REGI1ST

Regional development planning cycles and procedures

D2.1

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EXECUTIVE SUMMARY

This report focuses on reviewing the regional development planning cycles and procedures, in six EU regions, i.e. Asturias in Spain, Ireland Southeast, Liguria in Italy, Međimurje County in Croatia, Ormož and Slovenska Bistrica in Slovenia and Western Macedonia in Greece. More specifically the report includes:

- A review of the planning context in the six regions (including the current status in each region in energy and climate planning, as well as barriers, challenges and needs in energy planning);
- A review of the decision-making procedures in each partner region (e.g. methodologies and criteria, processes, actors, and challenges in decision-making);
- An analysis of the planning procedures followed in each region (stages of planning and respective responsibilities of relevant bodies/departments, planning methodologies and assessment procedures, formulation of priorities, etc.);
- A review of how multi-level governance is considered in the planning processes;
- A review of monitoring structures.

Particular emphasis is also given on the consideration of the Energy Efficiency First (EE1st) principle in energy planning.

A further four regions are also included in the review, i.e. Île-de-France (France), Lower Austria (Austria), Észak-Alföld region (Hungary) and Mazovia (Poland), with a focus on the role of regions in regional planning, needs, challenges and barriers and planning procedures.

The report has identified a number of areas within the energy planning process that should be improved in most countries/regions considered. More specifically:

- The deliberation process between national and regional authorities for developing national energy and climate plans should be improved. Often, regional authorities and stakeholders are not actively engaged throughout the process, and instead can mainly provide feedback and input during the public consultation phase of plans.
- The same applies for citizens for the development of national and regional energy and climate plans. In most cases, citizens are given an opportunity to provide comments and feedback on national and regional plans during the public consultation phase of plans. Therefore, in such cases there is no true co-creation process at any government level.

- The EE1st principle is not explicitly incorporated in existing national and regional strategies and plans. In some cases, the principles are considered to an extent, for example plans first assess demand and then supply. However, this does not necessarily mean that priority is given to minimising demand. Thus, an effort is needed across regions and national government to better incorporate the EE1st principle in energy planning.

With regard to the last point, i.e. incorporating the EE1st principle in energy planning, a number of common challenges have been identified at a regional level:

- Communicating the importance of incorporating the EE1st principle in energy planning at all levels of governance, in order to gain acceptability amongst individuals and organisations that have a key role in developing and implementing energy plans, as well as decision-makers.
- Raising awareness and informing people about the importance of energy efficiency and its benefits, especially in terms of reduced energy bills and environmental protection. Gaining stakeholders and citizens buy-in is a complex process (especially when considering conflicts of interests and "Not In My Backyard.' attitudes)
- Securing funding streams and financial resources for energy efficiency interventions, especially for the renovation of dwellings as a high percentage of households rely on grants, loans, or subsidies for undertaking energy renovations. Dealing with the issue of upfront investment costs is equally important.

Incorporating the EE1st in energy planning and implementing this requires a comprehensive and collaborative approach involving policymakers, industry stakeholders, and communities. Overcoming the challenges will require a sustained effort and commitment from all parties.

Nevertheless, addressing these challenges sooner rather than later is imperative, as a number of regional energy strategies and plans are either now being developed (e.g. the energy plan in Western Macedonia and the regional decarbonisation plan in the Southern region of Ireland) and others are currently under revision (for instance the Asturias Regional Energy Transition Strategy). This is an opportunity to better incorporate the EE1st principle in regional energy planning.

Finally, a number of best practices have been identified at a regional level, which are important to highlight, as these can inspire other regions across Europe. In particular:

- Creating a diverse regional working group that establishes a strong stakeholder collaboration for energy planning and for better monitoring and implementing measures. The principality of Asturias has established a very strong working group that has had a very active role in involving different stakeholders and

obtaining consensus during the development of its Regional Energy Transition Strategy and is now establishing a Regional Energy Transition Observatory to support the implementation and monitoring of its strategy.

- Setting up regular meetings between national and regional authorities to discuss needs, challenges and policies at all governance levels. In Italy, a Committee has been set up, named "Coordination between Regions", which through technical, as well as political working groups, provides opinions to inform national policy and gives the opportunity to regions and national authorities to exchange experience and views.
- Initial efforts in incorporating the EE1st principle in regional energy planning. Although the EE1st principle is not explicitly considered in the Regional Energy and Environmental Plan (PEAR) of the Liguria region, the energy efficiency scenario was the starting point in the planning process. More specifically, the maximum possible reduction in consumption for buildings was firstly considered, before considering renewable energy production.
- Ensuring that the region is technology ready. In particular, the region Western Macedonia has ensured that the new gas pipelines currently being installed, are hydrogen-ready, as hydrogen is expected to become increasingly important in the future. Therefore, the region is trying to plan ahead for technology developments and ensure that these are being considered in the implementation of projects and activities under way.

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1 Introduction

1.1 Why is regional energy planning important?

The role of regions and cities in EU policy-making has been widely recognized over the years, as these play a crucial role in implementing EU policies, but also in managing public investments. In addition, the effectiveness of EU policies can be improved by encouraging the involvement of regional and local government in the EU policy-making process.

According to the Council of European Municipalities and Regions (CEMR), an organization representing European local and regional governments, more than 60% of the decisions taken at the European level have a direct impact on municipalities, provinces, and regions, whilst 70% to 80% of public investments in Europe are made by local and regional authorities. As such, the increasing importance of European local and regional governments in both the economy and the life of citizens is evident.

Furthermore, regional and local authorities are the nearest governance level to the people and have a sound understanding of their needs and demands. This local anchorage sets them in a much better position than national governments to deal with matters that require local knowledge and an understanding of local needs and priorities, such as energy planning and climate adaptation. They are also in a better position to ensure that citizens participate effectively in the decision-making process affecting their daily lives, and in mobilising the public in implementing sustainable energy solutions, while at the same time acting as catalysts for change.

According to the UN Habitat, cities consume 78% of the world's energy and produce more than 60% of greenhouse gas emissions, with the biggest contributing sectors being buildings, energy production and transport. This makes cities a priority for action, whilst their urban density can be considered an asset for achieving a lower carbon footprint through more efficient infrastructure and planning. Cities are also particularly vulnerable to climate change, with many cities already dealing with the adverse impacts of climate change, and its associated financial costs, for example relating to repairing damages to infrastructure due to storms, floodings, and droughts. Evidently, climate change directly affects sub-national government, so climate change mitigation and adaptation should be a priority at local and regional level.

On the other hand, regions and cities have a key role in facilitating the implementation of sustainable solutions in many sectors, such as renewable energy production, the

energy renovation of buildings, waste and water management, mobility and spatial planning. Recognising the important role they can play, regions and municipalities are developing numerous plans that outline actions and projects they intend to implement, such as: sustainable urban mobility plans, and sustainable energy management/action plans.

Energy planning at a local level has been further encouraged through the Covenant of Mayors for Climate & Energy initiative (CoM). This was initially launched in 2008 in Europe, with the ambition to gather local governments to voluntarily commit to achieving and exceeding the EU climate and energy targets. Nowadays, CoM signatories also endorse a shared vision for 2050, that is to accelerate the decarbonisation of their territories, strengthen their capacity to adapt to unavoidable climate change impacts, and allow their citizens to access secure, sustainable and affordable energy. In order to turn political commitments to actions, CoM signatories committed to develop a Sustainable Energy and Climate Action Plan (SECAP), thus further encouraging the development of local energy and climate plans. To date, more than 11,500 municipalities across Europe are CoM signatories, with more than 7,800 cities subsequently developing action plans.

Regardless of the format and type of energy and climate plans that local and regional authorities develop, there are clear benefits in developing and implementing them, as these accelerate the decarbonisation in the territory. The implementation of these plans does not only positively contribute to achieving national and sub-national energy and climate targets, but also ensures the sustainable development of local communities, and supports social inclusion, innovation and economic growth. Besides guiding cities and regions mitigate and adapt to climate change, these plans can also ensure that the transition to a low carbon economy brings new opportunities for local enterprises, more local jobs, capacity building prospects, as well as energy security/independence, better infrastructures, and funds.

1.2 What is energy efficiency first?

The Energy Efficiency First (EE1st) principle is a guiding policy concept that prioritizes the implementation of energy efficiency measures before investing in new energy supply infrastructure or capacity. By emphasizing energy efficiency, this principle helps to reduce overall energy demand, decrease the need for new infrastructure investments, lower greenhouse gas emissions, improve energy security, and save consumers money.

In the context of regional energy planning, the EE1st principle directs policymakers and planners to first consider demand-side measures, such as improving the energy efficiency of buildings, promoting efficient appliances and lighting, and encouraging

behavioural changes that lead to energy conservation, before exploring options for increasing energy supply. Incorporating the EE1st principle into regional energy planning ensures a more sustainable, cost-effective, and resilient energy future for communities.

1.3 Regio1st in a nutshell

REGIO1st, a project co-funded by the EU LIFE programme, aims to raise awareness about the EE1st principle among regional authorities and their agencies, as well as support them to incorporate this in decisions related to energy planning.

Within the framework of this project, the following activities are being implemented: a) provision of appropriate support to regional authorities to embed the EE1st principle in their decisions and energy planning, b) establishment of a community of practice for EE1st, in cooperation with the Covenant of Mayors, c) facilitation of the introduction of the principle in national energy and climate plans (NECPs), and d) development of a customized co-creative tool for regions to assist their policy making process.

REGIO1st focuses on six regions, i.e. Liguria in Italy, Ormoz and Slovenska Bistrica in Slovenia, Western Macedonia in Greece, Asturias in Spain, Medjimurje in Croatia and Carlow, Kilkenny, Wexford, Waterford in Ireland. These regions aim to implement and test the REGIO1st framework and then showcase to other regions how they embedded the EE1ST principle.

1.4 This report

This report reviews the regional energy planning processes in Asturias in Spain, the Southeast in Ireland, Liguria in Italy, Medjimurje in Croatia, Ormoz and Slovenska Bistrica in Slovenia and Western Macedonia in Greece.

The report includes an assessment of the status in each region regarding the existence of an energy and climate plan, as well as the barriers, challenges and needs in energy planning and implementation. It also includes an analysis of the decision-making procedures (e.g. methodologies and criteria, processes, actors, challenges in decision-making) and of the planning procedures followed in each region (stages of planning and respective responsibilities of relevant bodies/departments, monitoring structures, planning methodologies and assessment procedures, formulation of priorities etc.). Finally, how multi-level governance is considered in planning processes; is considered.

It should be noted that this report was compiled by the respective regional energy agencies/organisations, and supplemented through interviews with key regional

stakeholders, mainly with representatives from regional authorities. The table below summarises key organisations involved.

Moreover, FEDARENE distributed a questionnaire to its members, with the aim to collect more information on regional energy planning more broadly across Europe. Responses were received from a further four regions, i.e. Île-de-France (France), Lower Austria (Austria), Észak-Alföld region (Hungary) and Mazovia (Poland) on the role of regions in regional planning, needs, challenges and barriers and planning procedures.

Table 1 – Key stakeholders involved

Region	Contribution	Interview
Asturias (Spain)	Asturias Energy Agency	Regional Directorate General for Energy, Mining and Restoration of the Government of the Principality of Asturias
Southeast (Ireland)	South East Ireland Energy Agency	Southern Regional Assembly
Liguria (Italy)	Liguria Regional Energy Agency	Energy Office of the Liguria Region
Međimurje County (Croatia)	Medjimurje Energy Agency	Administrative Department for international cooperation, project management and investments and the Administrative Department for Economy, Agriculture and Tourism
Ormož & Slovenska Bistrica (Slovenia)	Spodnje Podravje Local Energy Agency	Ministry of the Environment, climate and energy.
Western Macedonia (Greece)	The Cluster of Bioeconomy and Environment of Western Macedonia	Western Macedonia Region
Île-de-France (France)	Agence Parisienne du Climat	-
Lower Austria (Austria)	Energy and Environment Agency of Lower Austria	-

Region	Contribution	Interview
Észak-Alföld region (Hungary)	Regional Energy Agency of the Észak-Alföld region	-
Mazovia (Poland)	Mazonia Energy Agency	-

2 Asturias (Spain)

2.1 Planning context

Regional mandate on planning

Regional authorities in Spain do not have a mandate or obligation for energy or climate planning, or for the development of energy infrastructure. The responsibility for energy and climate planning, including the development of relevant strategies, remains with the national government. The National Administration is also responsible for the planning of the energy and gas market and infrastructures as well as emission reduction obligations.

On the other hand, regional authorities have obligations related to the licencing of energy and industry facilities, the access to the grid, and the monitoring and controlling of emissions. As such, in an effort to improve the energy sector and promote the decarbonisation of the industry, regional authorities can incentivise specific technologies, support priority projects and influence national authorities during the development of relevant national strategies.

Despite having no obligations to do so, some regions have elaborated energy strategies and plans or plans that contemplate energy planning to some extent. For instance, with the ambition of defining a position related to energy and climate in the territory, the Government of the Principality of Asturias developed a Regional Energy Transition Strategy (RETS) in 2021 for the identification and prioritisation of transition-related projects. This is particularly important, as the RETS considers local needs and challenges and promotes tailored policies for the region.

Regulatory framework

When developing regional/local energy and climate plans, the national energy and climate regulation and relevant national strategies and plans need to be considered. Furthermore, according to the national law 21/2013 on Environmental Assessment, action plans that incorporate measures that have a potential impact on the environment, need to include an assessment of the environmental impact of the plan.

Financing

The principality of Asturias can make decisions on the use of regional funds and can define its own criteria (in line with the national legislation). In particular, Asturias has set up its own regional operational program to define the strategy and the priorities for

the use of regional funds. With regard to national funds that are transferred to regions, Asturias can only adapt some aspects of the program (priority lines, timelines, etc.). Having an energy plan is not a pre-requisite to be eligible for a specific funding opportunity.

Current status in the region

As mentioned above, the principality of Asturias developed a Regional Energy Transition Strategy (RETS) for 2030, which was aligned with the National Energy and Climate Plan of Spain. The RETS defines regional priorities in the energy sector, considering the need for decarbonisation. It includes 63 measures for the energy sector and other sectors (e.g. industry, transport and buildings). The revision of the RETS is planned to be completed by 2024, which will include the update of objectives, the evaluation of the implementation of the strategy and its measures, and its alignment to new policies, strategies and plans.

Within the framework of the RETS, a Regional Energy Retrofitting of Buildings Strategy was also developed and published in 2021, to promote the energy renovation of buildings.

In addition, within the framework of the RETS, the Energy Improvement Plan of Asturias (Plan ASUME) was developed and published in 2022 to increase the energy efficiency of the regional public sector.

Closely linked to the RETS, is the Regional Just Transition Strategy published in 2022. This defines the main priorities for facing the energy transition in the region.

Currently, the Asturian Climate Action Strategy is under development, which defines the regional priorities and objectives for facing the effects of Climate Change in the region, as is the Regional Raw Materials Strategy, which defines the potential and the opportunities of raw materials in the region.

Needs, challenges and barriers

The main challenge of the region is the phase out of the thermal coal power stations and the coal mines in the short term. The regional coal mining sector is in a closure process for decades. Nowadays, regional production is only 200,000 t/year and it is foreseen that this will be zero before 2025. In the case of the coal thermal power stations, the 5 stations with a total capacity of more than 2200 MW in 2017 are scheduled to close before 2030 (two of them closed in 2020).

On the other hand, the principality of Asturias has significant industrial activity, especially heavy industry that uses coal. Carbon-intensive industries, including: iron and steel, metalworking and machine manufacturing, pulp, cement and chemical industry,

require a stable supply of electricity, which currently is provided by the thermal coal power stations. The direct activity of these industries and the energy sector represent around 15% of the regional GDP. As such, with the closure of the thermal coal power stations, it is necessary to increase energy end-use efficiency in order to reduce demand, to install new facilities (renewable energy sources) to increase electricity supply and find solutions (like energy storage) to stabilize the grid. Furthermore, the closures of coal mines and thermal coal power stations come with a reduction in economic activity and an increase in unemployment, making it imperative to create new job and activity opportunities linked to the energy transition (Just Transition approach).

