

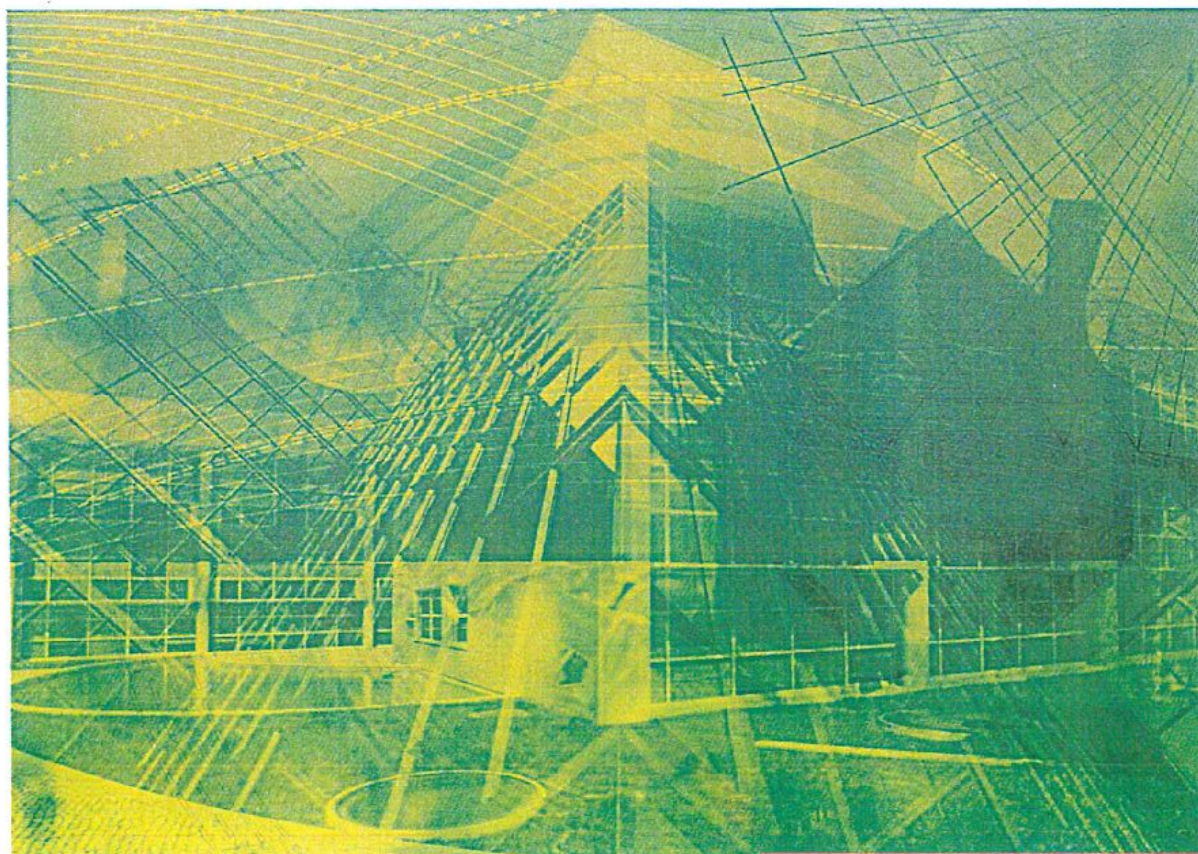


Regional Action Plan
in the framework of the implementation of the project CLEAN:
Technologies and open innovation for low-carbon regions

"Low- carbon strategy in a rural area in Crete

The case of Lassithi Plateau"

PO7 – Region of Crete



CLEAN Interreg Europe

Regional Action Plan
in the framework of the implementation of the project CLEAN:
Technologies and open innovation for low-carbon regions

**“Low- carbon strategy in a rural area in Crete
The case of Lassithi Plateau”**

PO7 – Region of Crete



Table of Contents

1	Executive Summary	1
2	General Information	2
2.1	The CLEAN Project	2
2.2	Project partner	3
3	Policy Context	3
4	Action: Low carbon strategy in a rural area of Crete – The case of Lassithi Plateau	11
4.1	Background	11
4.2	Action description	12
5	Action Description 1.1	14
5.1	Players involved 1.1	16
5.2	Timeframe 1.1	18
5.3	Cost / Budget 1.1	19
5.4	Funding sources 1.1	19
5.5	Impact expected 1.1	19
6	Action description 1.2	21
6.1	Players involved 1.2	22
6.2	Timeframe 1.2	23
6.3	Cost / Budget 1.2	24
6.4	Funding sources 1.2	24
6.5	Impact expected 1.2	24
7	Action description 1.3	24
7.1	Players involved 1.3	27
7.2	Timeframe 1.3	29
7.3	Costs / Budget 1.3	30
7.4	Funding sources 1.3	30
7.5	Impact expected 1.3	30
8	Action Description 1.4	31
8.1	Players involved 1.4	32
8.2	Timeframe 1.4	33
8.3	Cost / Budget 1.4	34
8.4	Founding source 1.4	34
8.5	Impact expected 1.4	34
9	Monitoring Plan	34

1 Executive Summary

The action plan is the result of the process started by the participation of Region of Crete in the CLEAN project and provides details on how the **lessons learnt** from the cooperation will be implemented in order to **improve the policy instrument** tackled within the region. Moving towards the end of phase one the Regional Action Plan is presented, and this document specifies the nature of the actions to be implemented, their timeframe, the players involved, the costs and funding sources.

The Action Plan aims to enhance the transition to a low-carbon rural area in Crete (Lassithi Plateau) deploying energy solutions in Buildings, Mobility and Public Infrastructure, based on a thorough study and a detailed analysis not only of the good practices of the CLEAN partners but also of the overall spatial and economic conditions in the region of Crete.

Specific objectives are to apply a series of energy efficient solutions such as energy saving from public lighting, the introduction of eco-friendly means of commuting and further to create an educational application for the residents on issues related to energy consumption.

This will be done by delivering a series of interventions in public places and public buildings and also by planning and implementing an educational program for the local population which will ensure the understanding and the exploitation of the proposed actions.

