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# Regional Action Plan

## Region of Crete

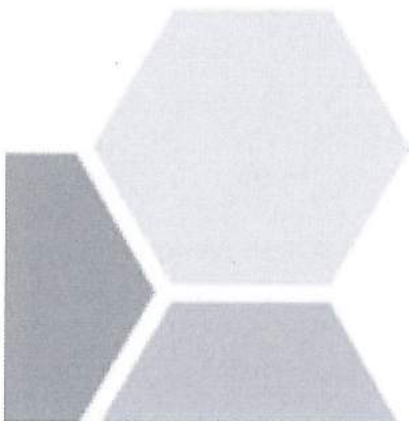


ΠΕΡΙΦΕΡΕΙΑ ΚΡΗΤΗΣ  
REGION OF CRETE



European Union  
European Regional  
Development Fund

**REBUS**  
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### General information

<b>Project</b>	<b>REBUS</b>
<b>Partner organisation</b>	<b>Region of Crete</b>
<b>Other partner organisations involved</b>	<b>-</b>
<b>Country</b>	<b>Greece</b>
<b>NUTS2 region</b>	<b>13</b>
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## Part I – Policy Context

Name of the policy instrument addressed	
<p><b>Regional Operational Program for the Region of Crete 2014-2020</b></p> <p><b>Priority 2:</b> Sustainable Development through upgrading of the environment and facing the climate change impacts in Crete:</p> <p><b>Axis 2.4.c:</b> Energy efficiency, smart management and use of renewable energy sources in the building sector.</p> <p><b>Call/Action 2.4.c.1:</b> Energy Saving in Public Buildings</p>	
<p><b>Short description:</b> The Regional Operational Program of Crete intends to address two key measures through the following two (2) Axis:</p> <ul style="list-style-type: none"> <li>- <b>Axis 2.4.c</b> that has as a main target the energy renovation and the promotion of sustainable energy in the public buildings.</li> <li>- <b>Axis 2.4.f</b> that supports pilot projects and innovative solutions also for the public buildings through cooperation of enterprises and providers of knowledge and technology.</li> </ul> <p>These two axes represent a major priority for the Region of Crete. The energy savings and the relevant energy costs to be tackled and reduced is a very important issue, which has multiple impacts (governance, environment, climate change, low carbon economy, energy efficiency and security of supply, innovation and regional smart specialisation etc.). These priorities concern 500 public buildings in Crete of various typologies (e.g. hospitals, schools, sports facilities, offices etc) and contribute to the energy upgrading of public buildings and infrastructures, by the selection of buildings according to their energy characteristics.</p>	
	<p>REBUS contributed to the development of the policy instrument and will support the Managing Authority of these axes, especially <b>Call/Action 2.4.c.1: Energy Saving in Public Buildings</b>, through this Action Plan.</p>

## Part II – Details of the Action

### ACTION – Selection & Evaluation Criteria Improvement

Improvement of evaluation criteria in the selection process of projects to be funded by the specific call (**Call/Action 2.4.c.1: Energy Saving in Public Buildings**) and monitoring the expected results

#### Description of the specific Action for Policy Improvement

- *Selection criteria to select projects included in the specific call*
- *Evaluation criteria to rank projects included in the specific call*
- *Monitoring system of the selected and approved projects*

The main territorial needs identified by the Region of Crete within REBUS are related to:

- Lack of monitoring systems in public buildings, which is essential to comprehend their energy behaviour and identify renovation needs;
- Lack of quantitative target figures as input to the decision-making process, in order to undertake a strategic planning approach, identify priorities and determine the maximum energy savings potential (need for a regional/ municipal action plan);
- Lack of monitoring the results of the renovation, need for monitoring of public buildings' energy consumption through automated control systems (i.e. BMS - Building Monitoring System) to automatically optimize the use of energy and to know all the information available in energy consumption;
- Low capacity of the civil servants needs for training for public managers and employees to raise awareness on energy efficiency measures (behavioural changes).

Therefore, the need of the specific Action regarding the policy improvement of an existing Call is significant and crucial. The **Call/Action 2.4.c.1: Energy Saving in Public Buildings** related to **Axis 2.4.c: Energy efficiency, smart management and use of renewable energy sources in the building sector** of the addressed policy instrument was officially launched in March 2018 and closed in 15<sup>th</sup> of January 2019, which is the start of Action implementation.

The Call concerns public entities owning public buildings to be renovated through energy efficiency interventions. The works foreseen aim at the energy upgrading of energy-intensive public buildings in order to achieve the objectives set in the National Energy Efficiency Action Plan. When designing energy upgrading interventions in public buildings, criteria for energy consumption and building characteristics (e.g. building use, operational profile, system age, total surface area, energy efficiency class etc.) are set in order to provide priority in buildings with high energy consumption and through upgrading of which energy savings are achieved.

The interventions are covering, among others, window replacement, application of thermal insulation system to the building shell and application of an internal thermal insulation system (e.g. for historical buildings with technical difficulties), upgrade of heating system, heat pumps, heating/cooling with Renewable Energy Systems (RES), high efficiency cogeneration/trigeneration, and other actions to promote self-production from renewable energy sources such as net metering

or virtual net metering, installation of building energy management system (BEMS), ISO 50001:2011 certification.

The Region of Crete with the contribution of REBUS project has supported the Managing Authority in the definition of the selection criteria of the call and the evaluation process to rank the submitted proposals. Moreover, monitoring system of the selected and approved projects is part of this action plan for the policy improvement.

The selected projects are funded in the form of a capital contribution of up to 100% of eligible expenditure. The total budget of this Call is 12,121,575.00€.

