



Action Plan of Pilot Region Murcia

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Introduction

The present Action Plan has been developed under WP3 with the following main goals:

- to present the current situation in the Murcia Region regarding sustainable energy potential focusing on building retrofitting/RES incorporation;
- to present available financing models of relevance to local sustainable energy actions in the Murcia Region;
- to tailor an Action Plan for the Murcia Region and to ensure it fits with the Murcia Region's constraints and reality;
- to outline the necessary steps to be taken in order to put in place or execute the program that will help Murcia Region in securing funding taking into account organizational, administrative, legal and financial aspects.

Brief description of Murcia Region strategic objectives

The strategic objectives of the Murcia Energy plan are based on three concepts:

- Guaranteeing supply security conditions (supply, legal and prevention) and quality with the necessary infrastructure.
- Encourage savings and energy efficiency in all areas.
- Promote the use of sustainable energy sources and to ensure competitiveness.

These strategic objectives are connected with the horizon 20-20-20 tactical objectives are realized and quantitatively the operational objectives, modified these in a realistic conception conditioned by existing regulations, economic and social situation.

The strategic areas are subdivided into two categories:

- Sectoral
- Transverse

This classification is made in view of the matters that are the subject of execution; subdividing the first turn in the oriented businesses, residential and Public Administration; and the second to infrastructure, efficiency, positive environmental impact and administrative simplification.

Sectoral areas: these axes are the lines and actions are oriented clearly to specific sectors, groups or social or economic groups. Here is the Plan Efficiency in Public Buildings.

Transverse: Are these axes those lines and actions are oriented horizontally vocation and that will promote or foster concepts or areas of activity impacting positively on society.

Role of CITYinvest

The Government of the Region of Murcia has mandated the Directorate General for Energy, Industry and Mining (DGEAIM) of the Regional Ministry of Economic Development, Tourism and Employment to develop an energy efficiency plan for the renovation of the building stock owned by the regional authorities. This plan is part of a global energy plan 2016-2020 for the Region. The foreseen role of CITYinvest for the Region of Murcia is to provide expertise and knowledge to speed up the plan implementation by assisting in the setting up of a suitable organization to act as a PDU (Program Delivery Unit) facilitating the execution of the projects.

Facilitation structures under CITYinvest

Program authority/Program Delivery Unit roles and functions: The Program Authority (PA) and the Program Delivery Unit (PDU) are the two main stakeholders that will manage and implement the program or the model.

Program Authority (PA): The Program Authority (PA) is the public entity or organization that is in charge of the program or that controls the Program Delivery Unit (PDU). This is typically a national or regional government, a provincial or local authority or council or a city or municipal council. The Program Authority (PA) define the vision and the program scope including the targeted beneficiaries, the level of ambition, the implementation model and the funding vehicle that will be putted in place. The Program Authority also identifies within the stakeholders/parties who can play the role of Program Delivery Unit (PDU), and determines the services that it will offer to the beneficiaries. The Program Authority has also to secure the funding of the Program Delivery Unit (PDU)

Program Delivery Unit (PDU): The Program Delivery Unit (PDU) is the organization that is specifically set-up (and/or entitles) to implement/execute the program. It is often a separate legal entity, but can also be a department or project team within an existing organization. It can be a public, a public-private or a private entity/organization, depending the local capabilities and. In the most advanced models, the Program Authority (PA) has set-up a specific legal entity to play the role of Program Delivery Unit (PDU), either as a local public company or a mixed company (public-private).

Key questions to address

Program Authority (PA)	
Who is/are the Program Authority (PA)?	The Government of the Murcia Region
How can you help the Program Authority (PA) to have a clear vision of the issues?	The Government has mandated, through its Government Council, the Directorate General for Energy, Industry and Mining (DGEAIM) of the Regional Ministry of Economic Development, Tourism and Employment to develop Energy Efficiency Plan for the renovation of the building stock owned by the regional authorities. This plan is part of a global energy plan 2016-2020 for the Region. The DGEAIM works in close cooperation with INFO-Murcia to set-up and execute the plan.
How can you support the Program Authority (PA) to define the vision and the program scope?	<p>The Government of the Murcia Region has already fixed his vision and program scope in a first draft of an Energy Efficiency Plan for the regional buildings. This plan has been developed by the DGEAIM and is in the approval process by the regional government.</p> <p>The plan (first draft) aimed to renovate the public buildings owned by the Murcia Region (409 buildings – 107 GWh – 26,6 millions € energy base line) with an preliminary estimated investment of 44,39 millions € that should lead to 23% energy savings (24,66 GWh, 64,119 GWhep, 6,12 millions € savings) and 16,005 avoided tons of CO2 per year.</p> <p>This plan will be executed in several phases (8 phases) aiming to be fully accomplished in 2020.</p>

