

European Public Local Authorities' Network for driving the Energy Transition



D2.4 - REPORT ON ePLANET CLUSTERING GOVERNANCE

Final Version

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Executive summary

The ePLANET project is a Coordination and Support Action cofunded by the European Commission through Horizon 2020 program. This project aims to reframe the current governance model and design and establish a **new clustering governance model** to facilitate the deployment of energy transition projects, creating and improving coordination between **different municipalities acting together**. This needs to be based on a digital framework to share harmonised information, facilitating the adoption of coordinated energy transition actions by the European public sector. All these targeted objectives will give the needed support for the energy transition decision-making process and its practical implementation.

Considering the outcomes from tasks T2.1 and T2.2, this document aims to design a new clustering governance methodology and specifications of the deployment procedures. Moreover, this document will define new key actors and definition of their roles, responsibilities and skills to be provided, depending on the public authority level.

The methodology followed to carry out this deliverable is based on in-person meetings with each partner and through specific surveys. The three pilot regions, the Region of Crete in Greece, the Zlín region in the Czech Republic and the province of Girona in Catalonia, have been analysed to understand how they implement ET projects and their mechanisms to achieve it.

Previously, the first draft of this document was submitted on 30th June 2022 (M10). The first draft was an overall analysis of the current status of the three pilot areas and a first glimpse and approach to clustering governance.

Likewise, this final document analyses and explains in much more detail how each pilot region is currently governed and all the actors involved in the process of the energy transition deployment. After this comprehensive analysis, this deliverable also proposes a new methodology for clustering governance by defining new actors in the overall process of ET deployment, in each of the pilot region and involving its related country at national political level. The success of this implementation will depend on the real commitment from political governments.

Ultimately, the energy transition's success will depend on coordinated efforts at all levels of society. By working together, governments, industry, and international organisations, through clustering governance, can accelerate the adoption of renewable energy sources and the execution of energy transition plans.



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Abbreviations and acronyms

ABBREVIATION OR ACRONYM	DESCRIPTION
ABL	Adjusted BaseLine
AP	Action Plan
BL	Base Line
CA	Cost Avoidance
CDD	Cooling Degree Day
CILMA	Council of local initiative for the environment (in Girona)
COCo	Consulting Company
CoM	Covenant of Mayors
DDGI	Girona provincial council
DSO	Distributor System Operator (local utility)
EAZK	Energy Agency of the Zlín Region
ECM	Energy Conservation Measures
EA	Energy Agency
EAP	Energy Action Plan
ED	Energy data
EM	Energy Measure
EP	Energy Plan
ERDF	European Regional Development Fund
ESCO	Energy service company
ET	Energy Transition
ETG	Energy Transition Governance
ETM	Energy Transition Measure
ETO	Energy transition office
ETP	Energy Transition Plan
EUROSTAT	Directorate General of the European Commission
HDD	Heating Degree Day
I	Irradiance
LA	Local Authorities
LEC	Local Energy Community
NHRS	Number of hours
NUTS	Nomenclature of territorial units for statistics (Eurostat definition)
NUTS1	Major socio-economic regions



NUTS2	Basic regions for the application of regional policies
NUTS3	Small regions for specific diagnoses.
MLG	Multilevel governance
OAT	Outside Air Temperature
PA	Public Authority
PAET	Public Advisor in Energy Transition
RDFC	Regional Development Fund of Crete
REA	Regional Energy Agency
REAC	Regional Energy Agency of Crete
REC	Renewable Energy Community
RES	Renewable Energy Source
RL	Reporting Line
RPE	Reporting Period Energy
SEF	State Environmental Fund of the Czech Republic
SEAP	Sustainable Energy Action Plan
SECAP	Sustainable Energy Climate and Action Plan
UC	Use case
WS	Windspeed



1 Background

Energy transition (ET) deployment initiatives are structured in four main axes: Energy efficiency, energy savings, renewable energy source systems and climate neutrality. The previous deliverable on Governance (D2.1), in which needs and requirements were identified, showed an important interest from all pilot regions on two or more of those previous axes.

Even though ePLANET aims to promote ET projects by sharing information in a common digital space between different municipalities and other Public Authorities (PA) at different levels, digitalisation seems not to be a priority for some local areas.

Developing a clustering governance structure and its methodology needs inputs from all previous tasks under the WP2. Schematically this is represented in the following Figure 1 and explained hereunder.

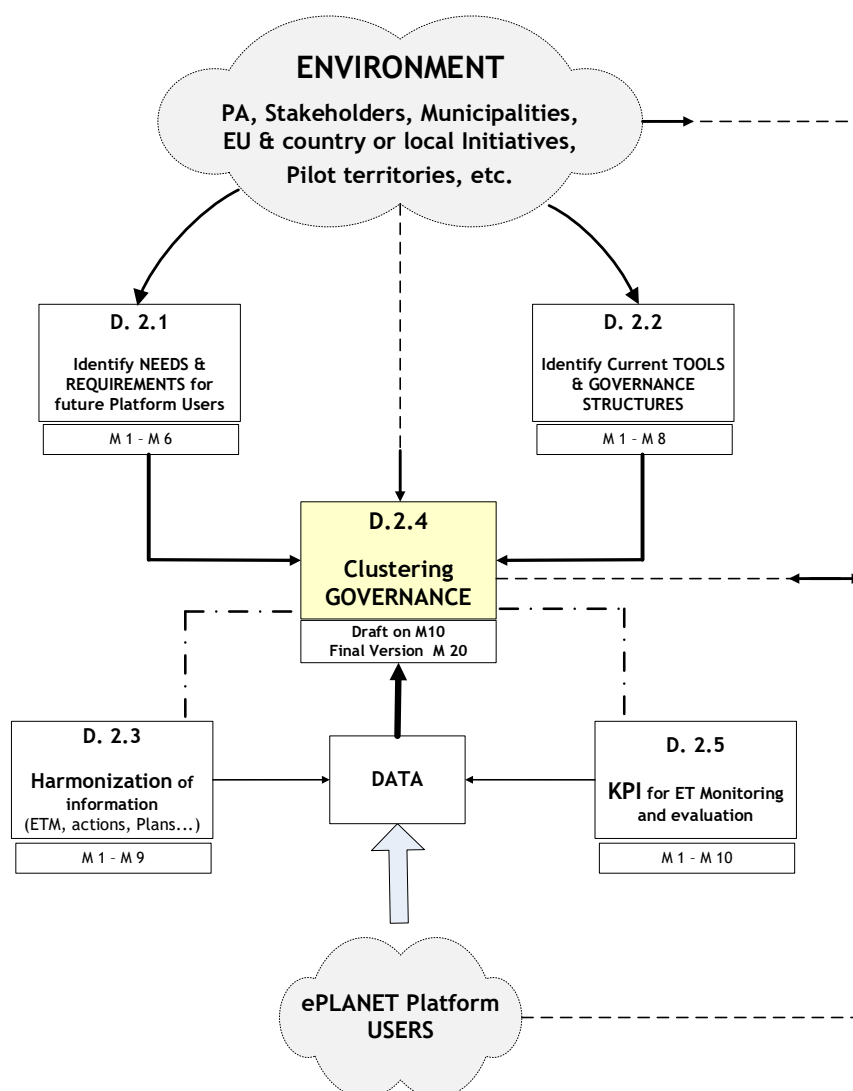


Figure 1. Overview of the WP2 structure

In Task 2.1, the needs and requirements were identified through surveys conducted on a set of municipalities in the three pilot regions. First conclusion we had is that not all European regions play with the same tool, as in Czech Republic the SECAP model is not considered. The CoM is not under consideration. This represents a challenge to find out the best procedure to make clustering governance in different condition from the other two pilot regions. This task helped to identify and understand some use cases, which are useful to make a deeper analysis to refine the methodology and a better adjustments of figures (actors) for a working governance.

Task 2.2 collected the current governance structures and tools in the three pilot regions and all European initiatives, wherever undertaken or ongoing. All this information is very valuable to build up the ePLANET governance proposal.

Task 2.3 focused on harmonising information, which is another key part of clustering governance. The data harmonisation layer aims to unify different data sources into a unique database. This process makes the data from diverse databases comparable by linking the various fields of a database into a standardised data model. The data harmonisation process will help integrate all the heterogeneous data sources into the ePLANET data model.

Finally, Task 2.5 is another important input for governance, as the follow-up of the ET projects implemented will be done through different KPIs.

Tasks 2.3 and 2.5 concern data related to energy consumption and other characteristics such as measures (ETM), energy & climate plans (SECAP), etc.

As seen in Figure 1, a draft proposal for ET governance needs to get extra inputs from the three pilot territories' environment; additional information is needed to understand their organisation and structure at different geographical and political levels and what initiatives are initiated, ongoing or planned.

1.1 Summary of main requirements identified

During Task 2.1, the main requirements and needs of future ePLANET users were identified. Those requirements gave us the information needed to define the features of the platform in order to ensure the future adoption of ePLANET outcomes by its users, mainly Public Authorities at the local level.

At the same time, outcomes from deliverable 2.1 is a value to orientate the approach and design of the governance methodology and the different needed actors for the clustering governance. Ultimately, the objective is to improve the deployment of energy transition projects at a municipal level.

It is important to highlight the main outcomes identified for each pilot region at a municipal level, as those results serve as a starting point for defining an Energy Transition for a clustering governance methodology and the key actors.

The conclusions reached were the following:

Needs from Municipalities of Zlín region:

- To raise awareness on Energy Transition (ET),
- Increase resources to carry out ET projects,
- Increase commitment from municipalities in developing ETP and its governance,
- Definition of funding schemes for ET projects deployment.



Needs from Municipalities of Crete Island:

- Increase public resources to carry out ET projects,
- Improvements in data gathering,
- Definition of funding schemes for ET projects deployment.

Needs from Municipalities of Girona province:

- Improvements in data gathering,
- Increase public resources to carry out ET projects,
- Definition of funding schemes for ET projects.

Deliverable 2.1 identified as well different Use Cases that will allow us to understand its flow processes, a more accurate and thorough design of a governance model and other extra actors. The defined Use case are:

UC1. The digitalisation of SECAPs. Consists in filling current information of Municipalities Energy Action Plans (under SECAPs Excel files for those from the CoM).

UC2. Analysis of energy performance of public buildings. It consists in implementing a system to assess and track energy consumption in municipal buildings.

UC3. Use of Geo-Tools for promoting energy communities (REC & LEC). It consists of using geographically based web visualisations of building energy consumption and renewable energy generation aggregated at a municipality level.

UC4. PV potential analysis in public buildings. It consists of setting up a GIS-based web environment to show public buildings' PV potential and self-consumption ratio.

The following Table 1 summarises the use cases for each pilot region.



Table 1. Use cases of the pilot regions

UC	Zlín Region	Region of Crete	Girona province
UC1. Digitalisation of SECAPs	--	- 16 municipalities - Rewrite information from PDF to CoM Excel	- 67 municipalities - Rewrite information from current excels to CoM Excel
UC2. Analysis of the energy performance of the public building stock	- In 70 - 80 buildings of 61 municipalities - based on monthly consumption in Excel files	- Implemented in 2 stages: 1 st Stage: 4 municipalities 2 nd stage: 16 municipalities - Based on monthly .xls files of electricity consumption	--
UC3. Use of Geo-Tools for promotion of <u>Energy Communities</u>	- Showcase of the city of Hostětín as a sustainable energy community.	- Implemented in 2 stages: 1 st Stage: 4 municipalities 2 nd stage: 16 municipalities - Data: under Excel format	- Implemented in 2 stages: 1 st Stage: 6 municipalities 2 nd stage: 67 municipalities - Data: under different formats (DATADIS, .CSV ...)
UC4. PV potential analysis in public buildings	- In 70 - 80 rooftops of 61 municipalities - based on LIDAR system and cadastral information of Zlín region.	--	--

1.2 Summary of existing governance structures and available tools for energy transition monitoring

Task 2.2 of ePLANET project presented an overview of the existing governance framework networks and projects related to energy transition in the partners' territories and beyond at the national and EU level. The aim was to undertake a desk review, gathering and analysing requirements and best practices from current EU or national governance networks and initiatives and past and/or ongoing projects addressing public authorities' Energy Transition (ET).

The review focused on the following aspects:

- Current legal and policy framework related to energy transition in the pilot partners' territories (national, regional or local level).
- Governance status related to energy transition in current EU-wide networks and initiatives (governance structures and tools, methodologies or digital platforms introduced by these networks for coordinating and monitoring energy transition plans and projects).
- Governance status related to energy transition in the three ePLANET pilot territories regions (existing governance structures and tools, methodologies or digital platforms currently used)



by public authorities for multilevel governance coordination and monitoring of energy transition plans and projects).

- Best practices on multilevel governance for energy transition (governance structures and /or tools, methodologies or digital platforms), identified from past or ongoing projects of the consortium partners and beyond.

The main conclusions were:

- The review of the legal and policy framework in the pilot territories identified forty-four laws and policy documents and plans relevant to the energy transition. In the three pilot regions, there are also regional-level policies and targets for energy planning and improvement of governance. In the Region of Crete, energy transition actions are also integrated into the broader SE(C)APs developed by Municipalities in the context of the CoM.
- Most Municipalities in the Province of Girona and the Region of Crete are signatories of the CoM and have developed/are developing their SE(C)APs. In the Zlín region, there are no developed SE(C) AP's yet by Municipalities.
- Energy communities and relevant implemented projects are pretty developed in Spain (Province of Girona), less developed in Greece (Region of Crete) and not so developed in the Czech Republic (Zlín Region).
- The review identified ten EU networks, initiatives, and twenty-one past or ongoing EU and national projects, with the participation of one or more of the consortium partners relevant to the ePLANET objectives.

This document found an important potential for improving coordination and multilevel governance for the energy transition in the participating territories. The outcomes of task 2.2 aimed to contribute towards this direction and provide helpful feedback to the subsequent WP2 tasks of the ePLANET project, such as task T2.4.

1.3 Process followed for the information collection

ICAEN as the Task 2.4 responsible and leading partner of the WP2, worked on different ways to have an overview of the current ET plans deployment of each pilot region.

First, ICAEN tried to prepare a template to be filled by the pilot regions; however, due to the difficulty of this task, it was decided and agreed with the coordinator CIMNE to do a specific technical meeting in person with each pilot region. Therefore, three technical meetings (1 for each pilot) were done in order to obtain the information for each pilot region. Moreover, online meetings with all partners and with specific partners were also done. To sum up, the methodologies used to collect information were: literature review, surveys, case studies, interviews and technical meetings.

These technical meetings were carried out on the following dates and places:

- Girona province: 28th octobre 2022, in the city of Girona,
- Zlin Region: 21st September 2022, in the city of Zlín,
- Crete region: 28th February 2023 in Paris.

For each pilot region, the discussion encompassed different topics, such as the administrative and geographical level of the regions, the stakeholders and the tiers of governments, etc.



Moreover, a deep analysis of the deployment of the ET in the pilot regions was also studied following these points:

- Drafting (elaboration) of ET Plans or Energy Action Plans ,
- Deployment of ET Plans,
- Monitoring & control and follow-up of ET Plans.

Therefore, process flow diagrams regarding the ET deployment of each pilot region were done and discussed with the partners of the pilot regions. Thus, the key actors involved in all these processes of the energy transition deployment were studied. Overall, a combination of these methodologies was used to collect comprehensive and reliable information on energy transition in the three pilot regions.

1.4 Purpose and organisation of the document

The purpose of the document is to make a proposal of governance for the energy transition in the three pilot regions, the Zlín region, the Crete island and the Girona province. The document is focussed on understanding the structure and organisation of each pilot region and their corresponding countries concerning the deployment of energy efficiency and renewable energies at a local level. That means focusing at the municipal level, but showing how the energy transition is coordinated from higher tiers up to the local government.

The main idea is to understand how Energy Transition is currently deployed in each pilot region, which will allow to design a new methodology and structure for improving the current state based on identifying current barriers, enablers and resources. This should give a hint for determining the figures for a successful energy transition organisation.

This document is organised as follows:

First, a summary of the outcomes of the previous tasks 2.1 (lead by ICAEN) and 2.2 (lead by CRES) are presented since they are the starting point to carry out the objectives of this document, as deliverables 2.1 and 2.2 are the basis on which the governance model has to be founded. This part has already been described in the preceding section.

Next, in the second part, it is analysed the current situation of the administration governance in the pilot partner regions by mapping the structure of the energy transition authorities (vertical and horizontal structures of governance), describing the current situation of the process flows.

The overall vision of the current status allows us to define a global vision of the governance and find the outcomes and benefits for the ePLANET users, including the definition of the main functions (roles) for effective deployment of energy transition measures in a territory. Different scenarios covering the pilot region specificities (e.g. type of energy transition structures) have been set up and analysed. For each of these scenarios and its related governance structure, we have analysed which roles should be adopted by each stakeholder or actor in the energy transition.



2 Governance structure in pilot regions

2.1 Multilevel governance

The concept of **governance** can be defined as the development, deployment and execution of procedures, rules and regulations with a specific purpose to achieve a goal. In our case, the goal is to achieve a wide and high deployment of Energy Transition projects implementation to comply with EU2030 sustainable energy targets.

The concept of governance should not be confused with the concept of government (see Table 2), since a government executes governance.

Table 2. Governance versus Government

Parameter	Government	Governance
Concept	A group of persons (representatives, leaders) who takes charge of certain activities in a territorial unit (country, nation, region, municipality, etc.)	A framework which consists in a set of rules, procedures, and regulations that are executed by the government
Function	To manage and control the territorial unit/s by powers they have assigned	The concept followed by the government to achieve the goals
Who/What	People selected by a predefined mechanism within a territorial unit	Policies, rules and regulations
Dependency	An independent factor	Depends on the government

Multilevel governance (MLG) refers to the governance at different government levels, mainly vertically, but horizontally as well¹.

The definition of multilevel governance (MLG) from the Committee of the Regions of the European Union² is as follows:

“MLG means coordinated action by the European Union, the Member States and local and regional authorities based on partnership and aimed at drawing up and implementing EU policies. It leads to responsibility being shared between the different tiers of government concerned and is underpinned by all sources of democratic legitimacy and the representative nature of the different players involved.”

MLG refers to the complex patchwork of power distribution and authority among multiple levels of government within a given political system³. This can include national, regional, and local levels of government, as well as international organisations and other non-state actors.

