D.T1.3.1 FRAMEWORK POLICY RECOMMENDATION FINAL DRAFT

Partner Region Version n°1 / 2021

Preface

Present Framework Policy Recommendation is a strategic document to be delivered for seven Partner Regions under the Project entitled "PROmoting regional Sustainable Policies on Energy and Climate change mitigation Towards 2030" funded by the Interreg CENTRAL EUROPE Programme under Thematic T1 "Assessment of availability and use of public funds supporting climate change mitigation".

Programme priority:	2. Cooperating on low-carbon strategies in CENTRAL EUROPE
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Partners involved

PP8

All PPs

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1. EXECUTIVE SUMMARY

Present document is a key deliverable developed by seven PROSPECT2030 Partner Regions under the Project entitled "PROmoting regional Sustainable Policies on Energy and Climate change mitigation Towards 2030" funded by the Interreg CENTRAL EUROPE Programme under Thematic T1 "Assessment of availability and use of public funds supporting climate change mitigation".

The overall output of this paper is a set of policy recommendations on the use of public funds for climate change mitigation at four territorial levels, i.e., European Union, transnational, national and regional levels. One recommendation was formulated at the European Union level, two recommendations at transnational level, seven recommendations at national level and six recommendations at regional level.

These recommendations are addressing relevant horizontal and thematic policy areas at each above territorial levels.

Overly, the policy recommendations aim to substantially contribute to the programming for 2021-2027 for climate change mitigation. They primarily target the decision-makers at EU, national and regional levels, but also the local administrations, non-governmental organisations and other opinion leaders who may influence the programming for the next seven years.

2. Introduction

The present deliverable is part of the implementation of Thematic T1 "Assessment of availability and use of public funds supporting climate change mitigation" (T1) of PROSPECT2030 which aims to deliver policy recommendations for the decision-making on the use of public funds, in particular ERDF funding dedicated to support the green transition.

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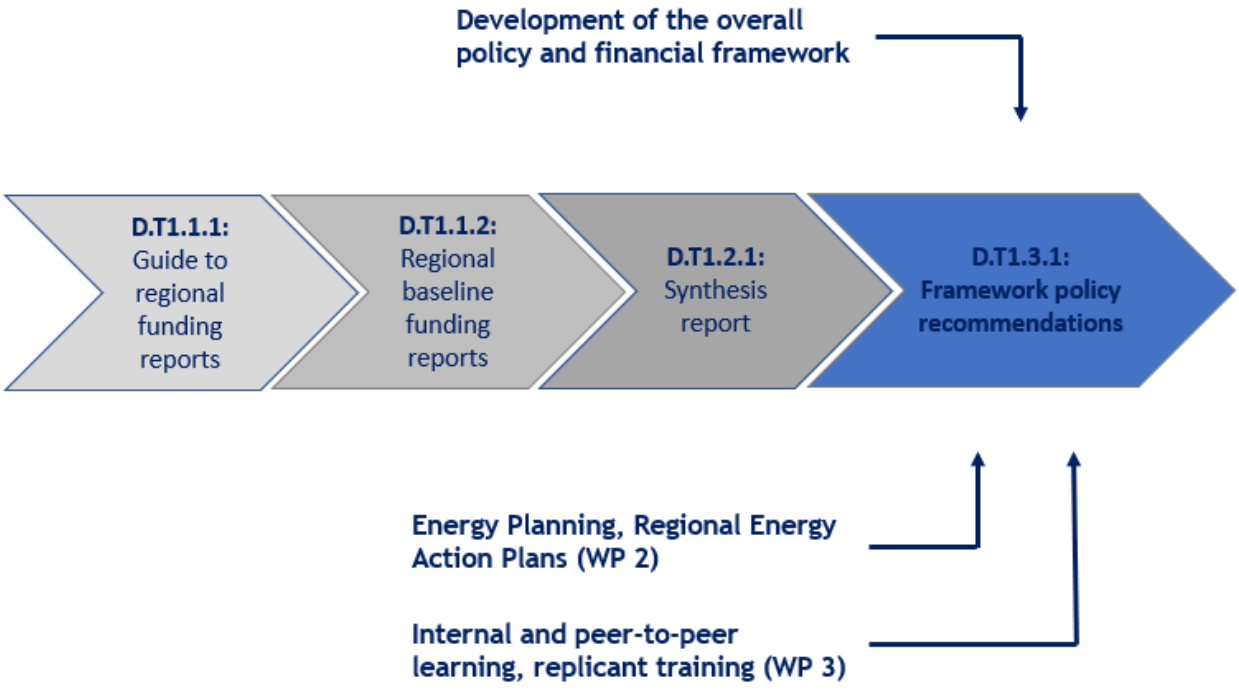
The overall objective of Thematic T1 "Assessment of availability and use of public funds supporting climate change mitigation" (T1) of PROSPECT2030 is to deliver policy recommendations for the decision-making on the use of public funds, in particular ERDF funding dedicated to support the green transition. Policy recommendations are developed at EU, macro-regional, national and regional levels.