More precisely, REBUS has supported the Managing Authority in the following steps towards the Policy Improvement:

**a) Definition of new selection criteria of the call for proposals**

The experience of the REBUS project partners and mainly from the City of Malmö proved the importance of undertaking energy audits in order to plan suitable interventions in buildings. Therefore, one of the selection criteria discussed with the MA and then included in the call was a compulsory energy audit already available in order to access the call.

Furthermore, the experience of the Tuscany hospitals showed the importance of the Building Management Systems in order to reach the maximum energy efficiency. Therefore, one of the selection criteria discussed with the MA and then included in the call as eligible intervention was the installation of an Energy Management System (BEMS), as well as the ISO 50001:2011 certification with the implementation of an Energy Management System.

**b) New evaluation criteria to rank projects**

The choice of suitable and more effective evaluation criteria was also an important topic of discussion with the MA.

From the experiences shared within the REBUS project, the following evaluation criteria were suggested by the Region of Crete and then included in the call:

- Energy efficiency: the score is derived from the energy classification of the building after the interventions, resulting from the second Energy Efficiency Certificate. The minimum threshold for a successful energy retrofiting is B rate up to higher score (A+ rate) that corresponds to nearly Zero Energy consumption Buildings (nZEBs).
- Sustainability and functionality: It should be described adequately the way in which the deliverables of the interventions are exploited, with documentation of their operation and maintenance. After each project is completed, an energy manager is required to be appointed.
- Energy Efficiency Action Plan for Public Buildings: The selection of the upgraded building follows the Energy Efficiency Action Plan developed by each Municipalities or Region.

**c) New engagement modalities of regional stakeholders and final beneficiaries**

The Region of Crete has supported some local authorities (municipalities, port authority, hospitals) that were interested in applying for funding. During that process, REBUS project was presented, and good examples from partners' regions are shown in order to help these authorities build their project proposal, improve their proposals and identify suitable solutions for their interventions. In the case of hospitals, representatives from the Technical Services Department of two of the main Hospitals in Crete attended as stakeholders the staff exchange in Tuscany, during which they had the chance to visit hospitals that were successfully energy renovated. The experience gained provided them with

important knowledge and was used for improving their proposals in existing health units in Crete.

**d) Analysis of approved proposals**

The monitoring of the Energy Audits and Energy Efficiency Certification (EEC) will indicate the energy efficiency rating (initial state) of the public building and the corresponding renovation works proposed by the energy auditors for enhancement of energy performance. The monitoring will be focused on the analysis of the impact of the EECs on the quality of the proposals. The elaborated data from all the submitted EECs of the buildings proposed for renovation in this call will give a basic index of both the current status of public building stock and the authorities' awareness not only on their obligation for ECC but also on their importance. In the same way, the proposed BEMS and ISO 50001 within submitted applications should be investigate and monitored for an adequate analysis of their impact in the overall energy retrofitting of the public buildings. Finally, the second updated Energy Efficiency Certification (EEC) should be monitored to sum up the final energy benefits form the implemented innervations.

**e) Evaluation and monitoring of approved and implemented projects (monitoring activities 4 & 5)**

The approved projects should be monitored and their documentation of how the outcomes of the proposed works will be exploited should be evaluated. For example, in the case of infrastructure operations where maintenance and operation are required, the existence of relevant operators/structures/operating mechanisms or the necessary actions on a timetable to ensure maintenance and operation (O&M) should be monitored and evaluated.

Furthermore, the completed Action Plans for Energy Efficiency by the applicants of the approved projects will be monitored and evaluated as a significant indicator for the readiness of the public authority, more specifically the municipality who owns the public building proposed for energy renovation

**Relevance to the project**

The policy improvements already included in the call were inspired by the following various experiences from REBUS project partners:

**1.** City of Malmö and its overall strategy of 2020 energy goal, the Environmental program for the City of Malmö 2009 – 2020 (aiming at being climate neutral by 2020), inspired the Region of Crete and more specifically:

- compulsory energy audits for buildings before and after renovation
- interventions leading to zero energy projects helping to reach the 2020 goal

**2.** Good practice from the City of Malmö the “Mercury Project for building monitoring centre”, bringing together discrete Building Management Systems BMS into a singular system, thus providing significant savings and simplify monitoring.

These were all used in order to improve the policy instrument addressed in terms of Definition of new selection criteria of the call for proposal (compulsory audits) and of new evaluation criteria to rank the projects (energy management system, energy efficiency classification).

The experiences from Malmo were shared during the following learning occasions:



- Interregional Exchange Event held in Malmö on 07-08/03/2017 where the Environmental program for the city of Malmö 2009 – 2020 was illustrated;

- Bilateral Exchange Round held with Malmö on 20/06/2017 where the context analysis and their GPs were discussed.

**3. Good practice from AFE “New Hospital Versilia”**

**4. Good practice from AFE Green Hospital Project**

These were used in order to improve the policy instrument addressed in terms of Definition of new selection criteria of the call for proposal (BEMS, ISO).

The experiences from AFE were shared on 13-14 March 2018.

**5. Good Practice from SERDA on “2015-2020 Sustainable Energy Action Plan (SEAP) of Buzau Municipality”** focusing on actions for general planning to implement local policies including the Urban Development Strategy of the Municipality in the field of energy efficiency and environment protection.

This was used in order to improve the policy instrument addressed in terms of new evaluation criteria to rank the projects (regional/ municipal action plans).

The experiences from SERDA were shared on 22-27/06/2018

As capacity building has already identified as a need in Crete, the Region of Crete intends to use the following experiences focusing on that for future policy improvements:

- a) Good Practice from Durham on THE BIG SWITCH OFF - behavioural change campaign which has involved the users of the public offices and has achieved very good results, from a minimum of 8% to a maximum of 18% of electricity savings.
- b) Good Practice from BORA 94 on capacity building “Training for employees of Local Energy Management Agency”, where the employees of the Agency and other stakeholders participated in a 5-day training to receive the required knowledge and skills for sustainable energy investments and smart energy use.

