innovation, supporting economic activity and structuring the ecosystem	**PACA (FR)** "Energy transition - energy efficiency"	Smart Grids

Good Practice	Region (Country) and S3 domain	Energy Topic
5. Ilmastokatu, Climate street Investing into solar power was made as easy as possible for property owners: solar surveys were offered to the housing companies and other properties. Property owners were also given energy efficiency guidance. A housing company Chairpersons' Club is a successful cooperation model and serves as a good communication channel with housing companies. Gadgets that measure or reduce energy consumption were tested and presented to the public in the Smart Gadgets event. Inhabitants reduced their carbon footprint with a personal climate trainer.	**Helsinki-Uusimaa (FI)** "Urban Cleantech"	Smart Cities
6. Joint solar power purchase Joint purchase of solar power for private buildings was organized as a part of North Karelia Towards Oil-Free and Low-Carbon Area project. 250 interested private persons were contacted during this process and in the end 41 solar power systems were installed with a total power capacity of 142,4 kWp. The Regional Council of North Karelia requested tenders for 2,5, 4,5 and 7 kWp units and compared the offers. Prices were approximately 30 % lower than average market price.	**North Karelia (FI) (Pohjois-Karjala)** "Forest bioeconomy"	Solar energy
7. Marine Renewable Energies Regional Roadmap The Marine Renewable Energy (MRE) roadmap was adopted by the Bretagne Region Council in April 2016. This broad-based regional government policy has a twofold aim: promote the energy transition to bring down the region's energy dependence while establishing an industrial showcase which is highly visible on the international scene. The roadmap sets the very ambitious goal to cover more than one third of Brittany's electricity consumption in 2030. This highly proactive policy promoting Marine Renewable Energy is characterized by a consultative emphasis that brings together all the stakeholders in the industry.	**Brittany (FR)** "Maritime activities for blue growth (a) Marine renewable energy…"	Marine Renewable Energy Smart Grids Energy storage
8. PICSA, Sustainable Construction Programme in Andalusia The Sustainable Construction Programme in Andalusia (PICSA) is a combination of economic measures and other actions such as regulatory, training and fiscal, that seek, through energy saving and renewable energy, to promote the energy rehabilitation of buildings, urban rehabilitation, improve the competitiveness of companies of the construction sector, create skilled employment and reduce energy poverty	**Andalucía (ES)** "Renewable energy, energy efficiency and sustainable construction"	Sustainable Buildings

Good Practice	Region (Country) and S3 domain	Energy Topic
9. Roadmap towards Oil-Free & Low-Carbon Roadmap North Karelia 2040 The Roadmap Towards Oil-Free and Low-Carbon Area 2040 is based on Energy and Climate Programme of North Karelia 2020. Main sectors for the roadmap are: Energy, Transport, Land-Use, Natural resources and bioeconomy, Circular economy, Innovations and know-how. Work was conducted in several workshops involving several stakeholders.	**North Karelia (FI) (Pohjois-Karjala)** "Forest bioeconomy"	Sustainable Buildings, other Energy Efficiency (in Industry, Transport, Services...) → Strategy for low carbon economy
10. SMILE, Smart grids as an industrial catalyst The SMILE project aims to act as an industrial catalyst for energy transition and network upgrading thereby fulfilling multiple goals: combating climate change, improving local energy solidarity, spurring innovation, and fuelling community engagement. Thanks to the development of a series of pilot projects deploying and testing innovative smart grids technologies over a large and densely populated area (27 133 km2 – 3,4 M population), SMILE will provide concrete examples of innovative market solutions, validation of business models, regulatory innovations, awareness raising and mobilization of prosumers in the field of smart grids.	**Brittany (FR)** "Observation, and energy and ecological engineering, including Smart grids"	Smart Grids Energy storage
11. Support instruments synergies for S3 and Energy The Northern Netherlands OP ERDF underlines the importance of creating synergies between innovation (TO1) and CO_2 reduction (TO4). This results in an integrated approach. Projects and initiatives applying for ERDF instruments can cover both objectives: contributing to enhancing the innovation capacities of SMEs as well as reducing the CO_2-footstep. SNN then assigns one of the objectives as the main objective. Two instruments with such an integrated approach are (1) Tender Valorisation and (2) Call Living Labs.	**Northern Netherlands (NL)** "Energy"	Bioenergy, Wind Power (onshore), other Energy Efficiency (in Industry, Transport, Services...) → Strategy for low carbon economy

Source: own elaboration.

Three comments can be made when looking at the scope of the collected cases[17]:

Energy topics:

The cases are classified under 6 topics[18]. The summary of the cases indicates that regions display a strong interest in broad strategic approaches, involving several types of actions and organisations, and integrating different dimensions into broad schemes.

Type of innovation:

[17] See in Annex 4 the boxes ticked under the keywords "energy topic", "type of innovation" and "type".

[18] 3 cases in Smart grids, 2 in Strategy for low carbon economy, 2 in Solar energy, 2 in Bioenergy, 1 in Marine Renewable Energy, 1 in Sustainable buildings.

Technological innovation is the dominant but by far not the only type of innovation targeted by the cases: managerial, social, service, public sector and system innovations are also present. It indicates that regions take a broad view on innovation when developing their initiatives in the field of energy and innovation.

Nature of cases:

Key actors platforms, strategic programmes and flagship/portfolio projects are the most common initiatives. Those types of initiatives display a high ambition and claim a high impact potential.

4 Lessons learned from good practices collected

4.1 Features shared by cases of good practices

An analysis of the good practice cases reveals ten specific features that are shared by most of the cases (second column in **Table 3**). These overlap largely with the quality criteria defined *ex ante* for good practices (first column of **Table 3**), with two exceptions: the sustainability criterion (which is hard to assess in the cases presented) and the presence of a monitoring system (which is not a common feature of the cases).

Table 3: Ex ante optional quality criteria for good practices and features of collected cases

Optional quality criteria	Features of good practice cases
Clear relevance to national and/or regional energy strategy	1. Alignment with regional and national strategies
Interactions between responsible agencies and/or authorities from different domains	2. Crossing policy domains - integrated initiatives
Synergetic use of several funds	3. Synergies between ESIF funding lines 4. Smart combination of public funding sources: regional, local, national, ESIF (including Interreg), H2020…
Ambitious (transformative ambition and high impact potential)	5. Integration of economic and sustainability goals
Inter-regional cooperation dimension	6. International cooperation and regional strategic alliances
Leading to private investments (leverage effect)	7. Private sector investments and industrial impact
Sustainability beyond funding period	/
Transferability of the practice	8. Innovative solutions with strong replicability (« showcase »)
Including a monitoring system	/
	9. Strong role of local communities and authorities
	10. Shared governance with multiple stakeholders

Source: own elaboration.

The ten features are explained below, together with references to good practice cases which are taken as illustrations of these remarkable features[19].

1. *Alignment with regional and national strategies*

Most of the cases are designed and implemented in the context of national or regional economic development or energy policies, with the aim of contributing to reaching the goals set in the relevant strategies. A good example is provided by the "Climate street Helsinki" case: this initiative aims to foster the investment in solar energy solutions for property owners and housing companies through the development of technical and personal guidance on energy efficiency. As a result of this initiative, energy consumption of greenhouse gas (GHG) emissions was reduced in the area. This is a grassroot implementation of the "urban cleantech" priority of the S3, with the aim to solve environmental challenges in cities by developing and piloting new solutions, technologies and service models for renewable energy, energy efficiency and low carbon emissions. That priority is consistent with the strategy for the city of Helsinki to become carbon neutral by 2050. The strategy foresees the participation of citizens and businesses as a requirement to create and use new, economically sustainable modes to reduce GhG emissions.

1. *Crossing policy domains - integrated initiatives*

A rather original feature of the collected cases is that they cross-over policy domains, in particular R&D&I and energy. This was the main expectation in collecting the cases, since their relevance to S3 meant that they had to be knowledge-based and innovative, while at the same time targeting energy efficiency/clean energy goals. This translates into initiatives that cover multiple policy domains in order to reach their goals. A good example is provided by the Roadmap towards oil-free and low-carbon North Karelia 2040. This roadmap has the purpose to collect and suggest, through participative workshops, tangible steps to reach the set targets for reducing GHG emissions and raising awareness about climate change, sustainable growth of bioeconomy sector and increasing the share of renewable energy. The roadmap is implemented in several sectors: Energy, Transport, Land-Use, Natural resources and bioeconomy, Circular economy, Innovations and know-how. The workshops proved to be a successful case of cooperation across sectoral borders. Hence the roadmap seeks integration between various sector-oriented initiatives.

2. *Synergies between ESIF funding lines*

A number of good practice cases managed to break boundaries between "thematic objectives" as defined in the ESIF procedures, to fund initiatives using both resources from the R&D (field (Thematic Objective 1, TO1) and Low-carbon economy field (Thematic Objective 4, TO4). This is notably the case of the Flexgrid project (development of smart grids in the French PACA region); the PISA project (sustainable construction programme in Andalusia) and the Arctic smartness decentralised renewable energy solutions in Lapland. The good practice case from Northern Netherlands is devoted entirely to this goal of developing synergies between support instruments from various fields: the OP does not only focus on stimulating innovations in general terms (TO1), but also links this to innovations in low-carbon technologies (TO4). In practice, projects and initiatives applying for ESIF instruments can cover both objectives. Two instruments with such an integrated approach are Tender Valorisation and Call Living Labs: both aim at bringing together knowledge institutions and businesses, and preferably end-users, in order for them to work

[19] As a general rule, these cases incorporate many of the 10 features: here only one or two cases are used to illustrate each feature. Annex 4 (cfr. keywords under "highlights") lists those features that apply to each case.

together. This leads to interesting projects combining innovation and sustainability, while also focused on strengthening SMEs.

3. *Smart combination of public funding sources: regional, local, national, ESIF (including Interreg), H2020…*

Beyond ESIF funding, there are also opportunities for enhancing synergies between public funds from EU, national, regional and local levels. Combining such funds in an intelligent way is a feature frequently found in the good practice cases. The Marine renewable energies roadmap in Brittany is a broad-based regional government policy with a twofold aim: promote the energy transition to bring down the region's energy dependence while establishing an industrial showcase which is highly visible on the international scene. To implement this roadmap - including ambitious projects such as the installation of a marine renewable energy terminal, several floating wind farms, tidal stream parks and offshore wind farms - the Region calls on a variety of funds including ESIF TO4, national funds supporting "industries of the future", regional funds dedicated to Marine Renewable Energy, and also local funding sources. Using those public funds responds to a real need because uncertainties concerning market development imply higher financial risk, preventing firms to access commercial bank loans. The funding sources for another French programme, the Flexgrid programme in Provence-Alpes-Côte d'Azur (a regional programme aimed at the large-scale deployment of smart grids on the territory of the region) come from private partners, local public authorities, ESIF (ESIF TO1 for research and innovation and TO4 for network infrastructure with 8 M€ specifically dedicated to smart grids projects), or other national (ADEME, PIA) or European (Horizon 2020, Urban Innovative Actions, etc.…) funding opportunities.

4. *Integration of economic and sustainability goals*

The large majority of the cases have set dual targets, covering both economic development and sustainability. This is often expressed as follows: "improving energy efficiency while supporting SMEs/companies to bring innovative solutions to the market". This is for example the case of the Bidelek Sareak advanced smart grids strategy in the Basque country. Its aims are: 1) to deploy smart grids to increase the security and efficiency of the electric energy supply; and 2) to position the Basque Country as one of the most advanced regions in the world in intelligent network infrastructures, both from the energy angle (savings and quality of service) and from the business point of view, thus raising the capacity of this sector to compete in international markets. The impact of the initiative is measured both in terms of energy saving produced by better management of the networks, and in terms of generation of industrial activity and highly qualified employment. Another example is the Sustainable Construction Programme in Andalusia (PICSA), which is a combination of economic measures (a new funding scheme was established) and other actions such as regulatory, training and fiscal, that seek, through energy saving and renewable energy generation or integration, to promote the energy rehabilitation of buildings. PICSA integrates several aims: to increase energy efficiency, to improve the competitiveness of companies of the construction sector, to create skilled employment and to reduce energy poverty.

5. *International cooperation and regional strategic alliances*

Many of the collected good practices look beyond their own borders to ensure the effectiveness of their action. This takes often the form of participation in Interreg Europe projects which open the minds of regional actors to new solutions: e.g. the Roadmap in North Karelia was drafted in the context of the Interreg Europe BIO4ECO project. It can also take the shape of internationalisation at European level: this is the case of the Sustainable Construction Programme PICSA Andalusia, which is part of

the S3 Partnership on Sustainable Buildings, an initiative supported by the EC via the S3PEnergy to support strategic alliances between European regions and MS to take advantage of regional opportunities for smart specialisation in sustainable buildings. The implementation of the first interregional projects is expected from 2018.

6. *Private sector investments and industrial impact*

Several good practices feature high private sector involvement and target industrial impacts in the region. This is notably the case for BioBIP, the Bioenergy Business Incubator Portalegre in Alentejo. BioBIP is a structure dedicated to incubating technology-based companies and projects focused on the field of bio-energy, in particular, the development of 2nd generation biofuels and energy recovery from wastes. It hosts a set of equipment on a pre-industrial scale for demonstration of technology that facilitates the start-up of companies and the dimensioning of industrial production units at higher scales. The ultimate goal is to generate wealth in the region through the development of new industrial activities in a rural region. Data from 2016 show the presence of 24 business projects, 46 people at the service of business projects and an aggregate turnover of €1.5 m. The three smart grids cases (in PACA, Bretagne and in the Basque country) are also characterised by a strong participation of private actors, which are given a chance to develop and put on the market new technical solutions; in those projects companies play a key role in governance structures' while being also important beneficiaries.

7. *Innovative solutions with strong replicability (« showcase »)*

A large share of the initiatives paid attention to the possibility to replicate their endeavour in other contexts. This consists of scaling-up of initiatives developed at local level to a broader area in the same region, or broader enlargement beyond the region and the country. A good illustration of the latter is given by the case of Flexgrid in Provence-Alpes-Côte d'Azur. With the objective to develop excellence in the smart grids sector at the regional level, it contributes to fostering innovation, supporting economic activity and structuring the ecosystem. Flexgrid supports the set-up of a large number of smart grids demonstrators throughout the territory, showcasing innovative solutions that could be replicated worldwide. The smart grid project in Brittany (SMILE) has similarly an explicit goal to create a showcase for regional and national industrial excellence in smart grid technologies for international markets.

Some of the cases are also the result of transfer of experience, e.g. the Climate Street initiative in Helsinki was inspired by a similar initiative in Amsterdam. Transfer of good practice is taking place through Interreg Europe projects such as BUILD2LC for PICSA in Andalusia or SET-UP for the SMILE project in Brittany (which also benefits from a cross-border Interreg project, the Intelligent Community Energy, ICE project).

8. *Strong role of local communities and authorities*

Several good practice cases are characterised by the important role played by authorities at local level. This is well exemplified by the Arctic smartness decentralised renewable energy solutions initiative in Lapland. The Arctic smart rural community cluster supports a holistic model of circular economy including energy self-sufficiency and food production. The goal is to increase the local biomass feedstock use based on sustainable bioenergy production in the farms and villages of Lapland. Energy production consists of comprehensive use of local resources and bio-based feedstock including forestry and farming residues. Higher value products are included in the value chain, but the biggest benefit (input-output ratio) for the community is achieved by producing biofuels, electricity and heating. In this initiative,

local entities and communities have been actively involved in the design and the implementation of a decentralised renewable energy solutions programme for Lapland.