	<p>DGEAIM has been designated as the Program Delivery Unit to handle and facilitate the program execution with the support of the DGP (Dirección General de Patrimonio e Informática) that will act as the contracting authority while INFO-Murcia will take in charge the reporting requirements within the CITYnvest project. With the support of INFO-Murcia, the CITYnvest team assists the DGEAIM/DGP to implement the program operationally.</p> <p>After studying the different models presented in WP1, the approach to be adopted by DGEAIM will be based on the following:</p> <p>Hybrid Facilitation/Integration model: The organization to carry out the Energy Efficiency Plan in Public Buildings is based on a hybrid facilitation/integration model, with two Murcia Regional Administrations at work on behalf of beneficiaries: DGEAIM team leads the organization, execution and follow-up of the plan and prepare/facilitate the projects pipeline (Execution of energy audits and diagnoses, Impact sheet and technical specs drafting) for the DGP Team which is in charge of the tender execution up to the contract awarding (through a Centralized Purchasing Office) and the monitoring, supervision and acceptance of works. DGP will act as the Contracting Authority.</p> <p>FI financing model: The model that we will use preferentially is the ESCO Financing model. In this model, the ESCO or contractor acts as the funding vehicle, providing financing through EPC financing. The ESCO takes on the financial risk of the projects. The Program Delivery Unit (DGEAIM & INFO) can support DGP with financial and technical advice.</p> <p>Therefore, the proposed model is a mixed or hybrid model, in which coexist integration (budgetary and administrative by the DGP) and facilitation functions carried out by the PDU (in this context, DGEAIM & INFO), which will provide technical advice to the DGP for the best use of funds.</p> <p>Operational models applied to this financial scheme are facilitation and integration. In the part of integration is the Program Delivery Unit (DGP) that signs the contract with the ESCO on behalf of the beneficiary.</p> <p>Implementation model: the EPC option has been chosen by DGEAIM to execute the projects.</p> <p>The DGEAIM/DGP will be funded to implement the plan (as part of his on-going work).</p>
<p>How can you get from the Program Authority (PA) a clear commitment to the</p>	<p>The commitment is fixed in the Regional Energy Plan 2016-2020 that contains the Plan of Energy Efficiency in public buildings.</p>

beneficiaries and the Program Delivery Unit (PDU)?	
Program Delivey Unit (PDU)	
What are the capabilities and knowledge requirements to manage the Program?	<p>Energy Efficiency assessment: DGEAIM has an internal team experienced in the field. In addition, DGEAIM will hire external consultants to handle audits and studies.</p> <p>Public procurement: DGEAIM will work in cooperation with a Centralized Purchase office (DGP) that has internal team experienced in public procurement but has limited to no experience in EPC contracting and/or Competitive Dialog.</p> <p>Project management : DGEAIM has an internal team experienced in the field.</p> <p>Public Finance: DGEAIM has an internal team experienced in the field.</p>
What are the tools and resources requirements to manage the Program?	<p>At date, the DGEAIM (and/or the DGP) has had little experience in EPC Contracting and/or Competitive Dialog. If applied, DGEAIM will have to:</p> <ul style="list-style-type: none"> acquire the knowledge and capacities to handle the procurement process develop a standard contract model hire experienced consultants in EPC contract facilitation and in Measurement & Verification techniques.
What will be the staff requirements to manage the Program?	3-4 permanent staff for DGEAIM. To these, must be added the staff of DGP.
What will be the funding requirements to manage the Program?	0,8 M Euro
How long will be the Program?	48 months (2016-2020)
Who are the stakeholders/parties that have those capabilities, knowledge and resources to play the role of Program Delivery Unit (PA)? Are they willing to play it?	DGEAIM has been designated as the Program Delivery Unit to handle the program execution while INFO-Murcia will take in charge the reporting requirements within the CITYnvest project.
Is it desirable/necessary to set up a specific entity to play the role of Program Delivery Unit (PDU)?	No, the DGEAIM has the resources and the knowledge to handle the program execution.