#### **Lessons learnt by GPs**

- Interregional Exchange Event held in Malmö on 07-08/03/2017 where the Environmental program for the city of Malmö 2009 – 2020 was illustrated
- Bilateral Exchange Round held with Malmö on 20/06/2017 where the context analysis and their GPs were discussed;
- Bilateral Exchange Round with AFE during an interactive session of bilateral exchange among partners in the Interregional Exchange Event held in Malmö;
- Bilateral Exchange Round with Durham on 27/03/2017 to analyze in detail their GP on capacity building training program.
- Staff exchange with AFE organized on 13-14 March 2018 where their GPs were discussed. From the staff exchange in Tuscany the Region of Crete got a completed and overall review of the «Green Hospital» project and got inspired on how to effectively reduce energy consumption in hospitals and introduce new methods and

effective combination of existing ones. It is a great example of designing, organizing, implementing and monitoring a renovation project, which can provide the Region of Crete with an important tool for monitoring the energy efficiency upgrading interventions in the public health infrastructures.

The Region of Crete was inspired by the approach of the environmental strategy implemented by the city of Malmö, and from the GPs on monitoring systems from Malmö, as they tried to import some aspects tackled by the strategy and by the GPs (i.e. importance of energy audits in the planning phase of energy efficiency renovation works in public buildings; importance of automated BMS systems installed in buildings; importance of a second energy audit after the renovation works).

During the staff exchange organized in Tuscany, the Cretan delegation was inspired by their good practices on successful implementation of energy renovation projects in hospitals. This experience can significantly contribute to Crete's effort for improving energy efficiency and comfort conditions in the health units in Crete. Moreover, the GPs can inspire the Region of Crete on how to effectively reduce energy consumption in hospitals and introduce new methods and effective combination of existing ones.

Finally, the Region of Crete was inspired by the GP from SERDA on "2015-2020 Sustainable Energy Action Plan (SEAP) of Buzau Municipality" and identified the importance of a decision-making process, in order to undertake a strategic planning approach, identify priorities and determine the maximum potentials in the field of energy efficiency and environment protection.

Work plan of action development (within REBUS phase 1)		
Activities carried out at regional level		
Activity Number	Activity Description	Timing (month/year or specific date where possible)
1	1 <sup>st</sup> LSG meeting where the significant role of their participation to the regional Action Plan was discussed, as well as their contribution in the drafting of the new Call for proposal	30 August 2016
2	2 <sup>nd</sup> LSG meeting where the Context Analysis was presented, and the territorial needs and issues were identified that should to be considered in the Call for proposal	31 March 2017
3	3 <sup>rd</sup> LSG meeting where stakeholders discussed GPs and possible improvements to the Call on energy efficiency in public buildings	15 September 2017
4	4 <sup>th</sup> LSG meeting where the delegation that participated to the 1st Staff Exchange in Tuscany presented in detail all the important information and outcomes of the visit and discussed the potential transfer of specific measures in hospitals in Crete	28 March 2018

	in the new call for proposal	
5	5 <sup>th</sup> LSG meeting where the draft Action Plan discussed in detail	September 2018
6	Meeting with the Managing Authority to analyze the proposed Action and monitoring activities	December 2018
7	6 <sup>th</sup> LSG meeting to evaluate the final version of the Action Plan before the meeting with the MA	January 2019
8	Meeting with the MA and discussion about the Final Action Plan	March 2019

Activities carried out at interregional level

Activity Number	Activity Description		Timing (month/year)
	Type of Activity	Activity Description	
1	Staff exchange with AFE	Study Visit to Versilia Hospital infrastructures in Tuscany Region Presentation of the experience of "Comprehensive thermal retrofitting programme implemented in Versilia Hospital" Presentation of Arezzo Hospitals retrofitting experience at the "Agenzia Fiorentina per l' Energia".	March 2018
2	Bilateral Exchange Round with BORA 94	During the project meeting in Florence, a BER with BORA 94 was carried out where the GPs of the two partners were discussed in detail.	June 2018
3	Staff exchange with Durham	A delegation from Crete (energy managers) will participate in the staff exchange in Durham in order to get informed about the implementation of the GPs (Big switch off, School carbon reduction program) and then apply them to the buildings they are responsible of. This will work as a pilot application in order to evaluate the results in Crete and propose specific capacity building/ raising awareness actions to the managing authority for a future call.	September 2018
4	Staff exchange with	The technical staff from Crete will	September 2018

	<b>Malmö</b>	visit Malmö to see the monitoring practices that have been implemented and get informed about the overall strategy of the city of Malmö.	
5	<b>Staff Exchange with BORA 94</b>	The Region of Crete will host a delegation from Hungary in order to present them the Good Practices in Crete focusing on the selection process and planning of energy retrofitting of regional and municipal building stock.	October 2018

Stakeholders involved in action development (REBUS phase 1)	
Name of Organisation / person	Role in Action Implementation
<b>Cretan Municipalities/</b> Sofia Yfanti (Hersonisos Municipality), Irini Sfakianaki (Malevizi Municipality), Ioannis Velegrakis (Arhanes-Asterousia Municipality)	Feedback on how the proposed measures and actions can be better applied to the municipal buildings
<b>Research and Educational Institutes/</b> EfprepiosBaradakis (Technical University of Crete), Ioannis Vourdoumpas (MAICH)	Feedback on how the proposed measures and actions can be applied to their buildings
Energy managers and technical staff from Hospitals/ Artemisia Spanaki (7 <sup>th</sup> Health Unit of Crete), EfstathiosGryparis (Venizeleio Hospital)	Members of the delegations in Tuscany and Malmö and potential beneficiaries of the calls. Based on their experience during the staff exchanges, they will provide feedback on how the proposed measures and actions can be applied to the hospitals of Crete
<b>Private sector/</b> Evangelos Grigorakis (Architect), Ioannis Aspirtakis (Mechanical Engineer)	Feedback on the applicability of the proposed measures and actions and point out the difficulties that might face, as potential contractors for implementing the funded projects
<b>Technical Chamber/</b> Spyridon Sofianos (Technical Chamber-Department of western Crete), Ioannis Haronitis (Technical Chamber-Department of eastern Crete)	Feedback on the applicability of the proposed measures and actions and point out the difficulties that might face, as potential contractors for implementing the funded projects