The multilevel governance theory recognises that different levels of government may have different responsibilities and areas of expertise and that effective governance often requires coordination and cooperation across different levels of government.



Multilevel governance can also involve the participation of non-governmental actors, such as civil society organisations and private sector actors, in decision-making processes⁴. This can help ensure that a wide range of perspectives and expertise are considered in policy-making and implementation.

The structure of MLG is seen at three levels:

- Supra national: in the context of European regions related to the European Union level (vertical level)
- Interstate: interactions between EU members (between states, horizontal level)
- Transnational: interactions between member countries in the form of institutions based on geographical proximity or special similarities with other countries. (Horizontal and vertical governance)

At a country level, independently of the structure of each country, the global pattern that follows the governance (MLG) is represented in the following Figure 2.

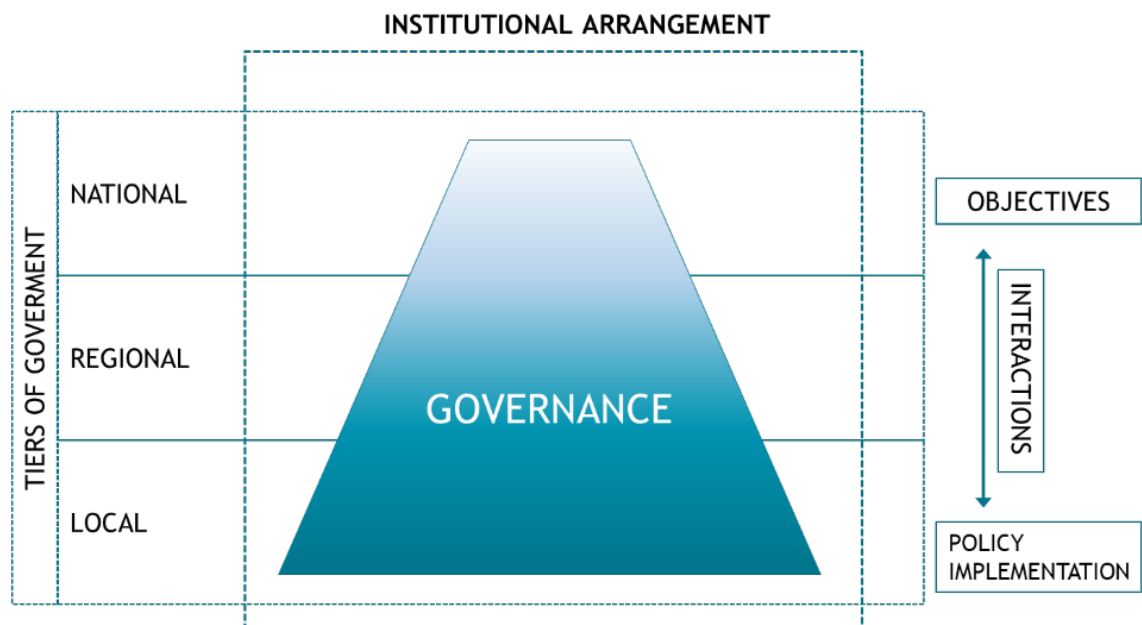


Figure 2. The analytical framework of an institutional arrangement. [Adapted from ⁵]

2.2 The administrative and geographical framework of the pilot regions

As can be seen in the following Table 3, the administrative framework is very different in each pilot region. For instance, Catalonia is divided into four levels of subdivision of organisational governance, one of them being Girona's Province (pilot partner region). The Girona province is, therefore, subdivided into eight sub-levels of County-levels, with a total of 211 municipalities. On the other hand, Zlín Region is linked directly to the 307 municipalities without having any subdivision level in terms of tiers of government. Finally, the Region of Crete is divided into 4 Regional Units, in which each regional unit has many municipalities; the total of municipalities in the Region of Crete is 24.

Table 3. The administrative framework of the pilot regions

STATE	SPAIN	CZECH REPUBLIC	GREECE
NATION	CATALONIA	--	--
REGION	--	Zlín Region*	Region of Crete*
PROVINCE / ADMINISTRATIVE UNIT	4 Provinces: Province of Girona* , Province of Barcelona, Province of Tarragona, Province of Lleida	--	4 Regional Units: Regional Unit of Chania, Regional Unit of Heraklion, Regional Unit of Rethymno and Regional Unit of Lasithi
COUNTY-LEVEL	8 counties in Girona 20 landscape units in the Girona province	-- --	-- --
MUNICIPALITIES	221	307	24

*The pilot regions of this project are marked in bold.

The different cases for the deployment of the energy transition are based on the three different pilot regions scenarios, as they geographically have different structures and organisations. Consequently, the deployment of ET and methodology will be studied based on the geographical organisation. The following Table 4 summarises the main characteristic of each pilot site.



Table 4. Overview of the three pilot regions.

Country/Nation	Czech Republic	Greece	Catalonia
Surface (km ²)	78.871	131.957	32.108
Population	10.700.000	10.720.000	7.566.000
# of regions/provinces	14	13	4
# of municipalities	6.258	325	947
Pilot	Zlín Region	Crete Region	Girona province
Surface (km ²)	3.964	8.336	5.910
Population	580.119	682.928	781.218
# of municipalities	307	24	221

2.3 Key Stakeholders and Authorities in ET governance

Regarding the multilevel governance structure, it is seen (Figure 3) that the interaction between PA and stakeholders is realised in horizontal and vertical dimensions. The vertical dimension refers to the interactions between different levels of government, while the horizontal level relates to interactions within the PA and the stakeholders within the same level⁶. Therefore, this wide variety of vertical and horizontal interactions makes innovation on ET policies possible in different parts of the governance system.

In that context, stakeholder refers to “the actors” who influence plans and decision-making processes. In this case, the term means stakeholders who are affected by or can affect the ET policies’ decision-making process by receiving information, consultation, or active participation⁷.

The European Commission has a wide range of stakeholders, including businesses, civil society organisations, trade unions, think tanks, academics, and other experts. The European Commission engages with these stakeholders in various ways to ensure that its policies are informed by their views and expertise⁸.



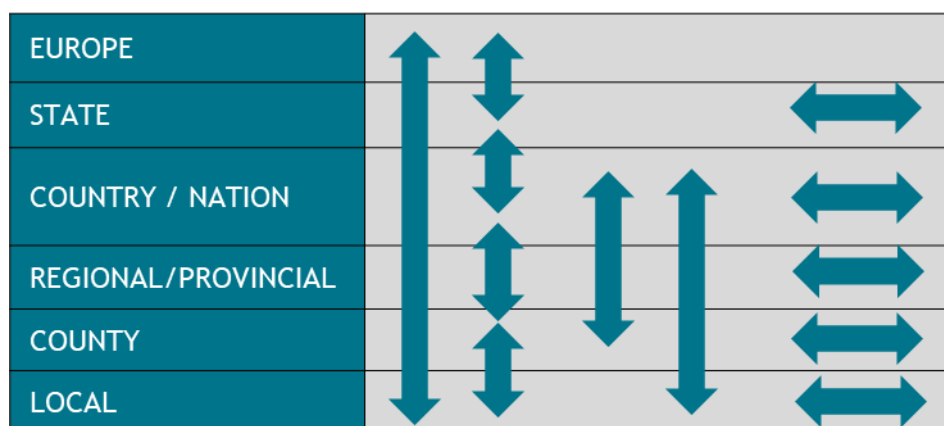


Figure 3. Vertical and horizontal governance. [Adapted from⁹]

From a legislation point of view, vertical governance is executed between European Commission and different member states. Indeed, all levels under the National level are interrelated, as the same law applies to all. Regarding horizontal governance, clustering coordination of projects makes sense mainly between municipalities and between counties or rarely regions or provinces¹⁰.

An analysis of the division of power and elements of the existing governance framework and mechanisms within the energy transition policies is crucial to better understand the main gaps or/and issues that could be improved.

Regarding the European level (all pilot regions are regions or nations members of the EU), it should be worth mentioning that there are four main decision-making institutions, which lead the EU's administration. These institutions provide the EU with policy direction and play different roles in the law-making process¹¹:

- the European Parliament,
- the European Council,
- the Council of the European Union,
- the European Commission.

However, the European Commission is the EU's main executive body. It uses its 'right of initiative' to propose new laws scrutinising and adopted by the European Parliament and the Council of the European Union. Then, these laws or directives are transposed to each EU member state.

The MLG governance is different for each pilot region since the geographical particularities are to a large extent, and the size and resources of each pilot region are crucial for determining the ET policies framework. Therefore, each pilot region will be deeply analysed and studied.

2.3.1 Girona province

Regarding Girona province, multilevel governance, vertical and horizontal, is seen in Table 5. Desk research was enhanced with a series of interviews for an energy policy analysis of the Girona Province. These interviews aimed to provide insights on the MLG approach used for implementing energy transition policies both from the local and regional/national levels.

Table 5. Multilevel governance in Girona Province. Political administration and stakeholders involved

Level (V)	PUBLIC BODIES / INSTITUTIONS	STAKEHOLDERS / PA
EUROPE	European Parliament https://www.europarl.europa.eu/portal/en European Commission https://ec.europa.eu/info/index_es	IRENA - International Renewable Energy Agency https://www.irena.org/ IEA - International Energy Agency https://www.iea.org/ IPCC - The Intergovernmental Panel on Climate Change https://www.ipcc.ch/
STATE	The Ministry for the ecological transition and demographic challenge https://www.miteco.gob.es/es/	IDAE - Institute for Diversification and Saving of Energy https://www.idae.es/home
COUNTRY / NATION	Department of Climate Action, Food and Rural Agenda DGE - General Directorate of Energy http://sac.gencat.cat/sacgencat/AppJava/orga/nisme_fitxa.jsp?cap=false&codi=21709	ICAEN - Catalan energy institute https://icaen.gencat.cat
REGIONAL / PROVINCIAL	Diputació de Girona - DDGI (Council of Girona) https://www.ddgi.cat/web/	Specialised municipal technician ET External consultancies
COUNTY	8 County council	Energy transition office, ETO (3) Energy agencies (when not ETO)
SUPRA-LOCAL	20 Landscape units (grouping of municipalities)	
LOCAL	Municipality	Specialised municipal technician ET Local consultant companies



The administrative structure of the Girona Province consists of seven levels of subdivision, each with corresponding administrative organisations (see Table 5); each public body has one or more stakeholders, which influence the decision-making processes. As mentioned above, the structure is not always hierarchical since the relationship depends on any case.

The highest share of power belongs to the national level, i.e. The Ministry for the ecological transition and demographic challenge, including legislative and executive power in matters such as energy transition. However, Catalonia has certain legislative and executive competencies in agreement with article 133 of the Spanish constitution. The counties and the municipalities have no legislative power, and they stand solely as an administrative body but can promote municipal by-laws.

The concept of Landscape unit: It is worth mentioning that a new geographical level was developed in Catalonia but with no administration power. In the case of Girona Province, the distribution can be seen in Figure 4.

The Landscape Observatory and the Cartographic and Geologic Institute of Catalonia published the Map of the Landscapes of Catalonia, which covers 134 landscapes catalogued, listed and described by the Observatory in the landscape catalogue. The map shows the great diversity and wealth of the landscapes of Catalonia. **Each landscape (technically called a “landscape unit”) is a portion of the territory with its character differentiated from the rest.** The landscape units can become an important reference area in the urban planning of open spaces and help to overcome the current fragmented planning of each municipality. Recognising the common particularities of the various homogeneous spaces allow defining territorial vocations adjusted to the potentialities and dynamics of each place.

This concept is important for SECAPS deployment, as it encompasses different municipalities with similarities in terms of the countryside and natural environment.



Figure 4. Landscape units in the Girona Province

See the complete Catalonia map of landscape units in the Annex.



The geographical structure of Girona province and Catalonia are represented in Figure 5. The Energy Governance for the deployment of sustainable energy projects follows this structure. The main guidelines come from the Catalan Energy Agency (ICAEN) and from Provincial Councils ('Diputacions'). From these two public authorities, the governance goes down to the municipalities. At the county level, there are county councils as offices that allow a better interaction between 'provincial councils' and the municipalities. In the case of Girona, its provincial council is very active promoting actions in municipalities through technicians that are deployed in the county councils but they belong to the provincial council.

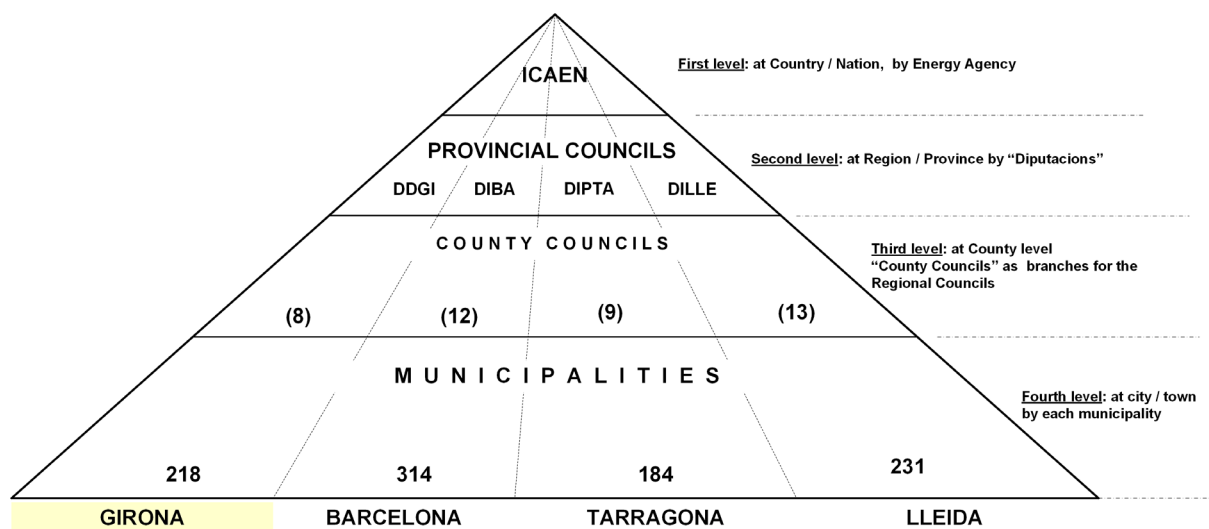


Figure 5. Energy Governance at the national level in Catalonia

2.3.2 Zlín Region

Regarding the Zlín Region, multilevel governance, vertical and horizontal, is seen in Table 6. Desk research was enhanced with a series of interviews as in the previous partner pilot region. These interviews aimed to provide significant insights into the MLG approach used for implementing energy transition policies both from the local and regional/national levels.

Table 6. Multilevel governance in the Zlín region. Political governance

Level (V)	PUBLIC BODIES / INSTITUTIONS	STAKEHOLDERS / PA
EUROPE	<p>European Parliament https://www.europarl.europa.eu/portal/en</p> <p>European Commission https://ec.europa.eu/info/index_es</p>	<p>IRENA - International Renewable Energy Agency https://www.irena.org/</p> <p>IEA - International Energy Agency https://www.iea.org/</p> <p>IPCC - The Intergovernmental Panel on Climate Change https://www.ipcc.ch/</p>
STATE	<p>Ministry of the Environment of the Czech Republic https://www.mzp.cz/en</p> <p>Ministry of Industry and Trade https://www.mpo.cz/en/</p> <p>Ministry of Regional Development https://www.mmr.cz/en/homepage</p>	<p>State Environmental Fund of the Czech Republic https://www.sfzp.cz/en/</p> <p>The National Network of Local Action Groups in the Czech Republic https://www.nsmascr.cz/</p> <p>Association of regions of the Czech Republic http://www.asociacekraju.cz/association-of-regions-of-the-czech-republic/</p>
REGION	<p>Zlín Region https://www.kr-zlinsky.cz/en/</p>	<p>Energy agency of the Zlín Region https://www.eazk.cz/en/</p>
LOCAL	<p>Municipalities</p>	<p>Energy agency of the Zlín Region https://www.eazk.cz/en/</p> <p>Specialised municipal technicians - (only in major towns)</p> <p>Veronica https://www.veronica.cz/</p>



In the Czech Republic, there is not any national energy agency. However, the State Environmental Fund of the Czech Republic (SEF), a major state institution of the environmental sector, has contributed to investments to protect and improve the environment.

Nevertheless, in the case of the Zlín Region, the Energy agency of the Zlín Region (EAZK) is the facilitating body for both the Zlín Region and the municipalities of the Zlín Region. It is worth mentioning that there is no relation between regional energy agencies to the national level regarding the subordination point of view.

Furthermore, it appears at the local level the NGO Consultancy Veronica, is an environmental centre supporting the applicants for ET measures locally in the South Moravian Region and the Zlín Region. Finally, there are specialised municipal technicians rarely and only in major towns.

The Czech scenario is based mainly on three tiers of governance (Figure 7). Even when there is no national energy agency to make a global country policy for the deployment of the energy transition, this role on the national level is played by the Ministry of the Environment for the public sector and the Ministry of Industry and Trade for the private sector. Operational Programmes play a very important role in supporting the ET measures in the Czech Republic. The Ministry of Regional Development is the coordinating body for the implementation of Operational Programmes in the Czech Republic

The governance for the ET deployment starts at a national level with the **State Energy Concept** issued by the Czech Government. Each of the 14 NUTS 3 regions in the Czech Republic has to approve a Regional Energy Concept for its region, which must be updated every five years.

As not all regions has an energy agency, some of them have the energy concept elaborated externally by consultancy companies, however, the Regional Energy Concepts and their updates are always approved by regional assemblies. National Energy Concept is supported by Operational Programmes which support measures to reach the goals set in national energy concept as well as in regional ones. On the local level the ET deployment is to some degree a random process where each municipality decides if makes its own Energy Concept or not, for what they might apply for advice to an Energy Agency or external company.

Within this process, Energy Agencies, as EAZK might make awareness campaigns. Each municipality has its own general middle term action and investment plan into which it may incorporate measures related to the ET. Usually municipalities might contact their Regional Energy Agency to find out funding resources.

But not all Czech Regions have a Regional Energy Agency, so for those regions municipalities have to contract to private consultancy companies.