9. *Shared governance with multiple stakeholders*

A key characteristic of all the good practice cases is the acknowledgement of the importance of involving a wide range of stakeholders in both design and implementation of the programmes/initiatives. This includes first a focus on "user-orientation", which is seen to increase the chance of reaching expected outcomes since needs and aspirations are better taken into account. This takes the shape of a large involvement of citizens (even school children as e.g. in North Karelia), companies and authorities in deploying the actions. Second, it translates into the establishment of specific governance models which show a high degree of inclusiveness. The latter is well illustrated with the SMILE case from Brittany. SMILE (Smart Ideas to Link Energies) is a large scale experiment of smart grid models from mature technologies: thanks to the development of a series of pilot projects deploying and testing innovative smart grids technologies over a large and densely populated area, SMILE will provide concrete examples of innovative market solutions, validation of business models, regulatory innovations, awareness raising and mobilisation of prosumers in the field of smart grids. To ensure adequate governance, a non-profit umbrella structure was set up: « SMILE Smart grids », composed of 160 members from both public and private organisations. The association is co-chaired by the French Regions of Bretagne and Pays de la Loire and vice-chaired by the Metropoles of Rennes and Nantes as well as by the 4 utility boards. SMILE Governance is also supported by the Chambers of Commerce of both regions, 2 competitiveness clusters, representatives of local authorities, representatives of both large companies and SMEs, universities and financial institutions.

Another good illustration is given by the Flexgrid programme of the Provence-Alpes-Côte d'Azur Region, which involves a large number of local public authorities, clusters and industries (more than 300 companies, notably major industrial groups – including DSOs and TSOs – and innovative SMEs), research centres, universities and technology platforms: the programme plays a significant role in consolidating and structuring the large smart grids ecosystem of the region, as it covers the entire value chain and gathers all types of regional smart grids stakeholders under one single programme.

4.2 Challenges for implementing S3 in Energy

The collected good practices are facing several challenges:

First, a consequence of the ambitious approaches integrating several lines of actions in different sectors is that the initiatives are highly complex. Managing multi-stakeholders portfolio of projects is very demanding. This requires qualified staff and well-developed strategic skills and the capacity to embrace a large set of projects which together contribute to strategic goals.

Second, another consequence of the integrated approaches is the difficulty in finding matching funds for such large cross-sectoral initiatives. Support instruments use to be fragmented and it is a challenge to engineer them while ensuring smooth execution of the initiatives, while at the same time minimizing administrative complexity.

Third, even if most initiatives are broad and cross-sector, they do not take place in a vacuum. Their success depends on wide-ranging system change towards new innovative and more sustainable practices in the field of energy. This includes trends towards decentralisation, changes in regulation, evolution of consumers' attitude, authorities' cooperation, and other deep changes in the society.

Fourth, since the initiatives are strategic and forward-looking, they have to anticipate market trends and at the same time set realistic targets. That is very difficult when working with new technological solutions that are not yet in the market place or with frontrunner experiments.

Last but not least, there is the difficulty in establishing monitoring systems for integrated initiatives. The typical difficulty in establishing robust, reliable and policy-oriented monitoring systems for standard projects, is amplified here because of the multi-dimensional, multi-actor, multi-sector nature of the initiatives.

5 Conclusions

Smart specialisation strategies have been designed within the context of research, technology and innovation policies. A more effective use of knowledge assets in view of nurturing regional development is indeed at the core of the concept.

Although S3 is closely linked to spending TO1 of the ESIF, guidance from the European Commission has underlined that S3 would work better in the frame of a comprehensive policy mix (European Commission, 2012 and 2014b). Moving to the implementation phase, there is indeed no reason why initiatives and projects should be confined to the R&D and innovation domain only. When a S3 domain touches upon the energy sector, it is of crucial importance that strategies and policies in that field provide the main background for implementing "S3-relevant" programmes, initiatives and projects.

So far, the practice showed that ensuring such a comprehensive policy mix has been difficult to implement, and for many reasons among others: very challenging and long process; priorities often technologically defined and knowledge production orientated; S3 governance structures which do not include managing authorities responsible for different policies; few concrete incentives from the EU level to integrate a broader range of policies. The natural outcome is that -in general terms– S3 is not widely considered outside the confines of ESIF managing authorities responsible for TO1 (Edwards *et al.*, 2017).

Nevertheless, the collected cases of good practices indicate that EU regions have found ways to create the needed synergies both at strategic and operational levels, to ensure that the new directions provided by S3 are translated into reality. However, in doing this, they face the problem of a support and public funding environment that is fragmented. Solving this fragmentation issue is one important avenue for the future. Those cases that have managed to create synergies of funds, notably within ESIF (using for example both T01 and T04 lines of action) demonstrate pioneering approaches in this respect.

The good practice cases show a potential way to address a typical weakness of ESIF operations: the syndrome of "projects accumulation" associated with a lack of capacity to capitalise across projects and upscale them to achieve significant impact in the territory. The cases are characterised by a strong interest in strategic and integrated approaches, a broad view on innovation and a high ambition/high impact potential. This is promising and the openness showed by many regions for international exchanges of experiences is a good foundation to showcase and learn from those ambitious approaches.

The present exercise focuses on "good practices", which were defined as practices that are at the same time effective in reaching their goal and offering a learning potential. On the first point, there are indications of good results achieved for some of the cases, but overall, the development of good indicator systems capturing the whole complexity of initiatives and going beyond results to capture outcomes and impacts is still to come. And it is critical for a "good practices" database to ensure that the practices are indeed effective in reaching their stated goals. This will determine the quality and the use of the database. That issue is without doubt another avenue to explore for the future.

The second characteristic of good practices – the learning potential – points towards the issue of transferability of experiences and lessons learned. Experience shows that, while stories or toolkits that are accessible on websites may act as starting points, those are not sufficient to guarantee successful transfer of good practices. People-to-people interactions, which help to "de-contextualise" lessons learned in specific cases, are necessary. This can take many forms and requires the support of specialised organisations and experts.

A final consideration is related to sustainability aspects. To what extent can the current policy approach support continuation of activities and projects after the end of public-funding allocation? The high involvement of private actors in several cases is a good feature, as business interest is a good pre-condition for continuation. But the overall

sustainability issue would need closer examination to ensure that this dimension is foreseen already at the design phase.

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List of abbreviations and definitions

CO_2	Carbon Dioxide
DSO	Distribution System Operator
EC	European Commission
EFSI	European Fund for Strategic Investment
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Funds
EU	European Union
EWRC	European Week of Regions and Cities
GhG	Greenhouse gas
H2020	Horizon 2020
MS	Member State
NGO	Non-Governmental Organisation
R&D	Research and Development
R&I	Research and Innovation
S3	Smart specialisation strategy
S3PEnergy	Smart Specialisation Platform on Energy
SET-Plan	European Strategic Energy Technology Plan
SME	Small and Medium Enterprises
TO	Thematic Objective
TSO	Transmission System Operator

List of Boxes, Figures and Tables

Boxes

Figures

Tables

List of annexes

Annexes

Annex 1. QUESTIONNAIRE FOR GOOD PRACTICES CASES COLLECTION

Questionnaire on Good Practice cases of implementing smart specialisation strategies in the field of energy

*The **Thematic S3 Platform on Energy (S3PEnergy)** is collecting and disseminating good practice cases of implementing smart specialisation strategies (S3) in the field of Energy. The goal is to support regions in implementing innovative and effective actions to develop their energy-focused smart specialisation domain, by presenting a range of inspiring examples and references of successful cases deployed throughout the EU regions. These are showcased on the S3 Platform website and events[1].*
http://s3platform.jrc.ec.europa.eu/s3p-energy

A good practice in implementing smart specialisation strategies in the field of energy is defined as a practice that is effective in addressing a given problem and/or in reaching a certain goal, and that provides sources of inspiration for others confronted with similar problems and/or aiming at similar goals.

The practice is:

- Relevant to S3: the topic is included (under) the smart specialisation domain(s)
- Funded by ESIF (at least partly) in the 2014-2020 period
- Being implemented (i.e. not at design stage only)
- Innovative: embeds product, process, organisational, system innovation or social innovation. It is going beyond the regional state-of-the-art (adaptive innovation is valid)
- Framed along the S3 concept: based on development and exploitation of critical mass of knowledge and economic activity in the region
- Involving at least three out of the four types of actors (quadruple helix cooperation): business, research, public authorities, civil society

[1] *For questions please contact the expert in charge of the good practices cases: Claire Nauwelaers, independent policy expert: c.nauwelaers@gmail.com or the JRC Seville S3 Platform on Energy: Isabelle.SEIGNEUR@ec.europa.eu or Javier.GOMEZ@ec.europa.eu.*

- Outcome-oriented: expected impacts are at least spelled out, possibly quantified and/or monitored. It includes a definition of success corresponding to S3 and/or Energy goals.

IDENTIFICATION

Name of the good practice case:

.....

Country	Region name (NUTS code)
...	**.... (...)**

Level at which the good practice is implemented (select one dominant level)

National❑ Regional ❑ Local ❑ Interregional-international ❑

Reference (website, documents)

Organisation in charge of the good practice case

Name:	Public authority ❑ Economic and/or innovation agency❑ Energy agency ❑ Intermediary ❑ Other ❑: ……..

Contact person: name, organisation, email, telephone

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services...)❑
Energy storage❑
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore)❑

Smart Cities❑
Smart grids❑
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore)❑
Other ❑: ……

DESCRIPTION

Short summary of the good practice

Max 60 words

Smart specialisation domain relevant for the good practice

Challenge addressed and targeted objective

Max 100 words

Innovation (max. 2 choices)

Technological ❑
Service❑
Commercial❑
Managerial ❑
Public sector❑
Social ❑
System❑
Other❑:.....

History: origin, definition phase, start and end

Max 100 words

Governance, stakeholders involvement and target groups

Max 100 words

Stakeholders involved in implementation (multiple choices allowed)

Public authority ❑
Economic and/or innovation agency❑
Energy agency ❑
Intermediary ❑
Research actors ❑
Industry❑
SMEs ❑
NGO❑
Civil society ❑
Other❑:.....

Beneficiaries (multiple choices allowed)

Public authority ❑
Economic and/or innovation agency❑
Energy agency❑
Intermediary ❑
Research actors❑
Industry❑
SMEs ❑
Start-ups❑
NGO❑
Civil society ❑
Other❑:.....

Implementation

Max 150 words

Funding sources

Max 60 words

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation)❑
ESIF T04 (low carbon economy)❑
ESIF T07 (sustainable transport and network infrastructure)❑
ESIF other or ESF❑

Interreg❑
H2020❑
National Funds❑
Regional Funds❑
Local Funds❑
Other❑:.....

Results achieved

Max 100 words

Future perspectives

Max 100 words

HIGHLIGHTS

Most successful elements

Max 100 words

Most important difficulties

Max 100 words

Lessons learned

Max 100 words

Ideas for transfer of good practice

Max 100 words

Annex 2. KEYWORDS FOR GOOD PRACTICE CASES

Theme	Keywords
Member State	List of EU MS (or other)
Regions	List of EU regions
Level	National❑ Regional❑ Local❑ Interregional-international❑
Owner	Public authority❑ Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ Other❑:.....
Stakeholders in implementation	Public authority❑ Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ Research actors❑ Industry❑ SMEs❑ NGO❑ Civil society❑ Other❑:.....
Beneficiaries	Public authority❑ Economic and/or innovation agency❑ Energy agency❑ Intermediary❑ Research actors❑ Industry❑ SMEs❑ Start-ups❑ NGO❑ Civil society❑ Other❑:.....
Public Funding	ESIF T01 (research and innovation)❑ ESIF T04 (low carbon economy)❑ ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg❑ H2020❑ National Funds❑

	Regional Funds❑ Local Funds❑ Other❑:.....
Energy Topic	Bioenergy ❑ Carbon Capture Storage and Use (CCS and CCU)❑ Cogeneration / Combined Heat and Power (CHP) ❑ Energy Efficiency in Buildings - Sustainable Buildings❑ Other Energy Efficiency (in Industry, Transport, Services...)❑ Energy storage❑ Geothermal energy❑ Heating and cooling❑ Hydrogen & Fuel Cell❑ Hydropower❑ Marine Renewable Energy (incl. wind offshore)❑ Smart Cities❑ Smart grids❑ Solar energy: Photovoltaics (PV) ❑ Solar energy: Concentrated solar power (CSP)❑ Wind power (onshore)❑ Other ❑: ……
Innovation	Technological❑ Service❑ Commercial❑ Managerial❑ Public sector❑ Social❑ System❑ Other❑:.....

Annex 3. LIST OF ENERGY TOPICS

Source: S3Platform energy partnerships (call for Expression of interest 2017[2])

- Bioenergy
- Carbon Capture Storage and Use (CCS and CCU)
- Cogeneration / Combined Heat and Power (CHP)
- Energy Efficiency in Buildings - Sustainable Buildings
- Other Energy Efficiency (in Industry, Transport, Services...)
- Energy storage
- Geothermal energy
- Heating and cooling
- Hydrogen & Fuel Cell
- Hydropower
- Marine Renewable Energy (incl. wind offshore)
- Smart Cities
- Smart grids
- Solar energy: Photovoltaics (PV)
- Solar energy: Concentrated solar power (CSP)
- Wind power (onshore)
- Other: ……

[2] https://ec.europa.eu/eusurvey/runner/S3_Energy_Partnerships_EoI

Annex 4. S3 AND ENERGY: GOOD PRACTICE CASES

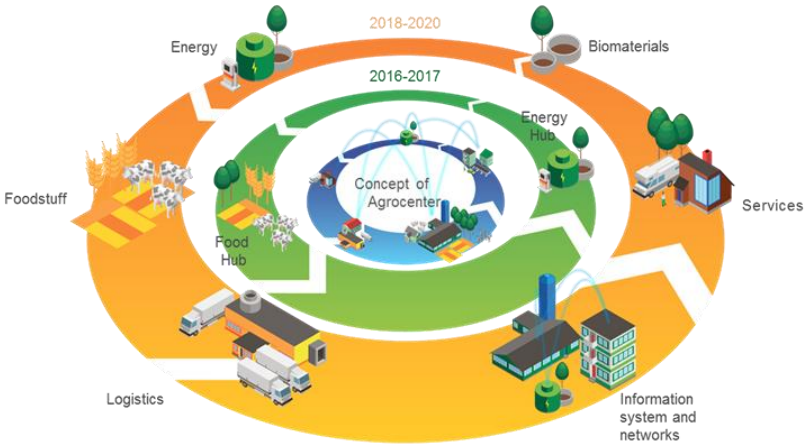
This annex includes the filled templates for the 11 collected cases:

1. Arctic Smartness decentralised renewable energy solutions
2. Bidelek Sareak, Advanced smart grids
3. BioBIP, Bioenergy and Business Incubator of Portalegre – Technology-based companies incubator in bioenergy
4. Flexgrid, Smart grids industrialisation programme
5. Ilmastokatu, Climate Street
6. Joint Purchase of Solar Power for 41 Private Properties
7. Marine Renewable Energies Roadmap
8. PICSA, Sustainable Construction Programme in Andalusia
9. Roadmap Towards Oil-Free and Low-Carbon North Karelia 2040
10. SMILE (Smart Ideas to Link Energies), large scale experiment of smart grid models from mature technologies
11. Support instruments synergies for S3 and Energy in the Northern Netherlands

IDENTIFICATION

Name of the good practice case

1. Arctic Smartness decentralised renewable energy solutions



Country	Region + NUTS code
Finland	**Lapland (FI1D7)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional ✓** Local❑ Interregional-international❑

Reference (website, documents)

http://luotsi.lappi.fi/smart-rural1

Organisation in charge of the good practice case

Name: Arctic smart rural community cluster	Public authority ❑ Economic and/or innovation agency❑ Energy agency ❑ Intermediary ❑ **Other ✓: Regional network**

Contact person: name, organisation, email, telephone

Cluster manager Johannes Vallivaara, Arctic smart rural community cluster, Johannes.vallivaara@proagria.fi, +358 40 6845741

Energy topic (max. 3 choices)

Bioenergy ✓
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ✓
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services...) ❑
Energy storage ❑
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore) ❑
Smart Cities❑
Smart grids ❑
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑
Other ✓: Self-sufficient farms/communities

DESCRIPTION

Short summary of the good practice

The Arctic smart rural community cluster is actively working on decentralised bioenergy solutions in rural Lapland. The cluster is established as one implementation activity of the Arctic Smart Specialisation (S3) strategy. This strategy aims at sustainable utilisation of arctic natural resources. The goal of the cluster is to decrease dependency on fossil fuels and create local supply for sustainable production of biofuels, heating and electricity by refining the biomass from forest and non-food agriculture sources. With modern technology, an individual farm or a whole village can be transformed to become almost energy-independent with moderate investments.