The main output will be that in a well-known rural area in Crete pioneering activities will be implemented in the field of energy saving and in the future the action can be communicated and replicated in other rural areas of Crete with similar characteristics.

2 General Information

2.1 The CLEAN Project

CLEAN or Technologies and open innovation for low-carbon regions addresses the challenge of how best to meet EU energy efficiency targets for buildings in Europe's regions. Buildings are responsible for 40% of energy consumption in the EU and older buildings consume between 8 and 12 times as much heating oil as new ones. CLEAN will increase energy efficiency in housing and public infrastructure by 4% through technology, open innovation and improved low-carbon policy instruments.



The partner regions are evenly spread across Europe and contain a mix of different climates, city/urban areas and levels of development – less, transitional and more developed. These regions are represented by a mix of regional partners including managing authorities, region/city authorities and energy centres.

The expected changes are better performance in 9 Investment for Growth and Jobs policy measures that address energy efficiency. This will result from a greater focus in these policy instruments to stimulate effective engagement between public authorities and citizens who own properties, and research centres and companies who can introduce new innovative energy efficiency solutions.

The project shares best practices for smarter and more energy efficient regions and is expected to improve low carbon policies in the participating regions and increase energy efficiency in the built environment. The CLEAN project has received financial support from the European Union's Interreg Europe cooperation programme, which helps regional and local governments to develop better public policies by creating an environment for sharing solutions between regions.

The project is five-years in duration with a budget of €1.6 million. It has studied the relationship between low carbon solutions, energy efficiency, information communications 'carbon tech' and mobile technologies, and how these can be employed to positively change citizen energy behaviours.

The project is led by the ERNACT network of regions with close cooperation from the following partners:

-  Fomento de San Sebastian (Spain)
-  Municipality of Iasi (Romania)

-  Naples Agency for Energy and Environment (Italy)
-  Cooperative Les 7 Vents (France)
-  Development Agency of Savinjska Region (Slovenia)
-  Regional Council of North Karelia (Finland)
-  Region of Crete (Greece)
-  Association of Local Authorities in Västernorrland (Sweden)

The main outputs are Action Plans, revised governance arrangements for policy instruments, and new types of projects supported as a result of interregional learning and transfer of innovative policy and solutions. These outputs will benefit all stakeholders in each region's energy environment, i.e. consumers of energy services, suppliers of energy products and services, centres of energy expertise (including innovation) and public authorities (promoters of energy efficiency).

2.2 Project partner

Project acronym: CLEAN

Partner Organization: Region of Crete

Region: Crete

Country: Greece

NUTS2 area: Crete

Contact person: Maria Apostolaki

Email: mapostolaki@crete.gov.gr; maria.apostolaki@gmail.com

Telephone number: +30 2813410132

3 Policy Context

The Action Plan aims to impact:

Investment for Growth and Job programme	✓
European Territorial Cooperation programme	x
Other regional development policy instrument	x

Name of policy instrument or instruments addressed:

The Regional Operational Program “ROP Crete 2014-2020”

Axis 2 “Sustainable Development by upgrading the environment and addressing/ deal with the impact of climate change in Crete”

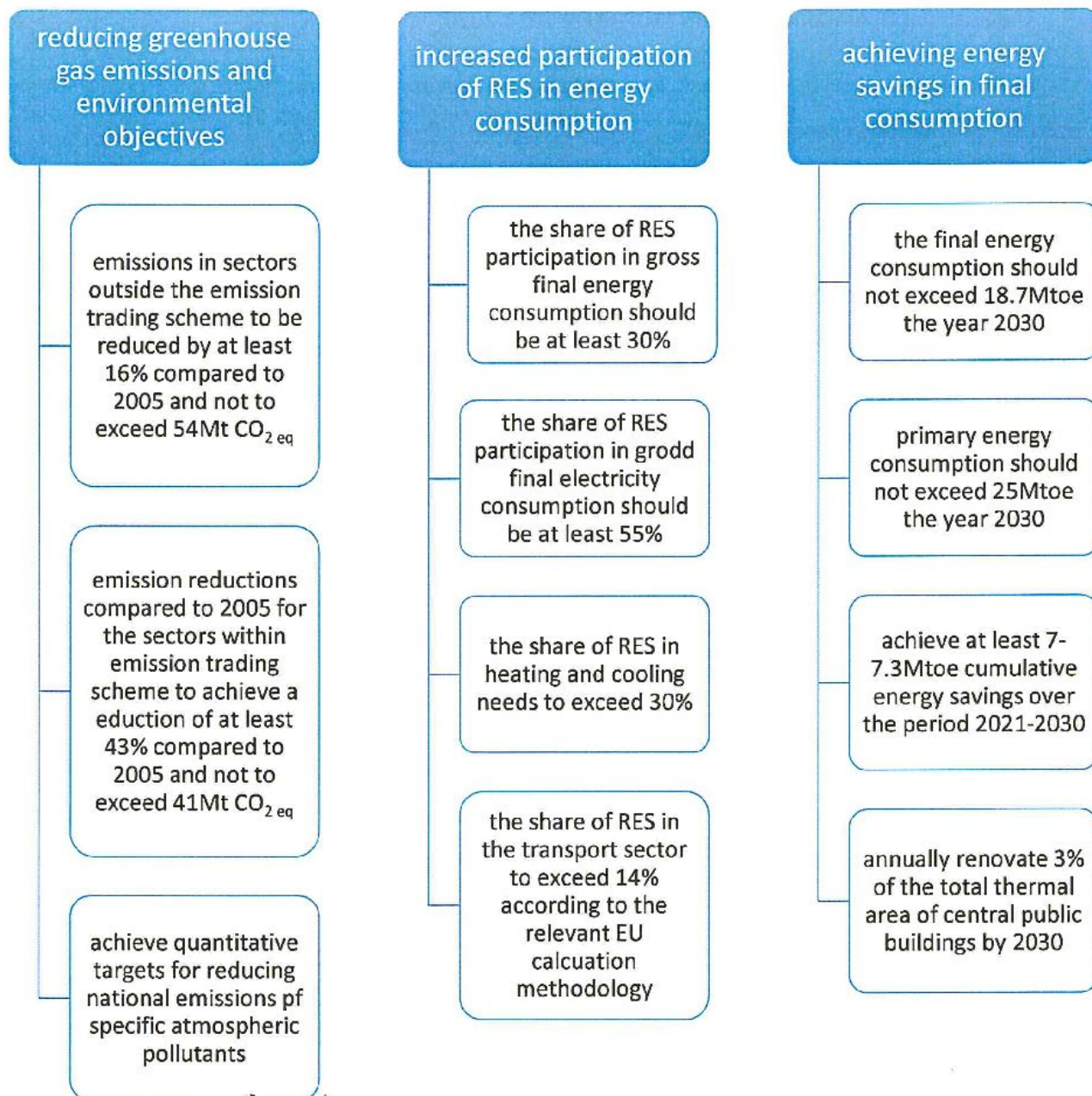
More details on the policy framework:

The energy sector is one of the key pillars of shaping and practicing policies in the context of the country’s development strategy for the next decade. Therefore, there is specific policy framework at national, regional and local level with initiatives and actions that are related to the CLEAN project and the objectives of the Regional Action Plan. The policies outlined at each of the above levels give priority to actions related to environmental protection and low carbon economy, which are the objectives of the CLEAN project, so the Action Plan can be integrated into the next programming period.

National Framework Policy

The programming of the period 2021-2027 provides “Quality and Accessible Growth infrastructure” as one of the main categories of structural interventions and reforms that the European Commission considers being a priority and is fully in line with the new cohesion policy and co-financed programs for the programming period 2021-2027. Particularly, a specific energy and transport strategy is envisaged, and Greece has sent to the EU the National Plan for energy and climate while the National Transport Plans are being developed for the country (https://ec.europa.eu/energy/sites/ener/files/documents/greece_draftnecp.pdf).

The following chart shows the individual quantitative targets for achieving these 2030 targets.



Existing policy measures

Policy measures to improve energy efficiency in buildings

The Greek Regulation for Energy Efficiency in Buildings (KENAK) and the related legislative framework in the context of the harmonization of Directive 2010/31/EU is the most important policy measure to improve energy efficiency in buildings. The buildings with near- zero energy consumption are expected to make a significant contribution to achieving the savings targets by 2030. By the beginning of 2021 all the new buildings should be virtually zero- energy buildings, while for new buildings housing public and wider public services, this obligation will come into force by the beginning of 2019. The national plan to increase the number of buildings with almost zero energy consumption, which has already been completed, is expected to contribute to harmonization with the above requirements. In addition, various regulatory measures have been adopted to improve energy efficiency in buildings, such as the increase in the building coefficient in energy efficient new buildings, the ability to offset the fine of arbitrators with energy upgrades. Improving the energy efficiency of housing has been substantially supported by the “Home Savings” program funded by the NSRF 2007-2013. In addition, under the NSRF 2007-2013, an additional program for energy upgrading of houses was implemented, which supported the cost of the internal gas installation to replace the existing heating system. The Sustainable Energy Action Plans, drawn up under the Covenant of Mayors, have the same target. Improving the energy efficiency of public and municipal buildings has been supported within the current programming period 2014-2020, such as the “Save” and “Save II” programs. In case of tertiary sector buildings, the program “Improving the energy efficiency of SMEs” is under development and aims to support micro, small and medium-sized enterprises in order to improve their energy efficiency. Finally, Energy Efficiency Contracts are an additional tool to promote energy saving interventions in both public and tertiary buildings as the required regulatory framework is in force.

Policy measures to improve energy efficiency in transport

The reform of urban public transport and the development of transport infrastructure are the most important policy measures. The construction of suitable infrastructures has significantly enhanced the alternative forms of mobility (e.g. hiking, cycling, etc.), while increasing the use of fixed track means has contributed to reducing the use of passenger vehicles respectively and at the same time to achieving energy savings. Funding is under way to upgrade a significant proportion of the city’s bus fleet, both for the urban transport of the country’s major urban centers and for the rest of the country’s urban areas (urban buses). The development of sustainable urban mobility plans is an additional measure that contributes to improving energy efficiency in the transport sector. The measure began its implementation mainly in the largest municipalities such as Athens and Thessaloniki, while specific actions were implemented both in the framework of the “Save” program and with a specific funding instrument from the Green Fund. A particularly important policy measure

was the provision of tax and financial incentives to replace passenger cars and light trucks with more energy efficient new vehicles. Promoting economic, ecological and safe driving, mandatory quotas with more energy-efficient vehicles in public services or organizations, linking vehicle taxation with energy efficiency and CO₂ emissions, vehicle energy labeling, and compulsory periodic technical inspection of vehicles can be considered as complementary policy measures.. Specific measures have been launched with a view to promoting alternative fuels in transport, while a measure is also under way to promote the electrification of vehicles and recharging stations for electric vehicles, aimed at promoting the purchase and use of electric vehicles. Finally, aiming at upgrading the services provided to citizens in the field of transport and the development of transport infrastructure in the country, the National Transport Plan for Greece (NTPG) is in the process of being drawn up. This is a project that is expected to contribute decisively to identifying the future transport policy strategy and supporting the Greek economy.

Regional Policy Framework

The objective of the Regional Operation Program “ROP Crete 2014-2020” is to create the conditions for the reorientation of the local economy, the exit from the financial crisis and the integration of smart, sustainable investments. One of the main priorities focuses on sustainable development by upgrading the environment and dealing with the impacts of the climate change. This is done by redirecting regional policy towards innovative environmental technologies and strengthening the academic and research community as well as businesses towards knowledge economy.

Particularly on Priority Axis 2: **Sustainable development by upgrading the environment and deal with the impacts of climate change in Crete** and more specifically on the thematic objective 4- Investment Initiative 4.c: **“supporting the transition to a low carbon dioxide emissions economy in all sectors”** through priority **“Support for energy efficiency, smart energy management and the use of renewable energy in public infrastructure, including public buildings and in the housing sector”**.