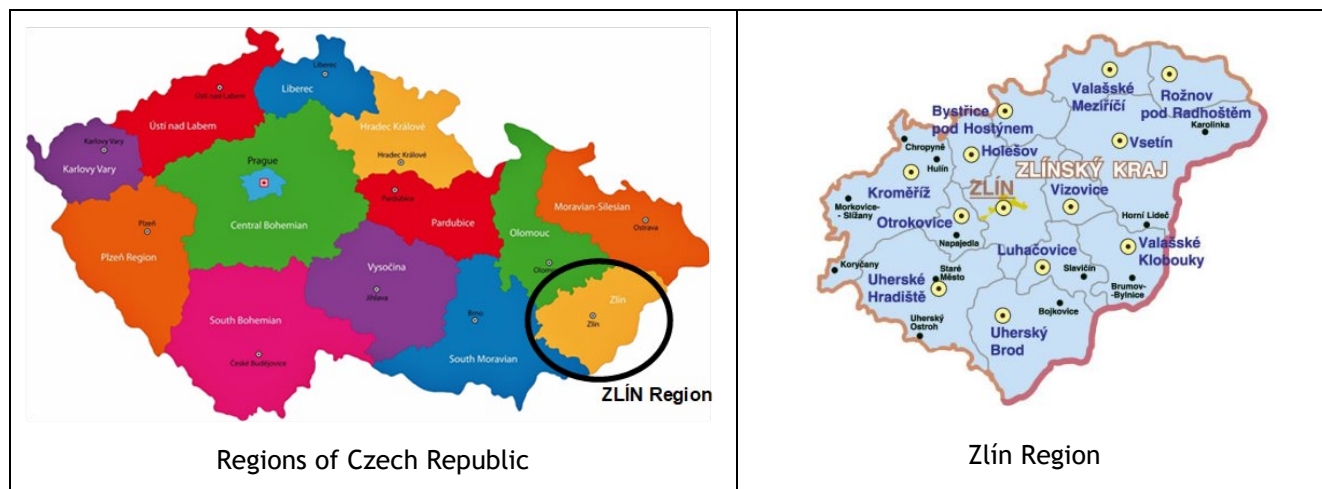


Figure 6. Regions of Czech Republic and geographical structure of Zlín Region

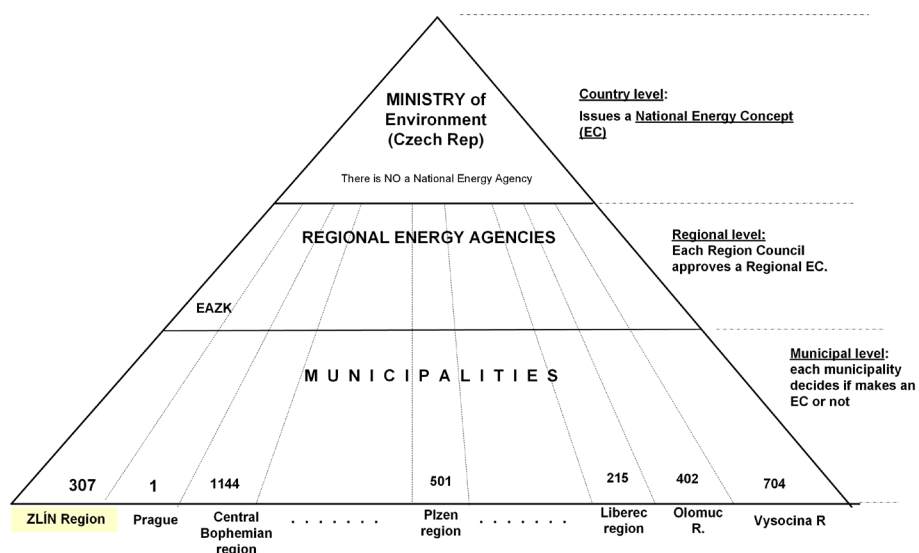


Figure 7. Energy governance at national level in Greece

2.3.3 Crete Island

Multilevel governance is studied in the Crete region. Desk research was enhanced with a series of interviews for an energy policy analysis with the regional pilot partner (RDFC) and the national partner (CRES). A summary of the public bodies/ institutions concerning the MLG of the Region of Crete is summarised in Table 7.

Table 7. Multilevel governance in Region of Crete. Political governance.

Level / Tiers	PUBLIC BODIES	STAKEHOLDERS / PA
EUROPE	European parliament https://www.europarl.europa.eu/portal/en European Commission https://ec.europa.eu/info/index_es	IRENA - International Renewable Energy Agency https://www.irena.org/ IEA - International Energy Agency https://www.iea.org/ IPCC - The Intergovernmental Panel on Climate Change https://www.ipcc.ch/
STATE	Ministry of Environment & Energy https://ypen.gov.gr/	Center For Renewable Energy Sources and Savings (CRES) http://www.cres.gr Energy managers of Central government buildings
REGION	Region of Crete https://www.crete.gov.gr/en/	Regional Development Fund of Crete (RDFC) - Regional Energy Agency (REAC) https://www.pta.gr/ Technical services personnel from the region Energy managers of Regional buildings
REGIONAL UNIT	4 Regional Units (all under the same administration: Region of Crete) Regional Unit of Chania Regional Unit of Heraklion Regional Unit of Rethymno	Regional Unit personnel Technical services personnel from the Regional Unit
LOCAL	Municipality	Technical services personnel from Municipalities Energy managers of municipal buildings Municipality CoM contact persons External consultant



The Ministry of Environment & Energy is the government authority in Greece for all issues related to energy policy and energy transition at the national level. CRES is the Greek national entity for promoting renewable energy sources, rational use of energy and energy conservation. CRES (National CoM coordinator) also has an institutional role in providing technical support to local/regional authorities to prepare energy efficiency plans and actions and support the Ministry of Environment & Energy in implementing energy efficiency policy. Moreover, there are key actors in all levels which are the energy managers of public buildings (in the Central government buildings, in the Region of CRETE buildings, and in the municipal buildings).

At the regional level, within the framework of implementing regional energy policy, the Region of Crete founded its Regional Energy Agency (REAC) (Regional CoM coordinator), which operates via the Regional Development Fund of Crete. RDFC (REAC) is also a signatory of the Pact of Islands, Member of the Clean Energy for Islands initiative and Member of ManagEnergy. It is a supporting entity to the Region of Crete development planning (including energy planning). RDFC supports both the region and the 24 Municipalities of Crete with energy advice, through the REAC. RDFC has supported 7 Municipalities of Crete in the development, implementation and monitoring of their SEAPs.

At municipal level, there are four different stakeholders/actors involved;

1. Municipality personnel (Technical Services Department, Financial Department, Development Department etc.).
2. Energy managers of Municipal buildings.
3. Municipality CoM contact persons (Mayors are the formal signatories, and there are also designated CoM contact persons - typically a public officer of the planning department, technical department, development department etc.).
4. A specialist external consultant, in many cases, which supports the municipality in developing and monitoring its action plan.

In some cases, stakeholders 1-3 are one person. For example, the energy manager could be the CoM contact point and also as a member of the technical staff could contribute in the planning of an energy transition plan. Especially in case of small municipalities, this is the most common scenario.

In the following Figure 9 it can be seen that in Greece, governance structure is pyramidal from the national level to the municipality. It has also an intermediate level at regional level, which gives more specific support to the municipalities. However, there are not regional energy agencies in all the regions of GREECE. In Crete Region, ePLANET is targeting the promotion of horizontal clustering governance mainly at municipal level and the promotion of vertical governance between the Region and Municipalities.

In regions where there are no energy agency, municipalities have to contact with consulting companies to receive the necessary support for the deployment of energy transition. Any municipality might contact with CRES as the National Energy Agency to receive guidance to find out the more suitable energy agency or consulting company.

Crete geographical structure:



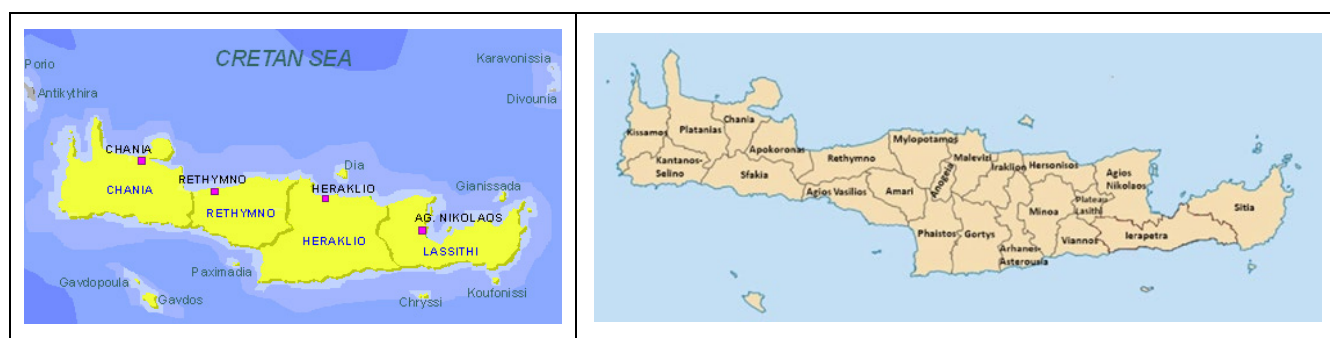


Figure 8. Regions of the Region of Crete

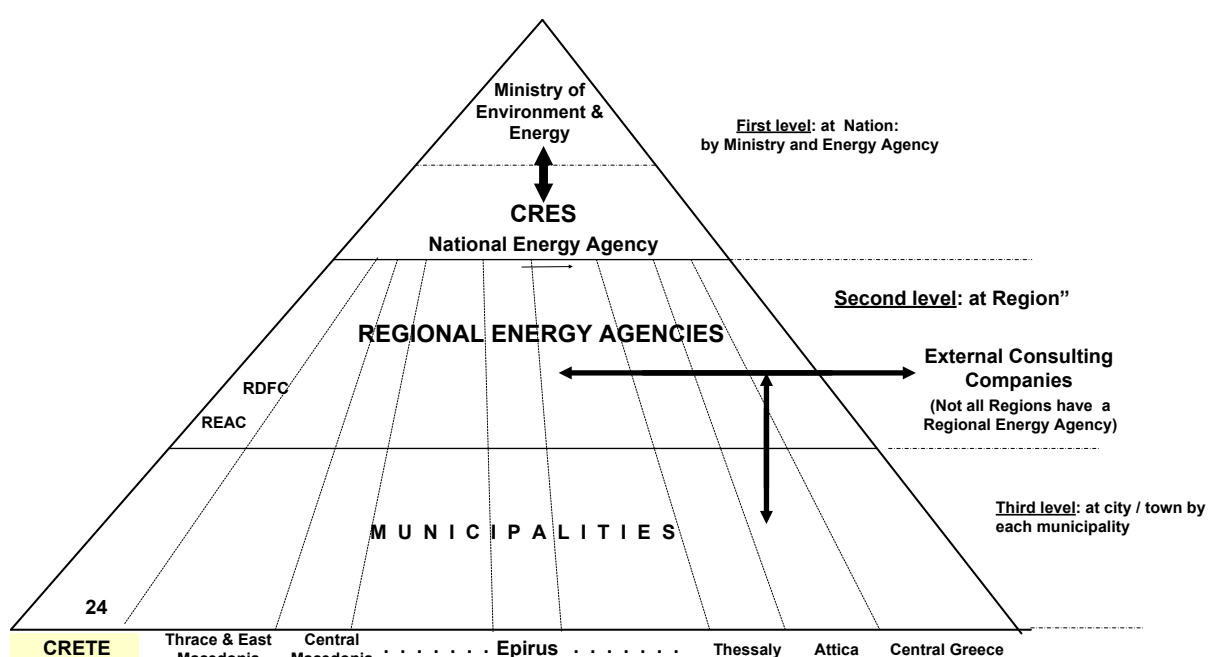


Figure 9. Energy governance at the national level in Greece

2.4 Overview from Pilot regions

The governance for the implementation of energy transition initiatives in the different European countries is determined by EU legislation applying to all countries for the implementation of renewables and energy efficiency projects.

Besides, at the European level, there are different organisations and authorities that support the networking and energy policies.

The following diagram is represented for the three pilot regions considered in this project, other 3 levels under the European level: the country or national level, the regional or provincial level and the local or municipal level in which ET actions have to be deployed. In this scheme are represented the

entities having a key role on energy transition in each pilot region. In this figure it can be seen the wide diversity of the 3 pilot regions.

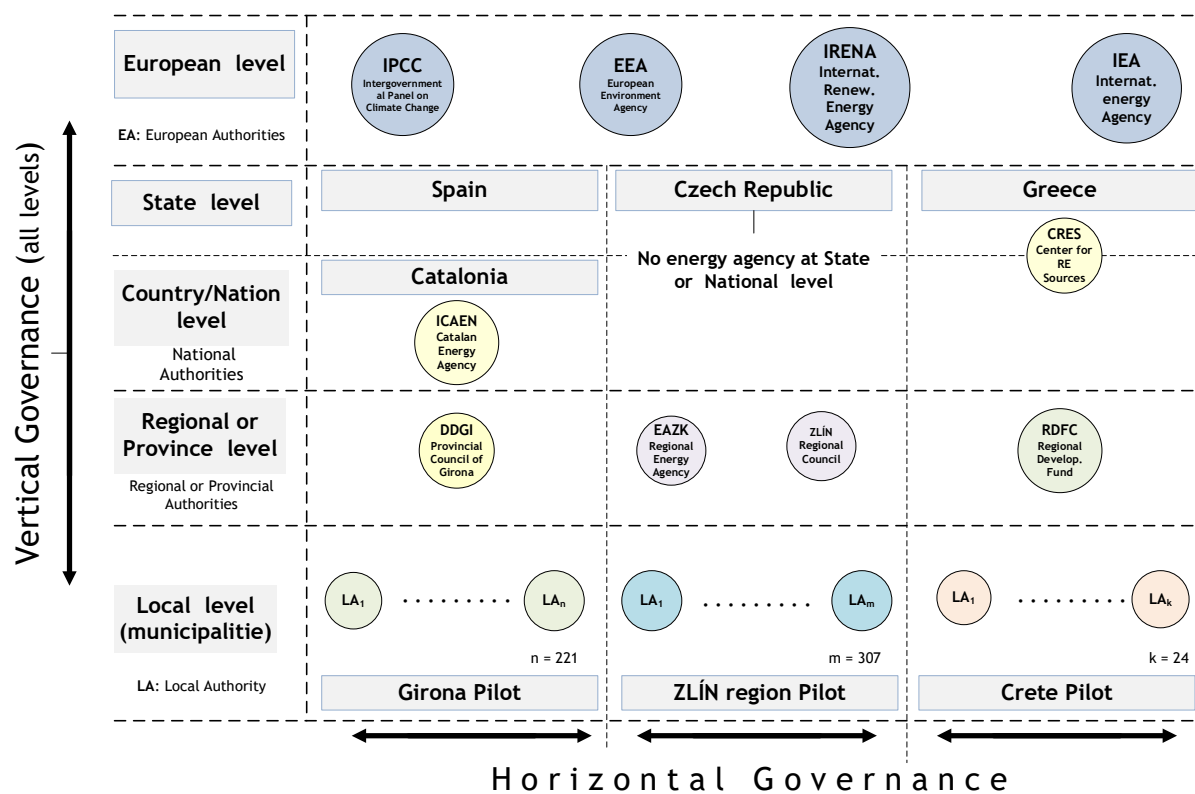


Figure 10. Summary of the three pilot regions' current governance stakeholders

3 Flow processes of ET deployment in each pilot region

This section describes the current initiatives in the three pilot regions conducted by local and regional authorities in order to organise a strategy to deploy Energy Transition activities.

The main tool used to deploy Energy Transition is an energy action plan, whether a SEAP, SECAP or any other energy plan. The energy Plan (EP) can be developed following guidance from the European Commission through the CoM, or recommendations from local, regional or national initiatives. SECAP stands for “Sustainable Energy and Climate Action Plan”. The SECAP is an important tool for local and regional governments to take action on climate change, as they have a significant role to play in reducing greenhouse gas emissions and promoting sustainable development in their communities. By developing a SECAP, these governments can identify the most effective strategies for reducing emissions and can work towards a more sustainable and resilient future for their communities.

The first task is to draft an Energy Plan at the municipal level. To undertake this task is usually done through a tendering process to select a specialised company. The Energy Plans do not always follow the same structure. For example, those public authorities already signatories of the CoM (e.g. some municipalities in Crete and Girona regions) will draft Energy Plans following the same template. However, Energy Plans from public authorities that are not members of CoM (e.g. all municipalities in the Zlín region as well as others in Crete and Girona regions) will be drafted in a different way. In any case, SECAPs or Energy Plans should be in the same digital format to facilitate effective governance.

To understand governance, besides the description of the current process flows, it is necessary to display how each pilot region is organised in geographical and administrative terms. Based on this organisation and structure, a Governance model and different key-actors will be proposed to achieve effective ET governance in each Pilot region and for any European Country.



3.1.1 Girona province

- **Drafting of SECAPS**

The following Figure 11 shows the process flow diagram in the case of Girona's Region. The diagram displays the current ways in which municipalities can have their own SECAPS.