Smart specialisation domain relevant for the good practice

Arctic Smart Rural Communities

Challenge addressed and targeted objective

The challenge is to increase the local biomass feedstock utilisation based on sustainable bioenergy production in the farms and villages of Lapland. Decentralised bioenergy production in rural area is framed within sustainable regional development and SME support activities; it aims at reaching self-sufficient energy production in communities (farmers, energy SMEs and public premises). This is seen as an efficient way to improve living conditions of members of rural communities. Local energy production creates a local market for biomass replacing the consumption of fossil fuels, for which capital leakage from the communities is huge. Arctic smart rural community cluster supports a holistic model of circular economy including energy self-sufficiency and food production. Energy production consists of comprehensive utilisation of local resources and bio-based feedstock including forestry and farming residues. Higher value products are included in

the value chain, but the biggest benefit (input-output ratio) for the community is achieved by producing biofuels, electricity and heating.

Innovation (max. 2 choices)

Technological❑ Service❑ Commercial❑ **Managerial ✓** Public sector❑ **Social ✓** System❑ Other❑:.....

History: origin, definition phase, start and end

The cluster was initiated by ERDF project Arctic Smartness Portfolio in 2015 led by Regional Council of Lapland together with four other regional clusters. The coordination of clustering continued with Arctic Smartness Excellence ERDF project led by University of Lapland. Work started in Summer 2015 and in Summer 2016 the cluster earned the bronze label provided by European Secretariat for Cluster Analyses. Cluster development continues, and during 2017 the focus has been even more on enhancing the business interface. Integration and active participation of local SMEs has been successful and work continues during the second half of the year. The cluster aims at having new Renewable Energy Sources (RES) investments implemented in Lapland during the next couple of years.

Governance, stakeholders involvement and target groups

The cluster is led by a cluster manager Johannes Vallivaara. He holds years of experience in business development and financial consultation of rural business sectors in Lapland. He is supported by an expert from the Regional Council of Lapland, in charge of the regional development part and by another expert from the Applied Science University of Lapland, leading the knowledge development part. The cluster has a "decentralised energy" thematic group consisting of 26 members from business life, municipalities, educational organisations, and developers. The thematic group has created a Lapland's decentralised energy program which is a strategic tool for development work in field of decentralised energy development. The cluster's target groups are companies or people who are planning to establish a business in energy production or energy savings industry.

Stakeholders involved in implementation (multiple choices allowed)

Public authority ✓ Economic and/or innovation agency❑ Energy agency ❑ **Intermediary ✓** **Research actors ✓** Industry❑ **SMEs ✓** NGO❑ **Civil society ✓** Other❑:.....

Beneficiaries (multiple choices allowed)

Public authority ✓ Economic and/or innovation agency❑ Energy agency❑ **Intermediary ✓** Research actors❑ Industry❑ **SMEs ✓** Start-ups❑ NGO❑ **Civil society ✓** Other❑:.....

Implementation

Cluster work is based on regional cooperation and strong coordination with all relevant stakeholders in the value chain, interested to develop the decentralised energy solutions. The cluster has solid operations on energy based regional programme of decentralised renewable energy solutions implementation. It also implements other initiatives such as the cooperation with the vocational institute Lappia in view of developing energy entrepreneurship in the environment of self-sufficient farm (biogas CHP, water treatment

and plans for liquefied biogas refining process). In addition, communities' understanding of the potential of decentralised renewable energy solution for the local economy has been increased. This has generated an interest to invest in new small production units.

Funding sources

The energy-related activities in the cluster are funded through local ERDF and EAFRD. In addition, energy-related initiatives have received funding from the Ministry of Agriculture and Forestry.

Furthermore, each organisation involved in implementing decentralised energy program has put own budget into the projects.

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation) ✓ ESIF T04 (low carbon economy) ✓ ESIF T07 (sustainable transport and network infrastructure) ❑ **ESIF other or ESF ✓** Interreg❑ H2020❑ **National Funds ✓** Regional Funds❑ Local Funds❑ Other❑:.....

Results achieved

The cluster has achieved a status of trusted and successful partner in European cooperation. Wide interest around EU and wide recognition have led to a situation where strategic focusing plays a bigger role. Cluster had set clear standards for cooperation and the ultimate goal is to improve regional conditions and work with local SMEs in Lapland with European support. Local entities have been actively taking part to future planning and on-going activities like creating a decentralised renewable energy solutions programme for Lapland. Rural entrepreneurs in the communities and SMEs operating on bioenergy (heating mostly) have been interested in cooperation and the expectation is that this interest will be growing. Investment plans have been made for communities and financing potential has been mapped for several potential cases during the past two years.

Future perspectives

It is expected that rural communities will take ownership of their energy production to a larger extent than before thanks to this cluster cooperation model. Also, other parties outside of the cluster are interested to support the common goals of more self-sufficient Lapland in energy production.

HIGHLIGHTS

Most successful elements

Governance practices on regional level. Partners and stakeholders' willingness to cooperate comes naturally. Raw material availability and sustainability. Mapping data and knowledge has led to investments. SMEs network established and growing.

Most important difficulties

Sparse population causes long distances in Lapland. Lack of critical mass and skills to create mutual understanding and goals is challenging. With minimal resources need for focus and allocation is crucial but this can cause inefficiency and slow down the development due to varying opinions. Believing and understanding of real potential and attitude of taking ownership of development in the region has been a challenge for the communication around the rural communities.

Lessons learned

Cluster operations must be based on real needs of SMEs, especially needs of entrepreneurs who are capable of investing and growing their business based on arctic natural resources sustainably. Also, enterprises suffering from structural challenges, like limits of legislation when implementing decentralised RES, are in the focus of the cluster. Pilot investments have a crucial role. Leading the way as pioneer has to be taken account seriously in the region. Wide support for first investors of new business models. In practice, this means for instance securing the supply of biomass with regional cooperation activities and regional policy planning.

Ideas for transfer of good practice

Regional cooperation model for other rural and sparsely populated areas Governance of cluster and implementation for energy development Resource efficiency in existing pilot cases like Lappia vocational institute farm (CHP and water treatment etc.)

Type	**Flagship project ✓** Strategic programme ❑ Funding programme ❑ Infrastructure ❑ **Key actors Platform (for regional cooperation) ✓** Interregional or International cooperation ❑ Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ Awareness-raising ❑ Other ❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** Cross-domain interactions (R&D&I and energy) ❑ **Synergetic use of several funds ✓** **High impact potential ✓** Civil society participation ❑ Continuous Entrepreneurial Discovery Process ❑ Inter-regional cooperation ❑ **Leading to private investments ✓** **Transferability of the practice ✓** Monitoring system ❑

IDENTIFICATION

Name of the good practice case

2. Bidelek Sareak, Advanced smart grids

Country	Region + NUTS code
Spain	**Basque Country (ES21)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional ✓** Local❑ Interregional-international❑

Reference (website, documents)

http://bidelek.com/en/

Organisation in charge of the good practice case

Name: Basque Energy Cluster	Public authority❑ Economic and/or innovation agency❑ Energy agency ❑ **Intermediary ✓** Other❑

Contact person: name, organisation, email, telephone

José Ignacio Hormaeche. Basque Energy Cluster – Cluster de Energía del País Vasco. jihormaeche@clusterenergia.com Tel +34 944 24 02 11

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services...) ❑
Energy storage ❑
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore) ❑
Smart Cities❑
Smart grids ✓
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑

Other ❑: …..

DESCRIPTION

Short summary of the good practice

Bidelek Sareak is a public-private partnership between the Basque Energy Agency (EVE) and the Spanish Distribution System Operator (DSO), Iberdrola Distribución Eléctrica, to improve the electric distribution grid and customer services by means of the development of advanced Smart Grid technologies and its deployment in both cities and towns. It is a real life project, complying with Smart Grids full functionalities, which is unique because of its scope, size, technical requirements and innovation.

Smart specialisation domain relevant for the good practice

Energy: 8+1 strategic areas (power electronics as key enabling technology) around 3 main value chains: offshore, smart grids and resource efficient manufacturing.

Challenge addressed and targeted objective

Electrical grids are increasingly complex systems that have to provide a service to a large number of consumers and need to absorb the production of distributed generation installations. Bidelek Sareak aims to deploy Smart Grids to increase the security and efficiency of the electric energy supply. In addition, this project has been a priority to position the Basque Country as one of the most advanced regions in the world in intelligent network infrastructures, both from the energy angle (savings and quality of service) and from the business point of view, for its tractor role of the powerful Basque industrial sector which, with a high technological level, is competing in this area in international markets.

Innovation (max. 2 choices)

Technological ✓ Service❑ Commercial❑ Managerial❑ Public sector❑ Social❑ System❑ Other❑:.....

History: origin, definition phase, start and end

Bidelek Sareak has taken the EC Directive 2009/72/EC of the European Parliament, which states that 80 % of consumers shall be equipped with intelligent metering systems by 2020, as an opportunity to carry out a much more ambitious project to become an international reference Smart Grid project worldwide. To this end, a public-private collaborating scheme has been put in practice. The Basque Energy Cluster coordinated the Working Group with the DSO, electrical equipment manufacturers, research agents, engineering firms and service suppliers and the Basque Energy Agency (EVE) to set up a collaboration dynamics. The project was carried out between 2011 and 2016.

Governance, stakeholders involvement and target groups

The project stands on a public-private partnership between the Basque Energy Agency (EVE) and Iberdrola Distribución Eléctrica to develop advanced smart grid technologies. Iberdrola leads the Smart Grid Project from a technological perspective, to ensure that certain selected areas are recognised as reference areas on account of the quality and efficiency of their electricity grids, both on a national and international scale.

A Working Group of companies coordinated by the Basque Energy Cluster ensured the industry involvement in the project. Ariadna, Arteche, Elecnor, General Electric, Iberapa, Ingeteam, Mesa, Ormazabal, Pronutec, Schneider, Uriarte Safybox, ZIV and Tecnalia (Research Centre) have provided technological solutions to the project.

Stakeholders involved in implementation (multiple choices allowed)

Public authority❑ **Economic and/or innovation agency ✓** **Energy agency ✓** **Intermediary ✓** **Research actors ✓** **Industry ✓** **SMEs ✓** NGO❑ Civil society❑ **Other ✓: Distribution System Operator**

Beneficiaries (multiple choices allowed)

Public authority❑ Economic and/or innovation agency❑ Energy agency❑ Intermediary❑ Research actors❑ **Industry x** **SMEs ✓** Start-ups❑ NGO❑ **Civil society ✓** **Other ✓: Distribution System Operator**

Implementation

The following actions were carried out in order to deploy the smart power grid:

I. Smart meters. In the urban development area, the existing meters were replaced by new smart meters providing service to 410.000 inhabitants in the city of Bilbao and the nearby town of Portugalete.

II. Smart transformer stations. In the urban development area, transformer stations were configured with management, supervision and automation services.

III. New concept of transformer stations. In the rural development area, modular stations with a new concept were located in the towns of Aulesti and Lekeitio-Gardata and new smart grid services were deployed in existing substations in Ondarroa.

IV. Distributed generation. Medium voltage cogeneration plants and low voltage generation plants were integrated in the grid.

V. Development and implementation of new services and tools. These are deployed in order to allow an efficient performance of the grid and to provide information to the final user that allows to analyse the way they are consuming their energy and how they can reduce their bills.

Funding sources

The total budget invested in this project is 60,000,000 euros, coming from private and public sources in the form of technology subsidies and loans. In addition to financial support, EVE contributed to the project with its vision and know-how on energy savings, energy efficiency and improvements in managing of energy demand for end users.

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation) ✓ ESIF T04 (low carbon economy)❑ ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg❑ H2020❑ National Funds❑ **Regional Funds ✓** Local Funds❑ Other❑:.....

Results achieved

In short, this project has helped to boost the technological development of the Basque electrical industry and implement its technology in national and international markets.

The quantitative results are as follows:

1. 407.179 smart meters were installed in the Basque Country to replace old ones
2. 2.306 transformation centres with remote management, supervision and automation services were configured.
3. 132 electronic relays for overhead electric lines switchgearI installed
4. 3 fully automated high voltage rural substations were integrated.
5. 500 secondary substations have been equipped with low voltage lines connectivity and advanced supervision systems.

Future perspectives

The next phase of Bidelek is currently being defined by a Basque Energy Cluster Working Group with the participation of Iberdrola, equipment manufacturers, research agents and public agencies in a 3 phases process:

1. Mapping of products and services of the new Smart Grids value chain and analysis of global trends
2. Identification of Challenges and Opportunities for the Smart Grids value chain in the Basque Country
3. Definition of projects or actions to be developed within the framework of the Strategic Initiative Smart Grids.

HIGHLIGHTS

Most successful elements

From an economic and industrial point of view, this type of project has a very positive impact, not only because of the energy saving produced by better management of the networks, but also because it generates industrial activity and highly qualified employment. In this way, the Bidelek Sareak project is affecting the sector of power electronics in the Basque Country, a world leading sector, with numerous companies supplying the latest generation digital meters to the project and running the field work for the assembly of digital electrical systems. 95% of the project's investment has been contracted to supplying companies in the Basque Country.

Most important difficulties

Overcome by the public co-leadership:

1. Vision of the Smart grids as a way towards Energy efficiency and demand response.
2. Fostering the role of consumers and facilitating information about consumption.
3. Financing of the Project and support to R&D projects.

Overcome by the private co-leadership:

1. Technological leadership of the Project, setting the specifications, requirements and standards to comply with.
2. Vision of the future electricity grids role and features.
3. Fostering competition between suppliers, based on technical innovation and

compliance with open standards and equipment interoperability.