Risk and Contingency Plans		
Description of Risk	Level of probability	Description of Contingency Plan
Potential lack of political commitment due to the upcoming	Medium	Keep updated, inform about our efforts.



elections (May 2019)		
Minimized participation and uptake of the Action Plan	Medium	Increase awareness and continue to engage a wide range of stakeholders.
Difficulty in achieving the criteria, especially by small municipalities (i.e. Action Plans for Sustainable Energy and Climate)	Low	Building capacity and increased cooperation between technical services
High workload of civil servants	High	Information of the added value of the policy, increased cooperation between regional authorities.
Potential disbelief towards proposed tools (e.g. ISO) that would increase the paper work	High	Increase awareness of the after-math added value of these tools.

## Part III – Details of the Monitoring Activities of the Action

### Monitor Activity 1 – Energy Audits and Energy Efficiency Certification

#### 1.1. The background:

The experience exchange of the REBUS project partners and more precisely the valuable knowledge extracted from the corresponding good practices, as in case of the City of Malmo where audit certificates are a compulsory requirement within the Environmental programme, highlighted the importance of undertaking energy audits to all public building in Crete's region. Therefore, energy audits should be the initial obligatory step in the planning phase of any energy efficiency renovation works in public buildings.

Moreover, the National Action Plan for Energy Efficiency is the vital base of the development of the current policy instrument "Regional Operational Program for the Region of Crete 2014-2020" and especially for "Axis 2.4.c: Energy efficiency, smart management and use of renewable energy sources in the building sector", while the need for energy renovation of the most energy-intensive public buildings strongly promote this activity, a fact that will be used as an example to boost the economy. Concluding, the recent revision of the Greek Regulation for Building Energy Efficiency contributes to the implementation of such a requirement for energy audits. Through the current national Building Energy Efficiency Regulation and the Energy Audits Guide, a reliable picture of the present-day state of public buildings in Greece will emerge.

#### 1.2. Monitoring Plan:

As a first step within the addressed policy instrument, energy audit constitutes a base to develop any further activity. More precisely, through the Regional Operational Program for the Region of Crete and the specific call (**Action 2.4.c.1: Energy Saving in Public Buildings**), any project proposal that will be submitted to the relevant call for granted should have completed an Energy Audit and an Energy Efficiency Certification (EEC). The EECs will indicate the energy efficiency rating (initial state) of the public building and the corresponding renovation works proposed by the energy auditors for enhancement of energy performance.

Regarding specific numbers, the energy class should be lower than or equal to D class (*energy consumption between 1.41 to 1.81 multiplication factor compared to the reference buildings kWh/m<sup>2</sup> value*), a threshold that can be considered as a strong indicator for cost effective energy renovation.

Phase 2 will be focused on the analysis of the impact of the EECs on the quality of the proposals. The elaborated data from all the submitted EECs of the buildings proposed for renovation in this call will give a basic index of both the current status of public building stock and the authorities' awareness

not only on their obligation for ECC but also on their importance.

*Methodology:* Recording the total number of submitted EECs (indicator 1) and the number of approved projects' EECs (indicator 2) and classification of the energy efficiency rating (D to H rate) and the public building types (i.e. buildings for training purposes, buildings for public services, buildings related with health and social security activities, etc.) both for all the projects submitted and for these that will be approved for funding. The overall energy efficiency classification of the approved projects will set an initial state (indicator 3 = average kWh/m<sup>2</sup> & Indicator 4 = Tons of CO<sub>2</sub> Equivalent) to compare with state of the building after the renovation works.

*Tools:* Meetings with Managing Authority (Access to proposals data base), Meetings with the Beneficiaries, Software for statistical analysis, Report with an integrated analysis (*accumulated and leveled data*) of all the EECs submitted.

#### 1.3. Players involved in implementation:

Due to this activity the **registered energy auditors** (*mainly from the region of Crete but not exclusively limited to it*) by the Ministry of Energy and Environment are strongly involved to the completion of the valid energy audits and the needed certification issuing for the proposals' submission.

Furthermore, **public, regional and local authorities** are essentially involved, because they must approve and cover the relevant cost for the energy audits implementation following the national legislation for these contracts.

Additionally, **Energy Managers (EM)** who are responsible for energy issues in each public building would provide all the relevant data to the energy inspectors with the most adequate and reliable way, affecting the successful implementation of this action.

#### 1.4. Timeframe for implementation:

The timeframe for this monitor activity follows the call for project proposals – periods of time when applications can be submitted. The call has an opening and closing date and outside of these dates it is not possible to apply. So that applicants can register and start preparing their application and especially this activity requirements before and within this period. More precisely, before the closing date (submission deadline - 15<sup>th</sup> of January 2019) the energy audits and the corresponding certifications should be implemented. During Q2 the stage of proposal selection should be completed, while meeting with MA will be arranged. Concluding, this monitor activity will be finished till the Q3, by completing the data elaboration, the statistical analysis and the arranged meetings.