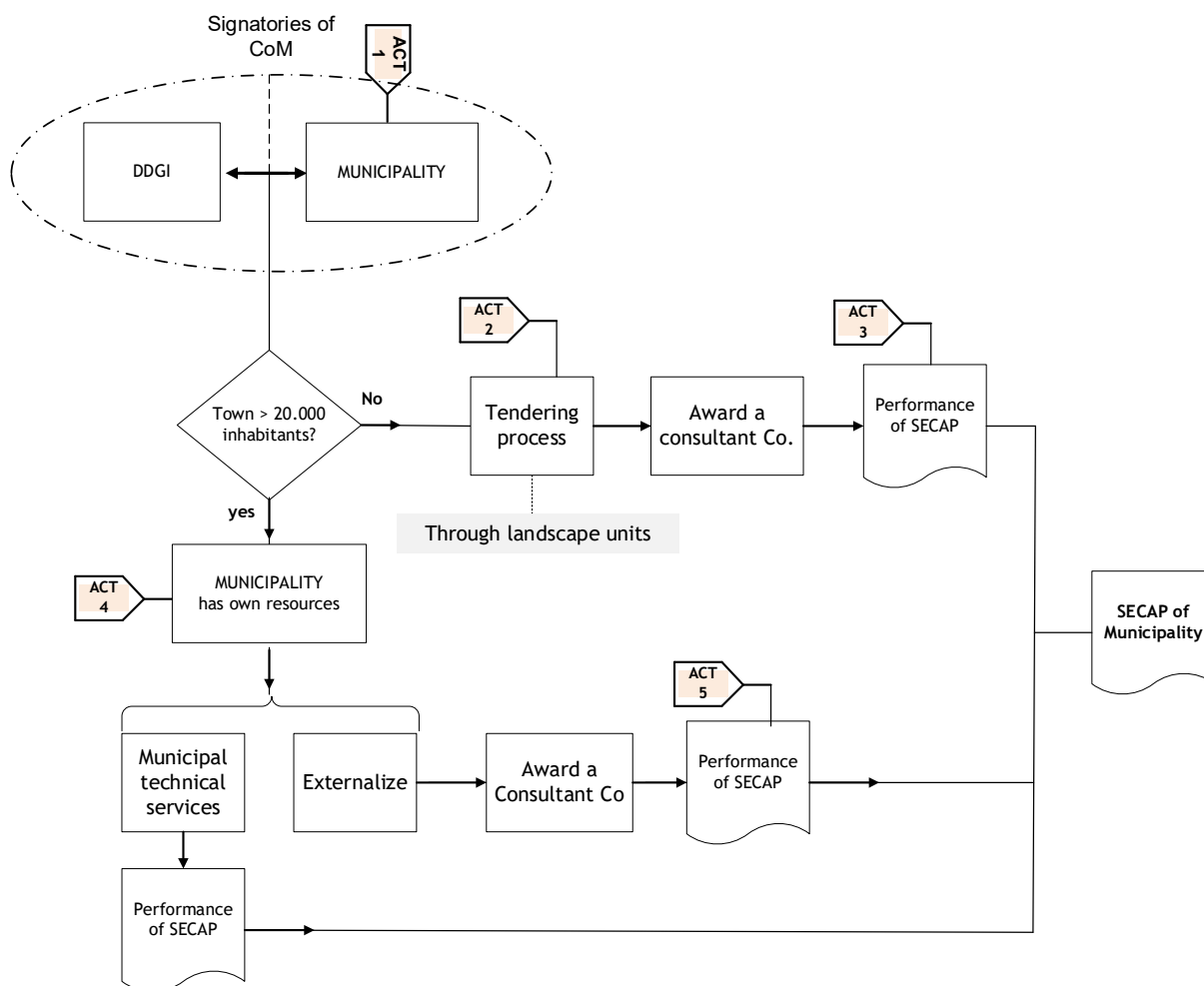


Figure 11. Process flow chart of SECAPS in Girona province

This flow diagram points out the main actions performed towards the drafting of the SECAPS since the municipality is aware of having an ET Plan.

The inception of this process is always in the commitment and decision from the policymakers and political heads of each municipality and the law requiring that each municipality has to have an energy action plan and its implementation in a determined timeframe period. This is being reported to all municipalities by the provincial council.

In the Girona region pilot, the provincial council-DDGI, partner of the project- is the leading entity giving support and resources related to the Energy Transition to a majority of the municipalities.

The process of drafting SECAPs has a different treatment by the regional council depending on the number of inhabitants of the municipalities. Therefore the process is divided into two different ways:

Municipalities with more than 20.000 inhabitants can receive advice from DDGI; however, the process of drafting a SECAP has to be done by themselves, as their size justifies a structure with enough technical and legal resources to prepare and award a consulting company for developing the SECAP.

On the other hand, this process is conducted by the DDGI for municipalities of less than 20.000 inhabitants. Some municipalities have technicians, but economic and legal resources are insufficient to undertake ET initiatives. In order to perform the SECAPS of these municipalities, the DDGI performs a tendering process for the drafting of the SECAPS under the framework of the landscape units (see paragraph 2.3.1 of the description of the landscape unit). The tender process is performed by grouping the landscape units in 5 batches in order to optimise the process.

It is worth mentioning that SECAPs are revised every two years by the DDGI.

As shown in figure 8, five key actors are identified within the process of developing a SECAP for the municipalities of Girona's Region:

- Act 1: Mayor or technician of the municipality establishes a communication relationship with the provincial council.
- Act 2: Provincial Council Team that usually conducts tendering processes.
- Act 3: Provincial Council Team or technicians of the county council.
- Act 4: Team or technicians from the municipality with expertise to draft a SECAP.
- Act 5: Team or technicians from the municipality conducting the tendering process.

• Deployment of SECAPS

The implementation of actions determined in SECAPs is under the sole responsibility of each municipality (Figure 12). Technicians from county council and province council meet together with municipality to decide which ETM (from SECAP) will be implemented, depending on the required budget, available resources and political commitment.

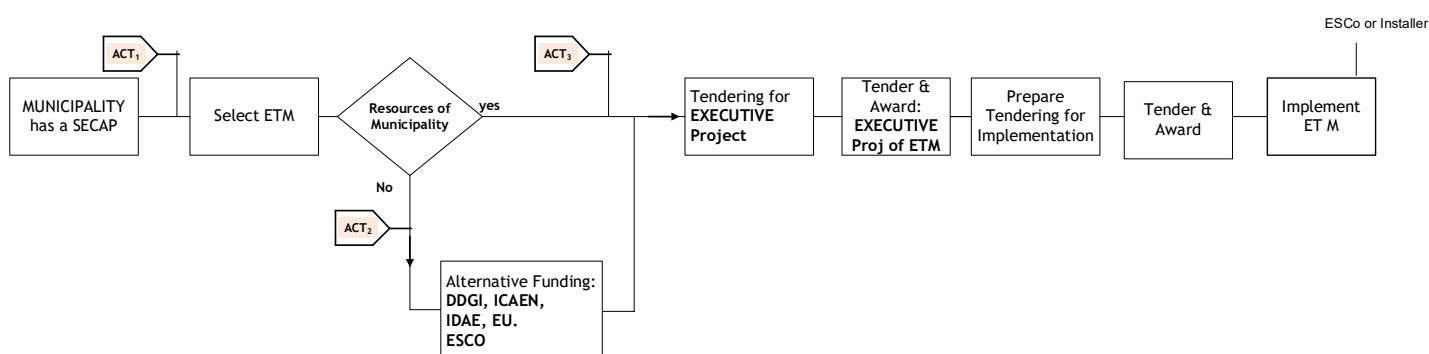


Figure 12. Deployment of the SECAPS in the Girona province

As shown in Figure 12, once the ETM are selected and if the municipality has enough resources, they select a provider to draft the executive project following an open tender procedure. Once the executive project is drafted, another tendering process will be conducted to assign the implementation of those ETMs to another provider.

In case of municipalities without sufficient resources, the municipality seeks for an alternative funding (e.g. the Provincial Council, or some national authority like ICAEN, IDAE, etc). Once funding is available, the implementation process follows the same principle of Figure 12.

It is very important to highlight that many projects from low-resources municipalities are not implemented because they don't obtain secure financial funds and subsidies.

The implementation of ETM from SECAPS requires the involvement of the following actors identified in figure 8:

- Actor 1: Technician/s from the municipality and technicians from DDGI/County council.
- Actor 2: Mayor, Alderman or Municipal technician to explore funding alternatives.
- Actor 3: Municipal technicians and administrative responsible for preparing tendering process.

• Monitoring and control

Once ETMs have been implemented, a follow-up to test results has to be done to check if targets are achieved (Figure 13).

This task is generally outsourced to the company (usually an esco) that has implemented the measures as a part of their service maintenance. In some instances, it can be done as well by municipal technicians.

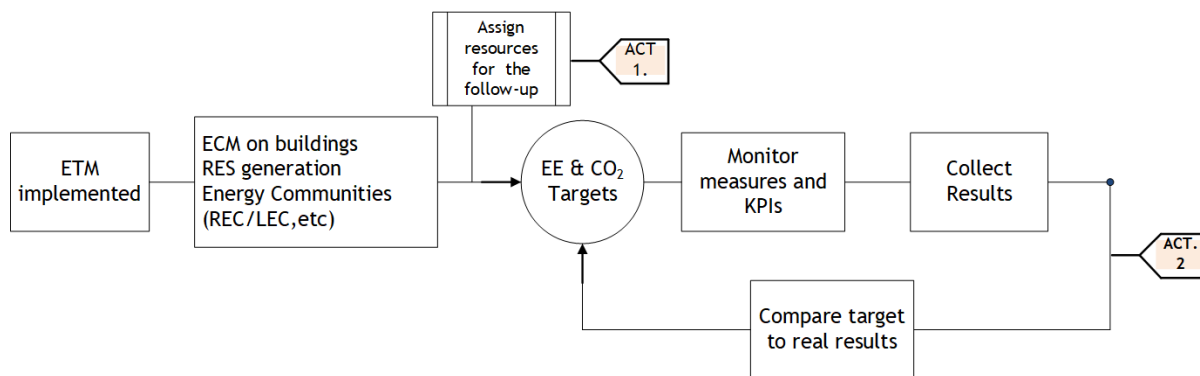


Figure 13. Flow chart of the monitoring of the SECAPS once implemented

The key actors found in this process are:

- Actor 1: Mayor, Alderman or Head of economic affairs
- Actor 2: Technician from Girona Provincial council that receives information from the esco company and compares the target to the real results.

3.1.2 Zlín Region

The Czech Republic has set a goal to become climate-neutral by 2050, which requires a significant energy transition through the country. The country's energy mix is currently dominated by coal, which



accounts for around 40% of electricity production. The government is planning to phase out coal by 2038 and increase the share of renewable energy sources (RES) in the energy mix. The National Action Plan for Energy and Climate, adopted in 2019, sets out the country's energy transition plans.

Czech Republic is not under the CoM Standards concerning the drafting of Energy Action Plans. This is not an obstacle for the deployment of energy transition measures.

The Zlín Region has developed an energy concept to guide its transition to a more sustainable and low-carbon energy system. The energy concept of the Zlín Region is based on the principles of energy efficiency, renewable energy, and sustainable development.

The processing of the territorial energy concept of the region is required by Act No. 406/2000 Coll. on energy management, Chapter II, Energy concept in § 4 - Territorial energy concept.

Under the diction of this law, the "Territorial Energy Concept of the Zlín Region" is based on the State Energy Concept and contains the goals and principles of solving the energy economy at the region's level. It creates the conditions for the economical use of energy in accordance with the needs of the economic and social development of the region, including environmental protection and careful use of natural energy sources. This requirement was emphasised by preparing the Territorial Energy Concept of the Zlín Region as one of the outputs of the "Zlín Region Emission and Immission Reduction Concept".

The content of the Territorial Energy Concept of the Zlín Region is based on the Government Regulation No. 195/2001 Coll., which sets out the details of the content of the territorial energy concept and which states: "energy and economic efficiency while respecting the state energy concept, regional limiting conditions and ensuring the reliability of supplies of individual forms of energy" The method of processing the Territorial Energy Concept is based on the specific requirements of the Zlín Region and on the knowledge and qualifications of the contractor - especially in the area of creating an energy and emissions information system, which can be fully integrated into the Information System (IS) of the Zlín Region, and in need of interlinking with other documents.

- **Drafting of Energy Action Plans**

The process flow for the drafting of energy action plans in the municipalities of the Zlín Region follows the diagram in Figure 14.



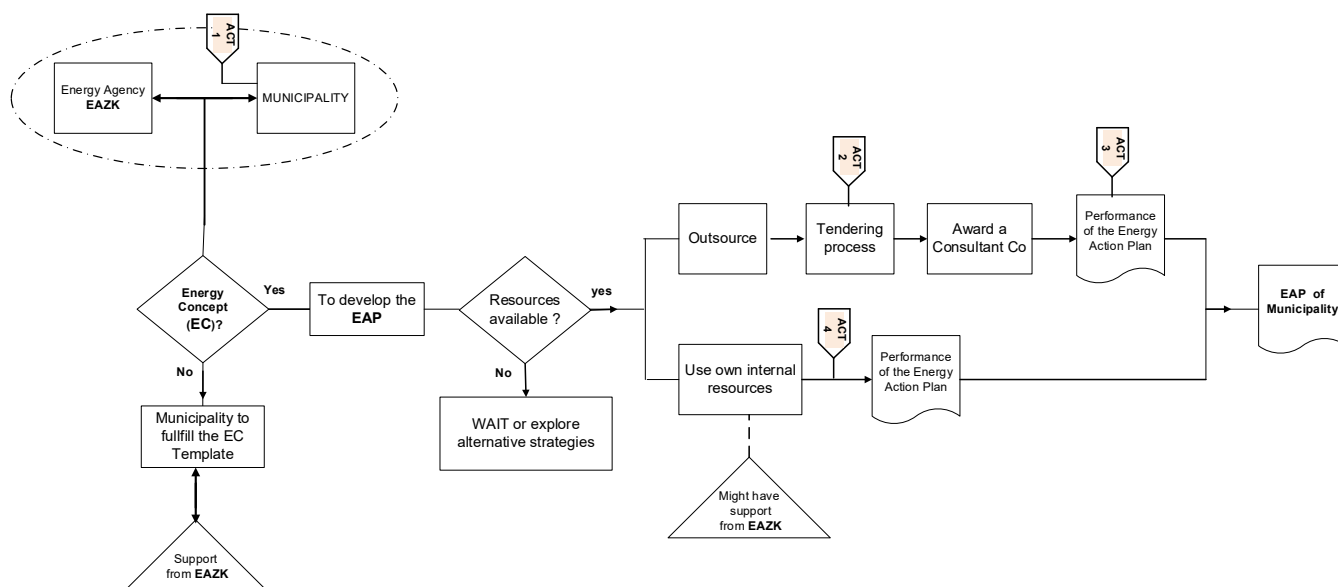


Figure 14. Process flow chart of SECAPS/Energy Action Plan in Zlín region

EAZK is the regional energy agency guiding and supporting municipalities in getting their energy action plans. As seen in the preceding scheme, energy plans might be, mainly in the case of larger municipalities, developed by external consulting companies.

Energy plans are definitely not under the umbrella of the CoM. This should not be a barrier for the implementation of ETM nor for the development of a clustering governance model that has to foster ET implementation.

Furthermore, the Energy Agency of the Zlín Region (EAZK) is implementing and monitoring the Energy Action Plan and the Energy Efficiency Financing Plan of the Zlín Region for the period 2020 - 2024. The structure of this plan reflects the need of the Zlín Region energy policy, and the Regional Energy Concept was one of the starting points for the development of this plan. The plan was drafted by EAZK with the help of stakeholders forums, workshops and long years' of experience in the regional energy field. This plan was approved by the Assembly of the Zlín Region, is implemented by EAZK and is monitored on yearly basis. The implementation is reported on yearly basis to the Management Board of EAZK which consists of 6 members nominated, approved and appointed by the Zlín Region Assembly.

Municipalities normally do not develop structured energy action plans. The measures related to the Energy Transition they take are based on their own various priorities. EAZK is a facilitator for them in systematic approach and access to the national funds promoting ET measures. The approach is for each municipality individual and it is not possible to describe a universal workflow. Many municipalities are assisted in their ET measures by EAZK, some of them use services of external energy companies and some of them are trying individually without any external help. EAZK has helped to a couple of municipalities to develop their own Energy Action Plan, however, such plans are quite simple, tailored on each municipality needs. They are eventually approved by municipal assemblies and reported to them on regular basis.

The actors found in this process, as shown in Figure 10 are the following:



- Actor 1: Person from the municipality. Up to 1500 inhabitants, the actor is usually the mayor, eventually with some municipal technician who is in charge of broader municipal operational agenda. Over 1500 inhabitants, the actor is the head of departments related to ET or the mayor.
- Actor 2: The same actor than actor 1.
- Actor 3: External awarded consultant or company.
- Actor 4: Specialised municipal technician.

• Deployment of Energy Action Plans

The implementation of energy measures in the Zlin Region on local level depends on the availability of resources, in the municipality and in the regional energy agency.

Firstly, in order to start the process, the municipality has to check if it has the resources that allow the implementation of energy measures. If this is the case, a tendering process will start to award a company for its implementation. If there are no resources, Municipalities resorts to EAZK, which evaluates the issue, eventually suggest a feasible solution, and identifies external financial sources to support these proposed measures. Currently, the majority of these external financial sources come from Operational Programmes.

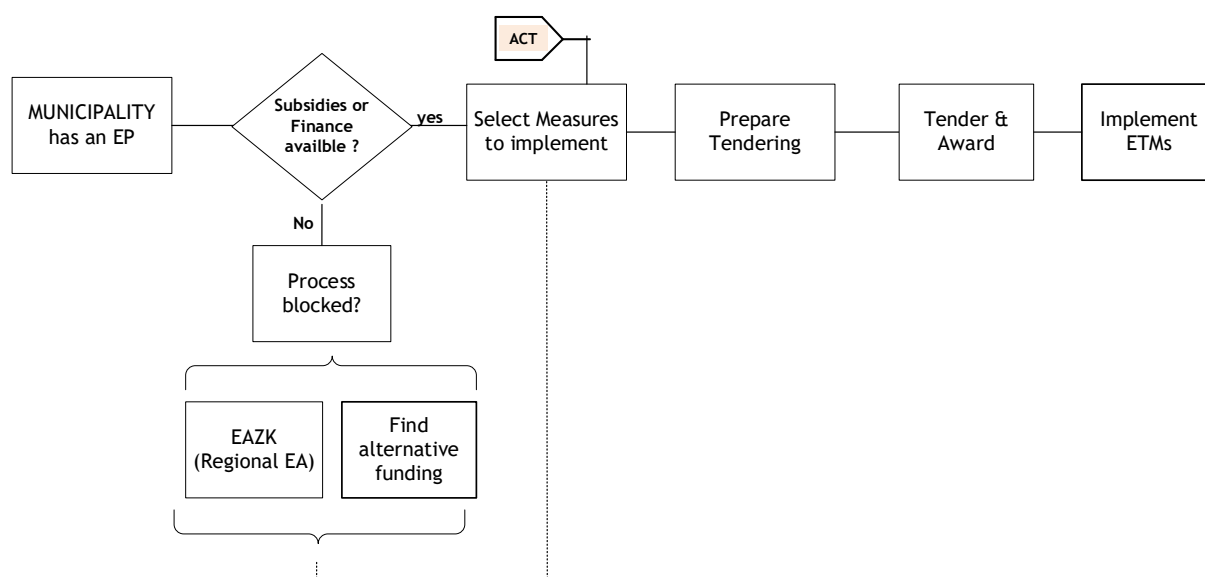


Figure 15. Deployment of the SECAPS in the Zlin Region

In this scheme, there is an actor detected: a person from the municipality who has to validate which ETMs will be selected for their implementation. The same actor is who would manage the tendering process to award a company for the real ETMs implementation.