Other key challenges for the principality of Asturias include:

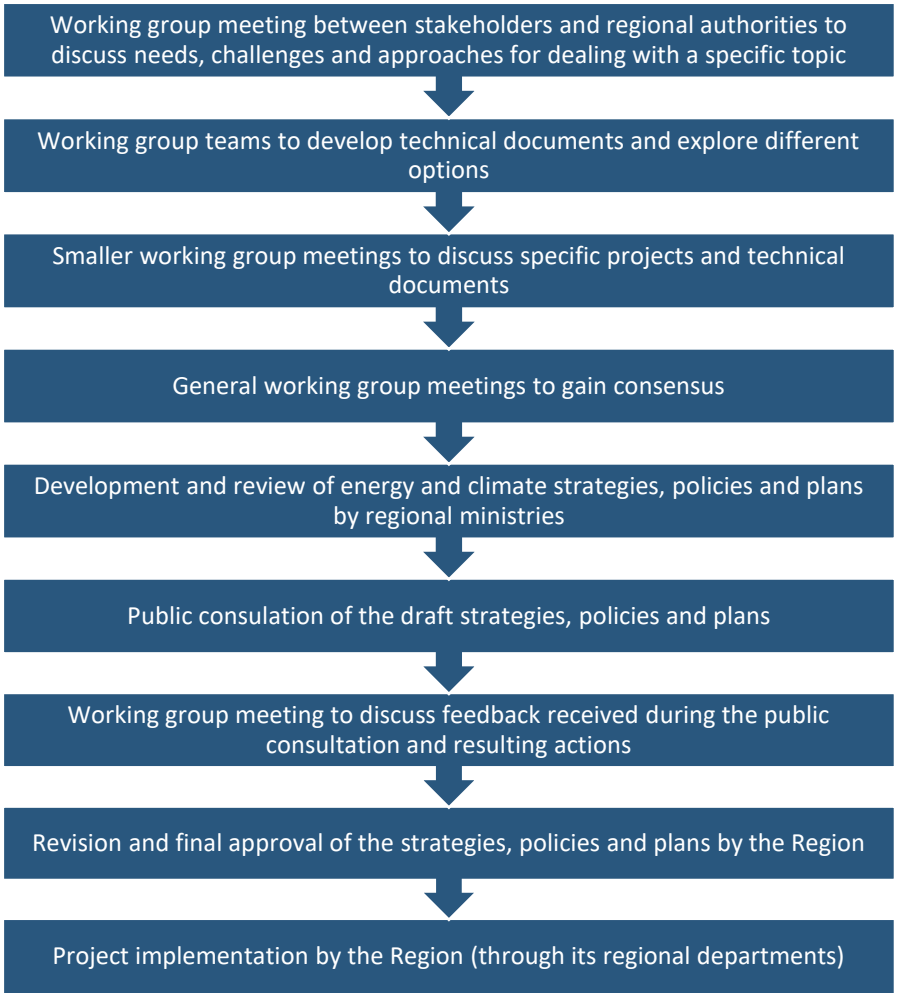
- Ensuring a just transition. Actions and projects need to ensure that the transition is just, not leaving anyone behind, mitigating potential social and economic impacts, such as job losses or changes in livelihoods.
- Successfully engaging citizens and ensuring their active participation in the energy planning process. For instance, during the public consultation of the Regional Energy Transition Strategy, the feedback and input provided by citizens was very limited.
- Gaining public acceptance for actions and projects. People's perception is important for gaining public acceptance and ensuring the successful implementation of actions/projects. However, there is sometimes a 'Not in My Back Yard' (NIMBY) reaction to actions/measures proposed, so it is still a challenge to reach people and convince them of the benefits of actions/projects.
- Overcoming bureaucracy. Simplifying procedures for participating in funding programmes/schemes, shortening the time needed for obtaining permits for energy and climate projects, and making the overall process less bureaucratic would help accelerate the implementation of projects, especially smaller projects, and facilitate the transition towards sustainable energy sources.
- Lack of or limited funding to implement action/projects, especially high cost interventions. This is also problematic for emerging technologies, where sometimes the lack of proof of their effectiveness, and/or the uncertainty related to their costs may further hinder their uptake. As a result, there is a substantial need for funding to support these technologies.
- Lack of human resources and expertise. For instance, skilled people are needed for the management of funds allocated to the energy transition and the monitoring of the use of these funds in order ensure that these are utilized efficiently and effectively.

2.2 Regional decision-making procedures

Decision-making stages

The key steps in the decision-making process of the principality of Asturias, are shown in the diagram below. As it can be seen, stakeholders are closely engaged and consulted throughout the decision-making process

Figure 1. The decision-making stages of the principality of Asturias (Spain)



Decision-making criteria

The main driver for developing Energy and Climate Strategies in the region is the reduction of greenhouse gases emissions. Other important drivers include the need to ensure security of supply, reduce the cost of the energy system, keep the quality of electricity supply, and create new activity and jobs.

Needs, challenges and barriers

Engaging with different stakeholders, having constructive discussions and obtaining consensus was perceived as an important challenge to overcome in order to ensure a sounder decision-making process. However, this was a barrier that was successfully overcome with the creation of a regional working group for energy planning, which helped establish a sound stakeholder collaboration and a social dialogue.

2.3 Regional planning procedures

Overall planning procedures

With regard to energy planning, national authorities (and in particular the National Ministry of Ecological Transition and Demographic Challenge) set up the national framework, national programmes and objectives.

Within this national framework, regional authorities develop energy and climate strategies, policies and plans. In particular, energy-related decisions, policies and plans are led by the Directorate-General of Energy, Mining and Restoring of the Regional Ministry of Industry, Employment and Economic Development, whilst climate-related decisions, policies and plans are led by the Regional Ministry of Infrastructures, Spatial Planning and Environment. The regions, through their departments, are responsible for the implementation of these policies and plans.

Overall, there is a close collaboration between national and regional authorities. National authorities define general objectives and actions, and regional authorities define their own strategies, considering these general objectives. In addition, for the development of regional energy and climate policies and plans, the principality of Asturias actively pursues the collaboration with key stakeholders.

With regards to the development of the RETS, this was led by the Directorate General of Energy, Mining and Restoring. The regional energy agency (FAEN) prepared the needed studies, estimations, assessments and documents for the Strategy. Key regional stakeholders provided contributions and inputs, and helped formulate the strategy. In addition, support was received by an external consultant company (provided through the START technical assistance) for the development of the RETS.

Stakeholder involvement and roles

The regional authority recognised the need for a transition towards a new energy paradigm and established a regional committee/working group to identify the risks, difficulties, and opportunities associated with this transition. This working group involved over 50 different stakeholder organizations, including:

- the Directorate General of Energy, Mining and Restoring,
- the different departments of the regional administration,
- the regional energy agency, which belongs to the Directorate- General of Energy, Mining and Restoring of the Regional Ministry of Industry, Employment and Economic Development
- the Asturian Association of Companies,
- the main energy consumer companies of the region,
- the Unions,
- the main transmission and distribution system operators,
- the University of Oviedo and
- research centres that focus on energy and are located in the region.

More than 60 individuals participated in the working group meetings, including experts, government officials, entrepreneurs, university researchers, and representatives from unions and associations. Pursuing and achieving the collaboration of the public and private sector is particularly important as this ensures the development of a tailored strategy that promotes projects that the region is well positioned to successfully implement.

The working group developed 18 different documents that informed the development of the RETS. This collaborative effort demonstrates the commitment and involvement of the various stakeholders involved in shaping the energy future of the region, with a focus on identifying opportunities amidst the challenges associated with the energy transition.

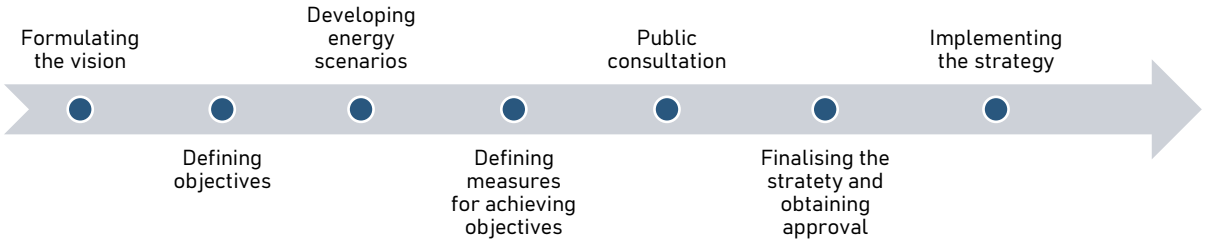
Regarding citizens participation, citizens were involved during the public consultation of the RETS via the website that the Regional Government dedicated to its strategies and policies.

Methodology

The methodology followed for the development of the Regional Energy Transition Strategy (RETS) for 2030 included:

- Formulating the vision ("decarbonized energy model by 2050") in consultation with interested parties
- Defining objectives ("Share of 72% of electricity from renewable energy")
- Developing energy scenarios ("Objective Scenario: 770 MW offshore wind; 1600 MW onshore wind; 240 MW photovoltaic plants;….)
- Defining measures for achieving objectives ("M1.1 promote the use of marine renewable energy",….)

Figure 2. The regional planning stages in Spain



For defining the objectives of the strategy multi-criteria analysis was used, considering the availability of regional resources, the most competitive technologies, the effect of the investment in the region in terms of new activity and creation of employment (not only in the energy sector but also in other sectors like the industry or the construction sector) and the effect of the investment in the security and quality of energy supply.

The main data source used during the planning phase of the strategy, especially for the multi-criteria analysis, was the Annual Regional Energy Balance, called "Balance Energético Principado de Asturias (BEPA)", with data available from 2000.

Planning considerations

Priorities: The main objectives of the Strategy relate to decreasing energy demand and final energy consumption and increasing the use of renewable energy in the production of electricity and in final consumption. Under the RETS, 16 priorities were identified:

- Promote the use of local energy resources
- Secure the supply of electricity and the services provided by the grid
- Take advantage of regional energy infrastructures
- Optimize the permitting process of energy projects
- Promote energy efficiency and technological diversification in the industry
- Facilitate the energy renovation of buildings
- Promote a new sustainable mobility
- Promote a more distributed energy model
- Strengthen the regional industrial supply chain related to the energy transition
- Take advantage of the energy transition for creating new activity in the primary and services sectors
- Promote research and development in technologies related to the energy transition
- Promote citizens involvement in the energy model
- Facilitate projects in Just Transition areas
- Protect more vulnerable consumers
- Increase awareness on the need for and importance of the energy transition
- Integrate the Strategy with other regional Strategies

The Strategy covers all relevant sectors, however, considering the regional energy model, actions related to industry are prioritised.

Scenarios: The Strategy includes three scenarios:

- The Business As Usual Scenario
- The National Energy and Climate Plan (NECP) Scenario, included in the NECP
- A Realistic Scenario, which relates to the objectives set in the RETS

Different indicators are considered, like primary energy production, primary energy demand, final energy demand, the production of electricity and the reduction of GHG emissions.

Technologies: The Strategy is neutral with regard to "transition energy technologies" and considers future advancements in technologies. The measures consider both supply- and demand-side available technologies and solutions, including renewable energy technologies (e.g. offshore and onshore windfarms, photovoltaic, and biomass heating systems), energy storage technologies, renewable hydrogen technologies, smart grids technologies, energy efficiency technologies, smart mobility technologies, etc.

Local context: During the planning process, the local context was considered in some aspects. Firstly, the local context was considered when promoting projects in "Just Transition areas". Secondly, it was considered in some measures that directly involve municipalities (like the elaboration of Local Climate and Energy Plans). Finally, the local context was considered in measures/initiatives closely linked to the local society, such as creating local energy communities and tackling energy poverty.

Moreover, regional specificities were also taken into consideration, and in particular:

- Asturias being a region in energy transition, with areas where the closure of coal mines and thermal coal power stations is foreseen, i.e. the "Just Transition areas"
- Asturias being a region with a very energy-intensive industry (steel, paper, cement, glass, Zn, etc.). For this reason, a significant percentage of final energy consumption is attributed to the industry sector.
- The Asturian energy model, which is based on coal (i.e. 3/4 of primary energy consumption). Therefore, there is a great need for decarbonization, whilst in parallel ensuring that the transition will not harm regional industry.
- Environmental regulations (as the region includes many protected areas) and geomorphological particularities, as well as the fragmentation of land to small owners, which favour some renewable energy technologies over others.

Financial: Most of the measures included in the RETS are expected to be financed by public and private funds. However, financial instruments and sources of funding are not considered in the Strategy. The action plan that is being developed for implementing the Strategy will address this specifically.

Measures that are already being developed, are financed by national funds transferred to the regions for the implementation of specific actions.

The implementation of a regional Just Transition fund is also expected to finance some measures included in the Strategy.

The EE1st principle in energy planning

The EE1st principle is not explicitly considered in energy planning. With regard to the development of the RETS, less options and measures were evaluated in the demand–side than the supply-side. However, the foreseen energy demand after the implementation of options was first evaluated, and then the best way to supply energy was assessed, considering the regional energy model.

As the RETS will soon be reviewed, there is an opportunity to incorporate the EE1st principle in the revised strategy. The Regional Energy Transition Observatory being created can enable discussions with key stakeholders on how to best include the EE1st in regional energy planning.

Interactions between national and regional planning

There is a close cooperation between regional and national authorities, established through periodical meetings. These meetings promote an open dialogue between national and regional authorities, and ensures that national authorities understand regional needs and challenges and regions understand national priorities and strategies.

Regional authorities in Spain participate in the national energy planning process during the public consultation of the documents. However, as regional and national authorities closely collaborate, many regional needs are usually addressed in the draft national strategies and plans (i.e. before the public consultation).

With regard to the energy supply infrastructure, the planning of such critical infrastructure is carried out after consulting with the regions.

For the development of the RETS, relevant European and national strategies and policies were considered, especially the NECP. One of the scenarios included in the Strategy reflects the implementation of the national objectives in the NECP within the region. Furthermore, the measures incorporated in the Strategy were aligned with the actions included in the NECP to enable the use of national funding programmes to achieve regional priorities defined in the Strategy. At an EU level, the region received support by an external consultant company (provided through the START technical assistance) for the development of the RETS. National government and local authorities were also consulted during the later stages of the process before finalising the RETS.

Interactions between municipal and regional planning

As with regions, local authorities in Spain also have no obligation to develop local energy and climate action plans. Nevertheless, some local plans are being developed with the support of the regional energy agency. In addition, municipalities with more than 50,000 inhabitants must define a "zero emissions area" for transport in 2023 with the objective to reduce GHG emissions in cities. In Asturias there are 4 municipalities that need to fulfil this requirement.

Currently, a Regional Energy Transition Observatory is being created, with the aim to monitor and control the implementation of the RETS. Different regional and local authorities will participate in the Observatory, and one of their mission will be to coordinate and align the regional strategies. Furthermore, the RETS includes a dedicated measure to "facilitate the elaboration and implementation of Sustainable Energy and Climate Plans (SECAPs) by municipalities in Asturias". Therefore, the role of municipalities in the implementation of the RETS is key, making them an integral part of the Observatory.

2.4 Implementation and monitoring of regional plans

Implementation

For the implementation of the RETS, incentives and grants are available for self-consumption installations, for the use of renewable energy in buildings, for energy efficiency measures in industry, for the energy renovation of buildings, for the renovation of vehicles and for the renovation of touristic buildings.

Monitoring

Most of the programmes/measures are monitored by regional authorities following guidelines and indicators provided by national authorities. For the rest, regional authorities define their own procedures and indicators.

More recently, a Regional Energy Transition Observatory is being established to coordinate monitoring efforts and oversee the implementation of key regional strategies. In particular, the observatory aims to monitor the progress in the implementation of four strategies through indicators and report on this annually, as well as ensure that these strategies are aligned with the latest relevant national and European policies.

As mentioned above, the observatory also aims to involve public and private stakeholders in the monitoring process. The involvement of various stakeholders will ensure a comprehensive and inclusive approach to monitoring and evaluation.

Different working groups for each strategy are expected to be formulated, within the structure of the observatory. These working groups will collaboratively review the strategies and assess their implementation. Monitoring progress against set objectives and being transparent about the results is important when assessing the success of strategies. Therefore, an annual implementation report will be developed for each strategy. It should be noted that for funds transferred to regions, it is necessary to report on the evaluation of the programmes/measures to national authorities every three months.

3 Southeast (Ireland)

3.1 Planning context

Regional mandate on planning

In Ireland, regional assemblies are responsible for coordinating, promoting and supporting strategic planning and sustainable development, as well as making local government and public services more effective. Their role on energy planning is to develop, and mostly implement energy and climate policies and plans.

The Southern Regional Assembly has a remit for the Southern Region. It incorporates three Strategic Planning Areas, and ten local authority areas. The Assembly has a regional role in linking local and national policy goals through regional, spatial and economic planning. It also has an oversight role of the Region's local authority plans.

Regulatory framework

The regulatory framework that needs to be considered when developing regional and/or local energy and climate plans includes Project Ireland 2040 National Planning Framework (NPF) and the National Development Plan (NDP), the National Renewable Energy Action Plan (NREAP), the Offshore Renewable Energy Plan and the National Energy Efficiency Action Plan (NEEAP), the National Energy and Climate Plan (NECP), the Climate Action Plan 2023, and the National Mitigation Plan.

The Climate Action and Low Carbon Development Act 2015 provides for the approval of plans by the Government in relation to climate change for the purpose of pursuing the transition to a low carbon, climate resilient and environmentally sustainable economy.

Financing

The NDP sets out the investment priorities that underpin the successful implementation of the NPF up to 2030. Ten National Strategic Outcomes (NSO) defined by the NPF are incorporated into the NDP with further investment details. The most relevant NSOs for energy planning include: sustainable mobility, and the transition to a low-carbon and climate-resilient society.

Regional assemblies are responsible for managing and monitoring European structural and investment fund programmes and securing EU funding for specific regional projects. The Southern Regional Assembly is the Managing Authority of the Southern Eastern & Midland Regional Programme 2021-2027, an ERDF co-funded investment programme, which supports balanced regional development across the Southern Region and the

Eastern and Midland Region. This €663 million programme aims to correct imbalances between regions under three strategic priority areas: Smarter More Competitive Regions, Greener More Energy Efficient Regions & a Just Transition and Sustainable Urban Development in our Regions.

Furthermore, the Assembly is the Irish Contact Point for various programmes, such as the Ireland Wales Programme 2014-20, Interreg North West Europe and Interreg Europe. It also participates in a range of EU Projects to support, develop, and deliver better policy for the Southern Region.