If a specific entity is to be set up, should it be a public company or a mixed company?	N/A
If a mixed company is suitable, who are the private stakeholders/parties that can be invited? Are they willing to play it?	N/A
How will the Program Delivery Unit (PDU) funded?	From the regional budget. The PDU functions are performed by the system consisting of DGEAIM and DGP. Both are part of the Regional Government and its employees are public servants.
Could the Program Delivery Unit (PDU) apply for a technical assistance (e.g. Elena or EIB technical assistance)?	Yes, in fact the PDU (DGAIM+DGP) is receiving technical assistance from the Elena-Fuensanta team of INFO.

Actions to undertake

No	Action	Due	Owner	Status
1	Presentation of the Energy Efficiency Plan (first draft) to the government of the Murcia Region.	25.03.2106	DGEAIM	completed
2	Refine the impact sheet	29.06.2016	DGEAIM/EI	Completed

Beneficiaries, type of projects & Level of "ambition"

The beneficiary profile, the type of projects and the level of ambition will have a significant impact on the model:

Beneficiaries: They could come from the public sector, the commercial sector, the residential sector and/or the industrial sector.

Type of projects: It could be Energy Efficiency building retrofit project, Energy Efficiency public lighting retrofit project, Energy Efficiency industrial retrofit project or renewable energy project.

Level of ambition: the level of ambition could be classified as following:

Up to 35% reduction of energy consumption and/or GHG emissions: this level of ambition could be reached with short and middle term contract durations (average 10 years) based on technical installations (HVAC, lighting, electrical...) retrofits and managed energy services. As basic indicator, the price per square meter in case of a building retrofit could be less than 50€. Typically the ESCO market based offer target this level of ambition. The market is also able to offer ESCO and TPF financing options for this level of ambition.

Up to 50% reduction of energy consumption and/or GHG emissions: this level of ambition could be reached with middle and long term contract durations (between 15 and 25 years) based on technical installations (HVAC, lighting, electrical...) retrofits, envelope retrofits (insulation), renewable energy generation and managed energy services. As basic indicator, the price per square meter in case of a building retrofit could be less than 200 €. There are various examples in Europe of EPC/ESC models that have addressed such a level of ambition. ESCO financing and/or TPF financing will be more difficult to find for this level of ambition.

Up to 75% reduction of energy consumption and/or GHG emissions: this level of ambition could only be reached with long or very long term contract durations (min. 25 years) based on deep retrofits. As basic indicator, the price per square meter in case of a building retrofit could reach up to 800 €. There are a few examples in Europe of EPC/ESC model that have addressed such a level of ambition. This level of ambition will require a mix of financing solutions (conventional financing, ESCO financing, PDU financing, Investment fund).

Carbon neutral: this level of ambition could only be reached with deep retrofit and renewable energy generation projects. This level of ambition will require a mix of financing solutions (conventional financing, ESCO financing, PDU financing, Investment fund).

Key questions to address

Beneficiaries	Comments
Who will be the beneficiaries of the program?	Government departments (Public Regional Administrations) of the Region of Murcia.
How many are they and what is their potential in terms of number and size of projects?	<p>Beneficiaries</p> <p>Beneficiaries are the nine departments of the Regional Department, four autonomous public organizations and five other public entities.</p> <p>Regional public buildings stock</p> <p>The regional building stock counts 409 buildings with a yearly consumption of 107 Gwh and 26,6 millions € of energy bill.</p> <p>The composition of the stock of buildings used to develop the Sheet Impact of May 18, 2016 is shown below. This information is based on the inventory of DGP. However DGEAIM continue working to improve the information available.</p> <p>Distribution public buildings CARM</p> <p>CONSEJERIA DE PRESIDENCIA: 6</p> <p>CONSEJERIA DE HACIENDA Y ADMIN PUBLICA: 36</p> <p>CONSEJERIA DE AGRICULTURA Y AGUA : 46</p>