Specifically, T1 aims to

I. conduct a structured assessment of the utilization of public funds instrumental in the area of the development of the low carbon sector in seven selected target regions of PROSPECT2030 over the 2014-20 programming period;
II. based on individual reports developed by the Lead Partner (LP) and relevant Project Partners (PPs) develop a Synthesis Report;
III. develop policy recommendations on the use of public funds for climate change mitigation, and thereby to provide policy inputs for the programming for 2021-2027 in the area of green economic transition; and
IV. subsequently adapt policy recommendations to fit the specific macro-regional strategies (EUSDR, EUSAIR, EUSBSR, EUSALP) of Central Europe.

The process of developing the framework policy recommendations is illustrated in the figure below. As the figure shows the sources of the framework policy recommendation are not limited to the assessment of the low-carbon funding made available within the 2014-2020 programming period, but also include the anticipated responses to the new strategic framework along the European Green Deal and the "Fit for 55%" Package and the financing planning in two dimensions, the Multiannual Financial Framework (2021-2027) and the NextGeneration EU. Furthermore, the recommendations are incorporating results achieved to date by PROSPECT2030 under the complementary thematic work packages, in particular in terms energy regional planning and discussion with the framework of various types of training activities.



The priorities, measures and SWOT analyses identified by the Regional Energy Action Plans (REAPs) prepared for each target region in parallel (WP 2 "Energy Planning for low carbon economy transition"), were also an essential source of information to support the formulation of policy recommendations. The REAPs provide inputs in

particular for phasing-in new focus areas within the energy and climate transition context as well as new or improved operational aspects.

When developing present paper, the lesson learnt, best practices and conclusions developed within the framework of the mutual and peer-to-peer learning and replicant training activities under WP 3 ("Mutual learning process and replication") are also taken into consideration in the process of formulating policy recommendations.

The overall output of this paper is policy recommendations on the prospective use of public funds for climate change mitigation at for territorial levels, i.e., European Union, transnational, national and regional levels. In the course of the assessment following horizontal and thematic policy objectives were identified and addressed at the above territorial levels.

Horizontal policy areas	Thematic policy areas
Governance	Energy efficiency - public sector
Territorial coordination	Energy efficiency - residential sector
Regional Energy Planning	Energy efficiency - SME sector
Programming	District Heating System
Implementation	Renewable Energy Sources
Monitoring	Transport/e-mobility
Ex-post evaluation	Gas grid
Energy data	Electric grid / smart grid
Finance	Energy storage
Stakeholders' engagement	Energy communities
Awareness rising	Research and development
Communication, Networking	Waste management/waste to energy
Best practice	
Training	

The key questions posed to identify the policy recommendations include in particular the following.

- Are the rationale and challenges of the energy transition process adequately communicated? Is there space for improving the public awareness?
- What is the social acceptance of renewable investments? Are appropriate measures required in this respect?
- Are local stakeholders appropriately engaged?
- Are regional green governance structures in place? Where are the gaps?

- Regional strategy formulation and programming are supported by adequately national governments?
- Are there sufficient data to profoundly support programming activities and the utilization of public grants?
- Appropriateness of low-carbon funding policies (KPIs properly set, are regional demands met by national governments, do regional and national priorities form a cohesive framework?)
- What are the key areas in the low-carbon sector where transnational cooperation can bring a tangible added value to the cooperation between European region?
- What is the focus of capacity development needs?
- What kind of platforms, tool, guides are deemed necessary to support the decision-making at various levels (i.e., policy, programming, investments)?
- How to characterise administrative procedures and institutions involved in the delivery of the funds to final beneficiaries (supportive, transparent, central/local levels, etc…)?
- What are the key targets for energy efficiency and renewable investments?
- What energy saving options are present?
- What is the efficiency of the use of public funds (resource efficiency, leveraging private funds)?
- What kind of innovative finance techniques are planned by the regions?
- What innovative cooperation networks are built to strengthen the regional/local energy independence?
- How the environmental/climate impacts (e.g., life cycle analysis) and economic viability of the use of public fund?
- What are the key research and innovation targets?

3. Policy recommendation for EU level

3.1. Horizontal policy recommendations

3.1.1. Maintaining cross-European, transregional and interregional cooperation as a resource for exchange of knowledge and replication of best practices to promote the green economic transition

The experience of Interreg PROSPECT2030 well demonstrates that further strengthening the information and knowledge exchange at European level brings tangible added value for project developers and project partners of various kind. The economic and social similarities and disparities between the European regions, the highly diverse characteristics and potentials of the regions coupled with specific challenges of financing, call for various specific innovative solutions among others in the green transition process. The impacts of the climate change require a rapid response from the European regions which can be successfully triggered by the efficient knowledge exchange and transfer.