Lessons learned

1. The **leadership of the DSO** (Iberdrola) is a key factor in the deployment of the Smart grids: clear scope, technical requirements, financial and business case, execution planning.
2. The Project has been oriented towards **innovative technologies** in collecting, monitoring and managing data for improving the quality of service and has focused on systems integration and **open standards**, to guarantee **interoperability** between different equipment and suppliers.
3. **Private-Public partnership** has been important to foster consumer orientation (information and energy savings and efficiency) and for the financial contribution.
4. The involvement of a **competitive supply chain** is key to guarantee the technological development of high level systems and equipment, the compliance with standards and open systems and the interoperability requirements.
5. It is not only technology: the whole **Iberdrola Distribution** organisation has embraced **the change**, and incorporated it to their daily work.

Ideas for transfer of good practice

Bidelek has benefited both consumers and electricity companies, as well as the sector's value chain in general. The grid's operation has improved and it has been modernised. The quality of the electricity supply has also improved thanks to the grid's ability to detect and isolate problems. It also enables consumers to manage their consumption and bills more efficiently. Bidelek has also promoted the integration of renewable energy, cogeneration and a charging network for electric vehicles on the grid. This initiative turns out to be an opportunity for the companies involved to reinforce their leadership in the field of technology and for the Basque Country to become a reference for Smart Grids solutions.

Type	**Flagship project ✓** **Strategic programme ✓** Funding programme ❑ **Infrastructure ✓** **Key actors Platform (for regional cooperation) ✓** Interregional or International cooperation ❑ Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ Awareness-raising ❑ Other ❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** **Cross-domain interactions (R&D&I and energy) ✓** Synergetic use of several funds ❑ High impact potential X Civil society participation ❑ Continuous Entrepreneurial Discovery Process ❑ Inter-regional cooperation ❑ **Leading to private investments ✓**

	Transferability of the practice ❑ Monitoring system ❑

IDENTIFICATION

Name of the good practice case

3. BioBIP, Bioenergy and Business Incubator of Portalegre – Technology-based companies incubator in bioenergy

Country | Region + NUTS code

Portugal	**Alentejo (PT186)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional ✓** Local❑ **Interregional-international✓**

Reference (website, documents)

www.biobip.pt (in Portuguese)

Organisation in charge of the good practice case

Name: Polytechnic Institute of Portalegre	**Public authority✓** Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ **Other✓: High Education**

Contact person: name, organisation, email, telephone

Joaquim Mourato, Polytechnic Institute of Portalegre, amourato@ipportalegre.pt, (+351) 245 330 353

Energy topic (max. 3 choices)

Bioenergy ✓
Carbon Capture Storage and Use (CCS and CCU)❑

Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services…) ✓
Energy storage ✓
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell ✓
Hydropower❑
Marine Renewable Energy (incl. wind offshore) ❑
Smart Cities❑
Smart grids ❑
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑
Other ❑: …..

DESCRIPTION

Short summary of the good practice

The BioBIP – Bioenergy Business Incubator Portalegre is a structure dedicated to incubating technology-based companies and projects focused on the field of bio-energy, in particular, the development of 2nd generation biofuels and energy recovery from wastes. The incubator has a high level of pilot scale demonstration facilities that allow incubating companies to develop new processes and projects.

Smart specialisation domain relevant for the good practice

Critical Technologies, Energy and Smart Mobility

Challenge addressed and targeted objective

The ultimate challenge addressed is to position the region as a producer of renewable energy technology.

BioBIP is a structure for the development of technology-based spin offs in the field of bioenergy in order to foster the formation of new companies in this area based on Research and Technological Development activities. BioBIP is thus an incubator of technological companies, having, besides a corporate hosting structure, a set of equipment on a pre-industrial scale for demonstration of technology that allows the start-up of companies and the dimensioning of industrial production units at higher scales.

BioBIP intends to contribute, with its material and human resources, to the development of economically viable technologies that allow the efficient conversion of biomass into solid, liquid or gaseous fuels, electric energy and thermal energy, with the final goal to develop efficient and sustainable environmental remediation methodologies.

Innovation (max. 2 choices)

Technological✓ Service❑ Commercial❑ Managerial❑ Public sector❑ Social❑ System❑ Other❑:.....

History: origin, definition phase, start and end

This project arises from the need for strategic of development in the Alto Alentejo region seeking to capture productive investment: the ultimate goal is to generate wealth in the region. Since Alentejo is a region of the country where agriculture and agro-industry are one of the strategic areas for development, targeting R & D in bioenergy in this region and the installation of a reference infrastructure in this domain is an appropriate goal for sustainable development.

Governance, stakeholders involvement and target groups

In this context of strategic development of a region, the Polytechnic Institute of Portalegre takes the lead of the project. The Institute participates in projects in partnership with companies from within and outside the region, at national and international levels. Its mission is to develop biomass transformation technologies in solid, liquid or gaseous fuels, electric energy and thermal energy and to transfer these to the market. Its stakeholders are companies in need of receiving these technologies, researchers and start-ups that develop these technologies using the infrastructures.

Stakeholders involved in implementation (multiple choices allowed)

Public authority✓ **Economic and/or innovation agency✓** **Energy agency ✓** Intermediary❑ **Research actors✓** **Industry✓** **SMEs✓** NGO❑ Civil society❑ Other❑:.....

Beneficiaries (multiple choices allowed)

Public authority❑ **Economic and/or innovation agency✓** Energy agency❑ Intermediary❑ Research actors❑ **Industry✓** **SMEs✓** **Start-ups✓** NGO❑ Civil society❑ Other❑:.....

Implementation

For the development of its activity, BioBIP provides technological infrastructures and equipment on a pre-industrial scale. The students of the Polytechnic Institute of Portalegre are encouraged to find technological development needs in the market and to develop research in these areas. It also carries out dissemination and communication activities in order to attract technological start-ups that need the infrastructures to develop innovative products and services in these areas. For the implementation of projects, physical infrastructure is offered, as well as various support services that allow the projects to be transformed into business or transferred to the market.

Funding sources

The operation of the entire infrastructure is supported by the Instituto Politécnico de Portalegre. In the case of business projects there is a payment for incubation and development services. The infrastructure and equipment were financed by Community

funds and the institution's own revenue.

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation) ✓ ESIF T04 (low carbon economy)❑ ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg❑ H2020❑ National Funds❑ Regional Funds❑ Local Funds❑ Other❑:FEDER – INALENTEJO + own funds

Results achieved

Several services have already been provided to companies in the region as well as support for research projects in the scope of doctoral, master's and bachelor's degrees. Practical examples are: a study of the granulometry of materials for introduction in cement kilns, a study of the effluent from the Sousel slaughterhouse, a study for Portuguese Environment Agency on burning of residues, several works involving the gasification of residues, gasification works Biomass and other combustion.

Future perspectives

The great future prospect of this project is to act as an instrument for the development of innovative projects in the region and in the country in the bioenergy area. For this, the incubator is positioning itself in the capture of this type of investment based on campaigns with the companies that operate in the sector, both in terms of process development and in terms of the development of equipment. On the other hand, it is working with students of master and doctorate levels in national and international higher education institutions in order to foster the installation of spin-off and start-up projects.

HIGHLIGHTS

Most successful elements

The most successful element of BioBIP's activities is the thermal gasification and anaerobic biodigestion. Regarding business incubation, the latest data from 2016 show the presence of 24 business projects, 46 people at the service of business projects and an aggregate turnover of 1.5 million Euros.

Most important difficulties

The establishment of infrastructure capacity and of excellent conditions for the development of new projects has been one of the main difficulties experienced, but is also the area where some resources have been invested.

Lessons learned

The need to communicate more and reach specific audiences who need our support and who can develop their projects in the incubator should be one of the goals for the near future.

Ideas for transfer of good practice

The creation of technological poles in specific areas should be encouraged as it leads to the excellence of the results, as experienced with BioBIP.

Type	Flagship project ❑ Strategic programme ❑ Funding programme ❑ **Infrastructure ✓** Key actors Platform (for regional cooperation) ❑ **Interregional or International cooperation ✓** Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ Awareness-raising ❑ Other ❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** Cross-domain interactions (R&D&I and energy) ❑ Synergetic use of several funds ❑ High impact potential ❑ Civil society participation ❑ Continuous Entrepreneurial Discovery Process ❑ **Inter-regional cooperation ✓** **Leading to private investments ✓** Transferability of the practice ❑ Monitoring system ❑

IDENTIFICATION

Name of the good practice case

4. Flexgrid, Smart grids industrialisation programme

Country	Region + NUTS code
France	**Provence-Alpes-Côte d'Azur (FR82)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional ✓** Local❑ Interregional-international❑

Reference (website, documents)

http://www.flexgrid.fr/en/home/

http://www.capenergies.fr/wp-content/uploads/2017/09/Pr%C3%A9sentation-FLEXGRID_EN.pdf

http://www.capenergies.fr/wp-content/uploads/2017/09/Projets-FlexGrid-2017.pdf

http://www.capenergies.fr/en/new-rd-and-industry-projects/major-programmes/smart-grids/flexgrid-regional-applications/

http://www.capenergies.fr/wp-content/uploads/2017/05/Projet_CP_AMI_FLEXGRID_15-09-16_EN.pdf>

http://www.capenergies.fr/en/the-initial-results-of-the-flexgrid-call-for-expressions-of-interest-are-in-the-smart-region-is-up-and-running/

Organisation in charge of the good practice case

Name:	**Public authority ✓**
Capenergies cluster, on behalf of the Provence-Alpes-Côte d'Azur Region	Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ **Other ✓: Energy cluster**

Contact person: name, organisation, email, telephone

Aurélie Bringer, Capernergies cluster, aurelie.bringer@capenergies.fr (+33(0) 4 84 49 10 37) / Delphine Robart-Maugis, Provence-Alpes-Côte d'Azur Region, drobart-maugis@regionpaca.fr (+ 33 (0)4 88 73 78 73).

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services...) ❑
Energy storage ❑
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore) ❑
Smart Cities❑
Smart grids ✓
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑
Other ❑: …..

DESCRIPTION

Short summary of the good practice

Flexgrid is a regional programme aimed at the large-scale deployment of smart grids on the territory of the Provence-Alpes-Côte d'Azur Region. With the objective to develop excellence in the smart grids sector at the regional level, in line with the smart specialisation strategy of Provence-Alpes-Côte d'Azur in the energy field, it contributes to fostering innovation, supporting economic activity and structuring the ecosystem.

Smart specialisation domain relevant for the good practice

Energy transition - energy efficiency

Challenge addressed and targeted objective

The Flexgrid programme offers regional solutions to energy transition challenges through the development of smart grids technologies and services. It will allow to set-up of a large number of smart grids demonstrators throughout the territory, showcasing innovative solutions that could be replicated worldwide. Its objective is to consolidate the position of the Provence-Alpes-Côte d'Azur Region as a territory of excellence in the smart grids sector, providing new opportunities for local public and private actors and promoting regional innovation and economic growth in this field.

Innovation (max. 2 choices)

Technological ✓ Service❑ Commercial❑ Managerial❑ Public sector❑ Social❑
System ✓ Other❑:.....

History: origin, definition phase, start and end

The Flexgrid programme was developed by local and regional authorities, clusters and industries in the Provence-Alpes-Côte d'Azur Region, in response to a national call for expression of interest for smart grids projects launched in April 2015 by the French government, in the framework of the national plan 'Nouvelle France industrielle'[3]. It started in 2016 and is due to run over a five-year period, until the end of 2020.

Governance, stakeholders involvement and target groups

Flexgrid is a programme of the Provence-Alpes-Côte d'Azur Region, and is steered and coordinated by Capenergies – the regional energy cluster – on behalf of the regional authority. It involves a large number of local public authorities, clusters and industries (more than 300 companies, notably major industrial groups – including DSOs and TSOs – and innovative SMEs), research centres, universities and technology platforms. Flexgrid plays a significant role in consolidating and structuring the large smart grids ecosystem of the region, as it covers the entire value chain and gathers all types of regional smart grids stakeholders under one single programme.

Stakeholders involved in implementation (multiple choices allowed)

Public authority ✓ **Economic and/or innovation agency ✓** Energy agency ❑ Intermediary❑ **Research actors ✓** **Industry ✓** **SMEs ✓** NGO❑ **Civil society ✓** **Other ✓ : energy and ICT clusters**

Beneficiaries (multiple choices allowed)

Public authority ✓ Economic and/or innovation agency❑ Energy agency❑ Intermediary❑ **Research actors ✓** **Industry ✓** **SMEs ✓** **Start-ups ✓** NGO❑ **Civil society ✓** Other❑:.....

Implementation

The programme is based on a portfolio of more than 50 projects focusing on a set of energy challenges throughout the whole region, with the aim to tackle a common issue: the need to improve energy flexibility in the region.

Several committees have been put in place to implement and coordinate the Flexgrid programme at the regional level: a strategic committee, an operational committee, a coordination committee, and three local committees covering each of the main geographical areas of the region. In addition, a steering committee is established for each single project of the programme. They all report to the operational committee on a regular basis.

[3] https://www.economie.gouv.fr/files/files/PDF/web-dp-indus-ang.pdf

Funding sources

Flexgrid will mobilise more than €150 million of investment from public and private partners (68 % from local and regional investors) to carry out all the smart grids projects dedicated to energy transition and economic development. The funding sources come from private partners, local public authorities, European Structural and Investment Funds (ESIF TO1 for research and innovation and TO4 for network infrastructure with 8 M€ specifically dedicated to smart grids projects), or other national (ADEME, PIA) or European (Horizon 2020, Urban Innovative Actions, etc.) funding opportunities.

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation) ✓ **ESIF T04 (low carbon economy) ✓** ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg❑ **H2020 ✓** **National Funds ✓** Regional Funds❑ **Local Funds ✓** Other❑:.....

Results achieved

The results achieved so far are both organisational and strategic: calls for projects have been launched in order to identify local projects to be included in the Flexgrid programme, the set-up of various committees has contributed to an increased coordination and involvement among actors, and the provision of the initial budget has attracted additional public and private investors. All this has reinforced the positive dynamics around the Flexgrid programme. Each project targets specific objectives at local level, which will provide new solutions for increased energy supply security and flexibility: photovoltaic self-production and self-consumption, solutions for high energy consumption companies, synergies between renewable energies, charging and discharging management for electric vehicles, territorial energy optimisation and territorial flexibilities. This will allow for the production of 1180 MW of renewable energy and 230 MW for heating and cooling networks. In addition, by supporting the development of the smart grids sector in the region, it should lead to the creation of approximately 6,200 jobs.

Future perspectives

Flexgrid will contribute to reaching the energy targets set out in the 2013 regional energy policy plan - 'Schéma Régional Air-Energie-Climat', which will be encompassed in the future 'Schéma Régional d'Aménagement, de Développement Durable et d'Egalité des Territoires' (late 2017).

HIGHLIGHTS

Most successful elements

The Flexgrid programme plays an instrumental role in structuring the smart grids sector and supporting regional innovative energy solutions, in accordance with the smart specialisation strategy of the Region. The launch of the programme has comforted the position of the smart grids / energy field as a strategic domain of specialisation in Provence-Alpes-Côte d'Azur while developing and exploiting the critical mass of knowledge and economic activity in the region in this field. The 'regional economic development, innovation and internationalisation strategy' (SRDEII), recently adopted, reflects this approach: the energy field, and more specifically the smart grids domain, is identified as a strategic sector for the Region.

Most important difficulties

One of the strengths of the Flexgrid programme rests in the fact that it comprises a large number of stakeholders, representing the entire value chain, and covers numerous projects at the local level. Identifying needs, selecting projects, securing funding, and coordinating the whole programme requires a complex implementation strategy.