• Monitoring and control



To monitor and control the impact of the ETM, follows a common scheme for its follow-up.

Only a few municipalities have their own “Energy Action Plan” which it was elaborated by an external company.

The monitoring and evaluation is usually reported on periodical basis to the municipal assemblies. However, each municipality has a duty to have its own general middle term action and investment plan into which it may incorporate measures related to the ET. The implementation of these middle term general action and investment plans is monitored, evaluated and updated on regular basis, at best yearly, and they are always discussed and approved by municipal assemblies.

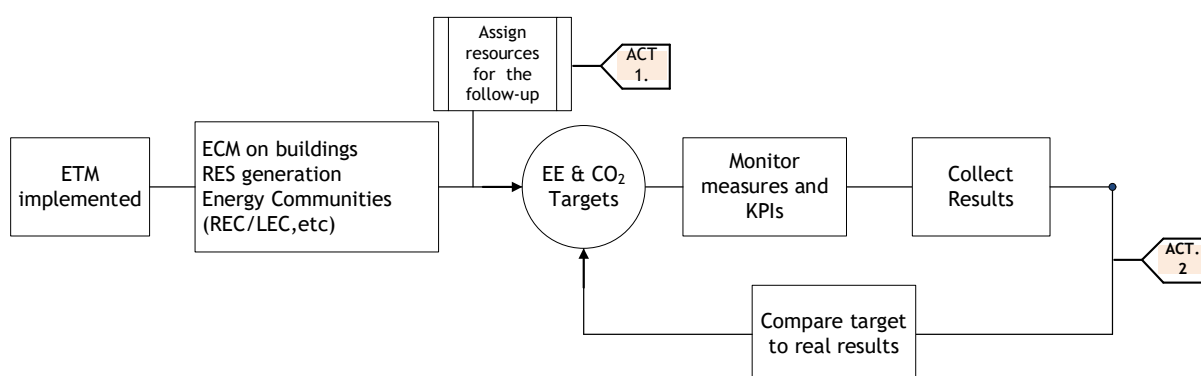


Figure 16. Flow chart of the monitoring of the SECAPS once implemented

The identified actors in the flow charts are the following:

- Actor 1: Person from the municipality. This actor will perform the tendering process for the external consultant (Actor 2).
- Actor 2: Usually is an external consultant who will track results.

3.1.3 Region of Crete

In Greece, SECAPs are developed at the municipal level by local authorities, often with the support of external consultants. The development of SECAPs in Greece started with a pilot project launched in 2015 in five municipalities, including the cities of Kozani and Kifissia. Since then, more municipalities have developed their own SECAPs, in the context of the Covenant of Mayors for Climate and Energy initiative. The development of SECAPs in Greece is an important step towards promoting sustainable energy and climate action at the local level and contributing to the country's national energy and climate objectives.

In addition to SECAPs, in line with Greek legislation, Municipalities must conduct, for public buildings under their jurisdiction, Energy Efficiency plans for their public-building stock, to be monitored, updated and submitted to the Ministry of Environment and Energy every 2 years.

At regional level, in line with Greek legislation, Regions must conduct, for public buildings under their jurisdiction, Energy Efficiency plans for their public-building stock, to be monitored, updated and submitted to the Ministry of Environment and Energy every 2 years.

- **Drafting of SECAPS**

The drafting of the SECAPS in the Region of Crete follows the process shown below in Figure 17.

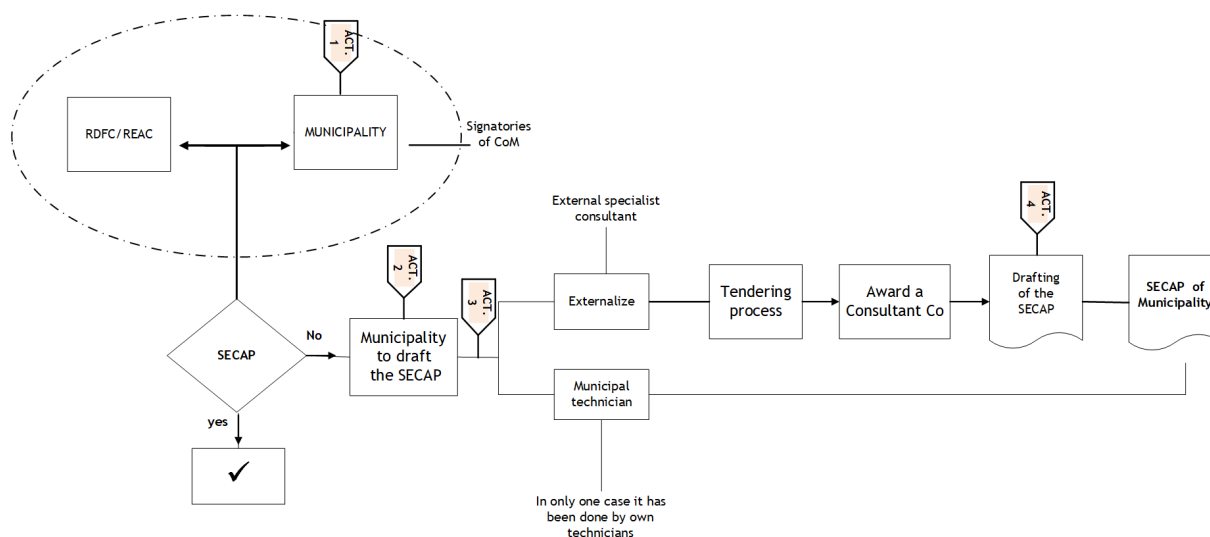


Figure 17. Process flow chart of SECAPS in Crete region

In the Region of Crete, the RDFC is the entity that promotes and fosters the execution of the energy transition plans by increasing the awareness of energy efficiency and sustainability in municipalities. RDFC conducts workshops, events, etc., to raise this awareness in these municipalities.

The flow chart (Figure 17) represents the process of drafting SECAPS in the Region of Crete. The first step is that the municipality has to initiate this process, which can be done in two different ways, depending on the human and economic resources. The most common approach is to externalise a

consultant for the drafting of the secaps through a tendering process. Once the drafting is done by an external consultant, the municipality has to revise the SECAP before submitting it.

The actors found in this process can be summarised in four:

- Actor 1: Person from the municipality, municipality CoM contact or energy manager. This actor contacts with regional authorities to be supported for the implementation of ET plan.
- Actor 2: Person from the municipality, municipality CoM contact or energy manager. This actor can be the same as the previous with another role: he/she initiates the tendering process of the SECAPs.
- Actor 3: Specialised municipal technician or external consultant. This actor has the role of drafting the SECAP.
- Actor 4: Specialised municipal technician. This actor revises the SECAP before submitting.

It is noted that a similar process is followed by a Municipality or a Region, for the Drafting of an Energy Efficiency Plan for public buildings (in line with Greek legislation). Key actors involved in this process are the Municipal or Regional buildings' energy managers.

• Deployment of SECAPS

Implementing energy transition measures identified in the SECAPS follows the below process explained in Figure 18. Once the municipality has defined and submitted a SECAP, the next step is implementing the identified energy transition measures. The number of ETM implemented will depend on the amount of funding resources. Normally, the more used resources are national or European subsidies which rely on the open calls available each time. Once the resource is available, the process will continue with a tendering process. On the other hand, if the municipality does not have any European or national subsidies available, the option is to use either its own funding or alternative funding, which may be ESCOs, crowdfunding, etc. this process would continue as the previous one, with a tendering process.

The investment to implement ETM when the option is alternative funding, rarely the ESCO model is used. The ESCO model in Greece in most cases so far has been used for significant investment projects (e.g. Municipal street lighting etc).

In other cases, where subsidies may not cover the total investment, the municipalities may supply the part of the investment not covered by the subsidies.



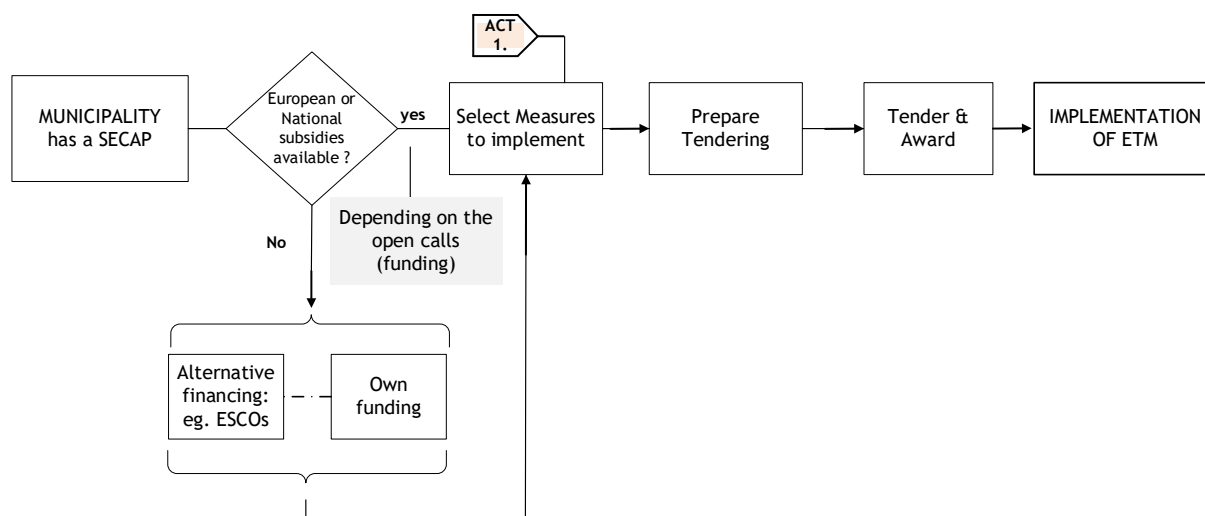


Figure 18. Deployment of the SECAPS in the Crete Region

The identified actor in this process diagram is a person or a team from the municipality in charge of deploying energy strategies, the building energy manager or the CoM contact person. Larger municipalities have technicians from the Technical Services /Financing/Development departments, who are involved in the planning and implementation of ET projects.

This actor can also be an external consultant supporting the Municipality or Region.

It is noted that a similar process is followed by a Municipality or a Region, for the deployment of an Energy Efficiency Plan for public buildings (in line with Greek legislation). Key actors involved in this process are the Municipal or Regional buildings' energy managers.

- **Monitoring and control**

Once ETM have been implemented, a follow-up to monitor results is compulsory (by the Conenant of Mayors) in order to check if targets are achieved (Figure 19). Four municipalities from the Region of Crete have already done this process.

As it is important to know the impact and effectiveness of the measures implemented, somebody has to develop the tendering process to assign the resources to follow-up measures.

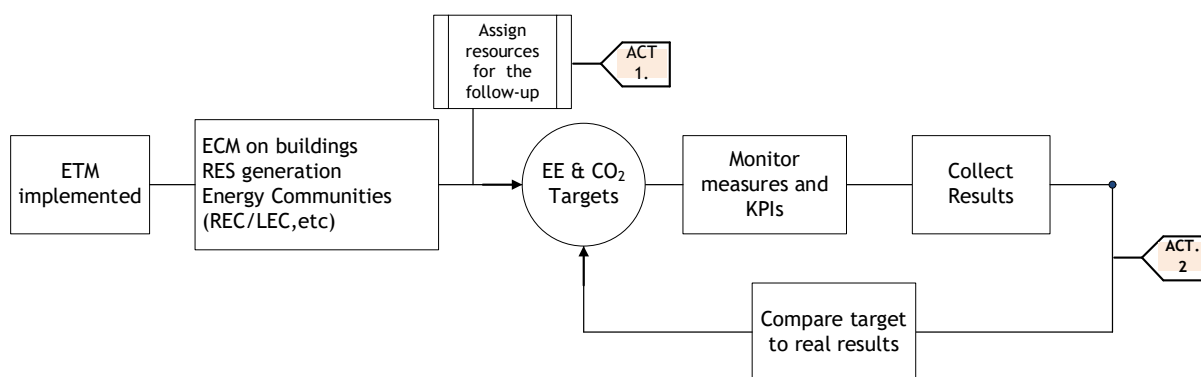


Figure 19. Flow chart of the monitoring of the SECAPS once implemented

The identified actors in the flow charts are the following:

- Actor 1: Person from the municipality, municipality CoM contact or energy manager. This actor will perform the tendering process for the external consultant (Actor 2).
- Actor 2: Usually is an external consultant who will track results, compare to the SECAP targets and evaluate deviations.

3.2 Summary of roles identified by the actors involved

Energy transition plans in municipalities involve a set of steps aimed at reducing greenhouse gas emissions and promoting the use of renewable energy sources. Overall, energy transition plans in municipalities require a comprehensive and collaborative approach involving various stakeholders. By transitioning to renewable energy, municipalities can reduce greenhouse gas emissions, promote sustainable development, and improve the quality of life for their residents.

This section identifies the required functions for efficient Energy Transition governance, considering all the phases, from design to monitoring (Figure 20). In Table 8 a summary of all the necessary roles involved in the steps of the energy transition actions plans deployed are presented. Moreover, the actors identified in all the pilot regions are summarised in each step presented. This analysis will allow us to define the new actors proposed in the following chapters.



Figure 20. Methodology for the implementation of the ET plans

Table 8. Summary of Actors and their roles for any ET plan deployment

PHASE	ROLES	ACTORS
PREVIOUS STEPS FOR ANY MUNICIPALITY	<ul style="list-style-type: none"> - Awareness rising to PA - Mobilise all departments in PA - Build support from stakeholders - Political commitment 	<ul style="list-style-type: none"> - Energy Agency/Provincial or regional council/Stakeholder - Mayor - Regional council or agency - Mayors and councillors
ET PLAN DEFINITION AND/OR UPDATE	<ul style="list-style-type: none"> - Assessment of the current framework (Economical, technical and environmental) → “Where are we?” - To promote interaction between PA and stakeholders - Establishment of goals - To define or update ET plan 	<ul style="list-style-type: none"> - Engineering/adviser Company. A public technician with expertise in big municipalities - Regional council or proactive internal councillors - In conjunction with technicians, the mayor and adviser (Energy agency or council) - External expertise company
ETM SELECTION	<ul style="list-style-type: none"> - Check measures implemented by other municipalities - Assessment of current situation (economic/financial, technical, environmental) - Promote interaction between municipalities and stakeholders - Selection of the measures 	<ul style="list-style-type: none"> - Municipal technicians or external advisors (private or public) - External expertise advisor Co. - Mayor, regional councillors - Mayors/municipal technicians and external expertise advisor. ESCo companies

ETM IMPLEMENTATION	<ul style="list-style-type: none"> - Implementation plan (technical and financial) - Implementation - Interaction between PA and stakeholders 	<ul style="list-style-type: none"> - Municipal councillor - ESCO Companies
ETM MONITORING	<ul style="list-style-type: none"> - Monitoring plan (technical and financial) - Follow up - Interaction between PA and stakeholders 	<ul style="list-style-type: none"> - Maintenance technicians: from a municipality or from an ESCo.

4 Proposed methodology to enhance ET clustering governance

4.1 Concept of clustering governance

Clustering governance refers to managing and governing a cluster of entities or organisations working together towards a common goal. Effective clustering governance involves designing and implementing policies and procedures that **encourage collaboration** and cooperation among cluster members. In addition, effective clustering governance involves creating a supportive environment that facilitates innovation and growth¹². This can include providing access to funding and other resources, **fostering partnerships** between members, and promoting entrepreneurship and innovation¹³.

In the energy transition context, clustering governance refers to the shift towards a more sustainable and low-carbon energy system within a group of municipalities, regions or countries to achieve the same goal (Figure 21). The energy transition requires collaborating and coordinating various stakeholders, including governments, businesses, academic institutions, and civil society organisations.

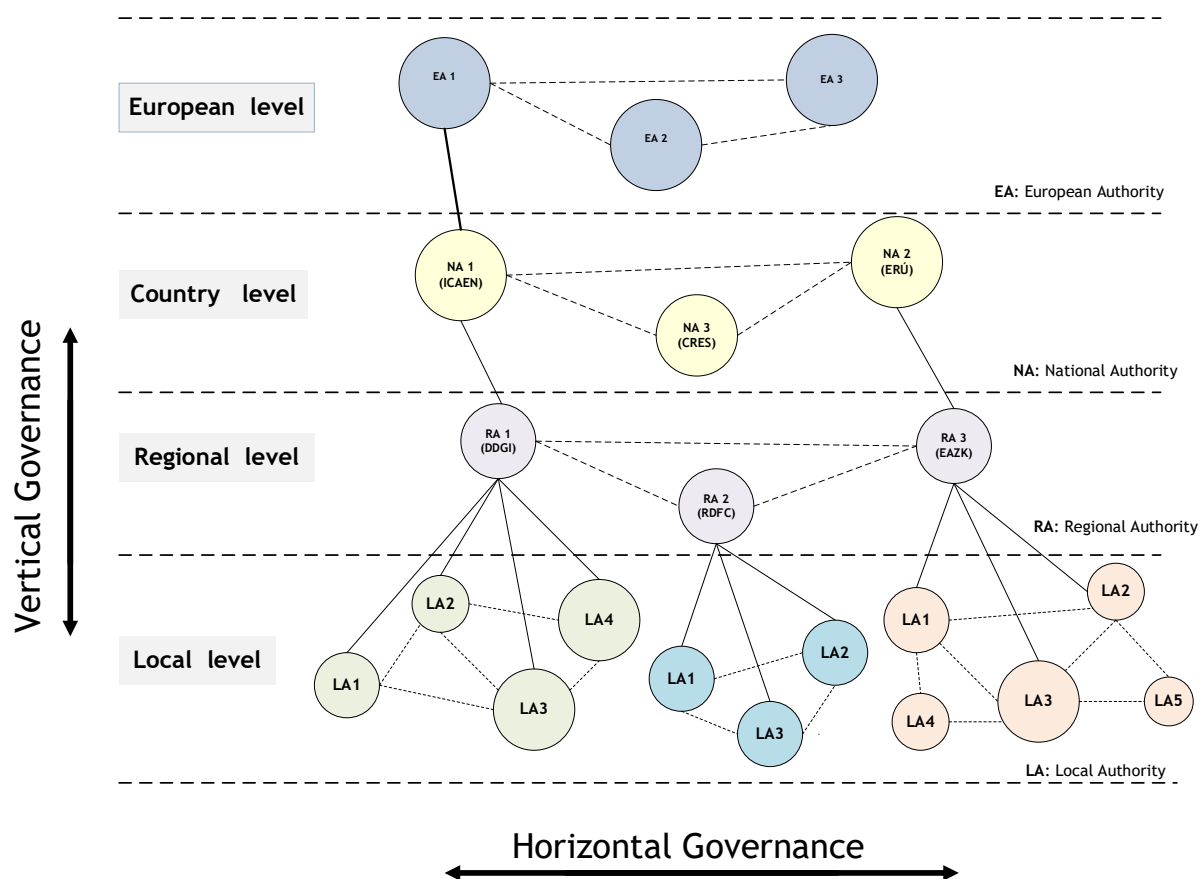


Figure 21. Clustering governance in the energy transition

Effective clustering governance in energy transition requires clear communication channels, shared goals and objectives, and a supportive regulatory and policy environment. This can involve setting up

decision-making processes that involve all stakeholders, promoting entrepreneurship and innovation, and ensuring equitable access to resources and funding. It also involves addressing potential conflicts or challenges that may arise, such as competing interests or conflicting priorities among stakeholders.