The valuable topics of common interest identified and explored within the framework of the PROSPECT2030 project include among others experience on regional energy planning methodology, modalities for efficient use of public funding, alternative fuels, energy storage solutions, one-stop-shop organizational models enhancing energy retrofits of residential buildings, stakeholder engagement techniques, innovative finance solutions. Based on the interest showed by the project partners including the associated partners of the project as wells by the large number of replicant partners, it appears that there is still an enormous space for learning from each other's experience, approaches, best practices and replicable solutions, and this mutual learning process substantially facilitates the building a more cohesive European future.

3.2. Thematic policy recommendations

3.2.1. Development of a common strategy for energy storage solutions.

Energy storage systems allow to store thermal or electric energy generated by volatile RES. Among the energy storage technologies, the conversion and storing of electric power into hydrogen (or methane) will allow to transfer to long distance power generated by RES (i.e. off-shore wind farms) by the use of the natural gas infrastructures (i.e. caverns, compressors, pipe-line). A common European Strategy for storing RES power as green hydrogen or green methane is recommended for increasing the security of supply, the resilience of the whole energy systems (electric, gas and thermal) and accelerate to the energy transition.

4. Policy recommendation at transnational level

4.1. Transnational horizontal policy recommendations

4.1.1. Evaluation of results of the European transnational projects and their dissemination

There is a need for a more systematic and user-friendly evaluation of ERDF financing in transnational projects and the subsequent dissemination of the results in order to ensure that the results, conclusion and lessons learnt can be accessed, adopted or replicated by the widest possible audience, as well as to maximise the resource efficiency of the mobilized public funding.

4.2. Transnational thematic policy recommendations

4.2.1. Coordination of Europe-wide high voltage power corridors and better integration of renewable-based electricity

European energy policy aims to increase the contribution of renewable energy sources and create a pan-European competitive electricity market. Flexible, automated, participatory and renewable grids are the future of energy systems.

Europe is currently in the process of preparing a top-down approach to support the planning of a future pan-European power system that includes prioritised electricity highways or corridors that have the capability to address European and national energy targets, climate change policies and market requirements until 2050. In order to achieve these objectives, a pan-European power system is required to facilitate the future transport of electricity generated from renewable energy sources, over long distances to the load centres via Electricity Highway Systems.

It is essential to identify appropriate scenarios considering all relevant political, technical, financial and socio-economic aspects at transnational, national and regional levels. Furthermore, focused incentives are required to better monitor the load of the distribution networks, transformer substations, calculation of losses in the distribution network, detecting and reducing losses in the grid, and to ensure better maintenance of the distribution networks. Besides the technical aspects, it is also an urging need to pay higher attention to decentralized power generation, the coordination of energy production and utilization at local level as well as the innovative energy storage options. Social structures such as Energy Communities or co-ownership of small and medium-size plants may engage private citizens and small companies, that can now produce, share and sell their energy with an unforeseen independency.

5. Policy recommendation at national level

5.1. National horizontal policy recommendations

5.1.1. Ensure more targeted programming of ERDF funds at national level to better respond to regional needs

The programming of decentralized EU Structural and Investment Funds (ESIF) including ERDF funding in the participating countries varies in the participating countries between a one-tier (national) and two-tier (national/federal/regional) structures. The programming at national level is only able to meet to specific regional needs to a limited extent, only. Even in countries where a two-tier programming structure exists and the regions manage own dedicated ERDF resources, improved cohesion and complementarity between national and regional priorities and associated measures are required in order optimize the efficiency of the utilization of the public funding. To ensure appropriate response to the regional/local development needs is even more complicated if the programming is performed at national level, only.

It is therefore recommended to strengthen the regional programming structures and capacities, or create and appropriately resource those structures. The proper communication of well-justified specific regional needs and initiatives to the government actors is essential in order to ensure that the national measures better and more cohesively integrate them.

5.1.2. Ensuring better access to energy data in order to facilitate energy and climate planning at regional level

The Project Partners PROSPECT2030 in general concluded that no comprehensive data in sufficient detail is available at national level that could efficiently support the European regions in formulating their regional energy and climate strategies and related measures.

It is recommended to dedicate more efforts and national resources to more comprehensively publish energy and climate related data and baseline assessment on public domain in order to facilitate. It is furthermore suggested to address the resource efficiency of (EU, national and regional) public grants with key performance indicators such as to what extent specific types of low-carbon investments are capable to mobilise private financial resources as well as what are the investment costs of generation of unit energy by the various renewable solutions.

5.1.3. Creating more favourable fiscal environment for energy efficiency and renewable investments

Austria

Tax for motor vehicles

The standard consumption tax (Normverbrauchsabgabe [NoVA]) is part of the Austrian tax model for motor vehicles. It is a percentage surcharge on the purchase price or fair market value that depends on CO_2 emissions and is payable on the purchase or import of certain motor vehicles. The NoVA is due when a motor vehicle is placed on the market in Austria for the first time. Motor vehicles that do not emit CO_2 due to their type of drive (e.g. electric and hydrogen) are exempt from the NoVA. The calculation is based on the CO_2 emission value in grams CO_2/km according to WLTP (Worldwide harmonised Light vehicles Test Procedure) minus 112 grams. The maximum tax rate is 50%. If a vehicle has CO_2 emissions exceeding 200 g/km, the tax for the CO_2 emissions exceeding the limit of 200 g/km is increased by 50 euros per g/km (so-called "malus"). It is recommended to maintain the taxation scheme.