More specifically, the action 4.c.1 provides for “Energy saving in public buildings”:

The action aims at energy upgrading of energy-efficient public buildings for achieving the objectives set out in the National Energy Efficiency Action Plan. In addition, the aim is to harness the potential of energy savings and energy efficiency improvements in the building sector, with the Public Sector being an example of mobilization for the entire economy. The intended results of the action concern the reduction of energy consumption in public buildings and reduction of CO₂ emissions by improving energy efficiency. Moreover it supports the use of renewable energy in public sector

infrastructures, through the adoption of energy efficient cooling and heating systems and hot water production, as well as through the application of energy saving technologies. The energy upgrading of public buildings, to be financed under this action, will be indicative of interventions in building shells (thermal insulation), replacement of windows, replacement of cooling and heating systems, etc.

In order to achieve the objectives of the action:

- Specific requirements are determined for the energy upgrading of public buildings, with a view to implementing interventions exceeding the minimum required energy efficiency levels or, if economically and technically feasible, upgrading to energy class A, A+ or near Zero Consumer Buildings.
- Specific interventions are identified.
- The achievement of the energy targets is ensured by conducting an energy audit by an Energy Inspector both before and after the implementation of the interventions.

The action will contribute to the Regional Energy Strategy, as the energy savings that can be achieved through the energy upgrading of public buildings are a key pillar of the strategy. During designing energy upgrading actions in public buildings, criteria are set regarding the energy consumption and characteristics of the buildings (e.g. building use, operating profile, system aging, total surface area, energy efficiency class, etc.). Priority is given in high energy consuming buildings and interventions that achieve greater energy savings (based on program indicators). Furthermore, the interventions to be financed will include, where technically and economically feasible, smart energy management systems and RES utilization.

Particularly for public buildings, the projects selected will:

- have high energy consumption
- achieve the highest possible level of energy savings
- have an exemplary role
- help to raise the awareness of the population
- ensure maturity of implementation

Local Level Policy Framework

The Municipality of Lassithi Plateau locally organizes and participates in a series of actions that aim at protecting the environment. Indicatively, the three most recent and relevant to the content of the Action Plan are presented below.

“Covenant of Mayors on Climate and Energy”

The new “Covenant of Mayors for Climate and Energy” aimed at reducing carbon dioxide emissions by at least 40% by 2030 has been signed by the Mayor of Lassithi Plateau.

The Mayors Pact on Climate and Energy, announced by Commissioner Miguel Arias Cañete as “the largest urban climate and energy initiative in the world”, unites thousands of local and regional authorities who voluntarily commit to achieving EU goals about climate and energy in their territory.

The new integrated Climate and Energy Covenant of Mayors was presented by the European Parliament in Brussels. The three pillars of enhanced Pact, namely mitigation, adaptation and safe, sustainable and affordable energy were adopted and implemented all over Europe.

The signatories welcome a common vision for 2050: to detach their territory from carbon sources, enhance their ability to adapt to the inevitable impacts of climate change and enable citizens to access safe, sustainable affordable energy.

The municipalities that signed the Pact are committed to taking action to achieve the EU’s 40% greenhouse gas target by 2030 and to adopt a common approach to climate change mitigation and adaptation. In order to transform their political commitment into practical measures and actions, the signatories of the Covenant must, mainly, prepare a Reference Emission Inventory and a Climate Change Risk and Vulnerability Assessment. They undertake to submit, within two years from the date of decision of the local council, a Sustainable Energy and Climate Action Plan (RRAP) outlining the key actions they are planning to undertake. The adaptation strategy should form part of the Sustainable Energy and Climate Action Plan and/ or be developed and integrated into a separate planning document(s). The signatories can choose the format of their choice. This courageous political commitment marks the beginning of the long-term process where municipalities commit themselves to reporting on progress every two years.

The Covenant of Mayors is a unique “from bottom to top” movement that has succeeded in mobilizing many local and regional authorities to develop action plans and to direct investment in climate change mitigation measures.

Projects under Action 4.c.1 of the R.O.P

Integrated Spatial Investment (ISI) is an integrated spatial development tool for the implementation of specific spatial unit development strategies. These areas either present specific problems that need to be tackled in a total way or are distinguished by significant development opportunities that can be exploited and maximized based on integrated development plan. The integrated nature of the spatial strategy and implementation plan should be ensured by the complementary and consistency of the proposed actions, as well as by the representativeness of the governance system. The objectives of each region's spatial strategy include improving the economic situation and employment, improving the daily life of citizens in social terms and maintaining a natural and structured environment based on a sustainable approach to the development process. Integrated Spatial Investments may be financed by the ESF, ERDF and Cohesion Funds, through combined investment, by referring to at least two Priority Axes and by combining one or more complementary investment priorities from different thematic objectives, one or more Project Objectives. Actions financed by specific measures of the EAFRD and EMFF may complement ISI, where necessary.

In the context of the above, the Municipality of Lassithi Plateau, together with Municipalities of Agios Nikolaos and Ierapetra, with coordinating body Lassithi Development, joined Lassithi ISI 2014-2020.

In addition, under the Action 4.c.1 (Energy Saving in Public Buildings) of the Operational Program of Crete, mentioned above, the Municipality of Lassithi Plateau participates with the following indicative projects:

- Upgrading the energy efficiency of municipal and other buildings in the Lassithi Plateau
- Demonstration project for the operation of the model "Plateau" windmill
- Energy Upgrading and functional integration of 'Xenia' Dikteon Andro into the residential complex

The ultimate goal of these projects is to contribute to the specific objective of Integrated Spatial Investments, namely the action to "Improve energy efficiency and the environmental footprint".

Participation in "European Mobility Week 2019"

The Municipality of Lassithi Plateau actively participates in activities that support environmental protection, such as the recent participation in 'European Mobility Week'.

As part of the action, the Plateau chose and focused on walking and cycling. The campaign included a week full of actions and campaigns, with the collaboration of Associations and local cultural organizations. From September 16th to September 22nd students and teachers were briefed on sustainable mobility, while a cycling day was organized on the streets of the Plateau with the

participation of the residents of the Municipality. Once again, the Municipal Authority supported actions and initiatives that aimed at improving the quality of life and raising environmental awareness and supported this two-year campaign.