Overall, clustering governance can help to **accelerate the energy transition** by promoting collaboration and innovation, enhancing resource efficiency, and facilitating the transition to a more sustainable and low-carbon energy system.

Among municipalities refers to activities or relationships that occur or exist between different municipal entities, such as towns, cities, or counties. Municipalities may also collaborate on regional initiatives, such as economic development or environmental protection, to achieve shared goals and outcomes. Effective communication and collaboration between municipalities can help to mitigate these conflicts and build stronger relationships. Regional planning organisations or associations can also help to facilitate cooperation and coordination among municipalities and promote regional development and growth.

4.1.1 Clustering governance in the ePLANET framework

As seen in all the document, these three pilot regions exhibit significant disparities across multiple dimensions. Firstly, in terms of geographical level, they possess distinct landscapes, climate patterns, and natural features, making each region truly unique. Secondly, at the administrative level, their governance structures, political systems, and decision-making processes diverge greatly, resulting in contrasting policies and regulations. Lastly, when considering size, these regions significantly vary in terms of land area, population, and overall scale, further emphasising the stark differences among them. In that context, a general scheme has been designed, however the implementation of the new clustering governance will be designed for each pilot region.

In the following Figure 22, the innovative approach of clustering governance in the ePLANET framework is represented. To promote this interaction between municipalities to foster making common ET projects, a digital platform is needed containing energy data from all municipalities and an actor or actors which will facilitate their interactions and alliances.



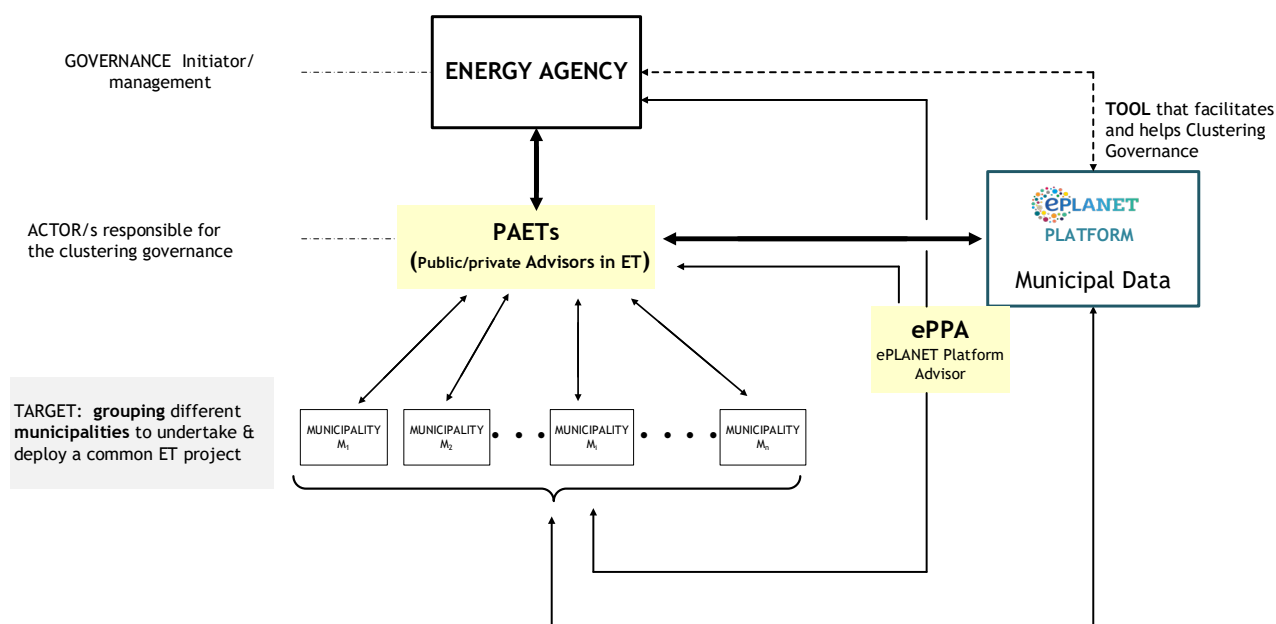


Figure 22. Global vision of governance structure through the Eplanet project

In this Figure 22, a global overview of the interactions of the PAET, municipalities, the data platform and the energy agency at the country level is presented (depending on the country where it is applied, the levels of government could vary). This new clustering governance relies on two elements: the first, the PAET (detailed explanation in the following section) and the second, a tool to help and enhance this new clustering governance in the ePLANET framework.

4.2 Actors proposed for ET

Actors in energy transition are those who influence or are influenced by the changes in the energy system. They can be individuals, groups, organisations, or institutions. They have different roles, interests, and capacities to shape the energy transition ¹⁴.

The proposed structure for an efficient ET clustering governance relies on the presence of 2 different actors with specific but essential roles. Those actors will be key to effectively respond with a holistic approach to the needs and requirements of PA at different levels (municipalities, regions, etc). The final form of these actors (individuals, groups, organisations, institutions, etc) should be adapted to the specific framework conditions of each cluster. In any case, these actors are considered essential to shape the energy transition in any territory, considering the needs of both the region and the municipal requirements.

• The PAET - Public / Private Advisor on Energy Transition

The central element in performing clustering governance is the actor called PAET, being an Advisor in Energy Transition, which can be public or private.

Clustering Governance requires the management and grouping of municipalities depending on their similarities and proximity. The function of each PAET is to analyse data from all municipalities under a particular territorial unit which is manageable by one PAET, for which the ePLANET Platform will be used, as it will contain data of all municipalities.

PAET's responsibilities will consist of reaching out to municipalities, trying to group them based on the information that has been checked in the platform and fostering a partnership to deploy a common ET project.

Note that each municipality should be able to check their information and the data in the ePLANET platform. Since only large municipalities might do this, as most municipalities have no resources to undertake initiatives by themselves, the PAET becomes a crucial actor in helping the acceleration of ET action deployment.

PAET should be at an intermediate level between regional and municipal tiers. However, depending on each country or region's geographical and political structure, it can belong to the regional level as part of a regional energy agency, or it could even be at a higher level as national.

The following Figure 23 represents the role of the clustering governance with the new actor, PAET.

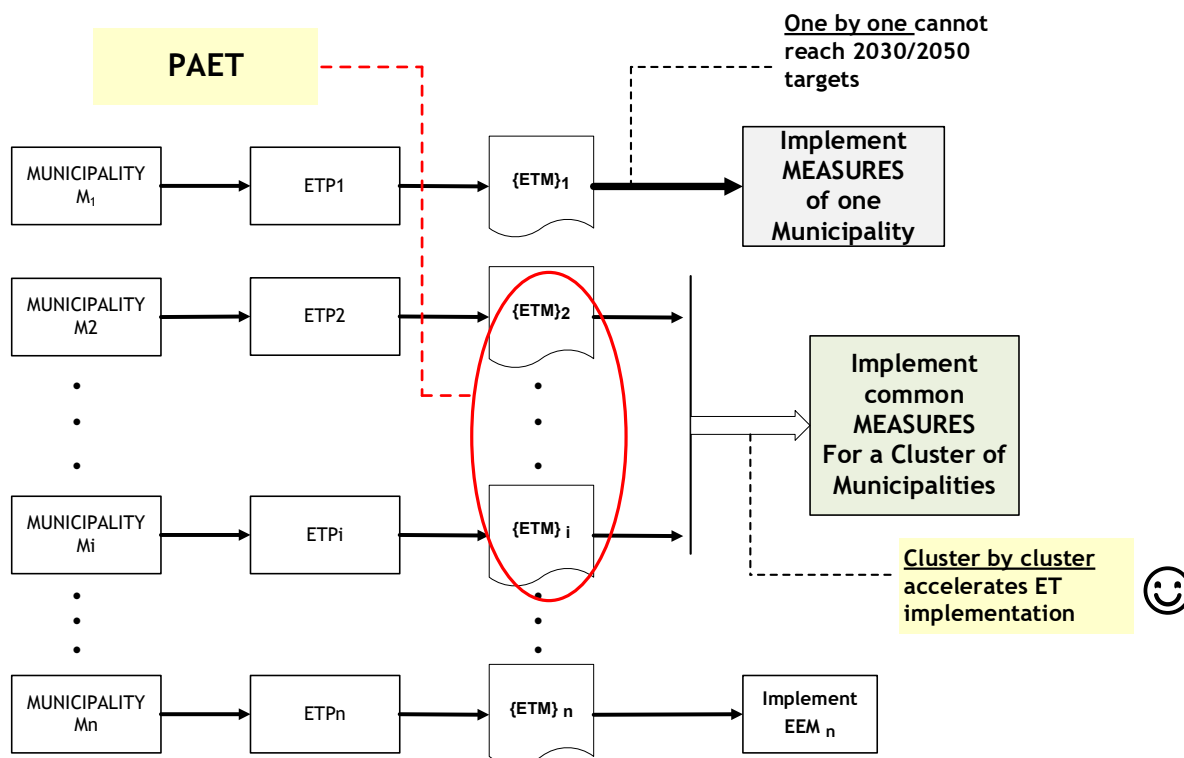


Figure 23. Clustering Governance by PAET

- **The ePPA: ePLANET Platform Advisor**

The previous Figure 23 shows another actor, the ePLANET platform advisor. This is the other key actor in order to keep the platform active and operable beyond the project duration. Without this platform and the ePLANET platform advisor, clustering governance becomes much more difficult to establish cluster projects, as information would be distributed and difficult to consult.

The ePLANET platform will contain information on each municipality. This information has to be shared and consulted by somebody who will be an actor responsible for the governance of the Energy Transition projects. This actor or actors, named PAET is who has to check the information and promote and foster partnerships between different municipalities or even people to execute ET projects. The information should also be reachable for municipalities, but it is more difficult to get effective governance from the system (whole municipalities at a time) than to have an actor responsible for this governance.

4.3 Tools for enhanced ET governance

The identified Tools needed for an ET governance are:

- 1) An Energy Action Plan for any municipality under any specific form, could be as SEAP, SECAP or any other type of **Action Plan**.
- 2) A **Platform** where all information on Energy Action Plans is stored and can be shared with other municipalities.

An Energy Plan (EP) or an Energy Action Plan (EAP) is the preliminary tool that any municipality needs to deploy energy transition in its territorial area. Energy Plans (EP) contain all measures that should be implemented to achieve energy sustainability. Action Plans specify the roadmap to follow in order to implement a number of selected measures and with an specific investment required.

Some European countries follows a common CoM template for the Energy Action Plans (SECAP), but other countries and regions have their own templates for an Energy Plan. Both can be integrated in the platform, but to compare Plans between countries requires the harmonisation of these data in order to be comparable.

The Platform is the other tool required for the ET governance. Data from all municipalities by regions or territorial areas have to be shared in order to explore accelerating strategies in the ET deployment.

The following diagram (figure 24) shows a global vision of the Pilots data contained in the ePLANET platform as a tool to be consulted by any actor or actors responsible for the ET governance in order to make proposals for different municipalities to joint for a common project execution.



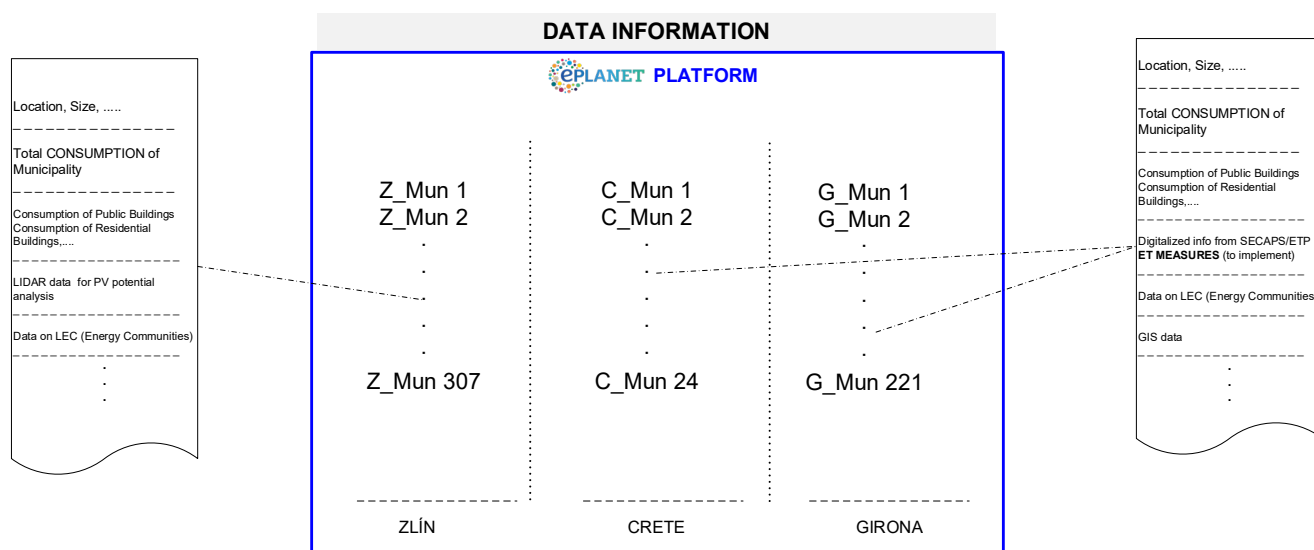


Figure 24. Global vision of the ePLANET platform as main tool used for effective governance

The ePLANET Platform-TOOL is accessible for the regional and municipal ET agents to provide an overview and comparison of any municipality with the other ones. This enables identifying the municipalities with fewer developments in ET, so it identifies the territorial areas with more resources needed to accomplish the energy transition.

This platform has the capacity to track the energy use and emissions from each municipality and municipal buildings when data is available. With this data, it can be evaluated if the actions accomplished reflect energy and emissions reduction. Moreover is prepared to track the ET plans actions. In order to help in the clustering governance, the tool can provide the data to all the governance levels. By providing this information, the ET technicians can compare the municipalities and coordinate municipalities with the same or similar planned actions, and the upper administration can have an overview of the regional ET development.

The platform enables to export all the information, from tables to graphics, to help the users analyse their data or export it to other systems if need it. Furthermore, in building actions evaluation, it will be analysed the baseline (building behaviour before the actuation) and the new consumption pattern from the building to evaluate the savings related to the action performed.

A scheme of the whole platform, its parts and the interface with actors or users for information and data consultation is shown in the following Figure 25.

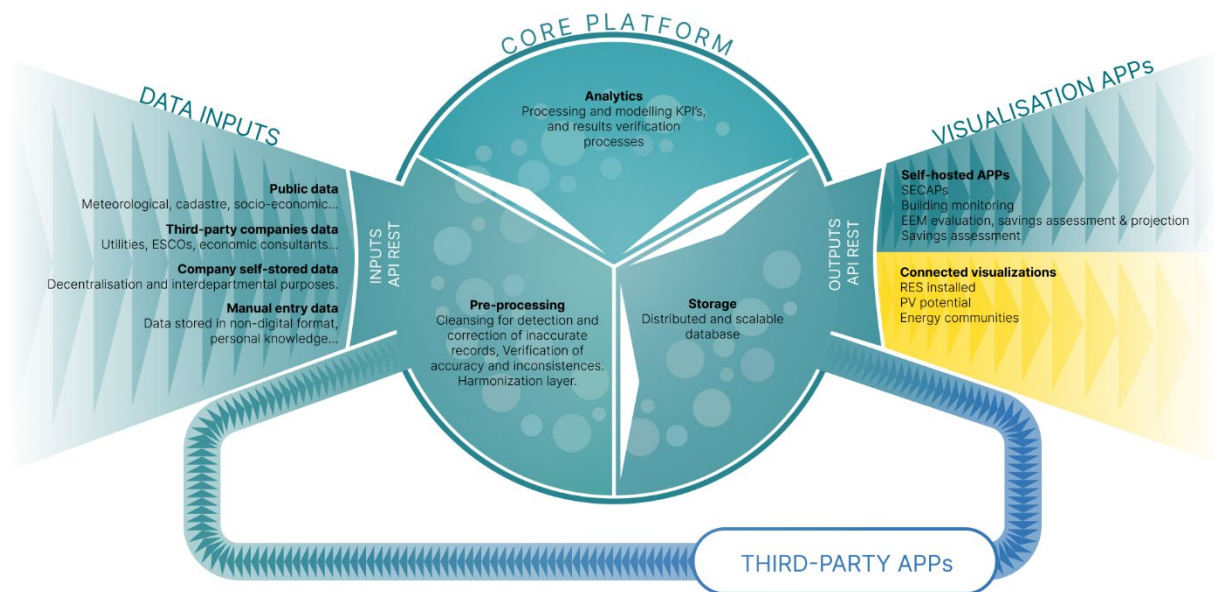


Figure 25. ePLANET Platform parts.

It is important to remark that the platform users will have at their disposal the data from the SECAPs (UC1) and the reported municipal buildings energy consumption (UC2) to evaluate the energy transition trend that the municipalities are taking.