Hungary

VAT regulations for energy retrofit of buildings

The current VAT charging system provides a non-competitive taxation environment for the renovation of residential buildings in Hungary. In order to promote the construction of new, energy efficient residential buildings, a preferential VAT rate of 5% is applied for the

construction of new residential buildings, whilst the VAT rate applicable for the renovation of old residential buildings remains the standard 27%. It is recommended to provide the same financial footing to the construction of new and renovation of old buildings in the residential building segment.

Italy

„Superbonus" scheme
In May 2020, the Italian Government issued urgent legislation to assist with the recovery of the Italian economy, following the unprecedented shock of the covid-19 pandemic. The so-called "Superbonus" tax credit is intended to cover 110% of the costs of energy efficiency and structural seismic improvements of Italian properties to help with the recovery of the economy and in the process, ensuring tax compliance in the local building industry. This tax credit can be set against tax liabilities of the relevant property owner, over five years, in five equal annual instalments. This tax legislation is complex and still evolving. It has been amended by subsequent legislation and its interpretation is progressing with Italian Revenue circulars and regulations. There are still some gaps to be filled and no doubt new issues/gaps will arise in future, but is a real opportunity for Italian property owners recommended to further pursue.

5.1.4. Innovative financing instruments

Hungary

ESCO/EPC framework
The Law on energy efficiency (Law No. LVII/2015) defines the ESCO/EPC concepts, according to which energy service companies are enterprises providing energy efficiency services or other energy efficiency improvement measures including the up-front investment and related operation, maintenance and system control, that lead to verifiable or measurable energy efficiency improvements or savings in primary energy use.
The National Energy and Climate Plan and the National Energy Strategy 2030 (with an outlook to 2040) reiterated the need to encourage ESCO solutions in the SME sector, public institutions, and in residential buildings. Currently, there is only a limited guidance for EPCs. To carry out an EPC project, the provisions of the Law on the public procurements (Law No. CXLIII/2015) are generally applied, as well as the Law on concession (Law No. XVI/1991) in some cases.
More strategic and practical guidance is required to optimize the blending of grant and ESCO finance in energy efficiency and renewable projects and to launch exemplary projects and disseminate best practices.

Risk-sharing instrument for geothermal projects
Hungary and especially the Southern Great Plain have very favourable geothermal conditions. The unpredictable risks associated with the development of geothermal production and injection wells, is identified as the major barrier for geothermal investments. These geological, technical and in some cases economic and social risks

cannot be profoundly assessed by financiers, although successfully designed and implemented projects are in general financially viable.
Therefore, it is recommended to consider redirecting public funding to a publicly-financed geothermal risk-sharing/insurance instruments instead of grant-supported individual projects.

Poland

EPCs
The terms of EPC may have in Poland double mining:
EPC(1) – Engineering, Procurement & Construction contracting, defines total contractor responsibility for project execution – in this document to avoid confusion we will use the term of EPCC;
EPC(2) – Energy Performance Contracting defines the purpose and goals of modernization contracting, which mostly calls for EPCC type of contracting responsibility range, in this case further down we will continue to apply the term of EPC;
EPC may be applicable for both types of clients: - public as well as private. Total scope of responsibility for contract execution (engineering, procurement & construction) is assigned to the contractor except an early design development stage which specifies investment program, feasibility study, contracting conditions and financing – the stage of tender documentation development. Energy Performance Contracting aims mainly for energy economy improvement by lowering energy demand and consumption in buildings, city building districts and industrial installation.
Public clients are usually unable to develop necessary for EPC documentation which specifies energy performance targets and project technical vision, feasibility study, financing and contract documentation – so called the early design stage documentation. Usually, they call for support to external auditing firms which as an early design stage contractor support the client in modernization processes.
The large scales of EPC usually are financed by consortia of Investment Funds and Banks. In case of public firms EPC can be financed from Public Support mechanisms. The EPC early design phase is usually financed out of bank credits.

Public-private partnerships (PPP)
Public-Private Partnership is a venture organized to address complex public projects due to technical (lack of expertise), financial (lack of financial resources – third party financing - TPF) or formal reasons. PPP is usually performed under long-term agreement – contract of which targets to modernize public infrastructure e.g.: EPC of public property infrastructure.
For public institutions as kindergartens, schools, universities and hospitals or local governments buildings it would be difficult to collect funds for modernization of their premises as well as to receive loans for improving energy performance of their premises, so an idea of financing modernizations out of energy savings had been developed in USA and spread out in Europe.