Current status in the region

At regional level, the assembly's main policy strategy in place is the Regional Spatial and Economic Strategy (RSES) for the Southern Region of Ireland. The RSES sets out the strategic regional development framework, with a primary aim to implement the NPF at the regional level and to support the achievement of balanced regional development. The policies in the RSES are structured under Regional Policy Objectives (RPOs) and Metropolitan Area Strategic Plan (MASP) Policy Objectives. RPOs include: low carbon, climate resilient and sustainable society; sustainable, planned and infrastructure-led development; and sustainable mobility.

There is no regional plan on energy and climate for the southeast of Ireland. Nevertheless, a regional decarbonisation plan will be developed within 2024 by external consultants, with the aim to define energy and climate strategies and actions to promote sustainable consumption and support decarbonisation efforts at a regional level. Emphasis will be given in communicating the benefits of transitioning to a low-carbon economy and raising awareness. So far, a study has been conducted to analyse energy consumption patterns in the southern regions, with a focus on social and economic factors that contribute to energy usage. This helps identify actions that influence consumption patterns and can support decarbonisation.

Needs, challenges and barriers

The needs of the region relevant to energy and climate planning include: a need for increased renewable energy production, improved energy efficiency, and reduced greenhouse gases emissions.

The region faces various challenges such as limited access to energy resources, limited financial resources, lack of information at a regional level, lack of resources within local authorities, and a lack of public awareness and engagement in energy and climate planning.

3.2 Regional decision-making procedures

Decision-making procedures and stages

The Southern Region is represented by 33 local councillors, who appointed as members of the Regional Assembly for a 5-year term - 27 by their constituent local authorities, and 6 as Committee of the Regions representatives.

Members meet monthly to discuss issues related to regional planning, submissions to local authorities, national government, and the EU; EU programme management and project benefits; and other statutory functions of the Assembly. They also sit on committees related to EU programme management and regional planning.

Decision-making criteria

The key criteria considered in decision making include: share of renewable energy in the regional energy balance, cost-effectiveness of measures, impact of measures on jobs, public acceptance of measures, and environmental impact. Additionally, the potential economic, social, and environmental benefits of the proposed policy/measures were also considered.

Needs, challenges and barriers

A key challenge in the decision-making process is the communication between stakeholders and decision makers. This communication is key for designing effective and targeted policies, strategies and plans.

3.3 Regional planning procedures

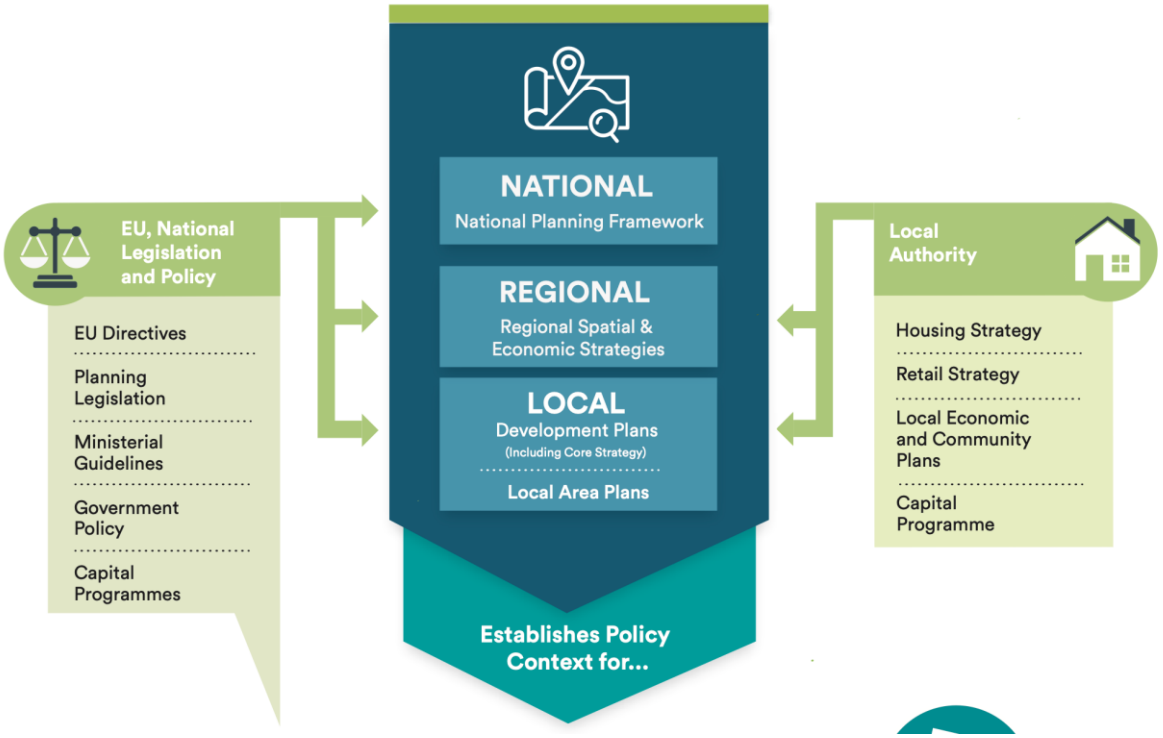
Overall planning procedures

The Planning and Development Act 2000 (as amended) forms the foundations for planning in Ireland. The Act covers a huge range of planning-related issues, including setting out the detail of regional planning guidelines, development plans and local area plans, as well as clarifying how a range of particular planning processes operate.

With regard to energy and climate planning, national government sets up the national framework and develops the national plans. More specifically, the Irish Governments Department of Environment, Climate and Communications is responsible for developing and implementing energy and climate policies, as well as overseeing the implementation of energy efficiency and renewable energy projects. Additionally, the Sustainable Energy Authority of Ireland (SEAI) is responsible for providing advice and support to

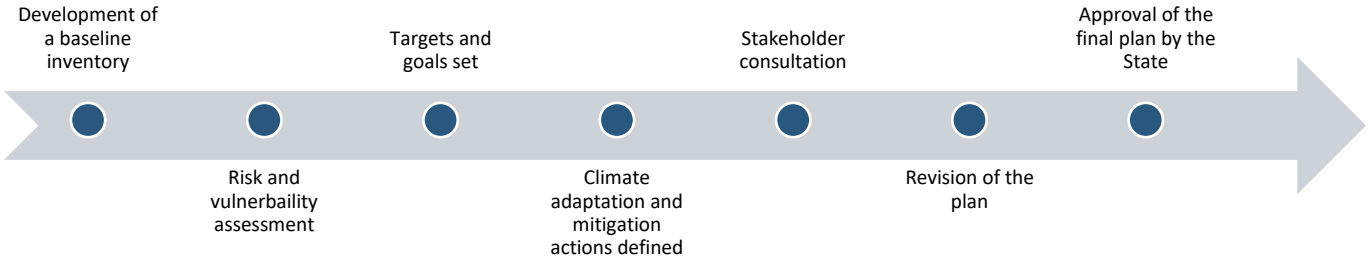
government and delivering sustainable energy programmes, while engaging and motivating a wide range of stakeholders and other stakeholders. Regional assemblies and local authorities are responsible for implementing the national framework at regional and local level. As mentioned above, at regional level, the assembly's main policy strategy in place is the RSES for the Southern Region of Ireland.

Figure 3. Planning interrelationships in Ireland



At local level, the development of climate and energy plans starts by developing a baseline inventory and assessing risks and vulnerabilities in terms of climate change, Then, targets and goals are set, to meet or exceed national targets, and different climate adaptation and mitigation actions are considered, including the installation of renewable energy sources and the implementation of energy efficiency interventions. Subsequently, various stakeholders are consulted, and the contributions gathered inform regional and local planning decisions. Actions are designed and the final plan obtains approval by the State.

Figure 4. The local energy and climate planning stages in Ireland



Stakeholder involvement and role

Stakeholders and citizens are involved in the regional and local planning process through various means, such as:

- Targeted engagement to ensure that specific stakeholder groups are properly involved in the planning process, including through tailored briefings and working groups;
- Public meetings, surveys, and other forms of public engagement; and
- During the public consultation, where stakeholders and citizens can provide feedback and input to draft plans published by local authorities.

A large number of stakeholders was involved during the development of the RSES, such as chambers of commerce, local authorities, state agencies, regional offices, and IDA Ireland.

Methodology and planning considerations

For the development of the RSES, the procedures laid down in the Local Government Reform Act 2014 (Sections 22, 24 and 25) were followed.

Priorities: The RSES has identified three priority areas for action to address climate change and facilitate the transition to a low carbon economy and society:

- Decarbonisation
- Resource efficiency
- Climate resilience

Particular emphasis is given in retrofitting houses and improving the energy efficiency of the public sector, as Ireland has an old housing stock with many inefficient builds, the public sector can lead by example.

Technologies: The RSES recognises the need for alternative renewable energy with greater interconnection to energy resources, increased capacity in biomass/biofuels and reconfiguration of power generation facilities from use of fossil fuels to low carbon

solutions. Smart metering in buildings, and new initiatives to support low carbon heating, including district heating, are also emphasised for householders and business. For the transport sector, the RSES focuses on a shift to more sustainable transport modes, alternative and low emission fuels for vehicles for freight, and the increased electrification of transport.

Financing: Investment is key for delivering the objectives of the RSES, which will arise from a variety of funding sources. A number of measures and schemes are /will be funded by the regional operational program (Southern, Eastern and Midland Regional Programme 2021-2027). Other funds that can finance measures and schemes include the Urban Regeneration and Development Fund, the Climate Action Fund, the Disruptive Technologies Fund, the Ireland Strategic Investment Fund, and other European Funding Programmes.

The EE1st principle in energy planning

Currently, the EE1st principle is not explicitly considered in regional strategies and plans. As a regional decarbonisation plan is expected to be developed by 2024, there is an opportunity to incorporate the EE1st principle in this plan.

An important challenge though is how to communicate the importance of incorporating the EE1st principle in energy and climate action. Raising awareness and gaining acceptability is vital at all levels of governance in order to be able to incorporate the EE1st in the planning process. Stakeholder and public acceptance are equally important.

Another challenge is how to best incorporate the EE1st principle. Energy efficiency and reducing energy demand are typically considered, but these need to be integrated more in spatial and regional planning. This is particularly important in urban regeneration and compact growth projects and initiatives.

Interactions between national and regional planning

All regional strategies and plans need to be aligned with national strategies and plans, meeting or exceeding national targets and objectives. More specifically, the RSES is aligned with Project Ireland 2040 NPF and NDP, the NEEAP, and the NECP.

Interactions between municipal and regional planning

Ireland's local authorities play a pivotal role in their local communities and can act to demonstrate public sector leadership on climate action in their areas as well as become key mobilisers of change. Four local authorities in the southeast have their own climate action plan or strategy document. These cover energy and the built environment and consider both the public and the private sector.

Under the National Adaptation Framework (NAF) local authorities are required to develop their own adaptation strategies. In 2018 four Climate Action Regional Offices (CAROs) were established to assist the local authorities in building capacity to engage effectively on climate change and develop their strategies. The Atlantic Seaboard South CARO, led by the Cork County Council, supports and coordinates climate action undertaken by the five local authorities of Clare, Limerick, Kerry, Cork City and County.

Furthermore, the RSES incorporates three Metropolitan Area Strategic Plans (MASP) for the region's three main cities and metropolitan areas: Cork, Limerick-Shannon and Waterford. The MASPs were developed with the collaboration of the constituent local authorities and key stakeholders.

In addition, the ten City and County Development Plans (CCDP) are a key component of the RSES process, as these provide the detailed and coordinated plans to guide and shape the development of communities. The same applies for the Local Economic & Community Plans for each local authority in the Region, which identify strategic assets, high-level goals, sustainable objectives, priorities and actions at local community level.

The Planning and Development Act 2000 (as amended) requires that all CCDP, and variations of these plans, are aligned with the RSES and other relevant national policy. Draft development plans or proposed variations to development plans are referred to the Regional Assembly. The Regional Assembly evaluates the consistency of the plans with the RSES and makes formal recommendations to the local authority for amendments. Furthermore, the Regional Assembly ensures the coordination between the CCDP and LECP of the local authorities in the Region.

The Planning and Development (Amendment) Act 2016 provides for recently adopted plans, ordinarily lasting 6 years, to be brought forward for review or variation to align with the RSES. This means that most development plans are now subject to review, in order to be aligned with the RSES. All Local Area Plans (LAPs) are/will be similarly brought into alignment during or immediately after the development plan review period.

In terms of local planning informing regional and national planning, CAROs were consulted in the development of the Climate Action Plan and the NECP. Local authorities were also consulted during the development of the RSES and the NECP, and provided information on local energy consumption.

Overall, regional assemblies act as a mediator between local authorities and national government, providing information and advice on regional requirements and ensuring the implementation of national strategy. The NPF, RSES, the CCDP and LECP processes are part of a multi and interrelated tiered approach to the broadening role of local authorities in planning and in economic and community development.

3.4 Implementation and monitoring of regional plans

Implementation

Robust structures are put in place for the implementation of the RSES and the MASPs to ensure delivery is specific, measurable, attainable, realistic and time bound. Local authorities and key stakeholders are critical agents in the delivery of the RPO's and MASP Policy Objectives. In consultation with local authorities and key stakeholders, implementation groups are formed consisting of representatives of these organizations. These implementation groups aim to drive implementation, and have the oversight of their respective MASPs for the Region.

Monitoring

The Southern Regional Assembly has a leadership role in developing a comprehensive and transparent monitoring and reporting process. As such, a robust and transparent monitoring system is put in place to ensure that the progress of the regional objectives are tracked against baseline data at regular intervals during the life of the Strategy. This includes:

- Making baseline data available to local authorities and other public bodies to inform the preparation and implementation of a local authority's Development Plans, LAPs and LECPs;
- Updating baseline date for monitoring purposes;
- Supporting the establishment of regional working groups to facilitate data and information sharing and exchange;
- Establishing a monitoring committee with cross-sectoral and cross-regional representation to oversee progress and contribute to the process. The process aims to facilitate the involvement of relevant stakeholders throughout the implementation of the RSES to provide input on progress.

A formal review of the RSES will be undertaken not less than once every six years, to allow for revoking or amending the objectives of the RSES. If there is a need to revoke the RSES (other than to make a new RSES), the regional assembly must consult with planning authorities in its Region (in line with the Local Government Reform Act 2014).

4 Liguria (Italy)

4.1 Planning context

Regional mandate on planning

The Italian Constitution defines energy legislation as "concurrent," meaning it is shared between the National Government and the Regions. Legislative powers regarding energy are primarily vested in the Regions, but fundamental principles are established by State legislation. Among the basic principles established at national level is the obligation for Regions to adopt a Regional Energy and Environmental Plan (PEAR). PEARs are not required to be approved by the National Government, but in the scoping phase (VAS – Strategic Environmental Assessment) they are evaluated by relevant national stakeholders such as Ministries and the Superintendence for Cultural Heritage and Architecture.

Energy efficiency and renewable energy objectives are provided to Regions through the "Burden Sharing" mechanism (from 2015 - its revision is currently in the process of being approved). The Liguria Region has a regional law that mandates updating its PEAR every 7 years.

Finally, do not regions have direct influence on energy infrastructure planning, as this is done at national level.

Regulatory framework

When developing regional energy and climate plans, relevant EU and national strategies and plans need to be considered.

For the development of the PEAR, the Liguria region considered the following:

- EU level: EU Green Deal, Fit for 55 Package, Repower EU Plan, and various other strategies (for the integration of the energy system, on hydrogen, Renovation Wave, Methane, Offshore Renewables, adaptation to climate change, sustainable mobility, etc.)
- National level: the Integrated National Energy and Climate Plan (NECP), Piano per la Transizione Ecologica (Ecological Transition Plan), PNRR Italia (National Recovery and Resilience Plan), various other strategies (sustainable development, energy renovation of buildings, adaptation to climate change, etc.)
- Regional level: the SRACC (Regional Strategy for Adaptation to Climate Change), Regional Waste Management Plan, Regional Law n. 22/ 2007 (Norms in the Energy field), Regional Law n. 13/2020 (on Renewable Energy Communities).

Financing

The Italian regions have their own operational programmes, such as the newly approved Liguria ERDF regional programme ("POR-FESR Liguria"), which defines the strategy and operations for the use of funds allocated to the Region by the European Regional Development Fund (ERDF). The Region set its own criteria and decides on the investments to be included in the POR-FESR Liguria. The POR-FESR Liguria identifies three main challenges/priorities:

- The transformation of the Liguria economy (i.e. the need to increase research & innovation capacity, promote new technologies and digitalization, support the competitiveness of small-medium enterprises, etc.)
- The ecological transition (i.e. the need to invest in energy efficiency and renewable energy, adapt to climate change measures, prevent risks and ensure resilience, circular economy)
- Social cohesion and quality of life (i.e. the need to fight poverty, increase the quality of basic services, invest in cultural assets).

In general, the actions proposed in PEARs are linked to POR-FESR measures, as PEAR actions tend to promote POR-FESR priorities when applicable.

Current status in the region

In the Liguria Region, there are two Departments that are involved in energy and climate planning:

- The Economic Development Department, which deals with Energy (through its Energy Office)
- The Environmental Department, which deals with climate change and manages the Strategic Environmental Assessment (SEA) procedures.