Monitoring Plan Description	2019	2020	2021	2022	2023
<b>Monitoring Activity 1 - Energy Audits and Energy Efficiency Certification</b>					
Task 1 Energy audits implementation					
Task 2 Energy efficiency certification issuing					
Task 3 First stage of project proposal selection					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Meetings with the Beneficiaries					
Tool 3 Software (Excel) for data elaboration and statistical analysis					
Tool 4 Report with an integrated analysis of all the EECs submitted					
Player 1 Registered energy auditors					
Player 2 Public and regional sector authorities					
Player 3 Energy managers					

#### 1.5. Costs for implementation:

The cost of the needed energy audits can be considered as independent (*it follows the national legislation for energy audits from registered energy inspectors who own and use a specific certified software*) to the final approval of each project, because it is a compulsory criterion for the submission process. The total cost for this activity is realized before any funding and it has a linear relation to the total space of the building for renovation. The total cost for the expected submitted projects proposal (estimation of 20-25 applications) will range between 20,000€ to 30,000€ (Indicator 5).

#### 1.6. Funding sources:

This activity isn't eligible for funding through addressed policy instrument, Regional Operational Program for the Region of Crete 2014-2020. Therefore, the total cost is covered by the applicants.

#### 1.7. Indicators monitoring:

- Indicator 1 – Number of EECs at submission stage
- Indicator 2 – Number of EECs at selection stage
- Indicator 3 – Initial state (Average kWh/m<sup>2</sup>)
- Indicator 4 – Tons of CO<sub>2</sub> Equivalent
- Indicator 5 – Final cost of the activity (*sum up of the total certification cost*)



## Monitor Activity 2 – Building Management Systems & ISO 50001

### 2.1. The background:

In this monitor activity too, the experience exchange between the REBUS project partners and the good practices examples, as AFE Green Hospital Project, emerged the significance of building energy management systems (BEMS) implementation in the public building at Crete's region. Additionally, using ISO 50001 supports organizations in all sectors to use energy more efficiently, through the development of an energy management system (EnMS). Therefore, projects that include BEMS and/or ISO 50001 in their energy saving plans for public buildings should be promoted for a more successful renovation works.

The current national legislation states that ISO 50001 is obligatory only for large enterprises, excluding SMEs and public sector, therefore it can be included in the call as eligible intervention that strengthen the energy saving and efficiency work potential.

Moreover L.4342/2015 (article 7, par.12) suggests that an energy management system should be implemented under the responsibility of the regions and municipalities within the buildings of their jurisdiction.

### 2.2. Monitoring Plan:

The promotion of BEMS implementation and ISO 50001 application will be established through addressed policy instrument. A significant contribution for even better energy efficient buildings can be made maximizing the penetration of such systems in the renovation works. Therefore, Regional Operational Program for the Region of Crete and the specific call (**Action 2.4.c.1: Energy Saving in Public Buildings**), premiums any project proposal that will include BEMS and/or ISO 50001 in their energy renovation plans with a higher evaluation score that will help their final selection.

Selected data from the submitted projects that propose BEMS and/or ISO 50001 in their renovation plans will give a significant index of the market influence of these intervention in public buildings, in parallel with the level of awareness in this field from the local Energy Managers of the public bodies.

*Methodology:* Recording the total number of submitted BEMS (Indicator 6) and ISO 50001 (Indicator 7) within the projects proposals if any compared to the total submitted applications, classify the energy efficiency contribution of BEMS (Indicator 8 = % energy saving contribution compared to the total energy saving of the projects) and ISO 50001 (Indicator 9 = % energy saving contribution compared to the total energy saving of the projects).

*Tools:* Meetings with Managing Authority (MA) and access to proposals data base and GANTT charts of the approved projects, Software for statistical analysis, Report with an integrated analysis

(accumulated and leveled data for BEMS and ISO 50001).

### 2.3. Players involved in implementation:

Due to this monitor activity the **registered accreditation bodies** (*mainly from the region of Crete but not exclusively limited to it*) are strongly involved to complete the accreditation process and issue the specific ISO 50001 certification for the projects that have been submitted.

The **public, regional and local authorities** as the main call beneficiaries who will be involved in installation, development and operation of the action.

Additionally, **local engineers, suppliers and contractors** are essentially involved, because they have to implement and commission the relevant infrastructures and procedures that is planned in each project.

The **energy managers** who are responsible for energy issues in each public building and contribute giving all the relevant data to the contractors and consultants with the most adequate and reliable way, affecting the successful implementation of this action during both planning and mainly operation stage.

### 2.4. Timeframe for implementation:

The timeframe for this monitor activity follows the GANTT chart of each project proposal – always within the period of time that the call defines (financial closure of the instrument at 31/12/2023) when the applications are approved. So that applicants can start implementation of their works relevant to the action within this period and following the previous chart. More precisely, the time frame of this monitor activity is defined by the specific call (**Action 2.4.c.1: Energy Saving in Public Buildings**) dates. Therefore, the specific timeframe starts from the initial launching of the projects (final evaluation by the MA - approx. April 2019) till their final implementation or the overall deadline (31/12/2023) of the call.

Monitoring Plan Description	2019	2020	2021	2022	2023
<b>Monitoring Activity 2 - Building Management Systems &amp; ISO 50001</b>					
Task 1 BEMS (submission stage, first selection stage, approval stage)					
Task 2 ISO 50001 (submission stage, first selection stage, approval stage)					
Task 3 BEMS implementation					
Task 4 ISO 50001 application					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Software (Excel) for data elaboration and statistical analysis					
Tool 3 Report with an integrated analysis of BEMS that are approved					
Tool 4 Report with an integrated analysis of ISO 50001 that are approved					
Player 1 Registered accreditation bodies					
Player 2 Local engineers and contractors					
Player 3 Energy managers					
Player 4 Public and regional sector authorities					

### 2.5. Costs of implementation:

The cost of this activity should be distinguished between BEMS expenditures (hardware & software) and ISO 50001 expenditures (soft-actions). The first one can be considered to have larger capital cost, estimated approximately at 400,000€ than the second one, which is estimated at 60,000€ for all the approved projects. Generally, the total cost will be realized mainly after the projects' approval, so the cash flow for its implementation should be depicted and retrieved from the corresponding GANTT diagrams of each project. This will help to investigate the priority of this activity (BEMS and/or ISO 50001) related to each individual plan.