Public-Private Partnership also defines the type of contracting relation between public property owner and private contractor which rewards himself out of operational savings after modernization. The contractor that undertakes this type of activity is called an ESCO. Unfortunately, this term in Poland has double meaning. In ESCO mode contractors finance projects execution out of their own funds or out of banking loans usually not more than up to 80%. In this case, banks usually require good references and proven history of ESCO project execution from contractors. Depending on the project size, ESCO projects in Poland are financed by international banks in cooperation with Investment Funds, where they usually play roles of payment guarantors.

Leasing of investments in energy efficiency and renewables

PolSEFF was the first program among all GEFF (Green Energy Finance Facility) scheme implemented by the European Bank for Reconstruction and Development in other countries, which enabled investment financing through leasing. This form of financing turned out to be the most popular among Polish entrepreneurs. Approximately 70% of all investment projects carried out under PolSEFF were financed in the form of leasing.
Basic causes explaining this result can be:
leasing has become a natural choice of entrepreneurs to finance the purchase of materials and equipment from the LEME list (List of Eligible Materials and Equipment);
simplified procedures and a very short time for the decision to grant a lease from the moment an entrepreneur applies for financing;
categories of materials and devices registered on the LEME list were co-created with leasing institutions that were aware of the needs of small and medium-sized enterprises.
Leasing also proved to be the optimal form of financing the purchase of products registered on the LEME list (preferred by suppliers who, while promoting products covered by the PolSEFF program, also promoted the entire program).

Crowdfunding

Crowdfunding (subscription) – is a form of financing for different type of projects organized by a group of people. In crowdfunding case a project is financed by a group of people donating relatively small sums of money by those interested in project execution. In principle, the crowdfunding is an activity consisting in some kind of funds collection and allocation for financing a project execution in order to achieve certain goals, e.g.: improvement in energy distribution installations within a building by occupiers in order to decrease costs of living. In most of the European countries crowdfunding is not legally regulated. In Poland a Polish Society of Crowdfunding operates, which provides legal support to interested groups of people.

Financing energy investments by commercial banks in Poland

The banking sector has gradually developed its involvement in the RES market, responding to the investors' demand and encouraged by former and present Polish governments, indicating the need to build infrastructure for renewable energy in Poland, among others due to the necessity to fulfil international obligations of the country in the scope of CO_2 reduction.

Representatives of the banking community assess the prospects for further development of this market in Poland as being subject to relatively high risk. The main problem is, above all, the huge instability of the national regulatory environment, especially the legal one.

Typical examples are:

- destabilization of the green certificates market;
- modification of the calculation method of the so-called substitution fee without introducing a minimum level (only the maximum level was introduced), which led to a negative stability change in the economic conditions for the continuation of long-term renewable energy projects;
- the ease with which the energy companies controlled by the State Treasury are trying to completely withdraw from the execution of the long-term CPA and PPA agreements that were the basis for financing the RES projects in the project finance formula.

All of the above factors caused either the lack of interest of banks in financing investments in renewable energy sources or a significant limitation of accessibility and raising the prices of their financing. As a consequence, the problems with access to external financing are also noted by investors seeking EU funds. The financial feasibility and timeline of these projects may be questionable. Bankers stress the need for the Polish state to rebuild confidence among investors and financial institutions. Lack of this confidence will cause reluctance to finance not only the renewable sector, but also other projects exposed to regulatory risk. Bankers also emphasize the need to undertake information and education activities in the public space on the economics of renewable energy sources, including the role of the banking system. Attention was drawn to appearing of unreliable or misrepresented information about banks participation in the development of renewable energy in Poland.

BOS Bank

Bank Ochrony Środowiska S.A. is a Polish bank whose majority shareholder is the National Fund for Environmental Protection and Water Management (NFOŚiGW). The Bank specializes in supporting projects and activities for environmental protection.

BOŚ offers a wide range of banking products and services:

- investment and revolving financing;
- supplementing the offer of NFOŚiGW and the Voivodship Environmental Protection Fund;
- European Offer - a package for companies interested in EU subsidies;
- investment advisory;
- leasing;
- preferential financing - implementation of projects that reduce the heat demand for heating the building or water, reducing primary energy losses in the local heat source and other investments aimed at reducing the negative impact on the environment.

Preferential financing is provided by BOŚ Bank in association with international financing institutions and/or financing schemes such as KfW Bankengruppe, CEB (Council of Europe Development Bank), EIB (European Investment Bank), JESSICA (Joint European Support for Sustainable Investment).

Investment funds
Investment Fund (IF) may be a public or private investing institution usually specializing in certain branches of activities. Usually, they operate in consortiums with banks and insurance institutions providing finances to large scale of EPCC projects execution resulting in development of new business opportunities, e.g. an EPC modernization project of district heating installation which creates new business opportunities to interested bodies. At investment completion IF may sell, lease or hire a professional operator to run a newly developed installation.