Lessons learned

The regional dimension of the Flexgrid programme is a determining factor for bringing the whole ecosystem together and covering a wide range of local projects and challenges. It also provides greater visibility for the projects and demonstrators at the national and European levels.

Ideas for transfer of good practice

The S3 platform and the S3 Partnership on Smart Grids should be used to present Flexgrid to other European regions, and explain the preparatory process and implementation. Important efforts are made by Flexgrid stakeholders to share experience with foreign partners and attract interests from other EU and third countries (access to demonstrators, showrooms, participation in European events, organisation of conferences (ie. "Innovative City" takes place annually in Nice), open-house days, etc…). In addition, the participation of regional actors in European-funded projects (Horizon 2020, ERDF, etc…) also offers good opportunities to share good practices with European partners and communicate/disseminate the results achieved in the framework of the Flexgrid programme.

Type	**Flagship project ✓** **Strategic programme ✓** Funding programme ❑ **Infrastructure ✓** **Key actors Platform (for regional cooperation) ✓** Interregional or International cooperation ❑ Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ Awareness-raising ❑ Other❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** **Cross-domain interactions (R&D&I and energy) ✓** **Synergetic use of several funds ✓** **High impact potential ✓** Civil society participation❑ Continuous Entrepreneurial Discovery Process ❑ Inter-regional cooperation ❑ **Leading to private investments ✓** Transferability of the practice❑ Monitoring system❑

IDENTIFICATION

Name of the good practice case

5. Ilmastokatu, Climate Street

Country	Region + NUTS code
Finland	**Helsinki-Uusimaa Region (FI1B)**

Level at which the good practice is implemented (select one dominant level)

National❑ Regional❑ **Local ✓** Interregional-international❑

Reference (website, documents)

http://ilmastokatu.fi/en/

Organisation in charge of the good practice case

Name:	**Public authority ✓**
City of Helsinki Environment Centre (main partner) City of Vantaa Environment Centre, Green Building Council Finland, HSY Climate Info and Aalto University	Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ Other❑:.....

Contact person: name, organisation, email, telephone

Viliina Evokari, City of Helsinki, Viliina.evokari@hel.fi; +358 40 519 7544

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services...) ❑
Energy storage ❑

Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore) ❑
Smart Cities ✓
Smart grids ❑
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑

Other ❑: …..

DESCRIPTION

Short summary of the good practice

Investing into solar power (PV) was made as easy as possible for property owners: solar surveys were offered to the housing companies and other properties. Solar surveys are used to find out the profitability of a solar panel investment and support decision-making: survey reports include installation suggestions, dimensioning, economic calculations and a ready-made form for tendering. Property owners were also given energy efficiency guidance. A housing company Chairpersons' Club is a successful cooperation model and serves as a good communication channel with housing companies. Gadgets that measure or reduce energy consumption were tested and presented to the public in the Smart Gadgets event. Inhabitants reduced their carbon footprint with a personal climate trainer.

Smart specialisation domain relevant for the good practice

The climate street project implements the "urban cleantech" priority in Helsinki smart specialisation strategy.

Challenge addressed and targeted objective

The cities of Helsinki and Vantaa aim to be carbon neutral by 2050. The cities can't achieve this only by themselves, participation of citizens and businesses is needed as well to create and use new, economically sustainable modes of operation. The project has aimed to reduce the region's greenhouse gas emissions in a way that will benefit both the local residents, businesses and other stakeholders.

In urban cleantech priority the aim is to solve environmental challenges in cities by developing and piloting new solutions, technologies and service models e.g. for renewable energy, energy efficiency and low carbon emissions. Piloting solar power in a housing company and piloting means for reducing energy consumption together with residents as done in this project are good examples of grassroots implementation of the strategy. It improves the energy efficiency and at the same time helps SMEs to bring their solutions to market.

Innovation (max. 2 choices)

Technological❑ **Service ✓** Commercial❑ Managerial❑ Public sector❑ Social❑ System❑ Other❑:.....

History: origin, definition phase, start and end

Between 2015 and 2017, Climate Street operated at grass root level together with local residents, property owners and businesses. The idea for the project came from "The best energy efficiency practices" report in which Climate Street from Amsterdam Utrechtsestraat was presented as a case. Inspired by the Utrechtsestraat, two Climate Streets were developed as open innovation platforms: one is Iso Roobertinkatu in the City of Helsinki and the other is Tikkuraitti-Asematie in the City of Vantaa.

Governance, stakeholders involvement and target groups

City of Helsinki Environment Centre was the main partner in the Climate Street project. Other partners were City of Vantaa Environment Centre, Green Building Council Finland, HSY Climate Info and Aalto University. Target groups were local residents, property owners, businesses and other stakeholders. Stakeholders were involved in the project through several workshops, meetings, training and events.

Stakeholders involved in implementation (multiple choices allowed)

Public authority ✓ **Economic and/or innovation agency ✓** **Energy agency ✓** **Intermediary ✓** **Research actors ✓** Industry❑ **SMEs ✓** **NGO ✓** **Civil society ✓** Other❑:.....

Beneficiaries (multiple choices allowed)

Public authority ✓ Economic and/or innovation agency❑ Energy agency❑ Intermediary❑ Research actors❑ Industry❑ **SMEs ✓** Start-ups❑ NGO❑ **Civil society ✓** Other❑:.....

Implementation

The project was implemented through the following actions: developing climate smart business with local entrepreneurs in workshops, gadgets that measure or reduce energy consumption tested and presented to the public in the Smart Gadgets event, energy efficiency planning and measures in the properties, developing a cooperation model with the actors in the area, Energy efficient terrace competition and piloting, visualisation of energy consumption, solar surveys as decision making tools to establish profitability of investments, agile experiments, carbon footprint measurement, personal climate trainers.

Funding sources

Sustainable growth and jobs 2014 - 2020 - Finland's structural funds programme, ESIF

Policy: 2. Production and utilisation of latest knowledge and expertise

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation) ✓ ESIF T04 (low carbon economy)❑ ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg❑ H2020❑ National Funds❑ Regional Funds❑ **Local Funds** ✓ Other❑:.....

Results achieved

Energy consumption and GHG-emissions of the project areas were reduced: carbon footprint was calculated in 12 properties of the Climate Street in the beginning and the middle of the project. At that point carbon footprint was reduced by 12 % in commercial properties. Carbon footprint is expected to reduce more within near future when the properties implement the energy efficiency plans executed during the project. The first PV panels with an annual production capacity of 6 500 kWh were implemented by a housing company in the city centre of Helsinki, there were fully operational in the summer of 2016. Ten businesses tested their smart&clean solutions in Climate Streets. About 10 local businesses developed climate smart services and products. 10 businesses and 17 housing companies were given energy efficiency guidance. At least 10 properties have implemented energy efficiency measures. Gadgets that measure or reduce energy consumption were tested and developed further. The awareness of energy consumption has grown.

Future perspectives

Climate Streets will be utilised as open innovative platforms and as testbeds for smart&clean solutions. New sustainable modes of operation developed in the project will be used in other areas of the involved cities also. Lessons learned and best practices are compiled in the Climate Street tool kit for anyone's use.

HIGHLIGHTS

Most successful elements

User-orientated approach was highly successful. The needs of the actors were considered when planning how to reduce the region's greenhouse gas emissions in a way that will benefit both the local residents, businesses and other stakeholders. Especially SME's with little resources need easy turnkey solutions. Most successful measures were solar surveys, agile pilots, energy efficient terrace competition and the Smart Gadgets event.

Most important difficulties

The decision making process in the housing companies is relatively slow which means that many energy efficiency investments will be implemented after the two-year-project.

Lessons learned

Peer support and experiences motivate more than expert statements. Connect with local businesses and property owners face to face. Listen to the stakeholders and find solutions that match their needs. Bring actors of the area together as often as possible to speed up cooperation between the actors. Make climate actions of the businesses and properties seen with communications, i.e. window stickers. Offer support in implementation. Carry out agile pilots for quick results.

Ideas for transfer of good practice

Lessons learned and best practices are presented in the Climate Street Tool Kit available on the project's website (www.ilmastokatu.fi/en/toolkit). In addition, Aalto University has produced the project's evaluation report (available on the same web page, in Finnish).

Type	**Flagship project ✓** Strategic programme ❑ Funding programme ❑ Infrastructure ❑ **Key actors Platform (for regional cooperation) ✓** **Interregional or International cooperation ✓** **Intelligence tool (measurement, analysis, foresight, evaluation…) ✓** **Awareness-raising ✓** Other ❑:……
Highlights	**Relevance to national and/or regional energy strategy ✓** Cross-domain interactions (R&D&I and energy) ❑ Synergetic use of several funds ❑ **High impact potential ✓** **Civil society participation ✓** Continuous Entrepreneurial Discovery Process ❑ **Inter-regional cooperation ✓** **Leading to private investments ✓** **Transferability of the practice ✓** Monitoring system ❑

IDENTIFICATION

Name of the good practice case

6. Joint Purchase of Solar Power for 41 Private Properties

Country | Region + NUTS code

Finland	**North Karelia (FI1D3)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional ✓** Local❑ Interregional-international❑

Reference (website, documents)

North Karelia Towards Oil-Free and Low-Carbon Area – Project: http://pohjois-karjala.fi/web/hinku (in Finnish only)

Organisation in charge of the good practice case

Name: Regional Council of North Karelia	**Public authority ✓** Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ Other❑:.....

Contact person: name, Organisation, email, telephone

Anniina Kontiokorpi, Regional Council of North Karelia, anniina.kontiokorpi@pohjois-karjala.fi, +358 50 414 4816

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑

Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services...) ❑
Energy storage ❑
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore) ❑
Smart Cities❑
Smart grids ❑
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑
Other ❑: …..

DESCRIPTION

Short summary of the good practice

Joint purchase of solar power for private buildings was organised as a part of North Karelia Towards Oil-Free and Low-Carbon Area project. 250 interested private persons were contacted during this process and in the end 41 solar power systems were installed with a total power capacity of 142,4 kWp. Regional Council of North Karelia requested tenders for 2,5, 4,5 and 7 kWp units and compared the offers. Prices were approximately 30 % lower than average market price.

Smart specialisation domain relevant for the good practice

Forest based bioeconomy (and renewable energies)

Challenge addressed and targeted objective

The objective of North Karelia Towards Oil-Free and Low-Carbon Area project is to increase the share of renewable energy in the region. The project is looking for and testing new kind of methods for developing markets for cleantech solutions and products. Joint procurements and purchases are one of the tested methods.

Innovation (max. 2 choices)

Technological❑ Service❑ **Commercial ✓** **Managerial ✓** **Public sector ✓** **Social ✓** System❑ Other❑:.....

History: origin, definition phase, start and end

The Regional Council of North Karelia and the Finnish Environment Institute, together with the Carbon Neutral Municipalities (HINKU) network, planned and organised a joint purchase for solar power units which was addressed to residents of North Karelian HINKU-municipalities and to private companies. Responsible parties organised five info-

events in different municipalities, advertised in and communicated through local and regional newspapers, social media etc. More than 250 persons were contacted during this process. Planning of the purchase took place in July-August 2016, events were organised in September 2016, registration in October-November 2016, invitation to tender in December 2016, comparison of the offers in January 2017, and installations of 41 solar power units in April-June 2017.

Governance, stakeholders involvement and target groups

Joint purchase was a part of North Karelia Towards Oil-Free and Low-Carbon Area strategy. Main organiser was the Regional Council of North Karelia and expertise help was received from the Finnish Environment Institute. Regional HINKU-municipalities participated in the process by offering venues for events and by promoting joint purchase for residents. Target groups were residents of the North Karelian HINKU-municipalities and private companies.

Stakeholders involved in implementation (multiple choices allowed)

Public authority ✓ Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ **Research actors ✓** **Industry ✓** SMEs❑ NGO❑ **Civil society ✓** Other❑:.....

Beneficiaries (multiple choices allowed)

Public authority ❑ Economic and/or innovation agency ❑ Energy agency❑ Intermediary❑ Research actors ❑ **Industry ✓** SMEs❑ Start-ups❑ NGO ❑ **Civil society ✓** Other❑:.....

Implementation

Promoting, request for tenders, comparison of the tenders were implemented through North Karelia Towards Oil-Free and Low-Carbon Area strategy. Joint Purchase was made together with Finnish Environment Institute which is a sectoral research institute. They were not investigating technological novelties but are developing and investigating methods for joint purchases. Contractor and participators made bilateral turnkey contracts. The last of the 41 solar power plants had been installed in June 2017.

Funding sources

European regional development fund, Future Fund (regional)

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation)❑ **ESIF T04 (low carbon economy) ✓** ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg❑ H2020❑ National Funds❑ Regional Funds❑ **Local Funds ✓** Other❑:.....

Results achieved

41 new solar power plants for private buildings were installed in North Karelia with a total power capacity of 142,4 kWp. The price for the purchase was approximately 30 % lower than average market price because of the amount of participants. New distributed energy production units were produced.

Future perspectives

Solar power is increasingly seen as a cost-effective way of producing energy also in Finland. Joint purchases have offered an easy way for purchasing solar power. The method has been tested now for couple of times and it is easy to spread to other areas.

HIGHLIGHTS

Most successful elements

Joint purchase of solar power in North Karelia for private buildings is so far the biggest joint purchase organised with this kind of method.

Most important difficulties

Convincing participants that joint purchase method really works.

Lessons learned

Timing of the joint purchase especially in the case of solar power is an important factor. People are more interested in solar power when the sun is shining. For this reason, late spring was chosen as the suitable timing for installations and communication with participants.

Ideas for transfer of good practice

Joint purchase is easy to transfer to other areas. It would be very interesting to hear how this method works in other EU-countries.

Type	Flagship project ❑ Strategic programme ❑ Funding programme ❑ Infrastructure X **Key actors Platform (for regional cooperation) ✓** Interregional or International cooperation ❑ Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ **Awareness-raising ✓** Other ❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** Cross-domain interactions (R&D&I and energy) ❑ Synergetic use of several funds ❑ **High impact potential ✓** **Civil society participation ✓** Continuous Entrepreneurial Discovery Process ❑ Inter-regional cooperation ❑ Leading to private investments ❑

	Transferability of the practice ✓ Monitoring system ❑

IDENTIFICATION

Name of the good practice case

7. Marine Renewable Energies Roadmap

Country	Region + NUTS code
France	**Brittany (FR52)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional** ✓ Local❑ Interregional-international❑

Reference (website, documents)

Presentations: http://www.bdi.fr/ressources/les-energies-marines-renouvelables

Regional roadmap: http://www.bretagne.bzh/upload/docs/application/pdf/2016-07/session_juin_2016_emr.pdf

Organisation in charge of the good practice case:

Name: Regional Council of Brittany; Bretagne Développement Innovation (regional agency for economic development and innovation).	**Public authority** ✓ **Economic and/or innovation agency** ✓ **Energy agency** ✓ Intermediary❑ Other❑:.....

Contact person: name, Organisation, email, telephone

Jean Michel LOPEZ, Directeur de la coordination Energie Marine : jean-michel.lopez@bretagne.bzh / (+33) (0)2 99 27 12 01

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services...) ❑
Energy storage ✓
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore) ✓
Smart Cities❑

Smart grids ✓
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑
Other ❑: …..

DESCRIPTION

Short summary of the good practice

The Marine Renewable Energy (MRE) roadmap was adopted by the Bretagne Region Council in April 2016. This broad-based regional government policy has a twofold aim: promote the energy transition to bring down the region's energy dependence while establishing an industrial showcase which is highly visible on the international scene. The roadmap sets the very ambitious goal to cover more than one third of Brittany's electricity consumption in 2030. This highly proactive policy promoting MRE is characterised by a consultative emphasis that brings together all the stakeholders in the industry.