### 2.6. Funding sources:

All the expenditure as a result of this activity are eligible and can be totally funded by Regional Operational Program for the Region of Crete 2014-2020 in the form of a capital contribution in case of final project approval and successful implementation. A significant index of funding sources be the percentage of relevant expenditures to the total budget of the fund for all the projects in the region. So, the expected budgets for BEMS installation cost (indicator 10=BEMS expenditures per total budget of the call) and ISO 50001issuing cost (indicator 11= ISO 50001 expenditures per total budget of the call) per total fund set two (2) indicators that show the weighted importance of this activity.

### 2.7. Indicators monitoring:

- Indicator 6 – submitted proposal including BEMS
- Indicator 7 – submitted proposal including ISO 50001
- Indicator 8 – % energy saving contribution compared to the total energy saving
- Indicator 9 – % energy saving contribution compared to the total energy saving
- Indicator 10 – % BEMS expenditures per total budget of the call
- Indicator 11 – % ISO 50001 expenditures per total budget of the call

### Monitor Activity 3 – Second Energy Efficiency Certificate

#### 3.1. The background:

From the experiences shared within the REBUS project, regarding energy audits and the need of measurable value for the level of contribution by the proposed and implemented renovation works a second energy audits should be taken to be compared with the first one that shows the initial state of the building.

#### 3.2. Monitoring Plan:

A second energy audit and the issuing of a revised Energy Efficiency Certificate will be used in the call as an evaluation tool of the achieved energy profile enhancement of the building after the interventions (from energy class rate B to a higher score that leads to nZEBs).

Regarding specific numbers, the energy class should be greater than or equal to B class (*energy consumption between 0.75 to 1 compared to the reference buildings value*), a threshold that can be considered as a strong indicator for sustainable energy renovation. The achieved energy class will be compared with the expected one in the submission stage, a fact that was a basic criterion to rank the projects.

The elaborated data from these second EEC of the buildings after the renovation depicts crucial indicators of the new public building status that will help to investigate the sustainability of the works, to reveal possible remedial actions and redefine the framework for the next calls of this policy instrument.

*Methodology:* Recording the results of submitted second EEC (Indicator 12), classify the energy efficiency rating (B to A+ rate) resulting new levelized energy profile (AIS indicator = average kWh/m<sup>2</sup>) and the difference between the initial proposed and the final achieved (indicator 13).

Finally, the monitoring methodology of this monitor activity will lead to two (2) significant and comprehensive indicators such as total reduction of primary energy (Indicator 14 = 8.6 GWh) and total reduction of CO<sub>2</sub> emission (Indicator 15 = 4.6 Tons of CO<sub>2</sub> Equivalent). Nonetheless in case that the submitted second EEC is found not to fulfill the required energy efficiency rating further investigation should follow with Questionnaires and interviews with the call beneficiaries.

*Tools:* Meetings with Managing Authority (MA) and access to proposals data base and second EECs of the approved projects, Software for statistical analysis, Report with an integrated analysis (*accumulated and levelized data for new EECs*), Questionnaires and interviews with the call beneficiaries.

3.3. Players involved in implementation:

Same as the previous monitor activity 1 this monitor activity involves the **registered energy auditors** (mainly from the region of Crete but not exclusively limited to it) by the Ministry of Energy and Environment to the completion of a valid second energy audit.

Moreover, **Energy Managers (EM)** who are responsible for energy issues in each public building should provide all the relevant data to the energy inspectors with the most adequate and reliable way, affecting the successful implementation of this action.

3.4. Timeframe for implementation:

Between the final stage of approved projects completion and each project final evaluation by the Managing Authority. More specific, the time frame of this monitor activity is defined by the corresponding project Gantt chart dates, therefore, from the closing of the renovation works (approx. 2022) till the overall deadline of the call which is 31<sup>st</sup> of December 2023.

Monitoring Plan Description	2019	2020	2021	2022	2023
<b>Monitoring Activity 3 - Second Energy Efficiency Certificate</b>					
Task 1 Second energy audits implementation					
Task 2 Second energy efficiency certification issuing					
Task 3 Final stage of project evaluation					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Software (Excel) for data elaboration and statistical analysis					
Tool 3 Report with an integrated analysis of all the new EECs					
Player 1 Registered energy auditors					
Player 2 Public and regional sector authorities					
Player 3 Energy managers					

3.5. Costs of implementation:

The cost should be considered as a total eligible cost and doesn't give any extra information for the policy instrument. The estimated cost can be considered approximately the same as monitor activity 1 for around 20 approved projects. Therefore between 15,000€ and 25,000€ in total for all selected projects.

3.6. Funding sources:

This activity is exclusively funded by Regional Operational Program for the Region of Crete 2014-2020 in the form of a capital contribution.