A new PEAR for 2021-2027 has been developed. The Liguria PEAR 21-27 draft version (containing a draft plan and a preliminary environment plan) was issued in December 2022 and is currently undergoing Strategic Environmental Assessment (scoping phase). Thus, it is being examined internally by all the relevant departments of the Region and by other stakeholders with a responsibility on environmental matters (such as ministries). After the Strategic Environmental Assessment is completed within 2023, the PEAR will be put out for public consultation to collect feedback and views from relevant stakeholders, associations and citizens. The final approval of the PEAR 21-27 (revised and updated to consider the above scoping phases) is expected in the fall of 2023. The Liguria Region has set a goal (via a regional law) to have the PEAR revised every 7 years.

The draft PEAR was developed by the regional energy agency IRE, which in turn subcontracted specific parts to external experts, namely the chapter on renewable energy (which was developed by the University of Genova) and the chapter on environmental impact. The development of the PEAR is overseen by the Economic Development Department's Energy Office, whereas the Environmental Department is responsible for managing the SEA procedures.

Finally, the Environmental Department is responsible for the SRACC (Regional Strategy for Adaptation to Climate Change), but regularly involves the Economic Development Department's Energy Office to understand the impact that the proposed environmental measures have on the energy sector.

Needs, challenges and barriers

The Liguria Region has a very complex territory because of its peculiar physical and geomorphological characteristics. This constitutes a barrier to the widespread installation of renewable energy, especially photovoltaics and wind turbines.

Resource scarcity is another challenge, not only for building wind farms and photovoltaics, but also for other technologies and renewable energy sources (e.g. there are no rivers to install hydroelectric systems). It is also difficult to develop a supply chain as there is no infrastructure, for instance forests are located in mountainous areas that are difficult to reach for the production of biomass.

In addition, the region has air pollution problems to face, therefore some options, like biomass, are not appropriate to be considered.

Citizens and businesses acceptance is also a big challenge. Citizens are not keen on having wind farms close to their houses or see it in the landscape. Businesses are also reluctant to switch to electrification, and in some cases, this is perplexed due to the nature of some businesses. The regional Environmental Department has also adopted a conservative approach and tends to impede the implementation of such projects.

Finally, another significant challenge is the lack of funds in the residential sector. The building stock in the region is quite old, and inefficient. This, combined with rising prices, often makes renovations too expensive and not affordable for people. To add to this problem, there are many historical buildings, and the energy renovation of such buildings is quite complex and bureaucratic. The government's Superbonus scheme (a type of tax credit) has helped, but it has also created problems (e.g. rising prices for renovations).

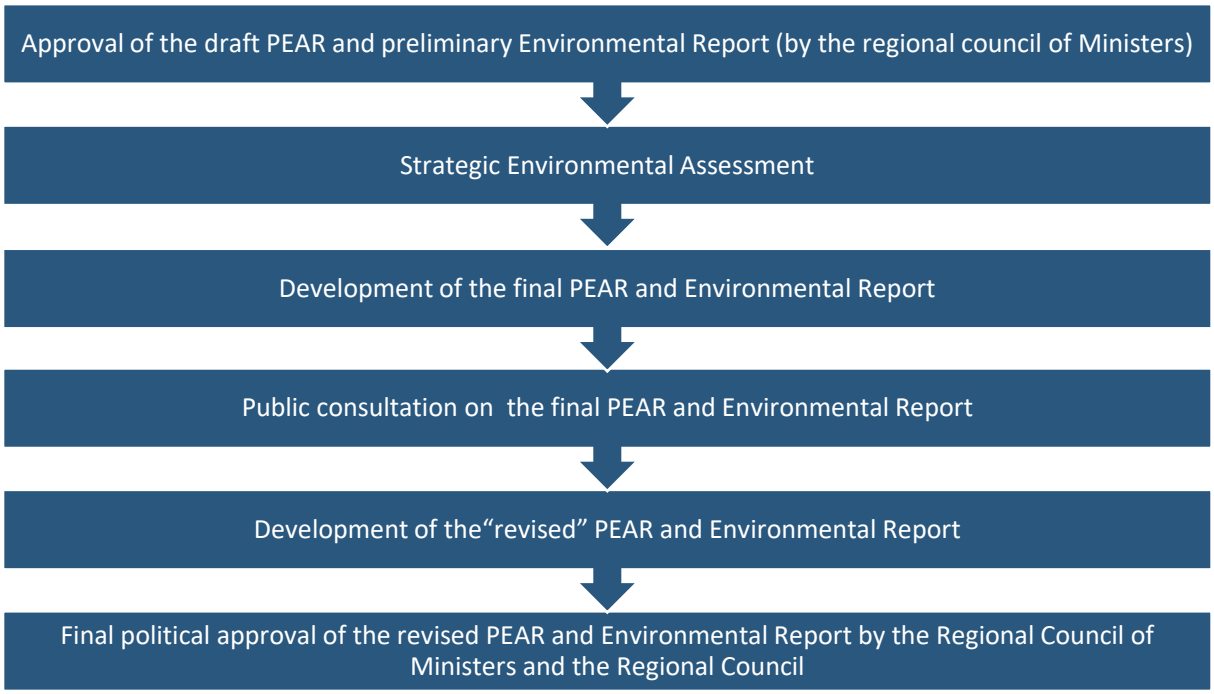
4.2 Regional decision-making procedures

Decision-making procedures and stages

Once the draft PEAR and the preliminary Environmental Report was developed, the decision-making stages include:

- The draft PEAR and preliminary Environmental Report are approved at political level (regional council of Ministers)
- Scoping phase (SEA)
- Development of the final PEAR and Environmental Report
- Public consultation
- Integration of comments and feedback, leading to a revised PEAR and Environmental Report
- Final political approval of the PEAR and the Environmental Report by the Regional Council of Ministers and the Regional Council.

Figure 5. The regional decision-making stages in Italy



Different levels of decision makers are involved in the process, including:

- The Economic Development Department (Manager of the Energy Office and Department Director) at a technical level
- The Regional Ministry for Economic Development and Energy (Minister) at a political level

- The Regional Council of Ministers (all Ministries and the Governor) at a political level
- The Regional Council (Assembly of all Councillors) at a political level.

Decision-making methodology and criteria

The main criteria considered, include:

- The reduction in energy consumption;
- The increase in renewable energy production; and
- The reduction in CO_2 emissions.

To a smaller extent, the socio-economic impact and the cost-effectiveness of the measures are also taken into account.

Needs, challenges and barriers

The key challenge for the region is that it has to meet energy efficiency and renewable energy targets, whilst at the same time meet the needs and interests of the local community and support the local economy.

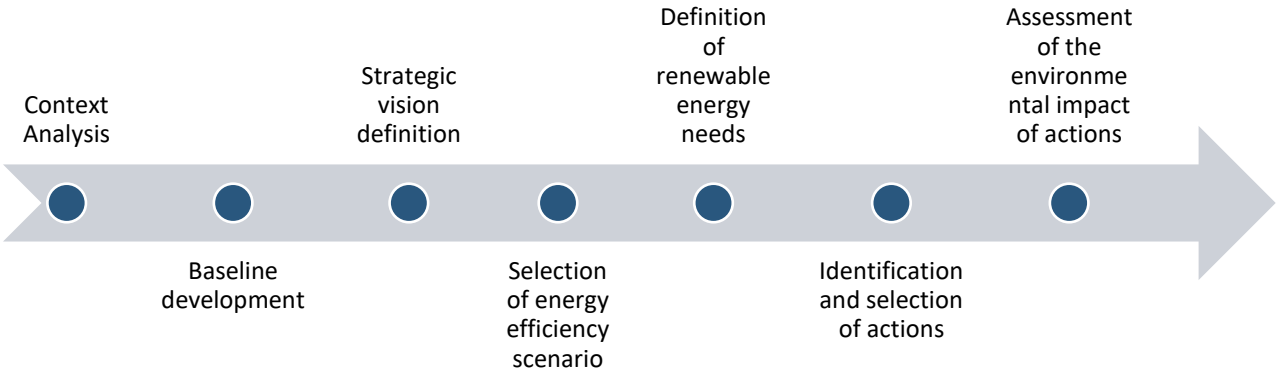
4.3 Regional planning procedures

Overall planning procedures

For the development of the PEAR, the different stages of the planning process include:

- Context analysis (legislative, territorial, socio-economic)
- Analysis of the current situation in terms of energy production and consumption, and development of the baseline
- Development of the Strategic Vision
- Development of different energy efficiency scenarios and selection of the most appropriate scenario
- Based on the selected energy efficiency scenario, renewable energy needs are calculated
- For each technological option, possible actions to be implemented/promoted are identified (and their feasibility is assessed)
- The environmental impacts of the proposed actions and of the various technological options are assessed.

Figure 6. The regional planning stages in Italy



As mentioned in the previous section, the PEAR has to receive political approval at the beginning and at the end of the process:

- Before being issued, the draft plan needs to be approved by the regional Council of Ministers for the first time (for the Liguria PEAR this took place in December 2022)
- After all changes and revisions (due to the scoping and consultation phases), the final version of the plan needs to go back to the Council of Ministers, as well as to the Regional Council for the final approval.

Stakeholder involvement and roles

All relevant stakeholders, as well as citizens, can participate during the public consultation phase of plans and strategies, which takes place after the scoping phase.

For the Liguria PEAR, the region carried out some preliminary meetings during the first phase of its development with the most relevant stakeholders (including the local industry association, the local chamber of commerce, the national energy agency, Italy's largest transmission system operators Terna, etc.), in order to better understand local needs and opportunities and align the PEAR with local strategies. Citizens were involved in the consultation phase through the civil society associations.

Methodology

When planning, the Liguria Region uses data from its energy balance, whenever such data are available and updated. Alternatively, it uses national statistical data adapted to the regional level.

For the development of the PEAR, data from the 2016 regional energy balance were used. National data (from GSE) and regional data from the regional database of Energy Performance Certificates (managed by IRE) have been used for the development of the energy efficiency scenarios, whilst published data and models have been used for the

development of the renewable energy scenarios (especially for PV, wind and heat pumps). When developing the energy efficiency scenarios and assessing the renewable energy potential of the region, an effort was made to take into account costs.

Planning considerations

Priorities: The Liguria Region's PEAR identifies three main priorities, with the ultimate goal to reach energy security and decrease dependency on fossil fuels:

- Energy efficiency to reduce consumption (civil and industry)
- Renewable energy increase (PV, wind, hydro, biomass, solar thermal, heat pumps, smart grids)
- Technological innovation (energy and thermal storage, wave energy, hydrogen, innovative nuclear)

Energy efficiency is a top priority, especially in three key sectors: the residential, tertiary, and industry sector. For each sector, a different scenario is defined with specific energy saving objectives, based on the number of buildings and their typical consumption in the territory.

Technologies: The Preliminary Environmental Report included in the PEAR features a SWOT analysis for each technological option. Besides energy efficiency and typical renewable energy sources (such as photovoltaics; solar, wind, hydro, biogas, solar thermal, heath pumps and biomass), the PEAR also gives emphasis on technological innovation (including hydrogen, wave energy, new generation nuclear).

Local context: The local context was taken into account, both in terms of vision (by considering local Sustainable Energy and Climate plans) and for the calculation of the renewable energy potential (mainly wind and hydro).

Financing: For the implementation of actions, the PEAR has taken into consideration the funding made available by the Liguria ERDF regional programme ("POR-FESR Liguria") and by the National Recovery and Resilience Plan (PNRR).

The EE1st principle in energy planning

The EE1st principle is not explicitly considered in the PEAR. However, the energy efficiency scenario was the starting point. More specifically, the maximum possible reduction in consumption for buildings was firstly considered, before considering renewable energy production.

Incorporating the EE1st principle in regional energy planning is a challenging undertaking, especially when considering that many of the funds available are not intended for private building renovations (except of the superbonus scheme that has now more strict criteria for participation)

There is also a need to raise awareness and sensitize people about the importance of energy efficiency and its benefits, especially in terms of reduced energy bills and environmental protection. This is equally important for policy makers and politicians, as they also need to understand the benefits from incorporating the EE1st principle in energy policy and planning. The Superintendents for Cultural Heritage also play a crucial role in this process, and their support and cooperation are essential to facilitate energy efficiency projects in historical buildings.

Interactions between national and regional planning

Regions have the opportunity to provide feedback and input in national energy strategies and plans during the public consultation phase.

Moreover, since energy planning is a concurrent topic for the State and the Regions, a Committee has been set up, named "Coordination between Regions", which through technical, as well as political working groups, provides opinions (sometimes binding) in relation to the norms to be implemented at national level. During the meetings of the Committee, regions also have the opportunity to exchange between them views and experience.

On the other hand, national plans are considered in regional planning. Italy's NECP sets the overall objectives in terms of energy efficiency and generation from renewable energy, which are then split between the various Italian Regions (the so called "Burden Sharing mechanism). The regional PEARs (including Liguria's) then develop measures to achieve the energy objectives set at national level for their territory.

With regard to energy infrastructure plans, there is a link between the national and the regional level, through the role and the activities of TERNA (National Electricity Network S.p.A.). TERNA is in charge of the preparation of a "Development Plan" on an annual basis. The plan describes the objectives and criteria in which the planning process of the national electricity transmission grid is organized and defines the intervention priorities. It also includes an assessment of the impact of the plan, by presenting the results of the reference energy scenario and the scenario outlined in the plan. During this process, TERNA has regular meetings with Regions in order to share the objectives of the Plan and collect feedback.

Interactions between municipal and regional planning

In Italy, municipalities have no obligation to develop energy and climate plans. However, in Liguria the voluntary Covenant of Mayors (CoM) initiative is widespread, with over 100 Sustainable Energy Action Plans have been developed, whilst more recently a number of SECAPs are under development (with one already finalised). All available local energy plans (e.g. SECAPs, Sustainable Urban Mobility Plans) are taken into

consideration in regional energy and climate planning. More specifically, they are used to identify needs and priority actions in the territory and merge them into the regional strategy. However, the region cannot intervene in urban planning issues, as each municipality has its own City Urban Plan (named PUC).

In terms of influencing national policy, local authorities can provide feedback and input to national energy strategies and plans during the public consultation phase. In addition, ANCI (the national association of municipalities) is involved both during the preliminary and final public consultation phase of national planning.

4.4 Implementation and monitoring of regional plans

Implementation

There are a number of instruments in place to facilitate the implementation of the PEAR, such as the GES thermal account, a scheme that enables applicants to apply for incentive premiums to contribute towards the cost of energy efficiency improvements in public and private sector buildings and technical installations, such as industrial plants. In addition, the Liguria ERDF regional programme also provides incentives for energy efficiency, interventions and the installation of solar and photovoltaic systems. Furthermore, the National Recovery and Resilience Plan (PNRR) incentivises hydrogen, wind, photovoltaics, and renewable energy communities. Finally, the Regional Rural Development Plan (PSR) provides incentives for the installation of photovoltaics.

Monitoring

The monitoring of the implementation of the PEAR is carried out exclusively by the Region, which when deemed necessary can subcontract the monitoring of specific cases/actions.

5 Međimurje County (Croatia)

5.1 Planning context

Regional mandate on planning

Mandated by the Croatian Energy Efficiency Act (OG 127/14, 116/18, 25/20, 32/21, 41/21), regional government units (counties – regional governments) and large cities (with more than 35,000 inhabitants) are obliged to adopt three-year energy efficiency action plans (EEAPs) for their territory, implement energy efficiency actions, monitor the effects of these actions and report on implemented actions annually to the national coordinating body for energy efficiency.

The Croatian Strategic Planning and Development Management Act (OG 123/17, 151/22) mandates that every regional government needs to adopt a Development Plan. This is an umbrella document which prescribes the main development principles and needs of the county.

Finally, regions do not have direct influence on energy infrastructure planning. Medjimurje-plin d.o.o., the regional distribution system operator is responsible for investments regarding natural gas distribution in the county. It is owned by 25 local authorities in the county, so local authorities can partially influence the supply of natural gas. Regarding electricity, HEP – Distribution system operator Ltd. (HEP ODS) is responsible for managing, maintaining, building and developing the distribution network and it is state-owned.

Regulatory framework considered

When developing regional energy and climate plans (such as EEAPs), the national planning framework needs to be taken into account. This includes:

- National plans and frameworks, and in particular the National Energy Efficiency Action Plan, the Energy Strategy of the Republic of Croatia until 2030 with a preview to 2050, the Integrated National Energy and Climate Plan (NECP) for the period 2021-2030; and
- National laws and corresponding bylaws, such as the Energy Efficiency Act, the Renewable Energy Sources and High Efficiency Cogeneration Act (OG 127/14, 116/18, 25/20, 32/21, 41/21) and the Regulation on a system for the monitoring, measurement and verification of energy savings (OG 98/21).

Financing

Operational programmes in Croatia are adopted and administered at national level. Therefore, the Medjimurje County, as a regional government, does not have a regional operational program.

Energy and climate planning in Croatia is partially linked to financial instruments and mechanisms. Lately, in order to be successful when applying to national public calls on energy and climate, local/regional governments must have an energy/climate plan developed (e.g. a Sustainable Energy and Climate Plan, an EEAP, or other equivalent plans). The plan must outline the measures that are proposed for funding under the call. Most national public calls on energy and climate are published by the Croatian Environmental Protection and Energy Efficiency Fund.

Current status in the region

Medjimurje County, as the regional government of the Medjimurje region, has an active role in energy planning at the regional level. The County has multiple administrative departments that are involved to some extent in energy and climate planning, such as the department for economy, agriculture and tourism; the department for spatial planning, construction and environmental protection; and the department for international cooperation, project management and investments.