4 Action: Low carbon strategy in a rural area of Crete – The case of Lassithi Plateau

4.1 Background

The present Regional Action Plan has been developed by the Region of Crete. During the first phase of the project's implementation the Region of Crete has participated in the exchange of experience process and has used all the experience and knowledge gained for producing the draft Action Plan. For its development, the Region of Crete has contracted an external expert, the company ETAM S.A. for technical support.

The Directorate of Development Planning of the Region of Crete has been in close cooperation with the **regional stakeholders**, who represent the public authorities of Crete (municipalities), the research and educational institutions (Technical University of Crete, Hellenic Mediterranean University, Foundation for Research and Technology Hellas), organizations that link industry with academia (PRAXI Network), as well as the private sector (engineers and companies that are active in the field of energy).

The development of the Action Plan is based on the lessons learnt during the exchange of experience process. More precisely the Region of Crete has participated in the following activities carried out during phase 1:

- **Launch Conference** in Caen, France where the project partners presented their good practices.
- **2nd Study Visit** in Caen, France where the good practices of Les 7Vents were presented.
- **Staff Exchange** in Naples, Italy where one staff member and one stakeholder participated for seeing how energy efficiency is addressed and how the national target of a near Zero Energy Building is reached.
- **3rd Thematic Seminar** in Savinjska Region
- **4th Study visit** in Savinjska Region
- **Staff Exchange** in Caen, France where two staff members and two stakeholders participated in order to deepen and analyze the GPs of Les7Vents.

- ## 4.2 Action description

The proposed action was inspired by the Good practice of the project partner Fomento de San Sebastian "REPLICATE". The aim of the Good practice was to enhance the transition to a nearly zero district in Urumea Riverside (Donostia) deploying smart solutions in Energy, Mobility and ICT/Infrastructures efficiency areas. The Region of Crete was inspired by the holistic approach for increasing the efficiency in various fields of an area and has proposed an action aspires to create the Near Zero Rural Area in Crete.

Area of intervention of action (23 km Route).

The proposed action consists of four activities that are described in detail in the following chapters.

Action site: Lassithi Plateau Municipality

Historical and geomorphological conditions:

It is the largest plateau in Crete and consists of a fertile and cultivated plain surrounded by the peaks of Dikti: Selena, Lazaros, Spathi etc, at the foot of which there are 17 small, but very picturesque villages. Dikti is recognized as the most famous mountain in antiquity, since Zeus was born there. It is an area of rare natural beauty, with significant caves and canyons, with surface and underground waters, as well as significant fauna and flora. The inhabitants of Lassithi Plateau have a rich livestock and agricultural activity, as well as tourist activity that has been developing the last decades.

Tourism consists of both foreign and local visitors. Thousands of tourists visit the plateau during the summer months, in order to visit antiquities and admire the lush natural surroundings. Even during the winter, that the plateau is covered with snow, thousands of Cretans visit it in order to admire the white scenery. Moreover, the 17 picturesque plateau villages are built at the foot of the surrounding mountains, leaving the plain free to cultivate. They are all connected by a 23km ring road. Indeed, this beautiful circular route is ideal for cycling, as the road is plain, without steep slopes.

Reasons for choosing this action site:

After a thorough study and detailed analysis of the geographical, socio-economic, environmental and energy conditions prevailing in the Region of Crete and among three representative areas, it was more appropriate to consider the case of a rural area of the island and not an urban one, as they are numerically superior. In addition, investments in energy saving and awareness-raising activities in rural areas are limited. Finally, these areas gather the main economic pillars of Crete, the primary sector and tourism, whose activities are directly related to energy consumption and climate change.

The area of Lassithi Plateau was considered the most suitable for the implementation of the Action Plan, as it presents a number of features such as:

- It is the largest elevation spatial unit of settlements and inhabitants
- It is highly recognizable and attractive as it is a well-known tourist destination
- It is located within a relatively small distance from the large urban and touristic centers in Crete, with good accessibility
- It belongs to the NATURA 2000 network
- It has the oldest wind park in Europe

All the aforementioned, in combination with the recent initiative of the Municipality of Lassithi Plateau for the energy upgrading of the area and the reconstruction and re-operation of private

windmills are ideal conditions to transform the area into an environmental attraction. In the long run, all this effort will result in the spread of good practices throughout the island and can be replicated in other rural areas in Crete.

Another worth mentioning effort being made by the Lassithi Plateau Municipality, and is combined with the objectives of the Action Plan, is the accession of the proposal, which has submitted to the Ministry of Culture and is entitled: "Water Resources Management Expertise: Windmills in the Lassithi Plateau in Crete", into the "Intangible Cultural Heritage Index" . The aim of registering windmills in the National Intangible Cultural Heritage List is to restore a large number of windmills in the Plateau, thus without any mechanical operation, zero-footprint products can be produced. The next goal after this approval will be an effort to include the windmills in the UNESCO list of monuments, which is expected to attract even more visitors.

Following the above and after a thorough study and detailed analysis of both the CLEAN partners' best practices and the Plateau data conditions, the most compatible practices were selected that are consistent with the philosophy of the project and at the same time contribute to its goals and general objectives.

The following section outlines the context and content of the project to be implemented by the Region of Crete, the good practices on which the original idea was based and the 4 sub-actions that will frame it. For each activity the good practices of the CLEAN partners are mentioned, which were initially the source of inspiration and were subsequently harmonised and adjusted to the needs of the Lassithi Plateau.

5 Action Description 1.1

Activity 1.1. Replacement of lamps with LED lamps

The exchange of experience between the CLEAN project partners and the good practices of ERNACT "Integrated Intelligent Lighting System" and "Street Lighting Retrofit with LED" emerged the significance of renewing street lighting systems in order to reduce energy consumption. Moreover, the solar trees that were demonstrated during the Study Visit in Slovenia proved the existence of new energy efficient ways to light public areas in small places.

Objective: Upgrading of energy-efficient luminaries and replacing them with LEDs for public outdoor lighting (streets, squares, etc.).

Urban and public lighting will be replaced by led lamps, with automation and sensors where appropriate. In addition, in the central areas of selected settlements tree simulators will be placed that PV panels incorporated and will function as luminaries. At the visitor's entrance to the Plateau and following the left-hand path, the settlements you meet are the following (with the corresponding number of luminaries):

- Piscopiano (30),
- Lagu (40),
- Tzermiado (150),
- Farsalo (30),
- Marmaketo (30),
- Agios Konstantinos (100),
- Agios Georgios(200),
- Avrakonte (100),
- Kaminaki (100),
- Magoulas (30),
- Psichro (100),
- Plati (30),
- Agios Charalabos (30),
- Kato Metochi (30).