3.7. Indicators monitoring:

- Indicator 12 – Number of new EECs at final stage

- Indicator 13 – Comparison of the new energy rates (average kWh/m<sup>2</sup>)
- Indicator 14 – Difference between the initial proposed and the final achieved (kWh/m<sup>2</sup>) – Target value 120kWh/m<sup>2</sup>.
- Indicator 15 – Total reduction of primary energy (8.6 GWh)
- Indicator 16 – Total reduction of CO<sub>2</sub> emission (Indicator 15 = 4.6 Tons of CO<sub>2</sub> Equivalent)

## Monitor Activity 4 – Operation and Maintenance Plan

### 4.1. The background:

Experience gained by REBUS project notes that sustainability and functionality of the addressed policy instrument should be recorded and evaluated in a predefined way. Therefore, progress report and monitoring of the projects describe adequately the way in which the deliverables of the monitor activity are exploited, with relevant documentation.

Considering that the intended results of the monitor activity concern the reduction of energy consumption of public buildings and the reduction of CO<sub>2</sub> emissions through the improvement of energy efficiency and RES technology utilization in public sector infrastructures, constant and reliable monitoring of the progress and the corresponding deliverables is of a great importance.

### 4.2. Monitoring Plan:

Due to this monitor activity, consideration is given to the Beneficiary's description and documentation of how the outcomes of the proposed works will be exploited. For example, in the case of infrastructure operations where maintenance and operation are required, the beneficiary should indicate the existence of relevant operators/structures/operating mechanisms or provide all the necessary actions on a timetable to ensure maintenance and operation (O&M). In the case of tasks except equipment or specific functions, the way of using the results should be explained.

*Methodology:* By assessing the Operation and Maintenance Plan of each approved project a list of subtasks, energy services and relevant work related to O&M can be extracted (indicator 16). This can help to monitor the projects operation sustainability and extract specific rules. Additionally, a questionnaire and an interview will help to investigate possible obstacles, threats or any other issues (indicator 17), giving a crucial feedback for remedial actions in the next calls (indicator 18).

*Tools:* Meetings with Managing Authority (MA), Access to proposals data base, GANTT charts of the approved projects, Software for statistical analysis, Six-months Progress Report, Questionnaires and interviews with the call beneficiaries.

### 4.3. Players involved in implementation:

Mainly, **municipalities and other public and regional authorities**, because they are mainly involved in these O&M Plans that follow the requirements of the corresponding call and they are the basic call beneficiaries who will be involved in updating of the O&M process and filling the questionnaires.

The **local contractors** are essential involved to the completion of the energy intervention and the renovation work. Thus, they can give through interviews a feedback for the difficulties and possible

delays.

Furthermore, **local registered consultants** (mainly from the region of Crete but not exclusively limited to it) are strongly involved to complete the required process and issue the specific reports and O&M plans.

The **energy managers** who are responsible for energy issues in each public building and contribute giving all the relevant data to the consultants with the most adequate and reliable way, affecting the successful implementation during both planning and mainly operation stage.

#### 4.4. Timeframe for implementation:

The time frame of this monitor activity is defined by the specific call dates. Therefore, from the initial launching of the specific call (March 2018) the project's proposal submission deadline 15<sup>th</sup> of January 2019, till the overall completion of the **Action 2.4.c.1: Energy Saving in Public Buildings**, which is 31<sup>st</sup> of December of 2023.

Monitoring Plan Description	2019	2020	2021	2022	2023
<b>Monitoring Activity 4 - Operation and maintenance Plan</b>					
Task 1 Collection of O&M plans from selected projects					
Task 2 Assess O&M plans from selected projects					
Task 3 Evaluate the outcomes of O&M plans from selected projects					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Software (Excel) for data elaboration and statistical analysis					
Tool 3 Questionnaires and interviews with the call beneficiaries					
Player 1 Local consultants, engineers and contractors					
Player 2 Energy managers					
Player 3 Public and regional sector authorities					

#### 4.5. Costs of implementation:

The cost of this activity is approximately up to 80,000€ (3,000€ per plan).

#### 4.6. Funding sources:

These activities aren't supported by addressed policy instrument (Regional Operational Program for the Region of Crete 2014-2020). Alternative funding sources could be used to cover the relevant cost such as Interreg, Horizon 2020 or other European or national programmes.

#### 4.7. Indicators monitoring:

- Indicator 16 – List of energy services and relevant work related to O&M plan
- Indicator 17 – List of possible obstacles and threats (questionnaires and interviews)
- Indicator 18 – List of remedial actions for the next calls



## Monitor Activity 5 – Action Plans for Energy Efficiency

### 5.1. The background:

National Energy Efficiency Action Plans (NEEAPs) set out estimated energy consumption, planned energy efficiency measures, and the improvements individual EU countries expect to achieve. Under the Energy Efficiency Directive, EU countries must draw up these plans every three years.

Thus, EU countries must report the progress achieved towards their national energy efficiency targets. According to L.4342/2015 (article 7, par. 12) one of the obligations for the public bodies is to develop of an “Action Plans for Energy Efficiency”.

Knowledge and experience extracted from REBUS, especially from SERDA on “2015-2020 Sustainable Energy Action Plan (SEAP) of Buzau Municipality” focusing on actions for general planning to implement local policies including the Urban Development Strategy of the Municipality in the field of energy efficiency and environment protection, gives a fruitful framework to combine this action within an overall policy instrument.

### 5.2. Monitoring Plan:

As a reinforcement activity within the addressed policy instrument, the completed Action Plans for Energy Efficiency are asked as a required document from the applicants to the relevant call in order to be selected for the final evaluation stage and be eligible for granted. These specific Action Plans are a significant indicator for the readiness of the public authority, more specifically the municipality who owns the public building proposed for energy renovation.

*Methodology:* Collect the total number of submitted Action Plans for Energy Efficiency (indicator 19), evaluate the submitted Action Plans for the projects which are selected for funding (indicator 20). This will help to investigate and extract the general similarities and the common energy efficiency interventions (indicator 21) between the aforementioned official Action Plan and the submitted application in the projects’ proposals.