Smart specialisation domain relevant for the good practice

Marine renewable energy is one of the "industries of the future" featuring in the Region's Smart Specialisation Strategy: Strategic Innovation Action 3- Maritime activities for blue growth – 3B Marine Renewable Energies

Challenge addressed and targeted objective

The roadmap addresses five key issues:

- Organising MRE coordination and planning for energy and maritime affairs
- Supporting projects off the coast of Brittany
- Supporting the sector's economic and industrial dynamic
- Investing in the infrastructure required to cater for MRE, particularly creation of an MRE terminal in the port of Brest
- Raising the international profile of the region's MRE offering.

The roadmap sets a very ambitious goal: planning and installing 2 GW of additional capacity by 2030, thus covering more than 33 % of Brittany's electricity consumption in 2030. This will be achieved through:

3 floating wind farms by 2030 (1.5 GW) with 3 GW of exploitable potential, to be developed in 2 large geographical zones off the northwest and southwest coasts of Brittany (consultation ongoing)

2 tidal stream parks (0.6 GW) with 2.2 GW of exploitable potential, to be developed in 2 zones off the west and north coasts of Brittany (consultation ongoing)

2 offshore wind farms (one of which is under construction - 0.5 GW) in northeast Brittany.

Such ambitious goals in terms of energy production from renewable resources represent

a major challenge when it comes to anticipating injection into the electricity system and balance management. The development of an additional capacity of several GW by 2020-2030 involves anticipating how intermittent energy integration solutions can be incorporated into power grids, including large-capacity storage and accurate production forecasting solutions. Therefore, the development of smart grids is another key challenge.

Innovation (max. 2 choices)

Technological ✓ Service❑ Commercial❑ Managerial❑ Public sector❑ Social❑ **System** ✓ Other❑:.....

History: origin, definition phase, start and end

Ever since it signed up to the Breton Electricity Pact in 2010, Brittany Regional Council has been at the forefront of a highly proactive policy promoting Marine Renewable Energy (MRE). Thanks to its strong ocean waves, currents, and winds, Brittany is a region with a high potential for harnessing marine renewable energy. It also enjoys a strong skills base in the maritime industry, which is crucial for growing this emergent sector along with the new technology required. The MRE roadmap was adopted in April 2016 and set objectives for 2030.

Governance, stakeholders involvement and target groups

Shared governance and collective planning are the key words for the implementation of the MRE roadmap. The Regional Sea and Coast Conference (Conférence régionale de la mer et du littoral, CRML) and the Regional Energy Transition Conference play a key role in ensuring the involvement of all key stakeholders under the coordination of the Regional Council of Brittany. In-depth coordination with economic stakeholders allows the Region to assist local firms in identifying outlets in major infrastructure projects, within Brittany and beyond, building momentum for international expansion. National authorities, financial institutions, economic and industrial stakeholders, research and academia, local governments, professional Organisations for fishing, aquaculture, port activities, shipbuilding and repair, farming, and tourism as well as non-profit associations devoted to the protection of nature and heritage, local residents are all involved at different stages of the decision-making process.

Stakeholders involved in implementation (multiple choices allowed)

Public authority ✓ **Economic and/or innovation agency** ✓ **Energy agency** ✓ **Intermediary** ✓ **Research actors** ✓ **Industry** ✓ **SMEs** ✓ **NGO** ✓ **Civil society** ✓ Other❑

Beneficiaries (multiple choices allowed)

Public authority❑ Economic and/or innovation agency❑ Energy agency❑ Intermediary❑ **Research actors** ✓ **Industry** ✓ **SMEs** ✓ **Start-ups** ✓ NGO❑ Civil society❑ **Other ✓: associations**

Implementation

The following projects are being planned or have been implemented under the MRE

roadmap: industrial tidal pilot projects, offshore wind turbine industrial park, offshore floating wind turbine pilot array farm, new transmitted and distributed smartgrid national planification, a MRE terminal in the port of Brest.

Funding sources

- ESIF
- Regional Marine Renewable Energy funds
- Other Regional funds and national funds

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation)❑ **ESIF T04 (low carbon economy)** ✓ ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ **Interreg** ✓ H2020❑ **National Funds** ✓ **Regional Funds** ✓ **Local Funds** ✓ Other❑:.....

Results achieved

- 2 connected industrial tidal pilot projects (world premiere)
- 1 offshore wind turbine industrial park in progress (site studies and permit procedure completed)
- 1 offshore floating wind turbine pilot array farm (4 devices) in progress (site studies and permit procedure completed)
- 1 project of new transmitted and distributed smart grid national planning (in progress experimented within the framework of the SMILE smart grids project)
- Work on the future MRE terminal in the port of Brest started in January 2017
- 1 national call launched for new industrial parks (floating and tidal)

Future perspectives

- Selection of five broad sites in which future arrays could be located (consultation process underway)
- 1st island to be powered by MRE and connected to the grids thanks to the use of smart grids (Ushant-Ouessant island, 2018-2020)
- 1st smart grids global system for MRE at transmitted grid scale (2019-2020 SMILE project and 2020-2030 in full scale)

HIGHLIGHTS

Most successful elements

The involvement of all the relevant socio-economic stakeholders and the capacity to retain local SMEs and help them overcome market related difficulties are the two most successful elements so far.

In this regard, March 3, 2017 marked a major milestone, with the validation by the Regional Sea and Coast Conference of three favourable sites for tidal stream generators

and 2 macro-zones for floating wind power.

Most important difficulties & Lessons learned

The biggest challenges when developing such strategies and roadmaps is to anticipate the development of the market, which is still not ready, at least for ocean energy technologies, and to set the targets accordingly. In the implementation phase, the main difficulty is to help industrials bridge the "valley of death" between R&D/prototype and demonstration and pre-commercial phases. In fact, uncertainties on production levels and maintenance requirements for farms and larger plants remain. These uncertainties imply higher financial risk, preventing access to commercial bank loans and call for investment support from the public sector.

Lessons learned

In order to overcome such difficulties, it is important to work closely with the industry. Such an ambitious strategy also calls for the involvement of all the stakeholders, especially the socio-economic ones. The whole value chain needs to be organised in order to push the market demand and be ready to answer to this demand once the market is ready. The support agencies and clusters should play a key role alongside the region in promoting the emergence of R&D, pilot and demonstration projects involving the research, the enterprises (large and SMEs) and the financial institutions.

Type	Flagship project ❑ **Strategic programme ✓** Funding programme ❑ **Infrastructure ✓** **Key actors Platform (for regional cooperation) ✓** Interregional or International cooperation ❑ Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ Awareness-raising ❑ Other ❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** Cross-domain interactions (R&D&I and energy) ❑ **Synergetic use of several funds ✓** **High impact potential ✓** Civil society participation ❑ **Continuous Entrepreneurial Discovery Process ✓** Inter-regional cooperation ❑ **Leading to private investments ✓** Transferability of the practice ❑ Monitoring system ❑

IDENTIFICATION

Name of the good practice case

8. PICSA, Sustainable Construction Programme in Andalusia

Country	Region + NUTS code
Spain	**Andalusia (ES61)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional** ✓ Local❑ Interregional-international❑

Reference (website, documents)

Development Plan for the Sustainable Construction and Rehabilitation of Andalusia, Horizon 2020 (online - Spanish): https://www.agenciaandaluzadelaenergia.es/sites/default/files/Documentos/plan_integral_fomento_construccionrehabilitacion_sostenible_horizonte202.pdf

Information on results of the programme: https://www.agenciaandaluzadelaenergia.es/guiainteractivaPICS/DATOS/secciones.php

Videos related to the programme/service:

Video 1: http://youtu.be/Ng9qIf8cqGQ

Video 2: http://ec.europa.eu/regional_policy/videos/movie/regiostars2015/picsa_short_en.mp4

Video 3 (Spanish): https://www.agenciaandaluzadelaenergia.es/documentacion/galeria-multimedia/la-agencia-en-los-medios/video-realizado-ce-proyecto-ganador-regiostars-2015

Other videos (Spanish):

Video 4 (Spanish): PROGRAMA DE IMPULSO A LA CONSTRUCCIÓN SOSTENIBLE

Video 5 (Spanish): REHABILITACIÓN DE EDIFICIOS

Video 6 (Spanish): EFICIENCIA ENERGÉTICA CONSTRUCCIÓN SOSTENIBLE

Video 7 (Spanish): EMPLEO CONSTRUCCIÓN SOSTENIBLE

Twitter account: Agenciaandaener

Links PICSA to REGIOSTAR 2015 Awards:
http://ec.europa.eu/regional_policy/en/projects/spain/making-andalusias-construction-sector-more-sustainable

Other links:

- New scheme (2017-2020):

www.agenciaandaluzadelaenergia.es/financiacion/incentivos-2017-2020/programa-desarrollo-energetico-sostenible/construccion-sostenible;

- BUILD2LC: www.interregeurope.eu/build2lc/
- Partnership: http://s3platform.jrc.ec.europa.eu/sustainable-buildings

Organisation in charge of the good practice case

Name: Andalusian Energy Agency	Public authority ❑ Economic and/or innovation agency ❑ **Energy agency** ✓ Intermediary❑ Other❑:.....

Contact person: name, Organisation, email, telephone

Joaquin Villar Rodríguez

Andalusian Energy Agency joaquin.villar@juntadeandalucia.es +34 95 478 63 35 / +34 697 954 563

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings ✓
Other Energy Efficiency (in Industry, Transport, Services...) ❑
Energy storage ❑
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore)❑
Smart Cities❑

Smart grids ❑
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑
Other ❑: …..

DESCRIPTION

Short summary of the good practice

The Sustainable Construction Programme in Andalusia (PICSA) is a combination of economic measures and other actions such as regulatory, training and fiscal, that seek, through energy saving and renewable energy generation or integration, to promote the energy rehabilitation of buildings and the urban rehabilitation, to improve the competitiveness of companies of the construction sector, to create skilled employment and reduce energy poverty.

Smart specialisation domain relevant for the good practice

The sustainable construction sector is one of the priorities of RIS3 of Andalusia.

Challenge addressed and targeted objective

The construction sector in Andalusia has evolved from representing 14.4% of the regional GDP in 2007 to 7.6% currently, has reduced from 15.2% to 5.2% its weight in employment and suffers from a high unemployment rate.

In energy terms, this sector represents one of the main consumers of Andalusia with almost two million buildings in Andalusia in need of substantial improvements.

The improvement of the competitiveness, the promotion of innovation, the generation of specialised and quality employment, and the society´s change of culture towards more efficient practices, are the main challenges of PICSA programme to achieve the energy and environmental objectives.

Innovation (max. 2 choices)

Technological ✓ Service❑ Commercial❑ **Managerial** ✓ Public sector❑ Social❑ System❑ Other❑:.....

History: origin, definition phase, start and end

The PICSA programme started in 2014 consisting of three main actions:

An **incentive scheme** for sustainable construction

A **financing line** through revolving funds for companies

A Development Plan for the Sustainable Construction and Rehabilitation of Andalusia, Horizon 2020.

PICSA, which was awarded the REGIOSTARS 2015, has been improved and extended in its main actions during 2016 with its internationalisation at European Level through the **S3 Partnership on Sustainable Buildings**[4], an initiative supported by the European Commission defined as a strategic alliance between European regions and Member States to take advantage of regional opportunities for smart specialisation in sustainable buildings.

The strategy in this field includes the redefinition of sustainable construction in terms of energy rehabilitation of buildings, the physical, social, economic and environmental recovery of urban environments and the rehabilitation of cities. The opportunities are based on the development of new materials and sustainable processes.

Governance, stakeholders involvement and target groups 100

Stakeholders play a very important role in all parts of the PICSA. Regarding the design of the **incentive scheme**, the principle of governance was incorporated, opening the dialogue process to market actors, from both the supply and the demand side.

Thus, the incentive scheme has been developed with the participation of companies liaising with the Agency in the management and processing of incentives, which facilitates the administrative procedures for final users. Most of them were SMEs, which contributes to generating economic activity.

Also, for the elaboration of the Development Plan, a **Round Table** was formed with more than 70 experts.

Stakeholders involved in implementation (multiple choices allowed)

Public authority ✓ Economic and/or innovation agency ✓ Energy agency ✓ Intermediary ✓ Research actors ✓ Industry ✓ SMEs ✓ NGO ✓ Civil society ✓ Other❑:.....

Beneficiaries (multiple choices allowed)

Public authority ✓ Economic and/or innovation agency❑ Energy agency❑ Intermediary❑ Research actors❑ **Industry ✓ SMEs ✓** Start-ups❑ NGO❑ **Civil society ✓** Other❑:.....

Implementation

From 2014 to 2015:

Design and implementation of an incentive scheme of 164 million euros and 48 possible actions. The minimum investment was very low, only 400 euros, so everybody could apply for an incentive.

Design and Implementation of a revolving fund with a budget of 50 million euros from the JEREMIE initiative[5], aimed at the companies liaising with the Agency in the management of incentives.

Organisation of a Round Table with the objective to elaborate a Development Plan for the Sustainable Construction and Rehabilitation of Andalusia.

[4] http://s3platform.jrc.ec.europa.eu/sustainable-buildings

[5] http://ec.europa.eu/regional_policy/en/funding/special-support-instruments/jeremie/

From 2016, based on the lessons learned, a new incentive scheme and new financial lines were launched. Also, the implementation of most of the 90 action lines included in the **Development Plan** started, as well as the creation of the S3 European Partnership on Sustainable Buildings. The implementation of the first interregional projects is expected before the end of 2017.

Funding sources

For the incentives scheme, 164 million euros from ESIF To4 and Regional Funds. In addition, the Development Plan is provided with 529 million euros until 2020, with budgets available from the European Union and the Andalusian Regional Government.

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation) ✓ ESIF T04 (low carbon economy) ✓ ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg❑ H2020❑ National Funds❑ **Regional Funds ✓** Local Funds❑ Other❑:.....

Results achieved

Quantitatively, the results from the incentive scheme have been the following:

Boost economic recovery of the construction sector

- 36,419 actions
- 242 M€ investment
- 8,247 collaborating partner companies

Generation and maintenance of employment

- 20,000 direct jobs in the implementation and management of the actions
- More than 60% of the companies have generated new job positions
- 22% of the collaborating companies formed working relationships with other companies participating in PICSA
- 43% of the collaborating companies carry out other types of actions different to those included in PICSA.

Use of efficient energy

- 36,322 toe/year of energy saved and 85,964 tons of CO_2 avoided.

Reduction of the energy bill

- Economic saving of more than 280 million euros in companies, citizens, neighbourhood and other entities.

Vulnerable groups – energy poverty

- Almost 23% of the incentives have been used to improve the housing quality of over 7,000 low-income families.

Future perspectives

The impacts of the new incentive scheme launched in 2016 are expected to be higher than the previous ones, due to the improvements implemented in the new incentive

scheme as a result of the evaluation process and a greater participation of private finance:

- 50.860 actions
- 1,425 millions of economic saving
- 23.500 new jobs.

In addition to these above-mentioned impacts of the incentive schemes, there are other actions included in the Development Plan which will have an even more positive impact on the construction sector and buildings (80.000 new jobs in the next 5 years).