4.3.1 Features of the tool.

The ePLANET platform, as a tool for effective governance for the deployment of Energy Transition, has the following features and capacities:

- **Data transparency.** It gathers data from municipalities and makes it available to all regional users.
- **ET coordination.** As all the planned ET measures are in the platform, the municipalities can coordinate themselves, joining efforts and reducing duplicated work.
- **ET evaluation.** Apart from evaluating the ET plans, the municipalities can see the plans done by other municipalities and follow their example if they are getting good results.
- **ET plan execution.** The incorporation of the ET plans in the platform place all the information from the measures (start and end period of the measure, budget...) in an interactive interface which helps in the execution of the ET plans and following its development.

4.4 Roadmap to enhance energy transition clustering governance for each pilot region

4.4.1 Catalan pilot and the Catalan model

The Catalan scenario is based on four different tiers for the deployment of the ET. It consists in a pyramidal structure where ICAEN is at the higher level, with a leading role of promoting and fostering ET deployment in Catalonia. On the other hand, the different provincial councils have been until now the only PA providing support to municipalities under their provinces. This was not effective enough, as there were too many municipalities per province to have a good understanding of their needs and requirements.

However, this scenario is being replaced following a new strategic and sectorial Plan for the deployment of Renewable Energies in Catalonia, called “PLATER”. Under this strategic Plan, ICAEN will promote a third County-level with the role of providing support to a smaller group of municipalities, making the process more efficient.

This strategic plan will consider the creation of a new actor: technicians at the Energy Transition Office (ETO), which will be integrated in the County Council structure. This new actor is the equivalent PAET actor defined by ePLANET clustering governance.

As can be seen, for the Girona’s pilot, it’s easier to govern 218 municipalities from 8 public offices (around 28 municipalities per ETO) than from one unique office.

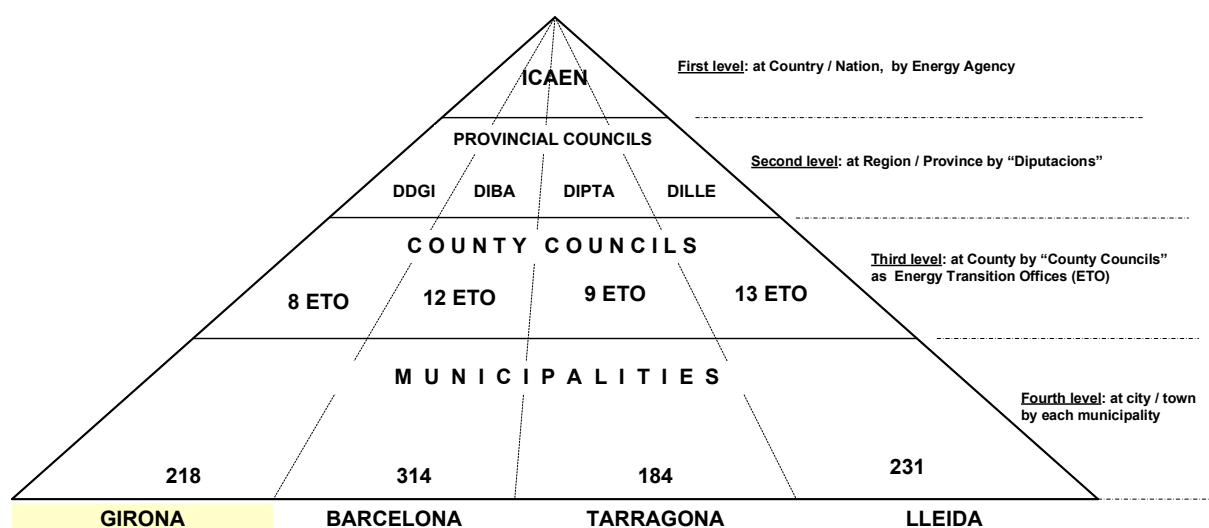


Figure 26. Girona and Catalan Geographical Structure

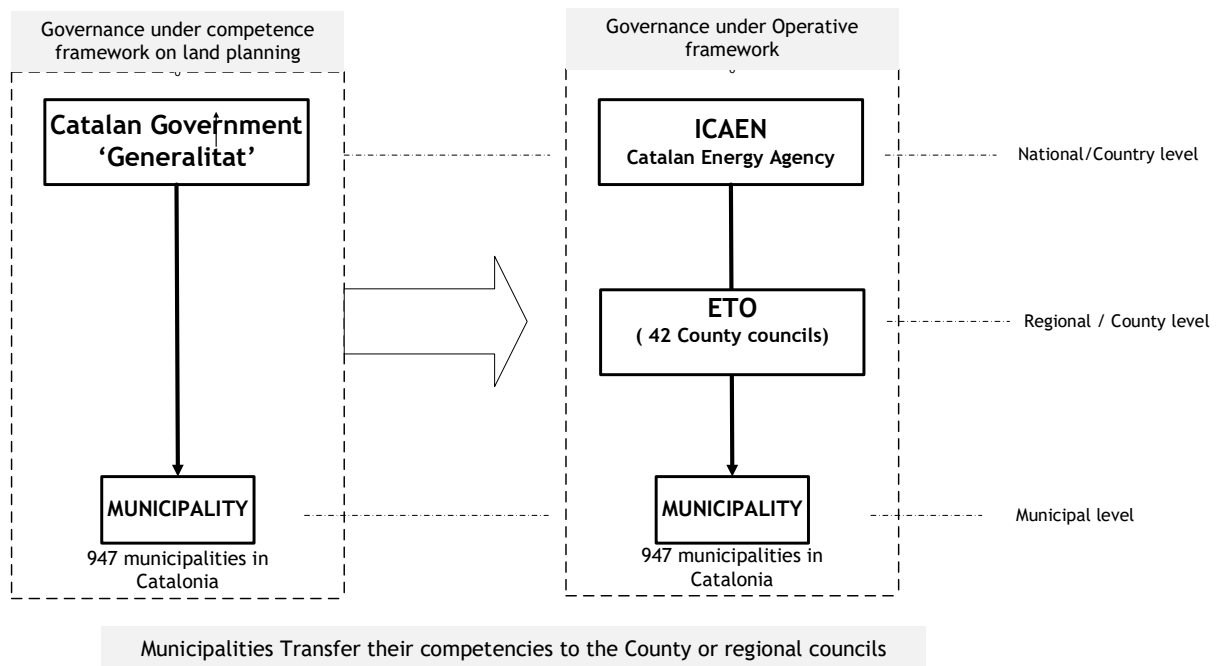


Figure 27. Girona and Catalan Geographical Structure

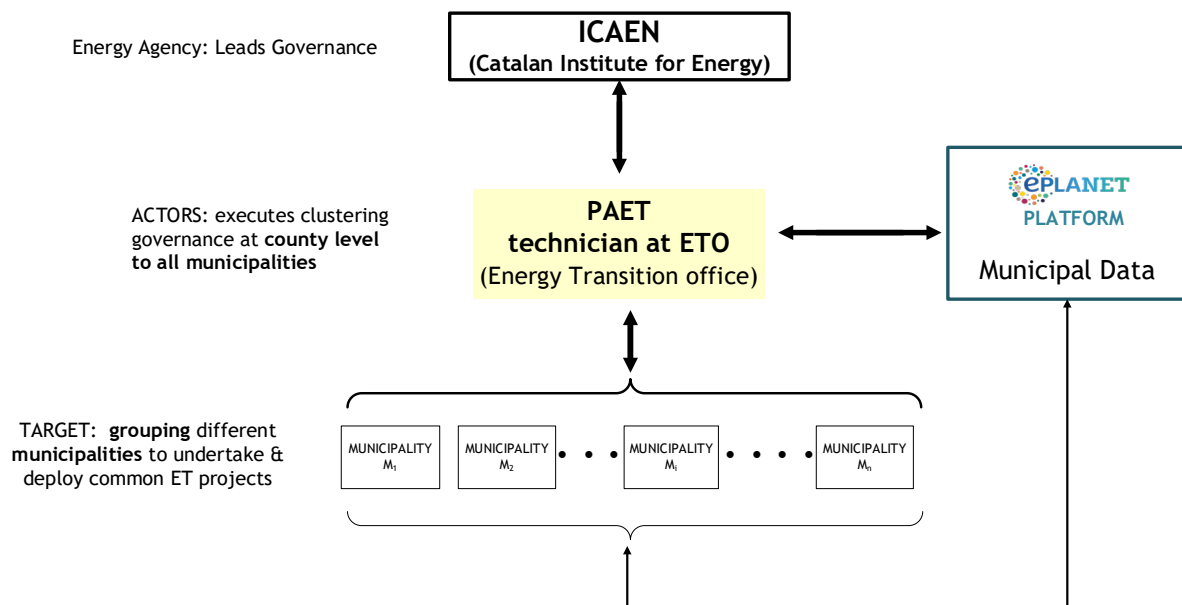


Figure 28. Catalan scenario with the PAET

Briefly, the strategy to start with this new focus, is giving direct support to all 42 ETOs (at all Catalonia) from ICAEN, by funding each ETO to contract one technician, which objectives will be, the deployment of SECAPs.

The figures for this pilot at local and Catalan country levels have been defined at an embryo stage.

The idea is to provide technical resources at County-level, in each county council office re-defined as energy transition offices (ETO). Those figures will work as facilitators supporting energy transition actions at the local level for the deployment of ETM. The requirements each defined figure will be developed in the final version of this document as their needed capacity buildings.

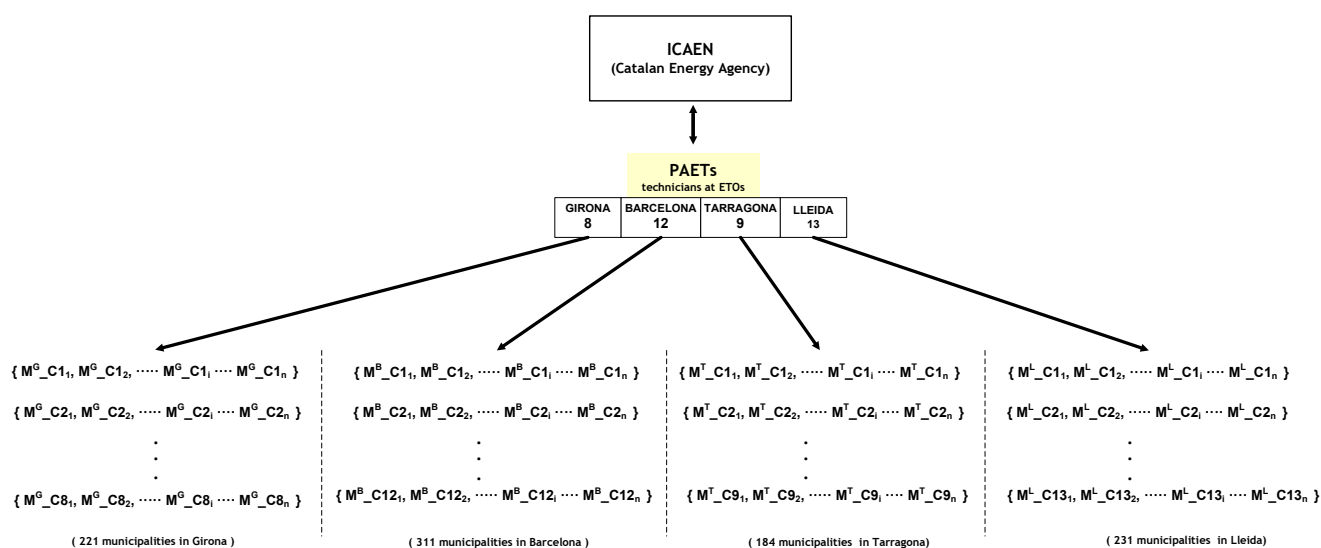


Figure 29. Clustering governance in Catalonia

4.4.2 Zlín region pilot and the Czech model

The Czech scenario is based on three tiers to deploy ET projects. It is a pyramidal structure that starts at the National Government in the Ministry of Environment and develops the bases of energy strategy, the Energy concept (EC), mentioned in section 2.3.2 that will spread to the whole country. Each region has to approve it in their Regional councils.

It is important to highlight that the role of Energy Agencies for a whole deployment is constrained, as not all regions have an energy agency. This fact needs support from the private sector to help the deployment and execution of energy sustainability in all municipalities

The following Figure 30 shows the scheme of how in the Czech Republic is conducted the governance of the deployment and implementation of ET projects.



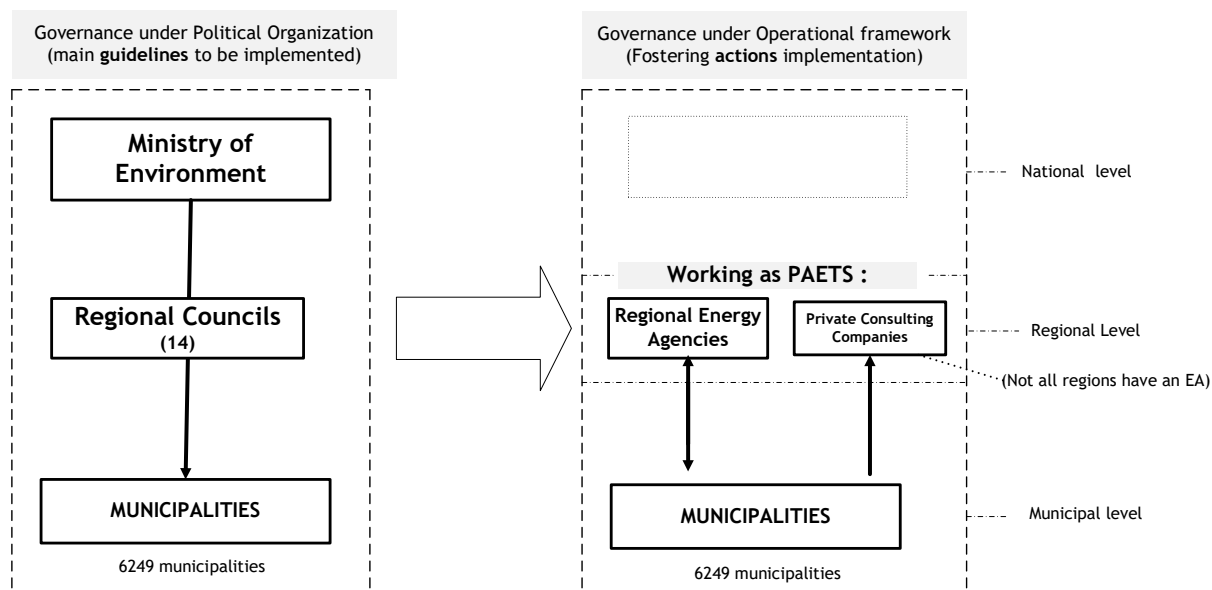


Figure 30. Czech Scenario with the PAETS

This scheme indicates that PAETs, as actors helping the energy transition in the country, are located in the Regional Energy Agencies and Consulting Companies, as not all regions have an Energy Agency. The main constraint in the Czech model is that there is no Energy Agency at the National level that could operate as the coordinator for the governance of this ET deployment.

Within this model, a PAET should be assigned in each Regional EA to conduct clustering governance. In regions without a regional energy agency, a Consulting company could be selected to perform the clustering governance, employing a technician trained for this particular work.

According to the previous scheme, the Czech government could manage this strategy.

The proposed Czech scenario with the PAET is as follows in Figure 31:

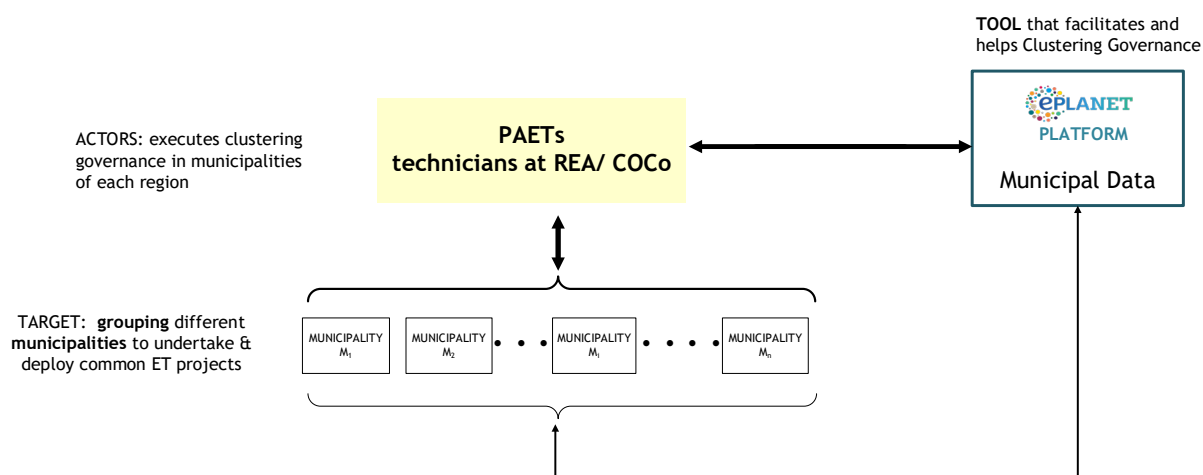


Figure 31. Zlin scenario with the PAET

This scheme lacks a governance level above the regional level. The leadership to undertake actions is at each regional council and mainly in municipalities. Each region should have a strategy to structure resources to put in place PAETs.

4.4.3 Crete region pilot and the Greek model.

The Greek scenario in deploying ET actions to achieve the EU 2030 and 2050 targets is based on three different tiers or levels of government. In political terms, the flow of the policies to be followed starts at the National level in the Ministry of Environment and Energy. It deploys to regions and from the regional councils to the municipalities.

The implementation of ET measures will be executed at the municipal level. For this, municipalities require support from an advising expertise technician, which is the ACTOR helping and accelerating the process of deploying energy sustainability. These actors, conceived as PAETs (public or private advisors in ET), are to be located at the regional level within the Regional Energy Agency or in a Consulting Company, as in Greece, not all Regions have an Energy Agency. The leadership and responsibility for this governance should be at the national level within the National Energy Agency or any other public authority committed to EU targets.

The following scheme (Figure 32) shows the governance structure for the deployment of the ET in Greece.