	<p>CONSEJERIA DE DESARROLLO EC. TURISMO Y EMPLEO : 8</p> <p>CONSEJERIA DE EDUCACION Y UNIVERSIDADES: 111</p> <p>CONSEJERIA DE FOMENTO E INFRAESTRUCTURAS: 7</p> <p>CONSEJERIA DE SANIDAD (included SMS): 101</p> <p>CONSEJERIA DE FAMILIA E IGUALDAD DE OPOR: 4</p> <p>CONSEJERIA DE CULTURA Y PORTAVOCIA: 10</p> <p>ORGANISMO AUTONOMO AGENCIA TRIB, REG. MURCIA: 1</p> <p>ORGANISMO AUTONOMO IMIDA: 4</p> <p>ORGANISMO AUTONOMO IMAS: 36</p> <p>ORGANISMO AUTONOMO SEF: 26</p> <p>ASAMBLEA REGIONAL: 2</p> <p>CONSEJO ECONOMICO Y SOCIAL: 1</p> <p>BORM: 1</p> <p>CONSEJO JURIDICO: 1</p> <p>CONSORCIO EXTINCION DE INCENDIOS: 8</p> <p>The energy efficiency plan intend to realize 23% energy savings (25 Gwh, 6,2 millions €)</p> <p>For the first group of 24 buildings contracts will be signed with an ESCO (Energy Services Company) that will acts as a unique contractor and assure all the technical risks of every contract. If the experience is positive this model will be extended to other groups of buildings, although other financing options have not been ruled out.</p> <p>The number of planned projects is 100 for large buildings, 79 projects for medium-size buildings and 230 projects for small buildings. The program will be implemented in 8 phases over the life of the program.</p>
<p>What is the estimated funding need to finance the beneficiaries' projects (depending of the level of ambition)?</p>	<p>Using the ESCO model, for a first group of buildings, the annual cost of the contract for the Program Authority will always be less than the annual cost of energy for that group, plus the cost of maintenance (electrical and thermal equipment). The other investments made by the</p>

	<p>company ESCO will be financed with the own savings obtained.</p> <p>ESCO model will be used for the first group of 24 buildings. If the experience is positive its use will be extended to other groups of buildings, although other financing options have not been ruled out.</p> <p>The exact cost will depend on which is the most favorable offer in the process of bidding and awarding the contracts.</p>
Are those potential and funding needs addressable within the program?	Yes.
Type of projects	Comments
What will be the type of projects?	<p>EE/RES in public buildings. Projects include the followings Energy Conservation Measures (ECMs):</p> <p>Façade renovation (mix between windows replacement and opaque facades placement)</p> <p>Inside lighting renovation (relighting with leds)</p> <p>Boiler retrofitting (biomass boilers)</p> <p>Air conditioning retrofitting (technical equipment replacement)</p> <p>Energy management (commissioning and regulation of the equipment)</p>
What will be the knowledge and resources requirements to realize this type of projects?	<p>Energy Efficiency assessment: DGEAIM has an internal team experienced in the field. In addition, DGEAIM will hire external consultants to handle audits and studies. In addition, technical assistance from the Elena-Fuensanta team of INFO.</p> <p>Public procurement: DGEAIM will work in cooperation with a Centralized Purchase office (DGP) that has internal team experienced in public procurement but has limited or no experience in EPC contracting and/or Competitive Dialog.</p> <p>Project management: DGEAIM has an internal team experienced in the field.</p>
Are there experienced ESCOs, contractors and/or suppliers to realize that type of projects?	Yes, there are several ESCOs active on the market in the Region of Murcia. In addition, there are many electrical and air conditioning installers which could answer to competitive tenders.
Level of ambition	Comments

What will be the level of ambition for the project?	23 % of savings (kWh)
Is it coherent with the beneficiaries potential?	Yes
Are beneficiaries able or willing to contract on very long term?	Yes
Is it addressable within the program?	Yes

Summary

Beneficiaries are the nine departments of the Regional Department, four autonomous public organizations and five other public entities. The regional building stock counts 409 buildings with a yearly consumption of 107 Gwh and 26,6 millions € of energy bill. The building stocks is composed as following:

CONSEJERIA DE PRESIDENCIA: 6
 CONSEJERIA DE HACIENDA Y ADMIN PUBLICA: 36
 CONSEJERIA DE AGRICULTURA Y AGUA : 46
 CONSEJERIA DE DESARROLLO EC. TURISMO Y EMPLEO : 8
 CONSEJERIA DE EDUCACION Y UNIVERSIDADES: 111
 CONSEJERIA DE FOMENTO E INFRAESTRUCTURAS: 7
 CONSEJERIA DE SANIDAD (incluido SMS): 101
 CONSEJERIA DE FAMILIA E IGUALDAD DE OPOR: 4
 CONSEJERIA DE CULTURA Y PORTAVOCIA: 10
 ORGANISMO AUTONOMO AGENCIA TRIB, REG. MURCIA: 1
 ORGANISMO AUTONOMO IMIDA: 4
 ORGANISMO AUTONOMO IMAS: 36
 ORGANISMO AUTONOMO SEF: 26
 ASAMBLEA REGIONAL: 2
 CONSEJO ECONOMICO Y SOCIAL: 1
 BORM: 1
 CONSEJO JURIDICO: 1
 CONSORCIO EXTINCION DE INCENDIOS: 8

The Energy Efficiency Plan in Public Buildings intend to realize 23% energy savings (25 Gwh, 6,2 millions.

Projects include the followings Energy Conservation Measures (ECMs):

- Façade renovation (mix between windows replacement and opaque facades placement)

- Inside lighting renovation (relighting with led)
- Boiler retrofitting (biomass boilers)
- Air conditioning retrofitting (technical equipment replacement)
- Energy management (commissioning and regulation of the equipment)

The number of planned projects is 100 for large buildings, 79 projects for medium-size buildings and 230 projects for small buildings. However, this number of planned projects is subject to evolve depending the results of energy analysis (in process) and the conditions of the first contracts signed with ESCOs. The renovation program will be implemented in 8 phases over the life of the plan.

Implementation of the plan follows the procedure below:

1. Execution of energy audits and diagnoses (DGEAIM)
2. Impact sheet and technical specifications drafting (DGEAIM)
3. Tender execution up to contract (DGP)
4. Monitoring, supervision and acceptance of works (DGP)

The table below details the phases foreseen at this stage of the master plan (draft paper):

Stages	Number of buildings in stages and sizes			Finish Date
	Big	Medium	Small	
I	47	8	7	2017/03
II	38	12	0	2017/03
III	15	35	0	2017/07
IV	0	24	30	2017/09
V	0	0	50	2017/11
VI	0	0	50	2018/01
VII	0	0	50	2018/03
VIII	0	0	43	2018/05
Subtotal	100	79	230	

This strategic updated as the However, the plan

planning is being plan progress. implementation

has already begun. At date, DGEAIM/DGP is busy to finalize the first stage with the drafting of the technical specifications to tender, award and sign a first EPC contract for a pool of 24 administrative buildings for which energy audits and diagnoses have been already executed. In the elaboration of the technical specifications of the 24 administrative buildings is collaborating the ELENA team of INFO Murcia.

The next step is the diagnosis of a second pool of 37 buildings (educational buildings). The contract is completed and pending tender and award.

Actions to undertake

No	Action	Due	Owner	Status
1	Execute Energy Audits and Diagnoses for the first pool (24 administrative buildings)	30.09.2016	DGEAIM	Completed
2	Draft Technical Specs for the first pool (24 administrative buildings)	30.12.2016	DGEAIM	On-going

3	Execute the tender for the first pool (24 administrative buildings)	01.04.2017	DGP	On-going
4	Execute energy audits and diagnoses for the 2d pool (37 educational buildings)	30.12.2016	DGEAIM	On-going
5	Calculate potential savings and investment needed for the 2d pool (37 educational buildings)	30.12.2016	DGEAIM	On-going
6	Refine the Impact Sheet with on-going results	30.12.2016	DGEAIM	On-going

Implementation model

The implementation model is the method by which the projects are technically and operationally implemented in the field, most often by using contractors or subcontractors. Typical implementation models are Energy Performance Contracting, Energy Supply Contracting and Separate Contractor Based.

EPC/ESC model: Energy Performance Contracting (EPC) or Energy Supply Contracting (ESC) is a method by which an ESCO (Energy Services Company) acts as a unique contractor and assure all the technical risks of the contract. The ESCO deliver to the contracting beneficiary performance guarantee on the energy savings (EPC) or "useful" energy to a contractually agreed price (ESC) that secures the stream of revenues to reimburse the investment. In the EPC/ESC model, the Program Delivery Unit (PDU) can act either as a project facilitator or project integrator but do not takes on the technical risks of the project (neither the beneficiary). The EPC/ESC model is the key condition to access to ESCO and/or Third party financing (TPF).