HIGHLIGHTS

Most successful elements

The most successful element with results already achieved is the design and management of the incentive scheme. To highlight, the participation of more than 8.000 collaborating companies in the management of incentives. They also played an active role in the publicity and dissemination among potential beneficiaries. Other elements that ensured the success of this scheme were: the design of a catalogue of energy improvement measures which allowed potential beneficiaries to know from the start what actions could be carried out to save energy; and the design of a very simplified 100% computerised procedure.

Most important difficulties

One of the main challenges was to facilitate the accessibility of the incentives to society through simplification. In this sense, the incentive aimed to achieve:

- A single and simpler procedure
- Fewer documentary obligations.
- A new clearer and more complete classification of actions.

Another challenge was to achieve a better energy culture:

- New technical conditions for greater energy savings and satisfying needs.
- Possibility of opting for more sustainable, energetic and environmentally friendly solutions.

Finally, it was necessary to offer the maximum guarantee to beneficiaries by improving business development and the competiveness of the collaborating companies.

Lessons learned

At the end of the incentive scheme in 2015, an evaluation process was carried out. From this evaluation, a series of lessons learned were drawn that have been taken into account in the design of the new incentive scheme launched in 2016. To highlight:

- Improve the training of collaborating companies relating to the documentation

requirements for the justification of expenditure.

- Carry out a pre and post analysis of the energy impact of the action undertaken implemented through the requirement of a previous and post certificate.
- Facilitate complementary financing tools.
- And progress in the improvement of the justification, facilitating the verification process of expenditure.

Ideas for transfer of good practice

Good practices are currently being transferred in the framework of the BUILD2LC project, led by the Andalusian Energy Agency. The overall objective of BUILD2LC, developed under the Interreg Europe programme 2014-2020, is to increase energy rehabilitation of buildings to reduce energy consumption and enhance policies to favour the creation of a market specialised companies in the sector. The project, financed by the European Commission, began in 2016, and involves a consortium of participating regions from 7 European countries that exchange good practices in this sector in the area of financing, competitiveness, activation of the demand and innovation. https://www.interregeurope.eu/build2lc/.In the framework of this project, the transfer of the good practice has been carried out through various interregional seminars (in which the good practice "PICSA" has been presented in detail), through the development of bilateral meetings with partner regions interested in its implementation and through the support of the Andalusian Energy Agency in the adaptation of the good practice to the particularities of each region. In addition to BUILD2LC, delegations from countries such as Greece, Italy, Germany or Bosnia and Herzegovina have held meetings with the Andalusian Energy Agency, interested in learning more about the good practice.

Type	**Flagship project ✓** **Strategic programme ✓** **Funding programme ✓** Infrastructure ❑ **Key actors Platform (for regional cooperation) ✓** **Interregional or International cooperation ✓** **Intelligence tool (measurement, analysis, foresight, evaluation…) ✓** Awareness-raising ❑ Other ❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** Cross-domain interactions (R&D&I and energy) ❑ Synergetic use of several funds ❑ High impact potential X Civil society participation ❑ Continuous Entrepreneurial Discovery Process ❑ Inter-regional cooperation ❑ **Leading to private investments ✓** **Transferability of the practice ✓**

	Monitoring system ❑

IDENTIFICATION

Name of the good practice case

9. Roadmap Towards Oil-Free and Low-Carbon North Karelia 2040

Country	Region + NUTS code
Finland	**North Karelia (FI1D3)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional ✓** Local❑ Interregional-international❑

Reference (website, documents)

Climate and energy programme of North Karelia 2020: http://bit.ly/2up1w3g

Roadmap Towards Oil-Free and Low-Carbon North Karelia 2040 – DRAFT (in Finnish): http://bit.ly/2tI15DL

North Karelia Towards Oil-Free and Low-Carbon Area – Project: http://pohjois-karjala.fi/web/hinku/tiekartta

Bio4Eco - Sustainable regional bioenergy policies: a game changer - Project : https://www.interregeurope.eu/bio4eco/

Organisation in charge of the good practice case

Name:	**Public authority ✓**
Regional Council of North Karelia	Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ Other❑:.....

Contact person: name, organisation, email, telephone

Anniina Kontiokorpi, Regional Council of North Karelia, anniina.kontiokorpi@pohjois-karjala.fi, +358 50 414 4816

Laura Mäki, Regional Council of North Karelia, laura.maki@pohjois-karjala.fi, +358 50 302 3914

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings ✓
Other Energy Efficiency (in Industry, Transport, Services...) ✓

Energy storage ❑
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore)❑
Smart Cities❑
Smart grids ❑
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑
Other ✓: Renewable energy, energy efficiency (buildings, transport)

DESCRIPTION

Short summary of the good practice

Roadmap Towards Oil-Free and Low-Carbon Area 2040 is based on Energy and Climate Programme of North Karelia 2020. Main sectors for the roadmap are: Energy, Transport, Land-Use, Natural resources and bioeconomy, Circular economy, Innovations and know-how. Work was conducted in several workshops involving several stakeholders.

Smart specialisation domain relevant for the good practice

Forest based bioeconomy (and renewable energies)

Challenge addressed and targeted objective

North Karelia is applying a membership in Carbon Neutral Municipalities Network: HINKU municipalities[6] aim to reduce greenhouse gas emissions by 80 % from 2007 level until 2030 inside the municipality's borders. Fossil oil used for heating will be replaced with renewable energy by 2020 and in transport by 2030.

Innovation (max. 2 choices)

Technological❑ Service❑ Commercial❑ **Managerial ✓** **Public sector ✓** Social❑ System❑ Other❑:.....

History: origin, definition phase, start and end

North Karelia's Climate and Energy Programme was adopted in 2012. It laid out the targets for reducing GHG emissions and raising awareness about climate change, sustainable growth of bioeconomy sector and increasing the share of renewable energy. The purpose of the roadmap is to collect and suggest tangible steps that are to be taken to reach the set targets. The roadmap is part of implementation of Fossil Oil Free North

[6] http://www.hinku-foorumi.fi/en-US

Karelia –project and contributes to a Regional Action plan that is being drafted in the Interreg Europe BIO4ECO project. The workshops were organised between March 2016 and May 2017.

Governance, stakeholders involvement and target groups

Six projects (North Karelia Towards Oil Free and Low Carbon Area, Secure NPA, BIO4ECO, Ten-Tacle, CIRCWASTE, Power from biomass) are run by three different organisations (Regional Council of North Karelia, Finnish Environment Institute, Karelia University of Applied Sciences). The Fossil Oil Free North Karelia project coordinated the work of more sectoral-oriented projects. Altogether, representatives of 54 different organisations – among them SMEs; public and local authorities; research centres; cooperatives; NGOs; municipalities and industries – attended the six workshops that were organised. The goal was to involve a wide range of stakeholders who will play an important role in putting the plans into action.

Stakeholders involved in implementation (multiple choices allowed)

Public authority ✓ **Economic and/or innovation agency ✓** Energy agency ❑ Intermediary❑ **Research actors ✓** **Industry ✓** **SMEs ✓** **NGO ✓** **Civil society ✓** Other❑:.....

Beneficiaries (multiple choices allowed)

Public authority ✓ **Economic and/or innovation agency ✓** Energy agency❑ Intermediary❑ **Research actors ✓** **Industry ✓** **SMEs ✓** Start-ups❑ **NGO ✓** **Civil society ✓** Other❑:.....

Implementation

Six thematic workshops were organised in order to collect ideas about actions that should be taken. The workshops dealt with identifying the regional strengths, energy, bio- and circular economy and transportation (replacement of fossil fuels and network of filling stations). In addition, the regional goals and guidelines were reviewed and opened for discussion for anyone interested in the roadmap. Comments came mostly from organisations that were involved during the whole process of elaboration of the roadmap. A separate workshop was organised for schoolchildren, who were asked about their views of sustainable future. A draft of the roadmap is currently publicly available for comments by any interested party.

Funding sources

European regional development fund, Interreg Europe, Interreg Northern Periphery and Arctic (NPA), Future Fund (regional), national funding (Ministry for economy and employment)

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation)❑ **ESIF T04 (low carbon economy) ✓** ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ **Interreg ✓** H2020❑ **National Funds ✓** **Regional Funds ✓** Local Funds❑ **Other ✓: NPA……..**

Results achieved

Roadmap works as an implementation plan for the Climate and Energy Programme of North Karelia 2020. It is a new kind of regional policy with more concrete actions. Most important stakeholders in the area were involved in the process and they will be the main actors with implementation of these actions.

Future perspectives

2-3 nationally and internationally interesting references will be designed and later on implemented through a new kind of financing and implementation model between public and private sector.

HIGHLIGHTS

Most successful elements

The workshops reached a large number of people from different organisations, and the process itself was a successful case of cooperation across sectoral borders.

Most important difficulties

In the course of the workshops it turned out to be challenging to focus the discussion from general to more concrete level, and name actors who could and should take initiative for advancing the proposed actions. In some cases it seemed that the instruments for influencing incentives (e.g. energy policies) were out of the reach of regional and local actors.

Lessons learned

A fully inclusive process was needed for organizing roadmap work. This took place through five different projects, a project group for roadmap consisting of experts from three different organisations, and several workshops with stakeholders from more than 50 organisations.

Ideas for transfer of good practice

The roadmap included regional targets concerning climate and energy actions and expanded perspective for developing economic activities in the area for example within bioeconomy and circular economy. Inclusive process with several workshops engages stakeholders for new actions needed for achieving targets.

Type	Flagship project ❑ **Strategic programme ✓** Funding programme ❑ Infrastructure ❑ **Key actors Platform (for regional cooperation) ✓** **Interregional or International cooperation ✓** Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ Awareness-raising ❑ Other ❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** **Cross-domain interactions (R&D&I and energy) ✓** **Synergetic use of several funds ✓** **High impact potential ✓** **Civil society participation ✓** **Continuous Entrepreneurial Discovery Process ✓** **Inter-regional cooperation ✓** Leading to private investments ❑ Transferability of the practice ❑ Monitoring system ❑

IDENTIFICATION

Name of the good practice case

10. SMILE (Smart Ideas to Link Energies), large scale experiment of smart grid models from mature technologies

Country	Region + NUTS code
France	**Brittany (FR52)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional** ✓ Local❑ Interregional-international❑

Reference (website, documents)

SMILE page on the institutional website of the Brittany Region : http://www.bretagne.bzh/jcms/prod_325881/fr/projet-smile-vers-les-nouveaux-reseaux-electriques-intelligents-de-l-ouest

Presentation from the ENEDIS website (DSO): http://www.enedis.fr/smile

Official website : http://smile-smartgrids.fr/

Website of the Regulatory Commission of Energy (CRE): http://www.smartgrids-cre.fr/index.php?p=smile-bretagne

SMILE page on the institution website of Pays de la Loire Region:

http://www.paysdelaloire.fr/no_cache/actualites/actu-detaillee/n/la-region-des-pays-de-la-loire-et-la-region-bretagne-laureates-de-lappel-a-projets-national-s/

Presentation from RTE's website (TSO):

http://lemag.rte-et-vous.com/actualites/accompagner-le-deploiement-des-reseaux-electriques-intelligents-de-demain

Organisation in charge of the good practice case

Name: Regional Council of Brittany Bretagne Développement Innovation (BDI) – Regional agency for economic development and innovation	**Public authority** ✓ **Economic and/or innovation agency**✓ Energy agency ❑ Intermediary❑ Other❑: .....

Contact person: name, organisation, email, telephone

Françoise Restif, SMILE project manager : f.restif@bdi.fr (+33) (0)2 99 67 42 08 / (0)6 74 09 05 86

Energy topic (max. 3 choices)

Bioenergy ❑
Carbon Capture Storage and Use (CCS and CCU)❑
Cogeneration / Combined Heat and Power (CHP) ❑
Energy Efficiency in Buildings - Sustainable Buildings❑
Other Energy Efficiency (in Industry, Transport, Services…) ✓
Energy storage✓
Geothermal energy❑
Heating and cooling❑
Hydrogen & Fuel Cell❑
Hydropower❑
Marine Renewable Energy (incl. wind offshore)❑
Smart Cities❑
Smart grids ✓
Solar energy: Photovoltaics (PV) ❑
Solar energy: Concentrated solar power (CSP)❑
Wind power (onshore) ❑
Other ❑: ……

DESCRIPTION

Short summary of the good practice

The SMILE project aims to act as an industrial catalyst for energy transition and network upgrading thereby fulfilling multiple goals: combating climate change, improving local energy solidarity, spurring innovation, and fuelling community engagement. Thanks to the development of a series of pilot projects deploying and testing innovative smart grids technologies over a large and densely populated area (27 133 km^2 – 3,4 M population), SMILE will provide concrete examples of innovative market solutions, validation of business models, regulatory innovations, awareness raising and mobilisation of prosumers in the field of smart grids.

Smart specialisation domain relevant for the good practice

Smart grids are one of the Strategic Innovation Areas featured in the Region's Smart Specialisation Strategy:
SIA 7 - Observation, and energy and ecological engineering, 7B- Smart grids.

Challenge addressed and targeted objective

Strategic objectives :

- Develop an integrated and exportable model that can be deployed at national level;
- Create a showcase for regional and national industrial excellence in smart grid technologies for international markets.

Targets :

- 10.000 jobs
- Development of an international industrial dynamic
- 1000 smart charging stations for electric vehicles
- >50 MWh storage
- 1000 positive energy buildings
- 2000 intelligent lighting systems
- 1 open community energy platform for awareness raising and stakeholder engagement at local level.

Innovation (max. 2 choices)

Technological✓ Service❑ **Commercial**✓ Managerial❑ Public sector❑ Social❑ **System**✓ Other❑:.....

History: origin, definition phase, start and end

This ambitious project takes into account the very fragile energy situation of Brittany, mainly due to a very low domestic production of electricity and a great fragility of the supplying network with the risk of a total blackout during severe winter weather. The Breton Electricity Pact, adopted in 2011, targets a threefold decrease in demand growth by 2020 and a fourfold increase in the production of renewables, as well as short-term and long-term measures designed to secure electricity supplies. A regional roadmap for the development of smart grids, seen as a key element to a successful energy transition, was developed and integrated to the Breton Electricity Pact in 2014.

The project was officially launched in April 2016 after a year-long preparation phase that involved Brittany's neighbour region Pays de la Loire as well as the whole industrial and economic ecosystem. The group dynamic draws on tried and tested cooperation between the two regions, benefits from the complementary characteristics and assets of its diversified territory, and is aided by a vibrant industrial ecosystem centred around smart grids.

Governance, stakeholders involvement and target groups

To ensure adequate project governance and be more flexible and responsive, a non-profit umbrella structure was set up: « SMILE Smartgrids », composed of 160 members from both public and private organisations. The association is co-chaired by the French Regions of Bretagne and Pays de la Loire and vice-chaired by the Metropoles of Rennes and Nantes as well as by the 4 utility boards (of which the DSO and TSO for gas and electricity are shareholders).

Governance is also supported by the Chambers of Commerce of both regions, 2 competitiveness clusters (Images & Réseaux and S2E2), representatives of local authorities, representatives of both large companies and SMEs, universities and financial institutions.

The SMILE Smartgrids association can count on the support of 3 groups of experts: a technical and scientific group composed of leading research centres, a second group working on financial instruments and a third one composed of representatives from different social and economic stakeholders as well as civil society (development agencies,

consumer associations…).