In this area there are approx. 1,000 lighting spots in:

- roads within the «city» plan of Municipality
- sidewalks
- squares
- parks
- public places



Typical street lighting installation in Ag. George.

In addition, photovoltaic tree modules will be placed on the squares of the larger villages to replace conventional luminaries and provide a "bright" indication of the potential of lower carbon dioxide energy sources.

STEP 1 (1.1.1): Registering of light points (type, coordinates, technical characteristics).

STEP 2 (1.1.2): Feasibility study for their replacement. Based on standard guidelines from the CRES (which are also one of the potential means of financing the action) and taking into account the characteristics of the lighting fixtures, the new ones will be selected to replace the existing ones.

STEP 3 (1.1.3): Search for funding when the feasibility studies are completed and the cost of the action has been calculated.

STEP 4 (1.1.4): Implementation (total duration 2 years). After a call for tenders, the contractor will be selected who will replace the old lamps with new ones within a specific timeframe.

5.1 Players involved 1.1

Action 1.1. Replacement of lamps with LED lamps	
Name of Organisation/Person	Role in action plan
Region of Crete	Coordination - monitoring
Municipality of Lassithi Plateau	Coordination - monitoring – scope – field of application
Project Contactors (engineers, economists, etc.) & Suppliers	Project design - implementation of actions

5.2 Timeframe 1.1

	Jan- '20	Febr- '20	Mar- '20	Apr- '20	May '20	Jun- '20	Jul- '20	Aug- '20	Sep- '20	Oct- '20	Nov- '20	Dec- '20	Jan- '21	Febr- '21	Mar- '21	Apr- '21	May '21	Jun- '21	Jul- '21	Aug- '21	Sep- '21	Oct- '21	Nov- '21	Dec- '21
Action 1																								
Action 1.1.1																								
Action 1.1.2																								
Action 1.1.3																								
Action 1.1.4																								
Action 1.1.5																								

5.3 Cost / Budget 1.1

Actions	Expenses
Action 1.1. Replacement of lamps with LED lamps	
1.1.1: Registering of light points	20,000€
1.1.2: Feasibility study	
1.1.3: Funding	
1.1.4: Implementation	280,000€
1.1.5: Evaluation - Conclusions	0€

5.4 Funding sources 1.1

Actions	Funding sources
Action 1.1. Replacement of lamps with LED lamps	<ul style="list-style-type: none"> • Sponsors • Energy Service Companies (ESCO)

5.5 Impact expected 1.1

The following table demonstrates the expected results after replacing conventional lamps.

CONVENTIONAL LAMPS	
Number of lamps	1.000
Installed Lighting Power (kW)	60
Electricity Consumption (kWh/Year)	260.610
Annual Electricity Expenditure (€/Year)	39.092
MODERN LIGHTING LAMPS	
Number of lamps	1.000
Installed Lighting Power (kW)	27

Electricity Consumption (kWh/Year)	99.683		
Annual Electricity Expenditure (€/Year)	14.953		
ASSESSMENT OF SUPPLY			
Total Expenditure excluding VAT (€)	241.935,50		
VAT(€)	58.064,50		
Total Expenditure including VAT (€)	300.000,00		
ENERGY SAVINGS - REDUCING EXPENDITURE			
Reduced Installed Power (kW)	33		
Annual Energy Saving by Replacing Lighting Lamps (kWh/Year)	150.000		
Annual Lighting Expenditure Reduction (€/Year)	20.000		
ENVIRONMENTAL BENEFIT (Tonnes/ kWh)			
Pollutants	Conventional System	New System	Benefit
CO ²	250	110	140
Reduction Rate of Emitted Pollutants:			56%

6 Action description 1.2

Activity 1.2: Visiting the places of interest using electric bicycles. Optimal routes for minimizing the car emissions.

The good practice on which the action was based is:

 ALAV GP1 - "Smarter travel save both money and climate".

The aim of the Good practice was to create a travel policy with a clear environmental perspective. When possible, distance meetings should be chosen instead of physical meetings and public transport instead of cars. The purpose is to save both environment and money by supporting distance meeting technology and travel advice for bus and train.

The Region of Crete was inspired by the idea of creating a travel policy and has proposed an action that aims to encourage local people and visitors to use electric bicycles in order to move between villages and visit the places of interest. Moreover, optimal routes will be available for minimizing the car emissions, when the option of the electric bicycles won't be selected.

Goal: To encourage the visitors to leave their cars and use electric bicycles so as to reduce carbon dioxide emissions in the area but also to provide them with an alternative experience by cycling tour. Electric bicycles can also be used by locals for commuting between the villages.

This action combines the promotion of the area's places of interest with an eco-friendly way of sightseeing. More specifically, it is planned to register the places of interest in the area and then to determine the optimal routes. Relevant communication material such as information boards and/or digital application will be included in the implementation planning. Furthermore, all the necessary actions will be taken for the supply of electric bicycles, the design of parking spaces and the location of a self-generating power plant from photovoltaic systems (net - metering or virtual net - metering). The electricity produced will be used for free charging of electric bicycles to allow visitors to move within the Plateau.

More specifically, four bicycle charging and storage stations will be installed along the route (generally of gentle slopes) and approximately 23 km long - around the plateau. The total number of bicycles will be 20.

The above action can be combined with the installation of a photovoltaic power plant (net - metering or virtual net - metering). Part of the electricity produced can be used for free charging of bicycles and the rest could cover other energy needs of the Municipality.

The charging and parking stations of the bicycles, as well as the location of the photovoltaic station will be decided after consultation with the Lassithi Plateau Municipality.

STEP 1 (1.2.1): Listing the points of interest, mapping the best routes, parking and charging stations of electric bicycles.

STEP 2 (1.2.2): Develop feasibility studies for the supply of the electric bicycles and the installation of charging facilities, the cost of the mapping and relevant the communication material.