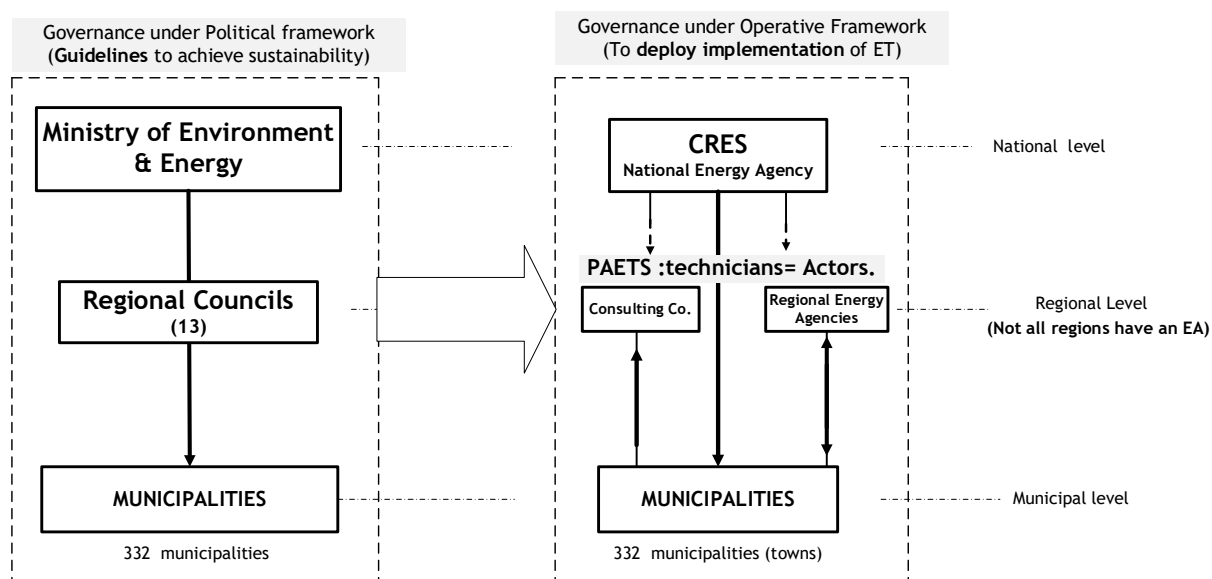


Figure 32. Greek scenario with the PAETS

To accelerate the deployment of energy transition, a network of expertise technicians should be implemented at regional level to conduct the governance of the ET deployment for the achievement of EU targets through clustering governance as expresses the following scheme:

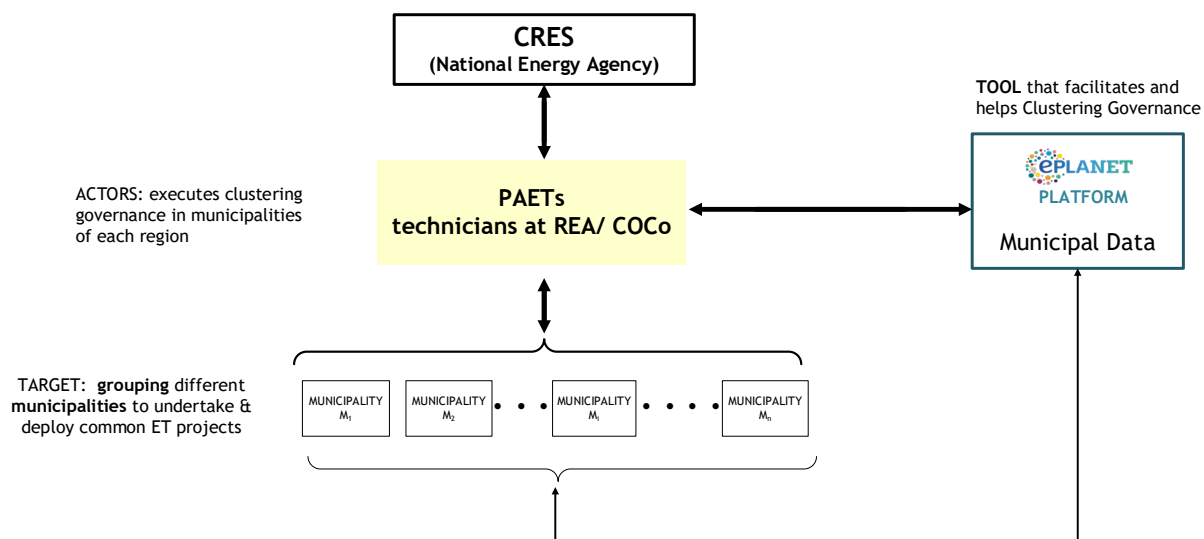


Figure 33. Crete scenario with the PAET

This scheme assumes that CRES as the National Energy Agency in Greece, should lead this process. However, this can only be real if CRES receives economic resources from the government. Alternative solutions could be that the resources would be directed via the Regional councils acting then CRES as an advisor for selecting and training the PAETs.

5 Conclusions

Despite all the efforts that European Union is doing to implement a MLG (*e.g. REGULATION (EU) 2018/1999 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council*)¹³ significant work must be done to accelerate the energy transition governance.

In that context, energy policies are critical tools for governments to address the challenges of transitioning to a sustainable energy system. Effective energy policies can incentivise investment in renewable energy, promote energy efficiency, and drive innovation in low-carbon technologies. However, energy policies must be carefully designed and implemented to be effective. They must be based on sound scientific and economic principles and consider the needs and perspectives of stakeholders from across society.

This document presented the *status quo* of the energy transition governance in the three pilot regions. It is important to highlight the diversity of the three pilot regions studied. However, two actors were designed to accelerate the energy transition through a **new clustering governance** approach; the **PAET** and the **ePPA**, explained in detail in the previous chapter. The intricate nature of clustering governance poses significant challenges to accelerating the energy transition deployment.

In conclusion, clustering governance presents a promising approach to promote economic growth and regional development. However, the success of clustering governance depends on several factors. It requires strong leadership and coordination from government agencies and active participation from industry and academic partners. Additionally, effective governance models must be designed to address the unique characteristics and needs of different regions, taking into account factors such as geography, industry specialisation, and local culture. To be successful, clustering governance must also be supported by effective policy frameworks and institutional structures.

In that context, the success of the deployment of the ET requires an effective follow-up of the measures being implemented. This means that the achieved savings have to be tracked. This follow-up has to be done mainly using the platform.

This fundamental feature has not been developed during this project. After 20 months of working with clustering governance, we realise that this should be a serious focus to be achieved if we want an effective and accurate platform to implement ET deployment through clustering governance.

As the time and resources have not been considered for this specific work, we believe that the conclusion we reached should be the inception of another new project where the ePLANET platform could be enlarged with this critical feature.

The following scheme represents the savings calculation through the platform that could be performed.



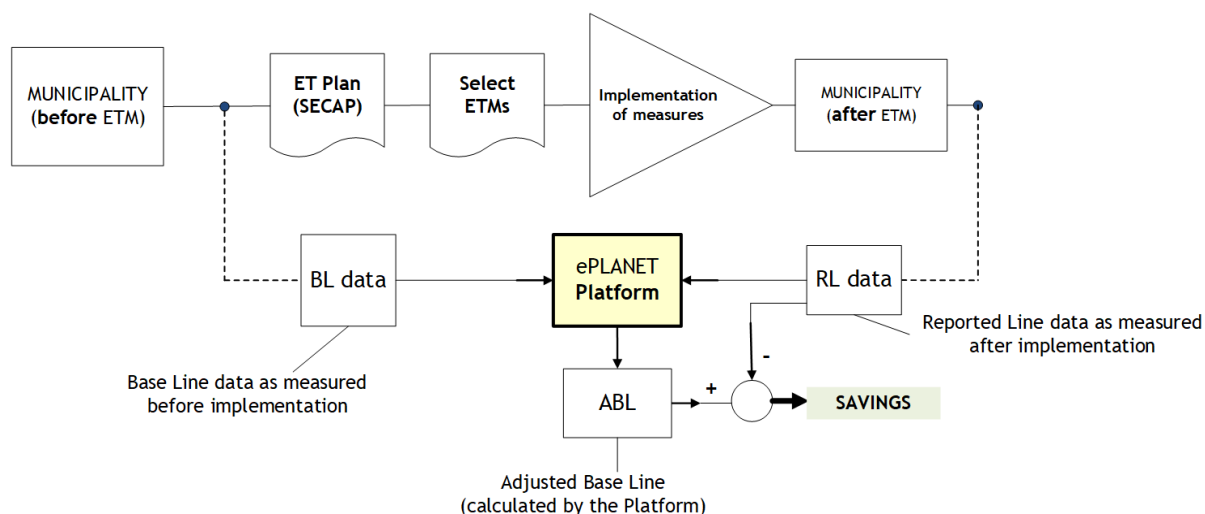


Figure 34. Overall scheme for energy savings tracking through the ePLANET platform (enhanced)

Since the calculation of savings is the main target, the conceptual obtaining of savings is important, for which it is necessary to calculate: Baseline for the energy use, (BL), Reporting Period Energy (RPE) and the Adjusted Base Line.

A graphical view of the savings calculation is represented in the following Figure 35

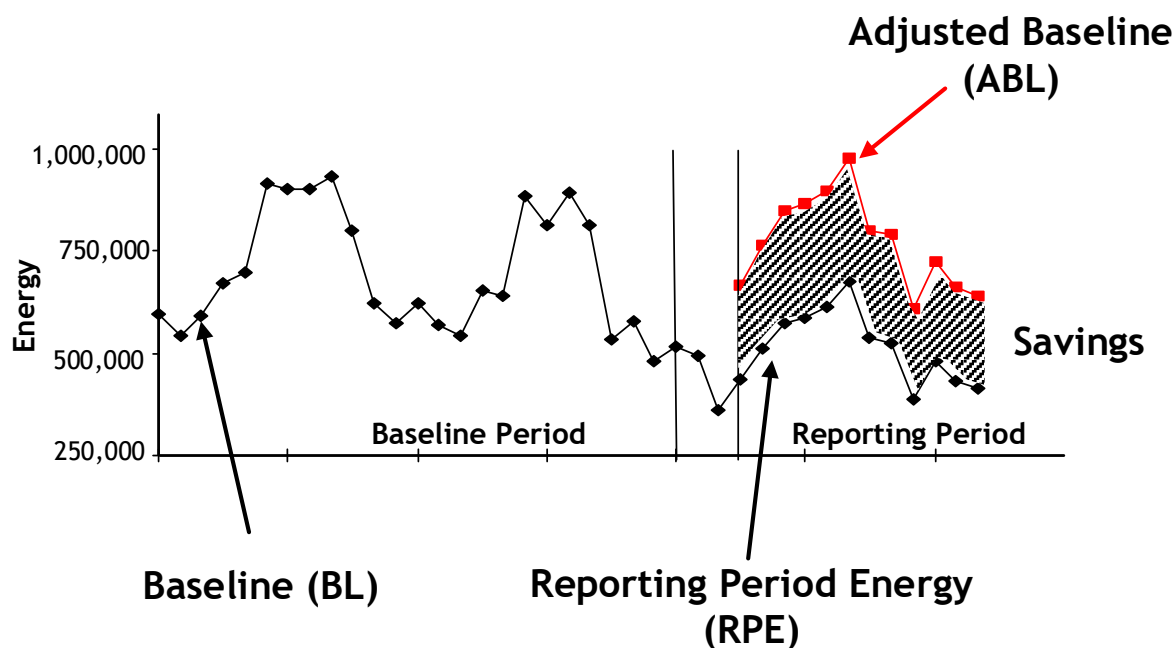


Figure 35. Conceptual visualisation of savings

To achieve final results, enhancing the current ePLANET developed platform with this capability is essential and presents significant challenges for the future.

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7 Annex

Template of table 2

STATE	SPAIN	CZECH REPUBLIC	GREECE
COUNTRY/NATION			
REGION			
PROVINCE / ADMINISTRATIVE UNIT			
COUNTY-LEVEL			
LANDSCAPE UNIT			
MUNICIPALITIES			



Template of table 3-4-5

PUBLIC BODIES / INSTITUTIONS		STAKEHOLDERS / PA
EUROPE	<p>European parliament https://www.europarl.europa.eu/portal/en</p> <p>European Commission https://ec.europa.eu/info/index_es</p>	<p>IRENA - International Renewable Energy Agency https://www.irena.org/</p> <p>IEA - International Energy Agency https://www.iea.org/</p> <p>IPCC - The Intergovernmental Panel on Climate Change https://www.ipcc.ch/</p>
STATE		
COUNTRY / NATION		
REGION		
PROVINCIAL		
COUNTY		
LOCAL		

The geographical organisation of the three pilot regions. Detailed scheme.

Catalonian structure.

Land	Province	Provincial Council	County	County Council (County Capital)	number of municipalities	population	Average Popul per Municipality	County #	Total pop	# city halls
CATALONIA. Energy Agency @ country level: ICAEN	Bcn	DIBA	Anoia	Igualada	33	124.112	3.761	1		
			Alt Penedès	Vilafranca del P.	27	110.172	4.080	2		
			Bages	Manresa	30	180.962	6.032	3		
			Berguedà	Berga	31	40.004	1.290	4		
			Osona	Vic	50	164.077	3.282	5		
			Moianès	Moià	10	14.243	1.424	6		
			Garraf	Vilanova i la Geltrú	6	154.264	25.711	7		
			Baix Llobregat	S. Feliu de Llobregat	30	833.312	27.777	8		
			Barcelonès	Barcelona	5	2.280.967	456.193	9		
			Vallès Occidental	Sabadell i Terrassa	23	937.422	40.757	10		
			Vallès Oriental	Granollers	39	415.789	10.661	11		
			Maresme	Mataró	30	459.625	15.321	12	5.714.949	314
	Girona	DDGI	Alt Empordà	Figueres	68	143.762	2.114	13		
			Baix Empordà	La Bisbal d'Emp.	36	137.268	3.813	14		
			Garrotxa	Olot	21	59.163	2.817	15		
			Ripollès	Ripoll	19	25.449	1.339	16		
			Cerdanya	Puigcerdà	10	10.230	1.023	17		
			Pla de l'Estany	Banyoles	11	32.876	2.989	18		
			Gironès	Girona	27	196.768	7.288	19		
			Selva	Sta. Coloma d Farnés	26	175.702	6.758	20	781.218	218
	Lleida	DILLEI	Aran	Vielha	9	10.372	1.152	21		
			Alta Ribagorça	Pont de Suert	3	3.945	1.315	22		
			Alt Urgell	La Seu d'Urgell	19	20.453	1.076	23		
			Cerdanya (occi)	Puigcerdà	7	9.000	1.286	24		
			Pallars Jussà	Tremp	14	13.170	941	25		
			Pallars Sobirà	Sort	15	7.101	473	26		
			Noguera	Balaguer	30	39.169	1.306	27		
			Solsonès	Solsona	15	13.600	907	28		
			Segarra	Cervera	21	23.412	1.115	29		
			Pla d'Urgell	Mollerusa	16	36.769	2.298	30		
			Urgell	Tàrrrega	20	37.276	1.864	31		
			Segrià	Lleida	38	211.609	5.569	32		
			Garrigues	Borgues Blanques	24	19.010	792	33	444.886	231
	Tarragona	DITA	Alt Camp	Valls	23	45.045	1.958	34		
			Baix Camp	Reus	28	195.098	6.968	35		
			Baix Penedès	El Vendrell	14	110.439	7.889	36		
			Conca de Barberà	Montblanc	22	20.104	914	37		
			Priorat	Falset	23	9.239	402	38		
			Baix Ebre	Tortosa	14	78.721	5.623	39		
			Ribera d'Ebre	Móra d'Ebre	14	21.864	1.562	40		
			Terra Alta	Gandesa	12	11.401	950	41		
			Montsià	Amposta	12	68.397	5.700	42		
			Tarragonès	Tarragona	22	262.001	11.909	43	822.309	184
									7.763.362	947

Czech Republic structure

Land	Regions (NUTS 3 level)	Region Capital / Administrative centre	Regional councils	Regional Energy Agencies	number of municipalities	population	Average Popul per Municipality
Czech Republic. NO Energy Agency @ country level.	Prague (capital city)	Prague	Prague City Council	n/a	1	1.335.084	1.335.084
	Central Bohemian Region	Prague	Central Bohemian Regional Council	n/a	1144	1.397.997	1.222
	South Bohemian Region	České Budějovice	South Bohemian Regional Council	n/a	624	643.551	1.031
	Plzeň Region	Plzeň	Council of the Plzeň Region	n/a	501	591.041	1.180
	Karlovy Vary Region	Karlovy Vary	Council of the Karlovy Vary Region	n/a	134	293.311	2.189
	Ústí nad Labem Region	Ústí nad Labem	Council of the Ústí nad Labem Region	n/a	354	817.004	2.308
	Liberec Region	Liberec	Liberec Regional Council	n/a	215	442.476	2.058
	Hradec Králové Region	Hradec Králové	Council of the Hradec Králové Region	n/a	448	550.803	1.229
	Pardubice Region	Pardubice	Council of the Pardubice Region	n/a	451	522.856	1.159
	Olomouc Region	Olomouc	Council of the Olomouc Region	n/a	402	630.522	1.568
	Moravian-Silesian Region	Ostrava	Moravian-Silesian Regional Council	Moravian-Silesian Energy Centre	300	1.192.834	3.976
	South Moravian Region	Brno	South Moravian Regional Council	CEJIZA, s.r.o.	673	1.195.372	1.776
	Vysočina Region	Jihlava	Vysočina Regional Council	Energy Agency of Vysočina	704	508.852	723
	Zlín Region	Zlín	Council of the Zlín Region	Energy Agency of the Zlín Region	307	580.119	1.890
					6.258	10.701.822	

Crete Region structure

Region	Regional councils	Administrative units (subregions)	Municipalities Names	population	number of municipalities	Region Population	Average population
Crete	1	Chania	Apokoronou	15.660	7	171.822	24.546
			Kantanou-Selinou	5.645			
			Kissamou	11.009			
			Chanion	116.154			
			Platania	20.972			
			Sfakion	2.224			
			Gavdou (island)	158			
		Rethymo	Rethymno	62.886	5	97.059	19.412
			Mylopotamou	17.464			
			Amarion	5.843			
			Agion Vasiliou	8.484			
			Anogeion	2.382			
		Heraklio	Heraklion	175.113	8	338.052	42.257
			Maleviziou	29.062			
			Archanon-Asterousion	16.780			
			Festou	24.572			
			Gortynas	15.680			
			Hersonissou	53.337			
			Minoa Pediadas	17.829			
			Viannou	5.679			
		Lassithi	Agion Nikolaou	28.033	4	75.995	18.999
			Siteias	18.155			
			Ierapetras	27.450			
			Oropediou	2.357			