The county has established a regional energy agency, namely the Medjimurje Energy Agency Ltd. (MENEA), with which it cooperates on all issues related to the energy sector, energy efficiency and renewable energy sources. MENEA manages the energy planning process, including the preparation of EEAPs. The county actively participates in the process, including in the collection of data and the design of measures to be implemented. In addition, MENEA undertakes energy analyses and prepares relevant studies and documents necessary for making decisions on the implementation of actions.

At the beginning of 2022, the Medjimurje County adopted its EEAP for the period 2022-2024. The plan covers buildings and transport, which are the sectors that the Medjimurje County can influence the most and make decisions on measures and investments.

In 2022, the Medjimurje County's Development plan to 2027 was also developed. This is a strategic plan that defines the framework for further development of the county. It includes three priorities: sustainable economy; healthy, inclusive and resilient society; and green and digital county, with the latter being heavily focused on energy efficiency and renewable energy sources.

With the aim to ensure the effective coordination and promotion of regional development, regional governments establish regional coordinators. The regional

coordinator of the Medjimurje County is the Public Institution for the Development of the Međimurje County (REDEA). REDEA had a major role in the creation of the Development plan of the Medjimurje County.

Furthermore, in accordance with the Environmental Protection Act (OG 80/13, 153/13, 78/15, 12/18, 118/18), in 2022 the Medjimurje County assembly enacted its Environmental Protection Program for the period 2022 to 2025. This also includes a report on the state of the environment in the county in the period 2017-2021. Other programmes include: the Air Protection Program for the period 2022-2025 and for Climate Change Mitigation, Adaptation and Protection of the Ozone Layer Program for the period 2022-2025.

Needs, challenges and barriers

During the last few years, there has been a significant increase in the housing stock of the Medjimurje County as a result of national co-financing measures for the purchase and construction of real estate. Accordingly, energy demand has increased, even though new buildings need to meet strict regulations.

Furthermore, although there are national co-financing frameworks for energy efficiency and renewable energy measures, these are still insufficient, especially when taking into account the current economic situation within the region. Therefore, it is necessary to that local and regional government also provide financial assistance.

The Medjimurje County should aim to create a healthy, inclusive, and resilient society using green and digital technologies. However, it faces a number of challenges such as legislation, accelerated development, lack of experts, and finances. For instance, the preparation of a regional plan is a challenge due to strict rules in place and the methodology that must be followed during the preparation process. Moreover, regional and local government do not have sufficient budget for the development and implementation of planned measures. Another challenge that arises during the implementation of planned measures is the lack of high-quality workforce and high material and equipment prices on the market.

Finally, introducing and implementing new and advanced technologies is a challenge, mainly due to the lack of funds, which is preventing public authorities becoming the carriers of progress in new technologies. Nevertheless, there are some private investors operating in the region that use and develop new solutions which can be applied in different environments.

5.2 Regional decision-making procedures

Decision-making procedures and stages

Besides MENEA, REDEA and the relevant administrative departments in the Medjimurje County, there are other institutions actively involved in regional energy and climate planning, including the Technology Innovation Centre Medjimurje Ltd. and the Regional Centre for Investments – Medjmurje Ltd, both established and owned by the Medjimurje County. All entities involved in regional energy and climate planning consult each other when developing plans in their field of expertise and have regular monthly meetings to discuss relevant topics of regional significance.

The decision-making process includes the following steps:

- Relevant entities, such as MENEA, define areas of interest and present relevant analyses to the competent administrative department.
- After presenting all the relevant facts and analysis to the competent county administrative department, if the department approves further action, the measure/project is proposed for funding.
- Decisions on small scale investments are made by the Medjimurje County prefect. Large scale investments require the approval of the County Assembly.

Decision-making methodology and criteria

The county determines the criteria for the allocation of funds to actions/projects from the Medjimurje County's budget. However, compliance with the legislative framework is a prerequisite, so if an action/project is prescribed by law, it must be implemented regardless of the cost.

Furthermore, if a measure/project is of great importance for the region, it is necessary to investigate and use external sources of funding.

Another criterion is the financial performance of the action/project, and the expected return on investment, which greatly affects the prioritisation of actions to be implemented.

Additionally, the increase in the share of renewable energy sources and the reduction of greenhouse gas emissions are taken into account when making decisions, as these both affect the achievement of energy and climate goals.

Finally, the internal capacity and key staff are considered, as these are key for successful implementation of approved actions/projects.

Needs, challenges, and barriers

In order to improve the decision-making process at the regional level, it is necessary to improve the quality of projects, since there are numerous irrational project solutions and unattainable project goals. This is particularly important as financial organisations have a decisive role in the implementation of a project, by co-financing the project.

Another challenge is that often decisions can be made only after all involved parties (e.g. experts in different fields) have agreed upon implementation, which in most cases results in delays in the implementation of actions and in spending available funds.

5.3 Regional planning procedures

Overall planning procedures

Through EEAPs, regional governments design the implementation of policies and actions for improving the energy efficiency of their regions, in accordance with national strategies and plans, considering also the specific needs of the region.

When developing an EEAP, the prescribed methodology of the legislation is consulted, which defines the stages of development and proposes energy efficiency measures for specific sectors.

Initially, the necessary data on public sector consumption (i.e. the building and transport sector) needs to be collected in order to create a baseline consumption inventory.

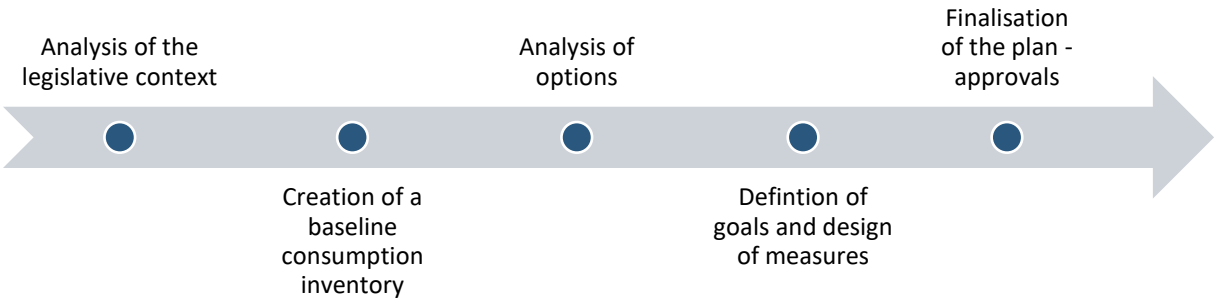
Different scenarios are developed on the basis of the available consumption, while possible options are determined, considering current trends in the area and national plans and programs, assessing their alignment as well with possible funding options.

Subsequently, based on options and needs, goals and measures to reduce emissions and increase the energy efficiency of the region are determined.

A prerequisite for the successful development and implementation of a plan is the establishment of a good and high-quality cooperation with all important stakeholders (for collecting data, defining measures, securing financial resources for their implementation, monitoring the implementation of measures, etc.). It is equally important to establish an effective internal collaboration, for example with key employees in county departments that can identify real needs and accordingly define measures to be implemented in order to meet these needs.

Regional EEAPs must be approved by the national coordinating body for energy efficiency, i.e. the Ministry of Economy and Sustainable Development. After the Ministry approves the EEAP, the EEAP needs to be approved by the County Assembly.

Figure 7. The regional planning stages in Croatia



Stakeholder involvement and role

A key element of the whole regional energy planning process is the engagement of relevant stakeholders. Key stakeholders for the energy planning process at regional level include: regional governments responsible for regional planning, distribution/transmission system operators (some owned by the state and some owned by local governments), regional energy agencies, public institutions and other organizations from different sectors, such as the economic, agricultural, tourism, educational and labour, health, social welfare, sports and culture, environment and infrastructure sector. Stakeholders participate in working group meetings held with the aim of defining strategic priorities and contributing to the creation of the regional planning documents.

Methodology

For the development of the Medjimurje County's EEAP, the current state with regard to the energy consumption in the territory was assessed. As such, data for the building and transport sector within the jurisdiction of the county were collected from the Energy Management Information System and from institutions founded by the county respectively. Collected data included energy and fuel consumption, as well as CO_2 emissions.

After the analysis of the data, suitable measures were identified that address the development needs and strategic priorities of the county. Measures focused on buildings and transport, which are the sectors that the county can influence the most. Other sectors, such as industry, agriculture and public lightning were not considered in the EEAP, as the Medjimurje County cannot influence consumption, planning and implementation of energy efficiency measures in these sectors. For instance, public lightning is within the jurisdiction of the 25 local governments in the Medjimurje region.

In addition to determining the measures (scope and description of measures, timeframes etc.), the EEAP elaborated the process of implementation, including: future projections of the implemented measures, a financial analysis of the measures to

estimate the required investment needed and the return on investment, potential funding sources, expected energy savings and monitoring information. To evaluate the expected impact of individual measures, and in particular energy savings, a bottom-up methodology was used, based on mathematical formulas and reference values defined by regulation.

Planning considerations

Priorities: energy efficiency, renewable energy sources and the reduction of greenhouse gas emissions from public buildings and transport under the jurisdiction of the public administration.

Technologies: During the planning process and when defining strategic priorities, the latest technologies and trends are considered. The region is well-connected with surrounding regions and countries that are more developed in terms of technologies and skills. This ensures the availability of advanced technologies and skills necessary to achieve development priorities.

Local context: When planning measures, the local potential is taken into account, mainly in terms of solar and geothermal energy, as well as for the reduction in energy consumption of end users.

Financing: When developing a plan, existing and future financing instruments and mechanisms are considered, both at national and European levels, so that planned measures can be implemented. Measures outlined need to be aligned with available financial resources within the county budget and beyond.

The EE1st principle in energy planning

The EE1st principle is not explicitly taken into account in regional energy planning. Priority is given to energy efficiency measures and projects at a regional level, when there is funding channelled for the implementation of these measures (e.g. the EU funds the county managed for the energy renovation of the existing building stock).

Important challenges in incorporating the energy efficiency first principle in county level planning relate to low public awareness and acceptance, suppliers perceiving this negatively and the private sector doing the minimum to satisfy obligations, and not willing to go beyond and invest more in energy efficiency.

Furthermore, a key challenge is the availability of funding, especially for energy efficiency interventions in the domestic sector. A large percentage of households rely on subsidies for undertaking energy renovations.

Finally, it is equally important and challenging to gain acceptance within the county administrative departments and ensure that the EE1st principle is incorporated across regional activities, and not limited to energy planning.

Interactions between national and regional planning

Regional authorities are not actively involved during the development of the NECP and other relevant national plans. However, relevant stakeholders, such as regional agencies, regional public institutions and other relevant regional stakeholders, are/were involved in the development of the NECP/other national plans, in their respective fields of knowledge.

Furthermore, before the approval of any national plan/program, a draft version is published online, via a platform called "e-Consulting". This platform is used by Croatian ministries and other public bodies to share plans, programs, laws, bylaws and other relevant documents with the public. Documents published on this platform are put under public consultation, so citizens and stakeholders, including regional authorities, can provide comments and propose changes. The publishing body then decides which comments or suggestions to address. The final documents are adopted by sectoral ministers or the parliament.

In accordance with national legislation, plans at regional level must be harmonised with plans/programs at national level, and ensure multi-level consistency among the plans. Therefore, regional EEAPs must be aligned with national energy efficiency action plan and NECP.

Furthermore, during the development of the Medjimurje county EEAP, the county's Development plan was taken into account, along with other relevant regional planning documents for individual elements of the EEAP.

Interactions between municipal and regional planning

Local governments in Croatia (cities and municipalities) are not obligated to develop energy/climate plans. However, in the past few years, local governments in Medjimurje region (Towns of Čakovec, Prelog and Mursko Središće and the municipalities of Nedelišće and Sveti Juraj na Bregu) have developed Sustainable Energy and Climate Action Plans (SECAPs) for their respective cities/municipalities. Only measures in these plans regarding areas under the jurisdiction of the Medjimurje County government are considered in regional planning.

The Medjimurje County adopts spatial plans for its territory, while its municipalities adopt a general urban plan for their territory that must be aligned with the county's urban plans.

The interaction between counties and local authorities when planning is mostly through public consultation. However, the county plans to address this issue through conferences and seminars at a local and national level, and most importantly through regular monthly meetings of mayors at the county level.

5.4 Implementation and monitoring of regional plans

Implementation

At a national level, investments in energy efficiency projects as well as renewable energy sources are supported through the currently available EU funds (Cohesion Fund, European Regional Development Fund...) and the National recovery and resilience plan.

Between 2012 and 2015, the Medjimurje County co-financed renewable energy and energy efficiency measures targeting family houses. From 2015 onwards, there were significant investments in the energy refurbishment of public buildings, whilst only national funding was available for interventions in family houses. From 2023, the Medjimurje County plans to finance renewable energy measures in family houses, independently of the national funding available.

Monitoring

According to the Regulation on monitoring, measurement and verification systems of energy savings, as well as the Energy Efficiency Act, the implementation of measures incorporated in energy plans needs to be monitored and reported. The report on implemented measures needs to be developed every year and present annual progress in the implementation of energy efficiency measures foreseen in the EEAP. More specifically, the report should contain an overview of measures implemented by regional government and financed by own funds, as well as all other measures implemented. In addition, the report should contain amendments and modifications to the EEAP (if applicable) and supporting measures implemented.

Once developed, the report needs to be submitted to the national coordinating body for energy efficiency. The data available on implemented energy efficiency measures, in the report, are entered in the system for monitoring, measuring and verifying energy savings. This data, collected by all regional governments, are used by the relevant ministries for developing a national annual report on energy efficiency measures implemented, which is adopted by the parliament.

For the Medjimurje County, the aforementioned report is prepared by the Medjimurje Energy Agency in cooperation with the relevant administrative departments in the Medjimurje County.

Overall, an efficient system for monitoring projects in the field of energy and climate is vital, so that additional investment needs can be easily identified and results of implemented projects monitored.

6 Ormož and Slovenska Bistrica (Slovenia)

6.1 Planning context

Regional and local mandate on planning

In Slovenia, there are no official regions or regional authorities. The regional division is only for statistical purposes.

The Energy Act requires municipalities to prepare a Local Energy Concept (LEC), which is valid for 10 years and is approved by the Ministry of Infrastructure. The LEC is the most important tool for developing a local energy policy strategy. The LEC contains solutions tailored to the municipality for efficient, economical and environmentally friendly energy services in homes, businesses and public institutions. The document also lists concrete results that the municipality can achieve by implementing the LEC activities. The document is the basis for further planning the economic development of the municipality, the development of local energy utilities, the efficient use of energy, the use of renewable energy sources and the improvement of air quality within the area of the municipality. The LEC enables:

- The monitoring, evaluation and reporting of energy consumption and related energy and environmental changes;
- The creation of short-term and long-term energy policy;
- The selection and determination of energy goals;
- The creation and comparison of various alternative scenarios related to energy and economic development;
- The review of measures to effectively improve the energy situation and thus the state of the environment.

In accordance with the Energy Act, municipalities must report annually on implemented measures incorporated in their LEC, and their impact in terms of energy savings, CO_2 emission reduction, etc.

Regulatory framework

The LEC must be prepared in accordance with the Regulation on the methodology and mandatory content of the local energy concept. Technical guidance is also available in the form of a guidebook for the preparation of the LEC.

The following policies are considered during the planning process:

- Act on the Efficient Use of Energy (ZURE)

- Act on the promotion of the use of renewable energy sources (ZSROVE)
- Rules on the efficient use of energy in buildings
- Integrated National Energy & Climate Plan (NECP)
- Regulation on Self-Supply with electricity from Renewable Energy Sources

Financing

There are no regional operational programmes in Slovenia, as there are no official regions in Slovenia. There have been discussions to have two operational programmes, one for the west and one for the east Slovenian cohesion region (NUTS2). But a decision has not been taken, so currently there is only one national operational programme.

The corresponding ministries prepare and publish calls under the national operational program, such as, calls for energy renovations of public buildings, renewable energy investments, district heating. Decisions on granting investments, as well as requirements related to implementation and monitoring are taken at a national level.

For implementing the measures included in the LEC, the municipality can either use its own funds or pursue external funding, for instance apply for a grant under the national operational program.

Current status at a local level

A LEC and a Sustainable Energy and Climate Action plan (SECAP) was developed by the municipality of Ormož in 2021 and 2022 respectively.

Meanwhile, the municipality of Slovenska Bistrica is in the process of creating its own LEC and SECAP, with the aim of having both documents approved by the municipal council by mid-2023.

Both municipalities within the region have also developed a Sustainable Urban Mobility Plan (SUMP).

Needs, challenges and barriers

The primary obstacle faced by local communities in the area is to decrease energy consumption among various sectors. The municipalities of Ormož and Slovenska Bistrica do not possess their own district heating systems, relying instead on individual heating systems that use fossil fuels and renewable energy sources. This poses a significant challenge in terms of energy planning, as the impact the municipalities can have is limited without a centralized heating system. To address this issue, both municipalities have constructed a gas pipeline network to serve as the primary heating source.

Furthermore, many small municipalities in Slovenia with populations under 10,000, and sometimes under 5,000, lack the resources to prepare their own energy plans. As a result, external experts (energy agencies) are typically hired to develop and prepare these plans. Municipalities are not actively involved in the development of the plans, with their engagement being limited in providing data at an initially phase and then during the final stage. This leads to a lack of a broader stakeholder involvement during the planning process.