STEP 3 (1.2.3): Develop of a feasibility study for the cost, location and power of the photovoltaic power station, which will generate energy to charge the bicycles.

STEP 4 (1.2.4): Search for funding and calculating costs, road mapping, communication, purchasing bicycles and charging equipment, designing charging sites and supplying equipment and installing the PV station.

STEP 5 (1.2.5): Implementation (total duration 1 year). After a call for tenders, the contractor will be selected and will study, supply, install and operate the electric bicycles, chargers, photovoltaic equipment, as well as all of the accompanying shaping projects above.

6.1 Players involved 1.2

Action 1.2: Visiting the places of interest using electric bicycles. Optimal routes for minimizing the car emissions.

Name of Organisation/Person	Role in action plan
Region of Crete	Coordination - monitoring
Municipality of Lassithi Plateau	Coordination - monitoring – scope
Project Contractors (engineers, economists, etc.) & Suppliers	Project design - implementation of actions

6.2 Timeframe 1.2

	Jan- '20	Febr- '20	Mar- '20	Apr- '20	May '20	Jun- '20	Jul- '20	Aug- '20	Sep- '20	Oct- '20	Nov- '20	Dec- '20	Jan- '21	Febr- '21	Mar- '21	Apr- '21	May '21	Jun- '21	Jul- '21	Aug- '21	Sep- '21	Oct- '21	Nov- '21	Dec- '21
Action 1																								
Action 1.2.1																								
Action 1.2.2																								
Action 1.2.3																								
Action 1.2.4																								
Action 1.2.5																								
Action 1.2.6																								

6.3 Cost / Budget 1.2

Actions	Expenses
Action 1.2: Visiting the places of interest using electric bicycles. Optimal routes for minimizing the car emissions.	
1.2.1: Listing of points of interest, disposal and charging of electric bicycles	20,000€
1.2.2: Feasibility study on optimal route, visibility, cost of bicycles and charging facilities	
1.2.3: Feasibility study on the cost, location and power of the PV station	
1.2.4: Search for funding	
1.2.5: Implementation	80,000€
1.2.6: Evaluation - Conclusions	0

6.4 Funding sources 1.2

Actions	Funding Sources
Action 1.2: Visiting the places of interest using electric bicycles. Optimal routes for minimizing the car emissions.	<ul style="list-style-type: none"> • Own resources • Local Development on Local Community Initiative (CLLD)

6.5 Impact expected 1.2


Consumption of an electric bike is estimated at 2 Kwh/100 km, 100km of autonomy, which reduces CO2 emissions by approximately 30 kg. The estimated cost for the bicycles is 25,000 euros and the cost for the charging stations is 25,000 euros.

A 50KW PV plant installation generates about 75,000 kWh and reduces CO2 emissions by about 60 tonnes per year. (37,500 full bike loads, estimated construction cost around 50,000 euros).

7 Action description 1.3

Activity 1.3: Info Energy Points

Good practice on which the action was based:

 7Vents GP1 – Serious game “renovation challenge”

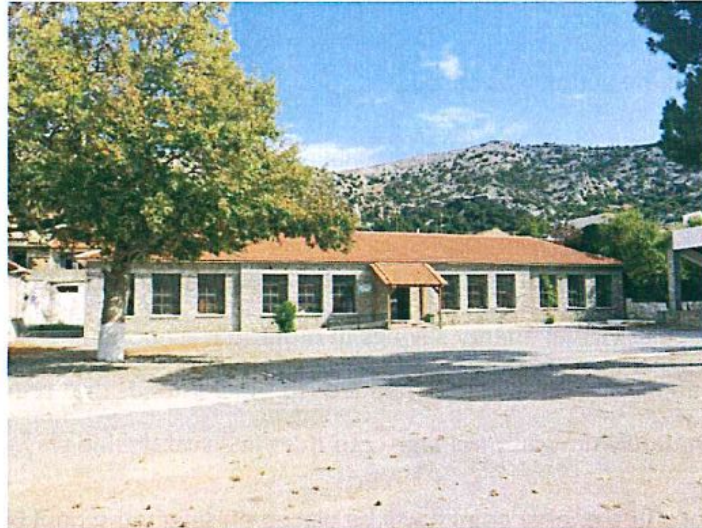
Goal: Familiarizing residents with the concept of energy upgrading of buildings through an application that will depict virtual energy savings in municipal school buildings in order to impart to children the information and knowledge needed to understand the principles of sustainable development, and ultimately naturally manage resources in a sustainable way.

According to the action, 'info energy points' will be placed on selected school buildings in the Plateau that will demonstrate real-time consumption and other energy data of the school buildings. The action will be carried out by placing appropriate meters on the electrical panels of the buildings. In addition, model-action applications will be included, so that children could choose an action that will contribute to the energy upgrading of the school building (such as replacing windows or lamps) and can immediately observe how the energy consumption will be affected.

The action will have demonstrative and educational purpose for students and at the same time it will multiply social benefits, as the information and the knowledge will be transferred to the families and the whole community. It is outlined that this action is combined with action 1.4 which is described below.

After visiting the school buildings of the Plateau, the actions - energy saving models are presented, that are proposed to be displayed at each school's info energy point, so that the user can select and make scenarios - combinations of energy savings corresponding to their choice.

Kindergarten of Tzermiado
(Construction year: before 1955)



- ✓ Replacement of heating system
- ✓ Installation of thermal insulation inside of the building
- ✓ Partial replacement of framing
- ✓ Replacement of lamps

High school of Tzermiado

(Construction year: partially 1955 & other part at 1970)



- ✓ Installation of thermal insulation outside of the building
- ✓ Replacement of framing
- ✓ Replacement of lamps

Elementary school - Kindergarten of Agios Georgios

(Construction year: partially 1955 & other part at 1970)



- ✓ Installation of thermal insulation on part of the roof of the building
- ✓ Installation of thermal insulation outside of the building
- ✓ Replacement of framing
- ✓ Replacement of lamps

STEP 1 (1.3.1): Listing of "info energy points" placements in the three school buildings and in the Town Hall.