Stakeholders involved in implementation (multiple choices allowed)

Public authority✓ Economic and/or innovation agency✓ Energy agency ✓ Intermediary✓ Research actors✓ Industry✓ SMEs✓ NGO✓ Civil society✓ Other✓: associations

Beneficiaries (multiple choices allowed)

Public authority❑ Economic and/or innovation agency❑ Energy agency❑ Intermediary❑ **Research actors✓ Industry✓ SMEs✓ Start-ups✓** NGO❑ Civil society❑ **Other✓: associations**

Implementation

The project was launched in April 2016. The first year has been devoted to the definition of pilot projects, building the right commercial consortia and matching projects with adequate funding and financial resources. The first 4 pilot projects have been launched in July (see below for more information).

Funding sources

- ESIF and other regional funding (25 M€ from each Region)
- Regional Marine Renewable Energy funds
- Patrimonial Regional investment for self-owner building (smartgrid referencial for ports / airports / highschools / Trains)
- Interreg Franche Manche (Intelligent Community Energy) ICE project
- Interreg Europe SET-UP project

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation)❑ **ESIF T04 (low carbon economy)✓** ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg✓ H2020☐ **National Funds✓ Regional Funds✓ Local Funds✓** Other❑:.....

Results achieved

So far:

- 17 sub-projects were approved in July 2017 that responded to the following criteria: i) partnership-based; ii) demonstrating mature technologies; iii) energy data exchanges; iv) viable economic model and with sound legal, technical, financial and territorial components.

  - *Cyber secured energy data platform (PRIDE)*
  - *Large scale "collective self-consumption" project (RennesGrid)*
  - *Energetic performance and competitiveness tools for firms (ATL-EN-TIC)*
  - *Smart island, supplied entirely by tidal energy (Ouessant)*

- *Smart monitoring in tertiary/educational buildings (BeFLEXI)*
- *Electric vehicles charging stations monitoring (Drop'n plug)*
- *Regional flexibility/demand-response platform (ATLAS)*
- *Smart gas grid (West Grid Synergy)*
- *Shared self-consumption in public/private buildings (Partagelec)*
- *Hydrogen storage of renewable energy for mobility uses (Hydrogen Demonstrator)*
- *Shared self-consumption in social housing centre (La Marseillaise)*
- *Smart monitoring for awareness raising in schools (SESPEC)*
- *Massive thermal conversion storage (STOLECT)*
- *Self-consumption associated to innovative organic redox flow battery storage (Foirail Chateaubriand)*
- *Smart residential and tertiary area (La Fleuriaye)*
- *Shared self-consumption in commercial area (Zadig)*
- *Shared self-consumption in residential area with setting-up of a cooperative company involving consumers (Phebus)*

- A non-profit association created to gather Smile partners:

  - *88 start-ups & SMEs*
  - *36 medium and big companies*
  - *18 training and research centres*
  - *24 public authorities*
  - *20 innovation and economic support centres*
  - *5 banks and financial institutions*

- A website, in French and English version: http://smile-smartgrids.fr/en

Future perspectives

- 15 others projects to be approved in March 2018
- 12 more local governments to be involved (urban / suburban / rural)
- Environmental and socio-economic analysis to be carried out and shared among stakeholders and at national level

HIGHLIGHTS

Most successful elements

The successful element of the SMILE project is the involvement of all stakeholders, especially consumers, which is the key to solve acceptability issues related to data management and privacy which are at the core of smart grids development. Without acceptability, already existing technological solutions cannot be validated and go through a process of market uptake.

Most important difficulties

The biggest challenge is related to the democratisation and decentralisation of the energy systems. These processes imply great changes at many levels, from the regulatory framework to the market as well as the acceptability by the final users. It also implies the

involvement of different policy and decision making levels, including the local level. Each of these actors is key and need to understand the interest and advantages (both social and economic) of smart grids.

Ideas for transfer of good practice

The main objective of the SMILE project is to create an integrated showcase for regional and national industrial excellence in smart grid technologies, characterised by exportable integrated solutions. The deployment zone, centred around the cities of Rennes and Nantes, is representative of the wide variety of energy situations encountered across Europe. The pilot projects can therefore be easily replicated in the EU.

The methodology, meaning aggregating all relevant stakeholders following the quadruple helix approach, can also be transferred to other European regions and territories.

Type	**Flagship project ✓** **Strategic programme ✓** Funding programme ❑ Infrastructure ❑ **Key actors Platform (for regional cooperation) ✓** **Interregional or International cooperation ✓** Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ **Awareness-raising ✓** Other ❑:.....
Highlights	**Relevance to national and/or regional energy strategy ✓** Cross-domain interactions (R&D&I and energy) ❑ **Synergetic use of several funds ✓** **High impact potential ✓** **Civil society participation ✓** Continuous Entrepreneurial Discovery Process ❑ **Inter-regional cooperation ✓** **Leading to private investments ✓** **Transferability of the practice ✓** Monitoring system ❑

IDENTIFICATION

Name of the good practice case

11. Support instruments synergies for S3 and Energy in the Northern Netherlands

Energysense Living Lab project, one of the projects covering both TO1 and TO4 in the OP ERDF of the Northern Netherlands

Energy & S3 in the Northern Netherlands

Country	Region + NUTS code
Netherlands	**Northern Netherlands (NL1)**

Level at which the good practice is implemented (select one dominant level)

National❑ **Regional✓** Local❑ Interregional-international❑

Reference (website, documents)

The references below exist only in Dutch (with the exception of the OP, see last reference)

General website: www.snn.eu

Tender Valorisation

• General information: http://www.snn.eu/subsidies/subsidies-ondernemers-kennisinstellingen/innovatie-tender-valorisatie-2017-mkb/

• Policy framework: http://www.snn.eu/subsidies/subsidies-ondernemers-kennisinstellingen/innovatie-tender-valorisatie-2017-mkb/regeling-en-toelichting/

Call Living Labs

• General information: http://www.snn.eu/subsidies/subsidies-ondernemers-kennisinstellingen/innovatie-proeftuinen-ronde-2/

• Policy framework: http://www.snn.eu/subsidies/subsidies-ondernemers-kennisinstellingen/innovatie-proeftuinen-ronde-2/regeling-toelichting/

English (summary of) the OP: http://www.snn.eu/en/subsidies/operational-programme-european-regional-development-fund-2014-2020/.

Organisation in charge of the good practice case

Name: Northern Netherlands Alliance (SNN)	**Public authority** ✓ Economic and/or innovation agency❏ Energy agency ❏ Intermediary ❏ Other❏

Contact person: name, organisation, email, telephone

Luc Hulsman (SNN) hulsman@snn.eu +31(0)50 5224 945

Energy topic (max. 3 choices)

Bioenergy ✓
Carbon Capture Storage and Use (CCS and CCU)❏
Cogeneration / Combined Heat and Power (CHP) ❏
Energy Efficiency in Buildings - Sustainable Buildings❏
Other Energy Efficiency (in Industry, Transport, Services…) ✓
Energy storage❏
Geothermal energy❏
Heating and cooling❏
Hydrogen & Fuel Cell❏
Hydropower❏
Marine Renewable Energy (incl. wind offshore)❏
Smart Cities❏
Smart grids❏
Solar energy: Photovoltaics (PV) ❏
Solar energy: Concentrated solar power (CSP)❏
Wind power (onshore) ✓
Other ❏: ……

DESCRIPTION

Short summary of the good practice

Northern Netherlands Alliance (SNN) is the Managing Authority (MA) of the OP ERDF for the Northern Netherlands. SNN is also responsible for the RIS3, in which energy plays a prominent role. This is reflected in the OP ERDF, the main innovation support instrument and implementation instrument of the RIS3, which focuses on TO1 (innovation) and TO4 (CO_2 reduction) and on creating synergies between both objectives.

Smart specialisation domain relevant for the good practice

Instead of indicating specific S3 domains, the Northern Netherlands has designated four societal challenges as a starting point for their RIS3. One of those is Reliable, Clean and Efficient Energy, to which the good practice directly contributes. It however also directly or indirectly contributes to the other challenges, which are outlined in the next section.

Challenge addressed and targeted objective

Instead of prioritizing (sub-)sectors, the Northern Netherlands designates four societal challenges as a starting point of its RIS3: (1) Health, Demography and Welfare, (2) Food Security, Sustainable Agriculture and Bio-based Economy, (3) Reliable, Clean and Efficient Energy and (4) Clean, Safe Water. The regional opportunities regarding innovation and sustainability contribute to tackling these societal challenges. The OP therefore not only focuses on stimulating innovations in general terms (TO1), but also links this to innovations in low-carbon technologies (TO4). This led to the creation of instruments that are dedicated to both objectives.

Innovation (max. 2 choices)

Technological ✓ **Service✓** Commercial❑ Managerial❑ Public sector❑ Social❑ System❑ Other❑:.....

History: origin, definition phase, start and end

The Northern Netherlands made an early start creating its RIS3. In 2012, a quadruple helix (Q4) Task Force drafted a position paper which stressed the pioneering role the region endeavours to assume within Europe. Through consultations with stakeholders, the RIS3 was completed the same year. The strategy became operationalised into the Northern Innovation Agenda (NIA), issued in 2014. The RIS3 and NIA formed the basis of the OP ERDF 2014-2020. The OP ERDF is thus based upon the societal challenges. They are guiding the way the Northern Netherlands stimulates innovations in CO_2 reduction – and contributes to a smart, sustainable and inclusive EU in 2020.

Governance, stakeholders involvement and target groups

Governance of the best practice case is a full quadruple helix affair. In the design, implementation and monitoring of the Northern Netherlands RIS3, **stakeholder involvement** is key. Recently, the Northern Innovation Board (NIB) was formed, consisting of stakeholders from the Q4, tasked with the encouragement and overseeing of the implementation of the RIS3 in the Northern Netherlands. The ERDF Expert Committee and the ERDF Supervisory Committee consist of Q4 stakeholders as well. This best practice case is designed to tackle societal challenges, thus **targeting** the whole (Q4) society.

Stakeholders involved in implementation (multiple choices allowed)

Public authority✓ Economic and/or innovation agency❑ Energy agency ❑ Intermediary❑ **Research actors ✓**Industry❑ **SMEs✓** NGO❑ **Civil society✓** Other❑:.....

Beneficiaries (multiple choices allowed)

Public authority❑ Economic and/or innovation agency❑ Energy agency❑ Intermediary❑ **Research actors✓** Industry❑ **SMEs✓** Start-ups❑ NGO❑ **Civil society✓** Other❑:.....

Implementation

The Northern Netherlands OP ERDF underlines the importance of creating synergies between innovation (TO1) and CO_2-reduction (TO4). This results in an integrated approach. Projects and initiatives applying for ERDF instruments can cover both objectives: contributing to enhancing the innovation capacities of SMEs as well as reducing the CO_2-footprint. SNN then assigns one of the objectives as the main objective. Two instruments with such an integrated approach are (1) Tender Valorisation (on basis of GBER 651/2014 art. 25, 28 and/or 29) and (2) Call Living Labs (on basis of GBER 651/2014 art. 27).

Funding sources

The main instrument to implement RIS3 is the ERDF. The Northern Netherlands Operational Programme ERDF is focused on TO1 and TO4, which are translated into two priority axes: (1) human capital, knowledge and innovation and (2) a low carbon economy. The budget for SNN's OP ERDF for 2014-2020 is €103,5 million, supplemented with an additional €18.5 million of the Dutch government, totalling €122 million.

Public funding sources (multiple choices allowed)

ESIF T01 (research and innovation) ✓ ESIF T04 (low carbon economy) ✓ ESIF T07 (sustainable transport and network infrastructure)❑ ESIF other or ESF❑ Interreg❑ H2020❑ **National Funds✓** Regional Funds❑ Local Funds❑ Other❑:.....

Results achieved

The integrated approach merging R&D with CO_2-reduction within the OP ERDF results in ERDF instruments that are amenable for projects under both TO1 and TO4. These instruments, such as the Tender Valorisation and the Call Living Labs, are therefore directed at bringing together knowledge institutions and businesses, and preferably end-users, in order for them to work together. This leads to interesting projects combining innovation and sustainability, while also focused on strengthening SMEs. The number of projects selected and/or funded is 49 and total € invested: € 18,6m. One example is the showcases 'MegaWindForce Windturbine' (ERDF tender Valorisation) in which a completely new type of wind turbine has been designed – a design which has been confirmed by several research institutes. This wind turbine is lighter, stronger and lower in maintenance, which makes wind energy better able to compete with other forms of energy. Another example is 'Energysense' (ERDF call Living Labs), which set up a Living Lab of over 3000 households to test new energy services and products in a real-life environment; the aim is to make these households at the disposal of SMEs and to develop the corresponding services for SMEs These types of cooperation lead to new ideas and even new innovations – all contributing to tackling the societal challenges linked to a better use of sustainable energy.

Future perspectives

For the future, the Northern Netherlands aims to further develop the synergies between both objectives and enhance the number of projects making use of the dedicated ERDF instruments. Also, we would like the projects to incorporate multiple actors and to include businesses and knowledge institutions, which cooperate in a creative environment and together develop new innovations in the field of clean energy – with the aim of making the Northern Netherlands a frontrunner in S3 and energy.

HIGHLIGHTS

Most successful elements

This approach of finding synergies between innovation and CO_2-reduction can be seen as a way to kill two birds with one stone: contributing to both TO1 and TO4 at the same time. The ERDF instruments Valorisation and Living Labs are quite successful in this regard. By encouraging various actors to cooperate in developing promising niches, new ideas arise that can grow out to become innovations – and ultimately, regional economic strengths, benefitting society as a whole. This has led to the Northern Netherlands becoming a region known for its strength in energy transition through innovation.

Most important difficulties

Even though there are some very good examples of projects combining innovation with CO_2 reduction through their ERDF funding, the number of these best practices could be enhanced. The most important difficulty hindering a larger amount of applications for innovation support is a lack of knowledge regarding the specific instruments, as well as the idea that funding applications are long, difficult and bureaucratic processes. Lessening the fragmentation between innovation support instruments and optimizing the coordination between different policy levels might help creating a more overseeable landscape of innovation measures. Efficient communication and information actions are crucial in this regard.

Lessons learned

With regard to difficulties, the first lesson is to develop an effective communication plan, which highlights the specific activities to undertake in order to realise a wider knowledge of the availability of innovation support instruments, leading to more and better applications. Another lesson is to facilitate rather than limit innovative and promising initiatives by widening the executive- or implementation frameworks of innovation support measures. SNN has developed a pilot ERDF instrument 'Open Innovation', which primarily aims at projects contributing to tackling the societal challenges of the RIS3 and contributing to the OP's synergetic thematic objectives.

Ideas for transfer of good practice

The good practice as presented in the Northern Netherlands might be disseminated across Europe by several dedicated communication activities. First of all, through the European Commission and the S3 platform itself, on their websites, newsletters, publications, etc. Secondly, SNN communicates these good practices on their communication channels and the website 'Europa om de Hoek' (https://www.europaomdehoek.nl). It might also be an idea to construct a (European) database of exemplary projects, which are showcased to inspire other regions. Project visits as part of interregional cooperation projects (H2020, Interreg) and bilateral study visits might also be a good way to exhibit the good practice.

Type	Flagship project ❑ **Strategic programme ✓** Funding programme ❑ Infrastructure ❑ **Key actors Platform (for regional cooperation) ✓** Interregional or International cooperation ❑ Intelligence tool (measurement, analysis, foresight, evaluation…) ❑ Awareness-raising ❑ Other ❑:.....
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