6.2 Decision-making procedures

Decision-making procedures and stages

Although at municipal level, departments vary between municipalities, depending also on the size of the municipality, often the department for economic and development, planning and finance is involved in energy policy planning.

The level of involvement of different structures in the energy planning process is different from municipality to municipality. In general, interventions are more often made at the decision-making stage. For instance, the committee, municipal council or the ministry can reject the LEC or request changes, so the process goes back to the preparation phase.

The decision-making process in general is as follows:

- A decision is made to develop the LEC;
- External experts (LEC developer) are selected and contracted;
- A working group is formed (including: municipal staff, external experts, relevant local stakeholders);
- Several meetings of the working group (with interested stakeholders in some cases) are held during the preparation phase to facilitate the experts work on developing the plan;
- When the LEC is prepared, it is first sent to the ministry and the minister responsible for energy for approval;
- The LEC is being presented and approved by the corresponding municipal committees (infrastructure, economic or other); and
- At the last stage the LEC is approved by the municipal council.

Figure 8. The regional decision-making stages in Slovenia

Decision-making methodology and criteria

Key decision-making criteria include: increasing the share of renewable energy sources, reducing greenhouse gas emissions and ensuring the cost efficiency of measures.

For determining the technical, energy and environmental feasibility of different options support is provided by energy agencies. In specific cases feasibility studies are also being developed.

Needs, challenges and barriers

To enhance the decision-making process, it is essential to address certain obstacles. In particular, local authorities need to be more involved in the preparation of energy plans, instead of just providing data and then being involved in the final stages of drafting the plans.

Furthermore, local stakeholders and the wider public need to be more involved in energy planning.

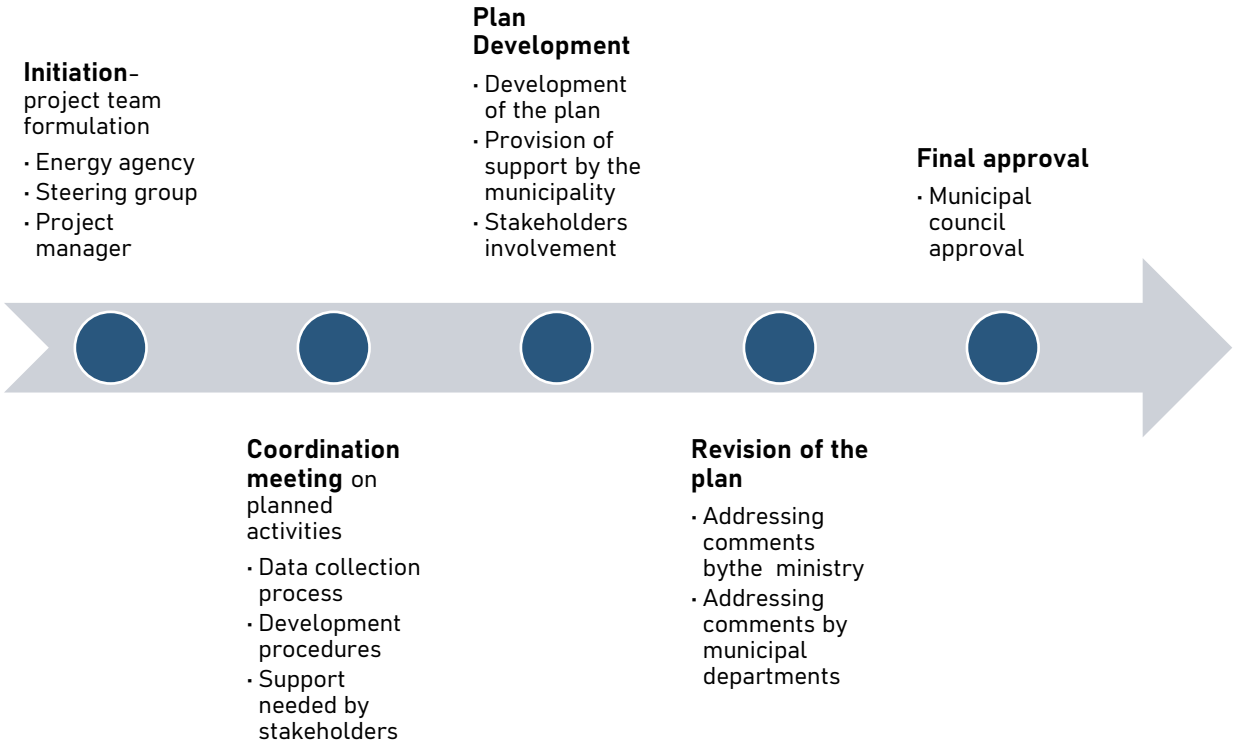
6.3 Planning procedures

Overall planning procedures

As mentioned above, it is common practice for, municipalities to use external experts for the development of their LEC and/or SECAP, due to the lack of qualified staff. In this case, after signing the contract with the external developer the process followed includes:

- The municipality appoints the steering group and the project manager.
- The municipality organizes an introductory meeting of the steering group with the developers of the plan, during which:
    - The developer presents to the steering group a set of data that will be needed for the creation of the concept/plan.
    - The developer presents to the steering group the process that will be followed, especially in regard to data needed (list of heating devices by energy source in households, list of public buildings, companies, larger boiler houses, etc.), interim and final presentation of the report, etc.
    - The municipality and the developer agree on the data collection method (e.g. preparation and distribution of questionnaires, surveying and/or interviewing by telephone, personal visits, ordering free and paid data, and other data collection methods).
- The municipality provides all the necessary contacts that the developer needs for his and for organising meetings.
- The municipality provides all existing studies, analyses, projects in the field of energy, and development programs of the municipality for the future.
- The municipality prepares all existing spatial documents and provides them to the developer, along with the data requested.
- The concept/plan is being prepared: the developer conducts an analysis of energy use and formulates measures to be implemented, along with a financing plan. The steering group and relevant stakeholders are involved in the preparation of the concept/plan.
- Final decision-making process undertaken by the corresponding ministry, municipal committee and the municipal council.
- After approval, the concept/plan is made public, usually by publishing the document on the municipality webpage.

Figure 9. The regional planning stages in Slovenia



On the basis of Article 325 of the Energy Act (EZ-1), the local energy organization can be the legal entity that undertakes the tasks for the preparation and implementation of the Local Energy Concept.

Stakeholder involvement and role

The main stakeholders and their role include:

- Energy agencies, which usually have the role of energy plan developer
- Grid operators that provide the necessary energy data for the baseline energy analysis.
- District heating operators that give data on heat production/distribution
- Energy suppliers that give data on energy supply and consumption

Energy suppliers and operators are usually engaged through meetings and surveys, with energy data being collected through applications and orders. While citizens can be involved in the preparation of the plan, this is not common.

Methodology

National guidelines have been established for the development of the LEC, while the Covenant of Mayors has also developed guidelines for the creation of SECAPs. Although the methodologies share some similarities, there are notable differences in key areas

such as the baseline years for energy data, the absence of the climate component in LEC, and differences in reporting procedures.

The data used in the analysis are typically obtained by the municipality, energy distributors and the Ministry of Environment and Spatial Planning.

Both LEC and SECAPs encompass: the residential sector, public buildings, industry, and transportation.

Planning considerations

Priorities: The main priorities are: energy efficiency and the use of renewable energy sources. Emphasis is given to the public buildings sector. Other sectors, such as the residential sector and industry are considered less, because local authorities cannot directly influence the uptake of energy efficiency measures and renewable energy sources.

Technologies: Usually, these plans do not go into detail with the specifics of the proposed technologies. For example, a measure may propose the replacement of old inefficient fossil fuelled boilers with heat pumps and does not go more into detail. Instead, when the municipality/local community decides to implement the measure, feasibility studies, energy audits and other necessary analyses are done.

Local context: During the planning phase, the potential of renewable energy sources is always taken into account. The proposed measures always consider the wider energy development strategy of the area. Larger energy consumers, especially industry, are specifically considered, as often these significantly contribute to energy consumption within the municipality, as well as have a certain potential for energy efficiency improvements and the use of renewable energy.

Financing: The LECs/SECAPs incorporate measures, for which a brief description is provided, responsibilities for the action/measures are defined, a time plan is proposed, the approximate costs of the action are estimated, and the available sources of funding (national or other funds) are explored.

The EE1st principle in energy planning

The EE1st principle is a fundamental principle of energy policy that prioritizes energy efficiency measures, before considering other energy sources such as renewables in meeting energy demand.

The EE1st principle is not explicitly considered in energy planning, nor are the interactions between energy demand and supply. For each selected measure, a simple cost benefit analysis is done, although this does not take into account impacts beyond energy costs.

In recent years, there has been a growing recognition of the importance of the EE1st principle in energy policy, both at the national and international levels. The European Union, for example, has adopted the EE1st principle as a key pillar of its energy policy, and many countries around the world have followed suit. Slovenia transposed this principle in national legal acts and adopted its National Energy Climate Plan.

There are ongoing discussions on how to better incorporate the EE1st principle in national and local energy planning. Efforts to incorporate the EE1st principle into national and local energy planning include: setting energy efficiency targets, implementing energy efficiency regulations and standards, promoting energy efficiency financing mechanisms, and developing energy efficiency awareness campaigns. Slovenia has also established the Slovenian Environmental Public Fund (Eco Fund) to support the implementation of energy efficiency measures at the local level. The Eco Fund activity provides funds and loans at reduced interest rates for investment in environmental protection. A few years ago, the Eco Fund took over the organization and financing of an energy advisory network offering free expert advice on how to improve energy efficiency at the local level.

Despite these efforts, there is still much work to be done to fully integrate the EE1st principle into national and local energy planning. Incorporating the EE1st principle at a national and local level faces several challenges, including:

- Technical complexity and lack of expertise: Implementing energy efficiency measures can be technically complex, requiring specialized knowledge and expertise. This can be a barrier for local governments or small communities that may lack the necessary technical capacity.
- Financing: Energy efficiency measures may require significant upfront investment costs, which can be a challenge for communities or individuals with limited financial resources. Financing mechanisms, such as grants, loans, or subsidies, may be necessary to make energy efficiency measures more accessible.
- Regulatory barriers: Existing regulations, policies, and market structures may present barriers to the implementation of energy efficiency measures. For example, regulatory frameworks may favour traditional energy sources over energy efficiency or may not incentivize the adoption of energy-efficient technologies.
- Behavioural barriers: Energy efficiency measures can also face behavioural barriers, such as a lack of awareness or understanding among consumers, renters, or homeowners. Education and awareness-raising campaigns may be necessary to promote energy efficiency and encourage behavioural changes.

Overall, implementing the EE1st requires a comprehensive and collaborative approach involving policymakers, industry stakeholders, and communities. Overcoming the challenges will require sustained effort and commitment from all parties involved.

Multi-level governance

The Slovenian Constitution lays down a decentralised system of governance in which local authorities have autonomy in the performance of their tasks and responsibilities. This means that local authorities can develop and implement their own plans and policies, including those related to energy and climate.

At the same time, the national government is responsible for the development and implementation of national energy and climate-related plans and policies. To ensure consistency between national and local plans, the government has put in place coordination and cooperation mechanisms between the different levels of government.

Interactions between national and municipal planning

Slovenia has mechanisms to ensure multilevel governance and the coordination of national and local plans.

The development of the NECP is managed at a national level by the Ministry of infrastructure (Directorate for energy) with the support of the Ministry for the Environment, the Ministry of Environment and Spatial Planning and environmental opinion makers (Slovenian Environment Agency, Institute of the Republic of Slovenia for Nature Conservation etc.). Other Ministries were involved by providing comments on particular sections concerning their responsibilities.

Although local authorities are not directly involved during the development of the NECP, organizations representing local communities, as well as other stakeholders, are invited to participate in the preliminary and final consultation. Within the framework of the first, which took place in March and April 2019, the Association of Municipalities of Slovenia submitted their comments. During the final phase, relevant NGOs and energy companies were involved into the discussions trough workshops organized by the Ministry of Infrastructure.

National plans are considered during the preparation of municipal plans. More specifically, The NECP is taken into consideration in terms of determining goals and targets, selecting energy efficiency indicators, determining the share of renewable energy sources and identifying measures to design, especially since the NECP lays down indicative proposals for measures to achieve the 2030 targets.

Regarding the framework for coordination between local authorities, the College of Mayors of Spodnje Podravje coordinates energy projects involving multiple

municipalities in the region, while the joint municipal administration of Spodnje Podravje handles common issues. The Development Council of the Podravje region is responsible for coordinating regional development plans.

Local authorities play a significant role in decisions related to the supply of energy in their respective territory. They are responsible for setting policies and regulations related to energy use, promoting energy efficiency, and encouraging the use of renewable energy sources. They also have the power to grant permits for energy infrastructure projects and to work with energy providers to ensure that energy supply meets local needs.

As such, local authorities can influence investments in energy infrastructure in several ways. For example, they can collaborate with energy providers to identify the most suitable sites for new power plants or transmission lines, taking into account the needs of the community and the environment. They can also work with energy providers to secure financing for new projects and to promote the use of renewable energy sources.

Moreover, local authorities can provide incentives for the development of clean energy technologies and energy efficiency measures. These incentives can encourage private investors to invest in energy infrastructure in the region, creating jobs and stimulating economic growth.

Overall, the role of local authorities in decisions related to energy supply is crucial for promoting sustainable development, reducing greenhouse gas emissions, and ensuring a reliable and affordable energy supply for the community.

6.4 Implementation and monitoring of existing plans

Implementation

Slovenia provides Incentives and subsidies for promoting energy efficiency and renewable energy sources are provided at national level.

The government manages these initiatives through various programs, such as

- The European Cohesion Policy Programme for the period 2021-2027. The package of new cohesion regulations was adopted on the 24th of June 2021 and published in the Official Journal of the EU on the 30th of June 2021, providing the legal basis for the preparation and submission of national European cohesion policy programs for the 2021-2027 period. Within the new operational programme, and policy objective CP2: Green Europe, targeted investments exist

for promoting energy efficiency and reducing greenhouse gas emissions in all sectors, as well as for promoting energy from renewable sources.

- The national Environmental Public Fund (Eco Fund). This provides subsidies for investments in energy efficiency and the use of renewable energy sources. More specifically the Eco Fund:
    - issues soft loans with favourable interest rates,
    - issues non-repayable subsidies (grants),
    - finances and coordinates the Energy Advisory Network (ENSVET) which is free for households (offices all over Slovenia),
    - finances awareness-raising activities in the field of environmental protection.

  The Eco Fund provides subsidies to various beneficiaries, including residential buildings for energy efficiency and self-sufficiency in electricity, and municipalities for the construction of nearly zero-energy buildings.

There are several incentives, subsidies, and funding streams that can be considered to support the implementation of local and national plans, promoting the EE1st principle in parallel, for example:

- Tax incentives: Government can offer tax incentives to individuals, businesses, and organizations that invest in energy-efficient technology, such as solar panels, LED lighting, or energy-efficient appliances. These tax incentives can be in the form of rebates or tax credits, which can reduce the upfront cost of these investments.
- Low-interest loans: Government can provide low-interest loans to businesses and organizations that want to invest in energy-efficient technology. These loans can help reduce the upfront cost of these investments and make them more accessible to a wider range of businesses.
- Energy-saving grants: Government can offer grants to businesses, organizations, and individuals to implement energy-saving measures, such as installing insulation and more efficient heating and cooling systems. These grants can cover a portion of the cost of these investments and help incentivize energy efficiency.
- Feed-in tariffs: Feed-in tariffs are payments made to businesses or individuals who generate renewable energy, such as solar or wind power. These payments can incentivize the adoption of renewable energy sources.
- Performance-based incentives: Government can offer performance-based incentives to businesses and organizations that demonstrate significant energy savings through energy efficiency measures. These incentives can be based on

metrics such as energy savings or greenhouse gas reductions, and can provide a tangible reward for businesses that invest in energy efficiency.

Overall, there are many different incentives, subsidies, and funding streams that can be considered to promote energy efficiency. These measures can help reduce the cost of energy-efficient technology and incentivize the adoption of energy-saving measures, leading to a more sustainable and efficient energy system.

Monitoring

To monitor the implementation of the LEC, local authorities need to prepare and submit an annual report to the Ministry of Infrastructure. The report includes information on implemented measures and activities foreseen in the LEC, investments made, co-financing obtained and an assessment of the impact of the measures (in terms of reduction in greenhouse gases, costs savings etc.). The report needs to also outline implemented awareness raising activities for the wider public and for staff employed at the municipality on the efficient use of energy and use of renewable energy sources, implemented. Finally, within the report, the municipality has to describe upcoming activities with the foreseen investment and possible co-financing.

During the monitoring and reporting phase, municipalities are supported by Local Energy agencies which usually have all the data necessary and access to energy bookkeeping tool that helps estimate energy savings. LEASP supports the development and monitoring of local energy plans in Spodnje Podravje.

7 Western Macedonia (Greece)

7.1 Planning context

Regional mandate on planning

At present, there is a lack of targeted instruments or national policies to motivate local and regional governments to establish ambitious energy plans. This is because energy policy planning is largely viewed as a national responsibility.