STEP 2 (1.3.2): Study on the costs of 'info energy points', of how to communicate with data points (school buildings, photovoltaic, municipal lighting and public lighting)

STEP 3 (1.3.3): Study on energy upgrading of school buildings, based on the above-mentioned interventions. The results-scenarios of this study will be integrated into the info energy point software.

STEP 4 (1.3.4): Seek for funding (ROP).

STEP 5 (1.3.5): Implementation (total duration 1 year). After a call for tenders, the contractor will be selected and will carry out the actions planned.

Action 1.3: Info Energy Points	
Name of Organisation/Person	Role in action plan
Region of Crete	Coordination - monitoring
Municipality of Lassithi Plateau	Coordination - monitoring – scope – field of application
Project Contractors (engineers, economists, etc.) & Suppliers	Project design - implementation of actions
Nursery School - Elementary School - High School of Lassithi Plateau	Implementation bodies

7.2 Timeframe 1.3

	Jan- '20	Febr- '20	Mar- '20	Apr- '20	May '20	Jun- '20	Jul- '20	Aug- '20	Sep- '20	Oct- '20	Nov- '20	Dec- '20	Jan- '21	Febr- '21	Mar- '21	Apr- '21	May '21	Jun- '21	Jul- '21	Aug- '21	Sep- '21	Oct- '21	Nov- '21	Dec- '21
ACTION 1																								
Action 1.3.1																								
Action 1.3.2																								
Action 1.3.3																								
Action 1.3.4																								
Action 1.3.5																								
Action 1.3.6																								

7.3 Costs / Budget 1.3

Actions	Expences
Action 1.3: Info Energy Points	
1.3.1: List of potential places for «info energy points» installation	50,000€
1.3.2: Feasibility study on operational costs of «info energy points»	
1.3.3: Feasibility study on the energy upgrading of school buildings	
1.3.4: Search for funding	0€
1.3.5: Implementation	0€
1.3.6: Evaluation - Conclusions	0€

7.4 Funding sources 1.3

Actions	Funding sources
Acton 1.3: Info Energy Points	<ul style="list-style-type: none"> Regional Operational Program

7.5 Impact expected 1.3

The expected energy savings rates that will be reflected in the application, based on studies and statistical analyses carried out, are demonstrated on the following table.

Suggested action	Expected savings rate
Installation of «info energy points»	5-10 %
Replacement of heating system	25-35 %
Installation of thermal insulation inside of the building	20-30%
Partial replacement of framing	5-10 %
Replacement of lamps	15-20%
Installation of the thermal insulation on the roof	25-35

8 Action Description 1.4

Activity 1.4: Training on energy saving issues

Good practice on which the action was based:

 7Vents GP2 – Challenge "positive energy families"

Goal: Informing - familiarizing and gradually changing the behavior of the residents of the Plateau in terms of energy saving and energy upgrading of buildings.

The current action is combined with action 1.3, and primarily focuses on the student population as it is the most appropriate audience to start and finally achieve this change through experiential education that can directly affect awareness and understanding of the problem.

More specifically, the main purpose of environmental education is to raise the level of knowledge and awareness of students, so that they can contribute to sustainable development. In addition, children are the link between present and future generations and therefore in a strategy of effective intervention over time their involvement cannot be ignored.

Through environmental education, students acquire the knowledge and skills on environmentally sustainable solutions, participate in environmental decision-making processes, or even participate actively in natural resource management. These thoughts led to the inclusion of this action in the action plan.

The training program will consist of 3 stages:

Stage 1 - Introductory / preparatory meetings with teachers:

The purpose of the preparatory meetings with teachers is to exchange views on the proposed content, to test students' basic knowledge and to provide teachers with recommendations on teaching methods.

Stage 2 - Classroom lectures:

The learning process begins in the classroom by improving students' knowledge. The teaching methodology used will depend on the age of the students and the general objectives that form the basis for the preparation and organization of lectures in the classroom.

Stage 3 – Real time data tool:

The younger generations have less and less practical experience. This can have a negative impact on understanding the influence of human behavior in energy consumption and the environment.

A practical experience is deeply embedded in every child's mind and imagination. Therefore, the main objective of the tool should be to stimulate students' interest in the environment. The tool will be designed to help children gain knowledge of energy consumption and practical experience in the energy footprint, which can provoke their curiosity and excitement, the key components of a successful learning process.

STEP 1 (1.4.1): List of schools in which the training will take place.

STEP 2 (1.4.2): Design and planning of the educational program, identification of beneficiaries of the action (direct learners - teachers, indirectly wider society).

8.1 Players involved 1.4

Action 1.4: Training on energy saving issues	
Name of Organisation/Person	Role in action plan
Region of Crete	Coordination - monitoring
Municipality of Lassithi Plateau	Coordination - monitoring – scope – field of application
Nursery School - Elementary School - High School of Lassithi Plateau	Implementation bodies

8.2 Timeframe 1.4

	Jan- '20	Febr- '20	Mar- '20	Apr- '20	May '20	Jun- '20	Jul- '20	Aug- '20	Sep- '20	Oct- '20	Nov- '20	Dec- '20	Jan- '21	Febr- '21	Mar- '21	Apr- '21	May '21	Jun- '21	Jul- '21	Aug- '21	Sep- '21	Oct- '21	Nov- '21	Dec- '21
ACTION 1																								
Action 1.3.1																								
Action 1.3.2																								
Action 1.3.3																								

8.3 Cost / Budget 1.4

Actions	Expenses
Action 1.4: Training on energy saving issues	0€
1.4.1: Listing of schools	0€
1.4.2: Design of educational program	0€
1.4.3: Implementation - Evaluation - Conclusions	0€

8.4 Founding source 1.4

Actions	Founding sources
Action 1.4: Training on energy saving issues	No funding needed

8.5 Impact expected 1.4

The training that will take place in the schools of Plateau is expected to have both direct and indirect impact on local people. In particular, the immediate impact will be on the 200 students and the 40 teachers. The indirect influence is expected as an outcome of the transfer of knowledge to their families and the whole community and is estimated to influence around 500 people.

9 Monitoring Plan

The information in this section is described in detail in Deliverable B3: "Monitoring Plan" that follows.



Date: 20/1/2020

Signature: *

Stamp of the organisation (if available):