Green Bonds
At the edge of 2016/2017 Poland issued Green Bonds in cooperation with HSBC, JPMorgan and PKO BP at the amount of 750 000 000 Euro. They are granted in countrywide auctions to private companies interested in RES technology investments. They might be used for financing and refinancing projects that coincides with Green Bond Framework worked out by The Ministry of Finance according to ICMA Green Bond Principles.

5.1.5. Increase the social participation in decision-making processes

The social acceptance of the projects related to the energy transitions is a key factor to accelerate the decarbonisation process. In general, the majority of the European citizens appreciate the sustainability policies and the more intensive exploitation of renewable energy sources in order to phase out fossil fuels, but they are often against investments if these are planned to be realized in their close neighbourhood.

This opposition is to a large extent attributed to the lack of comprehensible and quality information and the low efficiency of the conventional communication channels. This calls for new solutions based on Virtual Reality in the social acceptance. The innovative IT-based communication techniques are recommended to be addressed at transnational level in order to facilitate their rapid development and exchange of best practices.

5.2. National thematic policy recommendations

5.2.1. Promotion of energy efficiency of buildings and building integrated renewables

The building sector throughout in Europe represents the biggest aggregated energy consumer, accounting for nearly 40% of the total final energy consumption. By radical improvement of the energy performance of the public residential and commercial/industrial building stock, the current consumption level may be reduced depending on countries and regions by 30-50%.

The general public awareness should be strengthened in order to trigger i. behavioural changes and improved control of energy consumption as well as ii. investments to effectively reduce the energy consumption of homes, SMEs and municipal buildings.

The awareness raising should at first place target the population, SMEs and municipalities with appropriately tailored measures. The attention of the general public should be called to among others reducing energy consumption by switching lights off, appropriately operating thermostatic valve, installation of rooftop solar panels, eco-driving. SMEs and municipalities are to be targeted to strengthen their energy management in order to identify their saving potentials and the appropriate measures to reduce the energy consumption.

However, the extremely long repayment periods discourage the building especially in the residential sector to invest into comprehensive energy retrofits. Public grants or other fiscal intervention such as VAT reduction, are deemed necessary to ensure an efficient market uptake of residential energy retrofit.

5.2.2. ESCO/EPC to the energy retrofit of public buildings and infrastructure

In order to demonstrate its "flagship" role, the public sector plays an important role in the green economic transition process. Due to the order of magnitude of the anticipated energy saving (and the coupled CO_2 reduction) potential, the energy retrofit of the public building stock (e.g. schools, hospitals, sports facilities, public offices, multifunctional buildings, social housing, etc.) and infrastructure is widely regarded to be one of the key focus areas where public funding can be efficiently leveraged by private resources.

In general, public authorities (central and local governments) have limited own financial resources for implementing the energy efficiency upgrade and/or installation of renewable energy generation infrastructure in their building stock and infrastructure (e.g. waterworks, wastewater treatment plants, public transport infrastructure, street lighting). The majority of these retrofits are typically non-bankable projects, and the associated investment needs usually well exceed the capacity of this public authorities' budgets. Therefore, the area remains a target for public grants which, however, offers a wide-ranging opportunity for mobilizing private funds based on energy performance contracting (EPC).

The energy upgrading of lighting systems such as street lighting and external and indoor lighting of public buildings and facilities involving the replacement of lighting systems and installation of dynamic lighting control, is one of the most obvious areas to partner with energy service companies (ESCOs). Other public infrastructures (e.g. water works, wastewater treatment plants, public transport) offer public-private partnership options.

In order to maximize the resources efficiency, the predominantly grant-based deep renovation of public buildings including integrated installations producing renewable energy, need to be shifted towards the optimal blend of public grants and ESCO financing.

ESCO schemes are also to be promoted for efficient renewable technologies such cogeneration of biogas, as onshore and offshore wind farms, solar-photovoltaic parks.

The legal and operational framework of ESCO varies from Member State to Member State. Therefore, all Member States where this framework does not or only partially exist should be completed by relevant legal provisions building on the existing legislation (e.g. public procurement and concession) as well as by practical operation guidance up to applicable

models for tendering and contracting. ESCO/EPC models developed for the public sector should be able to give a momentum for similar schemes targeting SMEs or large industrial actors in the energy retrofit of their buildings.

5.2.3. Improving the energy efficiency and promotion of climate consciousness in the SME sector

The commercial and industrial buildings of SMEs throughout in Europe are regarded to a large extent energetically outdated. SME investments are largely focused on technology upgrade and production capacity increase which are associated with limited greenhouse gas reduction potential (if any).

In order to achieve substantial greening in the SME sector, public funding is recommended to dedicate to promoting the implementation of energy management systems, voluntary assumption of provisions of the Energy Efficiency Directive (2012/27/EU) concerning the energy audits, identification and implementation of energy efficiency measures. Moreover, public financial contribution is required to promote the alignment of SMEs with the Sustainable Finance Taxonomy (EU Regulation 2020/852) in order to enhance the environmental consciousness in the SME sector.