*Tools:* Meetings with Managing Authority (MA), Access to proposals data base and Action Plans for Energy Efficiency of public buildings approved projects, Six-months Progress Report, Questionnaires and interviews with all the call beneficiaries.

### 5.3. Players involved in implementation:

Firstly, **municipalities and other public and regional authorities**, because they are mainly involved in these Action Plans for Energy Efficiency that follows the requirements of the corresponding National

Action Plans for Energy Efficiency for Buildings.

Furthermore, **local registered consultants** (*mainly from the region of Crete but not exclusively limited to it*) are strongly involved to complete the required process and issue the specific reports of the Action Plan for Energy Efficiency.

The **energy managers** who are responsible for energy issues in each public building and contribute giving all the relevant data to the consultants with the most adequate and reliable way, affecting the successful implementation during both planning and mainly operation stage.

#### 5.4. Timeframe for implementation:

The timeframe for this monitor activity follows the call for project proposals – periods of time when applications can be submitted. The call has an opening and closing date and outside of these dates it is not possible to apply. So that applicants can register and start preparing their applications and especially these requirements before this period. More precisely, the time frame of this monitor activity is defined by the specific call (**Action 2.4.c.1: Energy Saving in Public Buildings**) dates. Therefore, till the project's proposal submission deadline which was the 15<sup>th</sup> of January 2019.

#### 5.5. Costs of implementation:

The cost of the needed Action Plan for Sustainable Energy and Climate can be considered as independent to the funding of each project. A rough estimation of this cost is approximately 250,000€ in total (10,000€ per plan).

Monitoring Plan Description	2019	2020	2021	2022	2023
<b>Monitoring Activity 5 - Action Plans for Sustainable Energy and Climate</b>					
Task 1 Action Plans for Sustainable Energy and Climate implementation					
Task 3 First stage of project proposal selection					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Questionnaires and interviews with the call beneficiaries					
Tool 3 Report with an integrated analysis of all the new EECs					
Player 1 Local registered consultants					
Player 2 Energy managers					
Player 3 Municipalities and regional authorities					

#### 5.6. Funding sources:

These activities is supported by addressed policy instrument (Regional Operational Program for the Region of Crete 2014-2020), although alternative funding sources could be used to cover the relevant cost for Action Plan for Energy Efficiency of Public Buildings.

#### 5.7. Indicators monitoring:

- Indicator 19 – Total number of submitted Action Plans for Energy Efficiency
- Indicator 20 – Total number of Action Plans for Energy Efficiency (Approval stage)
- Indicator 21 – Similarities and the common energy efficiency interventions

Gantt Chart of the Overall Monitoring Plan for the Action implementation:

Monitoring Plan Description	2019	2020	2021	2022	2023
<b>Monitoring Activity 1 - Energy Audits and Energy Efficiency Certification</b>					
Task 1 Energy audits implementation					
Task 2 Energy efficiency certification issuing					
Task 3 First stage of project proposal selection					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Meetings with the Beneficiaries					
Tool 3 Software (Excel) for data elaboration and statistical analysis					
Tool 4 Report with an integrated analysis of all the EECs submitted					
Player 1 Registered energy auditors					
Player 2 Public and regional sector authorities					
Player 3 Energy managers					
<b>Monitoring Activity 2 - Building Management Systems &amp; ISO 50001</b>					
Task 1 BEMS (submission stage, first selection stage, approval stage)					
Task 2 ISO 50001 (submission stage, first selection stage, approval stage)					
Task 3 BEMS implementation					
Task 4 ISO 50001 application					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Software (Excel) for data elaboration and statistical analysis					
Tool 3 Report with an integrated analysis of BEMS that are approved					
Tool 4 Report with an integrated analysis of ISO 50001 that are approved					
Player 1 Registered accreditation bodies					
Player 2 Local engineers and contractors					
Player 3 Energy managers					
Player 4 Public and regional sector authorities					
<b>Monitoring Activity 3 - Second Energy Efficiency Certificate</b>					
Task 1 Second energy audits implementation					
Task 2 Second energy efficiency certification issuing					
Task 3 Final stage of project evaluation					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Software (Excel) for data elaboration and statistical analysis					
Tool 3 Report with an integrated analysis of all the new EECs					
Player 1 Registered energy auditors					
Player 2 Public and regional sector authorities					
Player 3 Energy managers					
<b>Monitoring Activity 4 - Operation and maintenance Plan</b>					
Task 1 Collection of O&M plans from selected projects					
Task 2 Assess O&M plans from selected projects					
Task 3 Evaluate the outcomes of O&M plans from selected projects					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Software (Excel) for data elaboration and statistical analysis					
Tool 3 Questionnaires and interviews with the call beneficiaries					
Player 1 Local consultants, engineers and contractors					
Player 2 Energy managers					
Player 3 Public and regional sector authorities					
<b>Monitoring Activity 5 - Action Plans for Sustainable Energy and Climate</b>					
Task 1 Action Plans for Sustainable Energy and Climate implementation					
Task 3 First stage of project proposal selection					
Tool 1 Meetings with Managing Authority (access to proposals data base)					
Tool 2 Questionnaires and interviews with the call beneficiaries					
Tool 3 Report with an integrated analysis of all the new EECs					
Player 1 Local registered consultants					
Player 2 Energy managers					
Player 3 Municipalities and regional authorities					

The above actions are funded in the form of a capital contribution by each municipality or other public body (initial energy audits, action plans for sustainable energy and climate) up to 360,000€ and by Region of Crete up to 12,000,000€.

Date: 28/03/2019

Nikolaos Kalogeris, Vice Governor of Crete for the Environment, Spatial Planning and Energy

Signature: \_\_\_\_\_

Stamp of the organisation: \_\_\_\_\_



- The present document will be delivered to the Managing Authority of Crete and there will be a written agreement of acceptance.