Nevertheless, regions must develop an Energy Efficiency Plan (EEP), with a primary focus on public buildings. The plan must contain specific objectives and outline energy efficiency measures to be implemented. It should be submitted to the Ministry of Environment and Energy and reviewed every two years. An energy management system, including energy audits as part of the energy efficiency plan, should be put in place, while an Energy Manager should also be assigned for the authority's public buildings.

Besides the EEPs, regions must develop Regional Climate Change Adaptation Plans, which define priority policy areas and specific targeted measures.

Regulatory framework

The regulatory framework that needs to be considered relevant to regional and/or local energy and climate plans include:

- Law 4342/2015 that transposes the Energy Efficiency Directive (2012/27/EU) and establishes the obligation for the elaboration of an EEP at the local and regional level;
- Law 4414/2016 that establishes the development of Regional Climate Change Adaptation Plans. The content of each plan is specified in Ministerial Decision 11258/2017.

When planning at a regional level, the following national strategies and plans need to be considered:

- The National Energy and Climate Plan (NECP);
- The Just Development Transition Plan (JDTP), which addresses all issues arising from the strategic decision of the Government to withdraw, by 2028, all lignite plans of the country;
- The National Strategy for Sustainable and Fair Growth 2030;
- The National Climate Change Strategy;
- The National Plan for increasing the number of nearly zero energy buildings; and
- The 4th National Energy Efficiency Action Plan

Financing

The region of Western Macedonia has its own regional operational program. Through its operational programme, the region can make investment decisions related to energy efficiency and renewable energy.

Western Macedonia forms the pillar of the ambitious Just transition Plan. Therefore, the new independent Operational Program for the Just Transition of the new NSRF 2021-2027 is an important funding mechanism for energy efficiency and renewable energy interventions in the region.

In addition, a special transition clause has been introduced in all national funding programmes, i.e. providing beneficiaries with a higher subsidy rate if they are located in a transition area. For instance, the transition clause has been incorporated into the new "Save-Autonomy" and the "Save 2021: program, the law on electromobility, and Law 4864/2021 for improving the investment environment on "strategic investments". The transition clause is a key lever for accelerating the implementation of renewable energy projects and creating jobs in lignite areas in the short term and in general ensuring a fair transition.

Overall, the approval of energy-related investments typically takes place at the national level, whilst regional investments are reviewed by the Regional Council.

Current status in the region

The Just Development Transition Plan (JDTP) is a comprehensive multi-dimensional development roadmap for the withdrawal of lignite plants in the region of Western Macedonia and the municipality of Megalopolis. The JDTP includes a set of measures, such as policy and fiscal reforms (e.g. investment and tax incentives), new energy infrastructure (e.g. photovoltaic parks), training programmes to improve green skills,. rehabilitation of land and spatial planning strategies, and new public infrastructure projects (e.g. natural gas supply). It aims to revive the local economy, secure jobs and create new ones, offset the socio-economic effects of de-lignification and ensure the energy self-sufficiency of the transition areas and the country in general, while developing the local economy.

At a regional level, a regional Climate Change Adaptation Plan has been developed, outlining the adaptation measures the region intends to implement.

The region of Western Macedonia is also currently developing a regional sustainable energy plan, with the support of the Centre for Renewable Energy Sources and Saving. Although the region is not obliged to do this, it considers it important to better understand the current energy situation of the region and better plan measures and projects. The plan aspires to develop an integrated energy strategy for the region,

aligned with the NECP and the JDTP, as well as the regional authority's priorities and operational program's axes. Energy efficiency and new technologies are expected to be core priorities in this plan.

Besides these plans, within the framework of the regional EEP, the region is giving emphasis in the energy renovation of public buildings. The priority is to achieve having all public buildings in the region as nearly zero-energy buildings by 2030.

Finally, a few local authorities in the region have voluntarily joined the Covenant of Mayors initiative, such as the municipality of Kozani, and have developed a Sustainable Energy and Climate Plan (SECAP). The Municipality of Kozani also participates in the Climate Neutral City initiative. Under this, the Municipality of Kozani will develop short-term and medium-term development strategies that will lead to achieving net-zero greenhouse gas emissions by 2030, as well as complete a digital transformation, through a socially just transition that is economically efficient and benefits all citizens. The successful actions of this initiative are expected to be replicated at a regional level.

Needs, challenges and barriers

The challenges that the region of Western Macedonia faces in relation to energy and climate planning include:

- Ensuring the rapid delignification of the region, as the current legal framework does not facilitate this process. According to the NECP, all lignite-fired power plants that are currently in operation are expected to shut down by the end of 2023. A recent ministerial decision has delayed the closure of a couple of plants until the end of 2025.
- Achieve a green energy transition: from fossil fuels to green hydrogen and renewable energy.
- Make use of the current district heating system network, constructed and utilised under the lignite thermal power plants, under the new status that delignification sets.

Considering that these challenges can become key success factors of the decarbonisation process, the following is needed:

- Raising public awareness on energy efficiency and promoting energy efficiency measures in the tertiary and residential sector, including small and medium businesses in the region. To do so, public buildings need to lead by example, this is why this is an important priority of the region of Western Macedonia. Only by increasing public awareness and acceptance the private sector can participate in the energy transition, especially since energy renovation rates are currently very low. The recently established Energy Education Park is expected to help towards this direction.

- Facilitating the financing of energy efficiency and renewable energy interventions in the region. As mentioned above, there are numerous financial instruments, however, only a few aims to facilitate the financing of energy efficiency interventions at homes.
- Dealing with the disproportionate weight, supply-side stakeholders have in policy and decision making, as well as dealing with conflicts of interest (e.g. with regards to specific technologies foreseen in plans).

7.2 Regional decision-making procedures

Decision-making procedures and stages

The decision-making stages relevant to developing a regional energy action plan in Greece include:

- Decision to develop the action plan: The first step in developing an action plan is obtaining approval to initiate the process. The topic is included in the regional council agenda for approval. The agenda item may outline the purpose, scope, and objectives of the action plan, and may be accompanied by relevant supporting documents and information.
- Once approval is obtained the plan is developed. If the regional authority does not have internal expertise/capacity the development of the plan is assigned to external experts or consultants.
- Draft approval by the regional committee: Once the plan is drafted, approval by the relevant regional committees/departments is needed. These committees may be specialized committees or sub-committees formed by the regional council to review and evaluate the proposed plan. They may assess the plan against various criteria, such as economic viability, environmental impact, social implications, and legal compliance, among others.
- Once regional approval is obtained, draft approval by the Ministry of Environment and Energy may be needed: Depending on the scope and the nature of the action plan, it may be necessary to obtain approval from the Ministry of Environment and Energy or other relevant governmental bodies. These bodies may review the draft plan to ensure it aligns with national policies, regulations, and guidelines related to environmental protection, energy management, and other relevant areas.
- Final approval by the regional council: After considering the feedback received during the public consultation process, the plan is reviewed and finalized. This may involve further amendments, revisions, or modifications based on the feedback received, and a final vote for approval by the Regional Council to

officially adopt the action plan. Once approved, the action plan becomes an official regional document that will guide the implementation of actions and initiatives outlined in the plan.

Figure 10. The regional decision-making stages in Greece

Decision-making methodology and criteria

The main pillars that are taken into consideration in decision making processes and especially for energy and climate-related topics are:

- Clean energy
- Industry, small industry and trade
- Smart agricultural production
- Sustainable tourism
- Technology and education

The decision-making process is governed by the following basic principles:

- Emphasis on labor-intensive areas to create employment opportunities in local communities
- Ensuring a quick energy transition with an emphasis on quick-wins
- Promoting social and environmental sustainability with an emphasis on sustainable development
- Integration of modern technology and promotion of innovation

Needs, challenges and barriers

The key steps that need to be taken to improve the decision-making process can be briefly summarized as follows:

- Gathering relevant information
- Identifying the alternatives
- Weighing the evidence
- Choosing among alternatives
- Taking action
- Reviewing the decision and its consequences

Key barriers in the decision-making process include:

- Conflict of interest between regional authorities and the stakeholders
- Time constraints
- Uncertainty
- Biases by inhabitants due to the lack of multifaceted knowledge

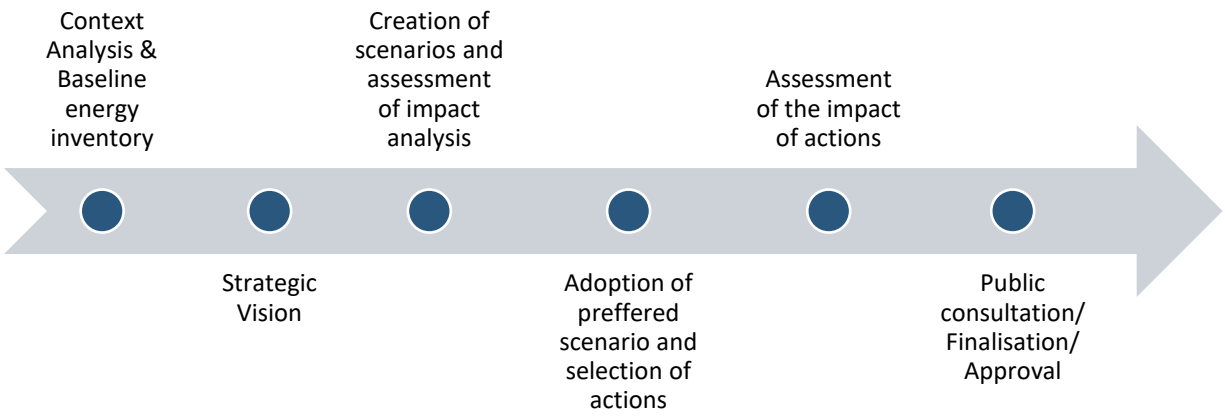
7.3 Regional planning procedures

Overall planning procedures

When developing a regional energy and climate plan in Greece, the different stages of the planning procedure can be summarized as follows:

- Analysis of the planning context (legislative, territorial, socio-economic) and the current energy balance (baseline)
- Development of the Strategic Vision in line with the region's priorities
- Development of future scenarios and their expected impact
- Selection of the most appropriate scenario and identification of possible actions/measures to be implemented/promoted
- Impact assessment of the proposed measures (in terms of costs, energy savings, CO_2 emission reductions etc.)
- Revision and Finalisation of the Plan after public consultation and approval

Figure 11. The regional planning stages in Greece



Stakeholder involvement and role

Public consultation is a crucial step in the development of an action plan/strategy in Greece, as it provides the opportunity to stakeholders, including the public, to provide feedback, express concerns, and contribute to the decision-making process. Public consultation is typically done through the relevant online platform at the final stage of the process, but may also include other methods, such as public workshops and surveys to gather input from the public, affected communities, and other stakeholders.

Beyond the public consultation process, stakeholders may also be involved in the development of plans and strategies. For example, stakeholders are sometimes engaged at local and regional level during the development of local SECAP and local and regional EEAPs.

More specifically, the region of Western Macedonia intends to involve different stakeholders in the development of its sustainable energy action plane at various stages of the process. The municipality of Kozani also involves different stakeholders, including local institutes and research organizations, during the development of its SECAP.

It is important to keep in mind that the success of any regional energy plan depends on the coordination and cooperation of local authorities and stakeholders. It is therefore essential to engage with them and ensure that they are kept informed throughout the development and implementation process.

The involvement of different stakeholders is also important in establishing links with other initiatives and actions taken at different government levels. For example, energy companies/utilities also design energy efficiency schemes under the Energy Efficiency Obligation Scheme (as required under article 7 of the Energy Efficiency Directive). They can also provide useful links to other national, regional and local policies that affect the plan, such as Sustainable Urban Mobility and Transport Plans.

Methodology

In order to determine the economic potential of high-efficiency cogeneration and efficient district heating and cooling at national level the financial sustainability indicators are calculated through the economic analysis of energy-efficient generation and transportation systems of the thermal energy to substitute existing conventional generation systems for space heating and domestic hot water production. Geographically, the entire Greek territory is covered at municipal level, and the climatic conditions, the economic feasibility and the technical implementation capacity of the technologies under examination are taken into account.

In parallel, a cost-benefit analysis was also carried out at the level of society, taking into account the external costs and benefits resulting from the penetration of technologies of the scenarios under examination. In the cases where there was no economic potential, the amount of the funding gap remaining to have financially viable investments in these technologies was examined.

The study developed a set of scenarios in relation to the heat demand which is met by district heating and always a different technology or source of heat is used. Each scenario was evaluated against the baseline scenario, which related to the current situation of heating and cooling generation by use of conventional technologies.

Planning considerations

Priorities: The priorities of the region include the reduction of energy consumption and the use of renewable energy for decarbonisation. Emphasis is given to the public sector, due to the regional EEP. These are also the priorities of the municipality of Kozani, especially energy efficiency in residential buildings as these are the major energy consumers.

Scenarios: For Western Macedonia, the University and the local chamber of CERTH are dealing with renewable energy penetration scenarios in the area. The JDTP also considers renewable energy potential in the region per technology.

Local context: Due to decarbonisation, the region, and especially the municipality of Kozani, has a lot of needs concerning heat and power. More specifically, the thermal power of the lignite power stations covers the heating and hot water needs of the buildings (households, offices, commercial) in the city of Kozani. Thus, taking into consideration the phasing out of lignite, new thermal power plants need to be built using natural gas to serve the existing district heating network.

Technologies: The current district heating network will be revived, using thermal energy by the new thermal gas unit for electricity production (Ptolemaida V) and other CHP (cogenerations of heat production) units, after the new gas supply network in Western

Macedonia is complete. In addition to the new gas pipelines being developed, the regional authority has set technical requirements for the gas pipelines to be hydrogen-ready, as the region has a priority to decommission fossil fuel technologies by 2030. The region expects that hydrogen may become an increasingly important source of energy in the future, so the infrastructure that is currently being put in place needs to be ready for this potential transition. Furthermore, one of the towns in the region is planning to use a small biogas unit for district heating.

Renewable energy sources, such as photovoltaic (PV) units, are also expected to be utilized both for electricity production and district heating. Nearly zero-emission building (NZEB) technologies are also considered important in reducing energy consumption and emissions.

Overall, the region is exploring a range of different energy sources to provide a sustainable and diversified energy mix for heat and electricity production to meet the regions energy needs, as well as technologies to improve energy efficiency.

The EE1st principle in energy planning

The EE1st principle is not explicitly considered in the energy planning process. However, the JTDP and the regional operational program includes energy efficiency as one of its priorities.

The main challenges in incorporating the EE1st principle in energy planning include:

- Public acceptability
- Lack of funding for energy efficiency measures
- Legal - the existing legal framework does not favor a rapid transition
- Lack of technical expertise
- Timeline of procedures
- Lack of visibility
- Awareness of engineers and the constructors

As mentioned previously, a regional energy plan is currently being developed. This is a critical opportunity to ensure that the EE1st principle is incorporated in regional energy planning.

Interactions between national and regional planning

There is no specific institutionalized structure to ensure multilevel governance. However, during the planning process, regional departments and development entities consider various factors, such as the legal framework, national targets, local context, and the needs of municipalities. This promotes multilevel governance and helps ensure consistency between plans at national, regional, and local levels.

Additionally, the public consultation stage of the energy planning process makes it more inclusive and gives the opportunity to stakeholders and the public to provide feedback.

Regarding the Just Transition Plan, the collaboration between the national and the regional level was achieved through the Steering Committee set up as a Working Group to coordinate the activities required for the preparation and implementation of JDTP. The Steering Committee ensured the active engagement of key stakeholders and regions during the development of the JDTP, as it included the following members:

- The Secretary General of Economic Policy
- The Secretary General of Public Investments and NSRF
- The Secretary General of Energy and Mineral Raw Materials
- The Regional Governor of Western Macedonia
- The Regional Governor of Peloponnese
- The Chairman of OAED
- The CEO of PPC

However, the Just Transition Plan was developed and is being managed at a national level, so there are concerns about whether it fully addresses regional and local needs. For instance, the monitoring committee includes primarily national stakeholders, such as the national Technical Chamber of Greece instead of the regional one in Western Macedonia.

For the preparation and implementation of the NECP a broad and ongoing framework of consultation has been established with key relevant stakeholders.

On the other hand, when developing regional and local plans, all relevant national strategies and plans, like the NECP, need to be considered.

Interactions between municipal and regional planning

Local authorities, when developing their local plans, take into consideration all relevant national and regional strategies and plans, like the national and regional EEP.

In addition, a workshop was held with 86 representatives from local and regional authorities, to exchange opinions and proposals on regional energy planning. At the same time, a questionnaire was sent together with the invitation to the workshop, which included questions about the regional dimension of the energy and climate plan, obstacles and challenges for its implementation.

7.4 Implementation and monitoring of regional plans

Implementation

As described above, there are a number of national and regional financial instruments in place to facilitate the implementation of energy efficiency and renewable energy projects.

The regional energy plan that is currently being developed will outline key actions/measures to be implemented per sector at a regional level. For each measure, the plan will include a description, outline implementation considerations and possible funding sources, based on the available financial instruments and mechanisms.

After the plan has been approved and the implementation of each measure starts, specific studies will be undertaken (e.g. feasibility studies, proposals for funding etc.) to support their implementation. However, it should be noted that for the implementation of the plan, it is necessary to create and promote an investment ecosystem that involves private and public entities, as well as public-private partnerships (PPP).

Flagship actions, which will absorb a large proportion of the workforce affected by the transition, are a key in building and developing an investment ecosystem. The vision, therefore, is promoted by emblematic actions.