6. Policy recommendation at regional level

6.1. Regional horizontal policy recommendations

6.1.1. Strengthening regional green governance

Ideally, regional governance structures supporting the green transition should

- develop regional environmental/energy/climate short-, medium- and long-term strategies, road maps, action plans;
- support the national programming with collection and analysis of energy and climate data, engaging local stakeholders, monitoring of the state of affairs with regard to EE and RES investments as well as developing policy inputs;
- initiate, design and coordinate/implement regional projects, in particular high added value projects such as international cooperation and technology transfer projects;
- provide technical support for the local stakeholders (municipalities, homeowners, SMEs, NGOs, etc.) in project design, attracting funding (grants/loans) and implementation;
- support local governments to adhere to the timely implementation of their climate and energy commitments;
- promote the sustainable exploitation of local renewable energy potential;
- monitor funding opportunities;
- raise awareness and provides targeted trainings for key stakeholder groups (in particular EE and RES);

- promote innovative financing tools and public-private partnership (energy performance contracting, leasing, crowdfunding, etc.) and public-private partnerships in order to mobilise private resources at large;
- promote specific cooperation networks such as for instance energy communities, renewable energy clusters or energy financing competence centres;
- develop energy and climate observatory at regional level in order to ensure the availability of energy and climate data at regional and local level, that can be used in regional and local strategic planning, the design of implementation measures as well as in monitoring and evaluation activities; and
- adopt the one-stop-shops model to support the energy retrofit of residential buildings in a holistic manner covering the entire customer journey starting with awareness and motivation through technical, energy and engineering aspects, and financial and legal advice.

These regional green governance structures have different maturity ranging between fully-fledged green governance structures, through structures with limited competence up to not yet existing structures.

At high maturity level, the recommendations are focused on strengthening the cooperation with local authorities and key stakeholders such as local bodies of the central government, innovation and research centres, educational institutions, economic clusters, business promoters.

In regions, where there is no designated office/department/service at regional level or it exists but only with a limited competence, the aim is to promote the creation or strengthening of decentralized energy and climate programming and implementation/coordination structure ("Climate Agency") that is set up and operated based on the internal resources of the respective regions. The key tasks of the Climate Agencies are in particular targeted to:

- support to the programming of energy and climate measures at regional level, and provides policy inputs for the programming at national level;
- develop and coordinate/implement key regional projects;
- support the regional stakeholders in project design, attracting funding and project implementation with particular focus on local governments to ensure the fulfilment of their climate commitments.

6.1.2. Communication and capacity development

Citizens and other key stakeholders are at the centre of the energy transition, since they can play an essential role in successful implementation energy measures. To boost the communication strategies and capacity building activities aimed at engaging them and raising their awareness on all energy issues, is thus crucial. Measures to induce behaviour change and to provide information and training can significantly contribute to the decrease of energy consumption and to a greater awareness of the need to increase energy efficiency and the use of renewable sources.

PROSPECT2030 identified the need for substantial communication, awareness raising, stakeholder engagement, networking and capacity building in the following areas:

- boosting communication and promotional activities targeting citizens and local authorities about actions and behaviours that improve the energy transition;
- engagement of homeowners to invest into energy efficiency and renewable measures to reduce the energy consumption and GHG emission of their homes;
- promoting the benefits for energy and climate planning at local level, preferably based on the methodology developed by the Covenants of Mayors (SECAP), and educate them on appropriate energy planning;
- promote the energy cadaster and energy management practice including smart metering and monitoring at municipal level (municipal building and infrastructure);
- sharing knowledge and best practices how to assess energy saving potentials, design appropriate energy efficiency measures and combining energy retrofits with integrated renewable solutions;
- supporting municipalities in the engagement of the local stakeholders; and eco-driving which represents one of 40 measures that should by 2050 contribute to 60% of traffic-generated emission reduction;
- creating local advisory groups to commit citizens and other stakeholders to contribute to paving the energy transition;
- promoting training activities such as project development assistance targeting local stakeholders including the staff of local authorities and professionals;
- provision of information and training to local stakeholders (local authorities, SMEs, NGOs, etc.) on local, national and international funding opportunities, preparation of proposals/tenders and public procurement rules.

6.2. Regional thematic policy recommendations

6.2.1. Promotion of the installation of renewable technologies

Renewable energy sources (RES) are essential to achieve EU targets set in the energy strategy for 2030 and for the carbon neutrality goal to follow. Given the actual level of energy consumption, the RES installations should be substantially speeded up. The anticipated increase of electric needs in the future per se requires further development for RES, and the new concept of decentralized energy systems triggers the need for installation of additional power plants with different characteristics in terms of capacity, location and operational functionality.

All these planned decentralised RES investments are coupled with a scenario of reduced capital costs for and incentive systems in place, that make RES investments even more attractive than the past. Given that it is urgent to manage the situation and promote the most desirable installations, avoiding the adverse environmental impacts or the negative social acceptance issues that raise whenever power plants are supposed to be installed.

In the regional context the key task includes, in particular:

- development or update of a regional RES cadastres identifying the suitable areas for the installation various RES options (e.g., solar photovoltaic, wind, biomass, biogas, geothermal, small-scale hydro power, energy generated by sea water);
- development of regional technical guides on RES development for institutional and private investors addressing among others the prevailing legal framework, technology option in terms efficiency, lifetime, etc. permitting process, local market potentials, etc.;
- identification of the constraints and critical issues with regard to the national transmission grids and on the distributions network for the installation and connection of additional RES capacities;
- increase the quality standards of RES installations in terms of environmental performance and added value for the whole energy system, etc.;
- increase the social acceptance of RES installations;
- creation of a shared knowledge platform between the regions, local authorities and energy operators to support the identification of the optimal location and size of new RES capacities.

6.2.2. The outdated transport fleets change to electric transport

The transport sector is one of the biggest challenges of the decarbonization process. Low penetration of new technologies, higher prices, interest of industry segments linked to conventional fuels and inertia of behavioural changes affect the sector.

E-mobility is a common term that denotes a functional system that basically consists of electric vehicles, infrastructure for charging electric vehicles and information technologies that support the coordination of transport services. The share of the transport sector in the consumption of conventional fuels, the technical features of electric vehicles such as high efficiency of electric motors compared to internal combustion engines, and the absence of concentrated pollution emission in urban areas make necessary the e-mobility to become an integral part of the long-term energy transition.

Although, much of the national networks of electricity generation, transmission and distribution are aged, currently the regions play the leading role in the promotion of electromobility. The major required measure identified by PROSPECT2030 include:

- awareness raising and education in shifting the consumers' preferences in order to ensure more efficient, predictable and resilient energy future, and development of comprehensive approaches to encourage e-mobility at the regional and local levels in terms of developing charging infrastructure for electric vehicles, increasing the attractiveness of procurement and use of electric vehicles by public bodies and supporting the business sector to develop sustainable models for related services;
- elaboration of regional E-mobility roadmaps analysing the current situation and needs, assessing development scenarios and translating these into regional action plans;
- development of charging infrastructure of electric vehicles and solar energy capture by photovoltaic panels and on-grid and off-grid energy storage options.

6.2.3. Supporting research and development

The key research and development area identified by PROSPECR2030 are listed below:

- new technologies supporting energy transition such as green hydrogen;
- energy storage technologies;
- management systems for renewable electricity sharing between different users and balancing between solar energy supply and demand;
- conversion of existing anaerobic fermentation plants from biogas to biomethane production;
- standardized quality management systems for biomass-fired plants and biogas digesters;
- development of small and medium sized biomass-fuelled district-heating plants along with sustainable forest management models;
- optimisation of existing district heating networks and integration with renewable energy generation and waste heat recovery opportunities;
- waste heat recovery in industrial processes and new industrial low-carbon technologies;
- provision of standardized IT-based data collection procedures for municipalities;
- development of the IT support of energy transmission and distribution grids; and sustainable buildings;
- technology development for using the thermal energy of the sea.

6.2.4. Development of Energy Communities

The establishment of energy communities is a key step towards the decentralization of the future of the energy systems. It allows more participatory and democratic energy markets by engaging private citizens as producers, consumers and market players into their community, and thereby it can sensibly reduce the needs for large infrastructures and lower the final user expenses. Small industries and services can also participate actively in the community market. Selling excess electricity from renewables and injecting heat into the district heating grids, but also build and co-own some facilities such as small hydro, biogas digester, wood chip boilers, medium-size photovoltaic plants are some of the opportunities that can boost the energy system transition.

Recently, Energy Community has a clear status in EU and national legislation. They are stipulated as a non-commercial type of market actors that combine non-commercial economic aims with environmental and social community objectives. Energy Communities are defined in the revised Renewable Energy Directive (EU) 2018/2001 (setting up the ‘renewable energy communities’) and the revised Internal Electricity Market Directive (EU) 2019/944, introducing the ‘citizen energy communities’ concept.

Both citizen energy communities and renewable energy communities can exercise similar activities, including generation, distribution, supply, aggregation, consumption, sharing, storage of energy and provision of energy-related services. Depending on the activity performed, they must comply with the obligations and restrictions applicable to the other

market participants. Key measures with regard to promotion of energy communities identified at regional level include, in particular:

- increase of renewable energy generation in low-energy buildings and low-energy production processes;
- promoting self-consumption of renewable electricity and heat;
- sharing of renewable electricity between different users on local smart grids;
- boost the existing pilot initiatives by reinforcing them in the stakeholder engagement as well as supporting them from legal and technical point of view;
- support the establishment of innovative solutions, disseminating best practices and case studies at EU, national and regional levels;
- encourage the development of distributed generation within a secure and integrated electricity system;
- simplify the legal/bureaucracy aspects for co-ownership of facilities.