Monitoring

The regional energy plan that is currently being developed will outline the monitoring structure and process of the plan.

In terms of the Regional Operational Program of Western Macedonia, a Monitoring Committee is tasked with supervising its implementation and progress, through regular meetings and written procedures. The President of this Committee is the Regional Governor of Western Macedonia, and its voting members include:

- Representatives of the management, coordination and certification authorities of the Operational Program and the NSRF.
- Representatives of public authorities, special services and staff structures of Ministries of the policy sectors related to the program.
- Representatives of the local government, the Union of Regions of Greece (ENPE) and the Central Union of Municipalities (KEDE).
- Representatives of economic and social partners and non-governmental organizations.

- Representatives of the Special Services of the National Coordination Authority, the Financial Control Committee, the General Directorate of Public Investments, the European Investment Bank, as well as representatives of the European Commission that participate in this Committee without the right to vote.

Regarding the EEP, regional and local authorities have to report the implementation of their plans via a national electronic platform (publicenergysavings.gov.gr). Through this electronic platform, the implementation of energy efficiency actions is being monitored, as well as the progress in reducing energy consumption tin the entire public sector (schools, universities, hospitals, ministries, public services, etc.) and local government.

8 Other regions in Europe

8.1 Île-de-France (France)

Regional mandate on planning

The law on the New Territorial Organisation of the Republic (NOTRe), redefines the power of the local and regional governments and introduces the requirement to develop regional energy planification strategies. In Ile de France, the Regional Climate, Air and Energy Plan (SRCAE) sets out regional guidelines for climate change mitigation, adaptation to climate change, prevention and reduction of atmospheric pollution; development of renewable and recovered energy sources. This plan is completed by the Regional Energy Efficiency Programme (PREE), which includes: a plan to roll out energy renovation platforms (centres for private individuals to help them with their renovation projects), and a section on financing the energy-efficient renovation of buildings. This program reflects the energy renovation targets set out in the regional plan.

Needs, challenges and barriers

The implementation rather than the design of plans is considered a key challenge, whilst in parallel ensuring that the experience from projects feeds into the energy planning process.

Another challenge is integrating the concept of energy sobriety and not just efficiency. People need to understand the differences between energy sufficiency and energy efficiency, and what the former also means in terms of changing behaviour in order to spend less energy in practical terms.

Co-ownership models, which are only available in Paris, also pose a challenge as any decision related to the energy renovation of a co-owned dwelling needs to go through all owners.

Overall planning procedures

The Île-de-France Region adopted a Regional Energy-Climate Strategy in 2018 which sets ambitious objectives in terms of sobriety, renewable energy production and reducing energy dependency, within two horizons: 2030 and 2050.

The Île-de-France Regional Energy and Climate Agency (AREC) was created in 1994 and was acknowledged as a department of the Paris Region Institute in 2019 to facilitate and accelerate the energy transition and adaptation to climate change by assisting local authorities and other players in the Ile-de-France region.

One of the AREC partners is the Paris Climate Agency (APC), which also works with the Ile de France Region, although it works almost exclusively with the Greater Paris Metropolis. It focused works on housing in the metropolitan departments. The remit of APC includes developing energy master plans. For example, the agency recently worked on a metropolitan energy master plan (SDEM) which covered the heating network, the electricity and gas networks, and new energy sources such as biomass, biogas, and hydrogen, and above all mobility. APC also leads the Coach Co-pro scheme, supporting energy renovation projects.

Planning considerations

Overall, when planning at a regional/local scale emphasis is given in reducing energy consumption and in increasing the uptake of new energy sources, such as biogas and hydrogen, especially for mobility.

The EE1st principle in energy planning

The EE1st principle is not explicitly considered in regional/local energy planning, but rather incorporated within the Négawatt scenario for 2050 for France. This covers all sectors (buildings, transport, industry, agriculture…) and shows how France could shift to a climate-friendly, nuclear-free, and sustainable energy future through an approach based on energy sufficiency, energy efficiency and renewables.

There is a need to formally incorporate the EE1st principle in energy planning, but also raise public awareness of what energy efficiency is and what its' benefits are.

Interactions between regional and national/local planning

APC has a leading role in ensuring that national plans and strategies are incorporated in local strategies.

In 2019, APC published a study on oil heating in Paris. Due to high interest, the study was reproduced at a metropolitan scale, and its scope was extended to include gas heating. The study provided key information for the metropolis on gas and oil-fired condominiums, including their density and location, along with where networks are located and how condominiums can be connected to networks if there is a switch to renewable energy supply. This helped identify areas in the region with no networks and triggered discussions between the metropolis, France Chaleur Urbaine and regional directorates, for instance to extend certain networks, such as in Neuilly-sur-Seine.

Financing

The city of Paris set up the CoProOasis scheme, which aim to support condominiums, for example in greening their buildings. To this end, the agency acts as a technical advisor, assessing the condition and specific technical features of the condominiums.

Furthermore, energy audits are supported by public funding programs for co-owners. Up to 5,000 euros are granted to cover between 90 and 100 per cent of the cost of the audit. As such, the city of Paris is paying for this assessment to help citizens begin renovation projects.

Regional and local funding programs are complementing the main financing resources. Finally, the Energy Savings Certificates (EEC) scheme is a demand management tool that encourages "obligated parties" (electricity, gas, heating and cooling suppliers and fuel distributors) to promote energy efficiency among their customers. This tool is one of the financing levers of the energy transition for local authorities.

8.2 Lower Austria (Austria)

Current status in the region

They are nine provinces in Austria, including that of Vienna, the capital of Austria that plays a double role as a city and a state. These have to ensure that EU and national climate and energy targets are met.

Lower Austria is the biggest province, with 2 million inhabitants. The regional authority of Lower Austria has developed a 4-years plan (2021-2025) for climate and energy and a longer-term plan for climate and energy for 2030.

Key targets in the plan for 2030 are doubling the share of wind energy, a fifth of the cars becoming electric, increasing ten-fold the share of photovoltaic panels, and phasing-out fossil fuels. It aims at reaching the national target of climate neutrality by 2040 in Austria.

The regional four-years plan incorporates 134 measures that aim to promote the use of renewable energy sources and increase energy efficiency.

Additionally, Lower Austria has a specific sectorial plan for wind turbines, in order to identify priority territories to deploy wind turbines.

Needs, challenges and barriers

There is a need to accelerate the energy renovation of buildings and to increase investments on the grid, because the state of the grid is a challenge.

Another challenge is that some municipalities do not want to increase the uptake of wind turbines and PV plants, especially on agriculture land.

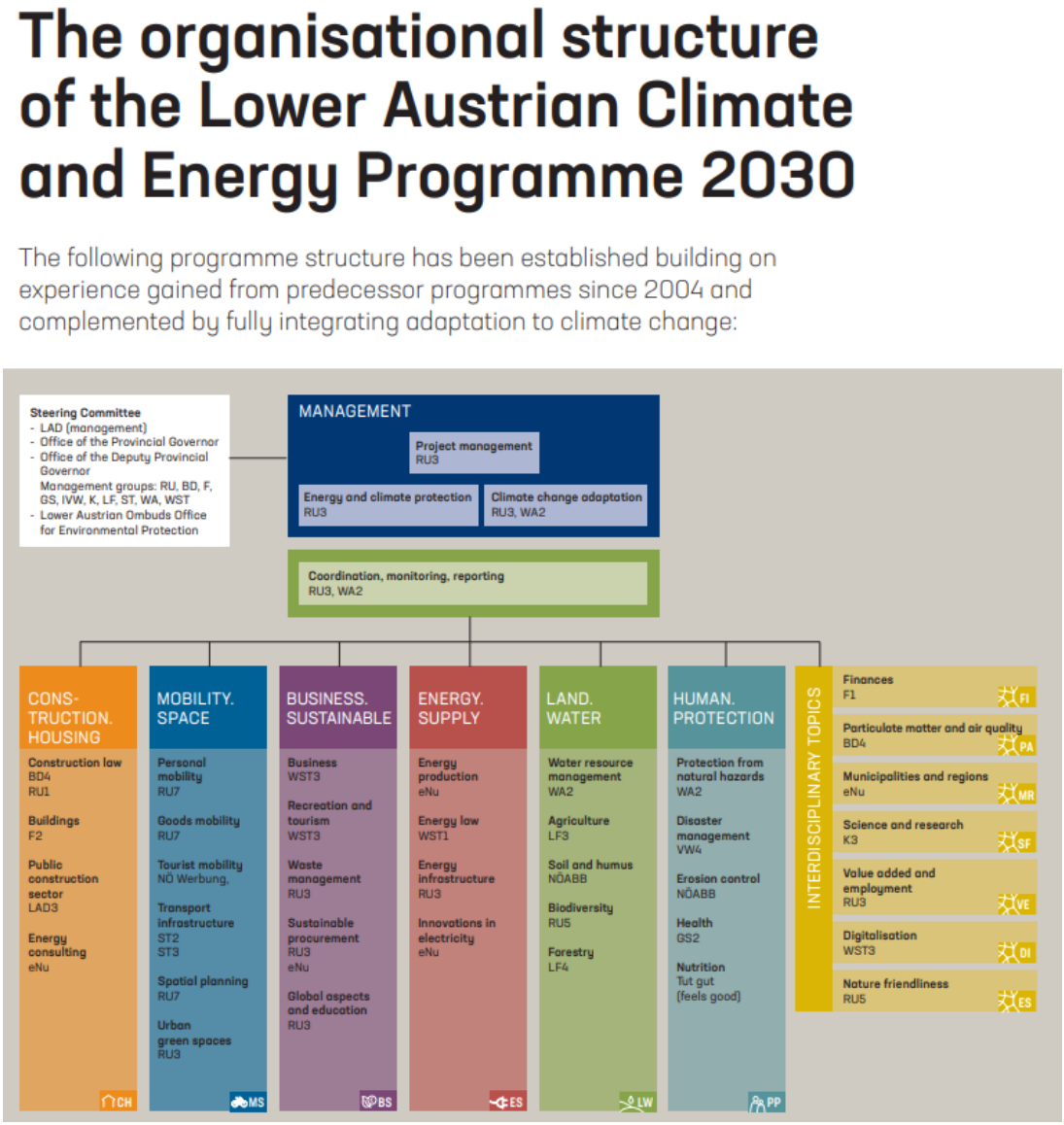
Overall planning procedures

Regions are very independent in their planification mandate, but national government can force the regions that are less ambitious to take action to do their share to reach national targets.

The heart of the Lower Austrian Climate and Energy Programme is the Climate Protection Project Group (Projektgruppe Klimaschutz) consisting of more than 180 people, appointed by the Regional Administrative Office, who are responsible for implementing the individual measures. Additionally, the following organizational elements have been established:

- 6 categories with 29 fields of action as priority areas, including technical responsibilities;

- 7 interdisciplinary topics with relevant networking mandates;
- A management and coordination team for the implementation of the overall process;
- A steering committee consisting of policy makers and representatives of public administration as the superordinate governing body.



Planning considerations

The regional plan has three main objectives:

- Reducing greenhouse gas emissions
- Raising the share of renewable energy sources
- Improving the adaptation to the effects of climate change

Targeted priority sectors include: building, mobility, business, energy supply, land and water, human protection, and inter-disciplinary topics. The measures are designed to be in line with the 14 fields of activity of the Austrian Strategy for Adaptation to Climate Change.

The Energy and Environment Agency of Lower Austria (ENU) leads the work on energy supply and adaptation within the region, and facilitates sustainable public procurement, electricity innovation, and energy production. The agency provides mostly consultancy services to the region, municipalities and the public, for example to provide assistance in projects involving heat pumps, PVs, renewable energy installation, or insulation.

The EE1st principle in energy planning

For a very long time, energy efficiency has been a key element in regional planning. Nevertheless, the EE1st principle is not explicitly considered.

Stakeholders involvement and roles

The administration of the region of Lower Austria often subcontracts the energy agency for different missions, including to collect feedback from local actors and stakeholders

ENU is also sometimes involved in the planning process, when solicited on specific topics, mostly at the national level. In such cases, the agency acts as a relay between the government and the municipalities and provides data from the city level.

Financing

The region can decide on investment decisions and set its own criteria in the decision-making process. The region mainly provides funding for the installation of heating systems, for the insulation of public buildings and for mobility,

There are also national funding programs, for example for the installation of heating systems. Most of the funding programs can complement each other, and it is possible to have national and regional funding at the same time, for example for energy renovation works. Funding is mostly available for municipalities and the private sector.

8.3 Észak-Alföld region (Hungary)

Current status in the region

In Hungary, the state is very centralised, so planning is done mainly at the national level. Regions exist only for statistical and development purposes. Counties and municipalities have different roles and separate responsibilities relating to local government. The role of the counties are basically administrative and focus on strategic development.

There are 19 counties in Hungary, most of which have a climate plan and strategy which has been based on national plans and strategies. This was thanks to an open call of the environment and energy efficiency operational program for supporting county-level climate strategies. There was also a call for municipalities, to develop local climate plans, so most of the cities in Hungary have a Sustainable Energy and Climate Action Plan (SECAP) and climate strategies.

Needs, challenges and barriers

The first challenge is financing. Most of the local authorities do not have sufficient financial resources for energy renovation projects.

This has encouraged the development of energy communities, in order to become less dependent on state funding. However, the main challenge in the development of energy communities is the legal status of these communities, which is still not clearly defined at national level. In addition, municipalities do not have the experience and there is lack of information on the topic. Despite this though, energy communities are being developed, thanks to available EU funding, like the ECAH (Energy Communities Advisory Hub) programme. For example, the regional energy agency of Észak-Alföld region (LENERG) currently works with a small municipality near lake Balaton to develop an energy community that also involves local companies and citizens.

Overall planning procedures

LENERG works with 82 local governments, with a total of 500,000 inhabitants. Most of these are small municipalities and do not have an energy department or energy experts. As such, the agency helps cities to develop energy and climate plans.

The national plan is up to 2030, with an outlook to 2050. However, at a local level planning is often done for a 4-year period (reflecting the length of a mayors term). Therefore, the role of the agency is also to help cities and settlements have longer-term plans and more ambitious targets. LENERG offers technical support and information on EU funding opportunities as well.

Finally, counties have climate and energy departments. However sometimes external expertise is needed, so LENERG supports them when needed.

Planning considerations

Energy efficiency is a priority in local planning, especially the renovation of public buildings, most of which have been renovated now. However, without the energy renovation of private houses, the national target for the renovation of 40 percent of buildings will not be met.

This is why SECAPs consider additional sectors and measures, such as the residential sector (heating system renovations etc.), transportation (electric cars and busses) and renewable energy (e.g. PVs).

The EE1st principle in energy planning

Energy efficiency is a priority, especially in local energy planning. This is particularly important as most of the buildings in Hungary are very old and have poor insulation. Nevertheless, the EE1st principle is not explicitly considered.

Stakeholders involvement and roles

Stakeholders are not widely involved in the energy planning process. Relevant authorities, industrial and other key stakeholders at a local and county level are only involved when needed. In any case LENERG consults with key external stakeholders and provides feedback to public authorities.

On the other hand, the public is not involved in the energy planning process, other than during the public consultation phase. Even then though, the input/feedback received is sometimes very low.

Financing

Most funding is provided at national level, so regions and counties do not have specific funding programs and cannot provide financial incentives for energy renovation projects.

Operational programs though provide funding for sustainable energy projects, including 'KEHOP plus' for the residential sector and 'TOP plus' for municipal/public buildings.

Finally, at a national level, a new energy efficiency obligation scheme for energy suppliers was introduced in 2021 as the main policy tool to promote and finance energy efficiency measures.

8.4 Mazovia (Poland)

Regional mandate on planning

The regions have only one multisectoral strategy, including energy sector, but can additionally prepare corresponding documents such as energy and environmental plans.

There is also a legal requirement for communes (incl. municipalities) to develop proper energy plans and mobility plans. The Mazovia Energy Agency (MAE) is closely involved in the strategy-making process at the local/regional level, especially when subcontracted to undertake specific tasks.

Overall planning procedures

The Marshalls office is responsible for preparing the regional strategy, which is a formal binding document. Initially the process starts with the exchange of ideas between the the regional authority and involved stakeholders. Many different departments of the regional government are involved in drafting the first version of the strategy. The regional monitoring committee, a working group set up for preparing the baseline and projections of future policies/strategies, needs to vote to adopt the draft, and then the regional council has to approve the final version. After the voting process, stakeholders can still suggest amendments, which can formally be considered when the review process of the strategy takes place.

Planning considerations

Long term strategies are mostly at a national level, although the Green Warsaw strategy is up to 2030. Local plans and strategies are rather short-term.

The EE1st principle in energy planning

The EE1st principle is not explicitly considered in regional/local energy planning, although it is integrated to an extent in the energy strategy and plans of cities.

The Mazovia energy agency is trying to influence the region to better incorporate the EE1st principle in the planning process, for example by bringing this topic to the public discussion and by meeting the board of the regions.

Stakeholders involvement and roles

Stakeholders are involved in regional planning through the regional monitoring committee, participating in regional technical meetings and consultations. The consultations are public and involve many other local and regional stakeholders, including private and public organisations, NGOs, and grid operators.

For the development of the strategy, over 100 different institutions were consulted. Open discussions with stakeholders took place at the beginning of the process, and then stakeholders were given the opportunity to review the draft strategy.

Website: https://fedarene.org/project/regio1st/

Social Media: #Regio1st

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