Separate contracting: Separate contracting is a method to implement multi-technique energy efficiency or renewable energy projects, by which each step of the process is dealt with by a separate party (energy auditor, engineering company, installer or contractor, maintenance company) and by which individual projects (e.g. boiler replacement, relighting, isolation, etc.) are executed by separate contractors for each technique. In this model, the Program Delivery Unit (PDU) can act either as a facilitator of integrator, but it can be useful to have the Program Delivery Unit (PDU) or another organization to act as an integrator to ensure an end-to-end delivery of the energy efficiency program and provide a consistent level of service from the different contractors. In the Separate contracting model, the Program Delivery Unit (PDU) and/or the beneficiary takes on the technical risks of the project. In this model, there is also little room to access to Third party financing (TPF).

Key questions to address:

EPC/ESC vs. Separate contracting	Comments
Are there local ESCO's on the market to organize competitive tenders? (= Condition for EPC/ESC)	Yes, there are several ESCOs working in the Murcia region.
Do local ESCO market practices meet the program level of ambition (e.g. in case of deep retrofit)? (= Condition for EPC/ESC)	ESCO companies that have worked in Murcia, have done projects on municipal infrastructures. No results are known about large public buildings.

Are the beneficiaries able or willing to sign long term contracts with suppliers/private ESCO's? (= Condition for EPC/ESC)	Yes, beneficiaries are departments of regional Government and can contract under the same conditions.
Is there a standard and robust EPC/ESC tendering model available locally? (= Condition for EPC/ESC)	No, there isn't at this moment.
Is there local expertise and resources in EPC/ESC tendering process? (= Condition for EPC/ESC)	There are some experiences in municipalities (sports facilities and public lighting) but DGEAIM and/or DGP) but has limited or no experience in EPC contracting and/or Competitive Dialog
Is it desirable to integrate "operating and maintenance services" within the contractual scheme for the projects? (= Suitable for EPC/ESC)	Yes. In cases of ESCO financing we think it is the most useful.
Is it important/necessary to manage the technical risk of the projects by performance guarantees? (= Suitable for EPC/ESC)	In all contracts the contractor must provide guarantees, but the guarantees increase the contract price. It is a case to handle case by case.
Is it important/necessary to manage and control transaction costs of the projects? (= Suitable for EPC/ESC)	We think it is very important.
Is it important to enhance financial predictability of the projects? (= Suitable for EPC/ESC)	Yes, we believe that ESCOs are an essential tool to enhance financial predictability.
Are ESCO and/or TPF financing desirable or necessary? (= Suitable for EPC/ESC)	After evaluating the financing possibilities for a first group of 24 building we have concluded that for large-scale energy efficiency projects the preferred financing option is ESCO financing, although other financing options have not been ruled out.
Are the "time to invest" and "time to savings" decisive factors for the program? (= Suitable for EPC/ESC)	These are very important factors.

Summary

EPC Contracting is the preferred model of implementation for the Region of Murcia, but this model could evolve depending the final results of the first EPC contracts.

Actions to undertake

No	Action	Due	Owner	Status
1.	Investigate local TPF/ESCO market	30.09.2016	DGEAIM/DGP	Completed

Operating Services

The Operating Services are the kind of services that are delivered by the Program Delivery Unit (PDU). They can be Marketing, Aggregation, Integration, Facilitation, Financial Advisory, Financing and Assessment (or a combination of):

Marketing: Marketing covers the commercialization of the services of energy efficiency to the beneficiaries. This covers the whole range of communication and commercial development services that are necessary to inform the beneficiaries of the types of offerings that are available to them. It also covers the pricing policy and product/services development.

Aggregation: see below

Facilitation: Facilitation means that the Program Delivery Unit (PDU) does not sign the contract with the beneficiary, but coordinates or “facilitates” the whole process of project delivery on behalf of the beneficiary. The contracts are signed directly between the beneficiary and the contractors. This role is often played by the Program Delivery Unit (PDU) in case of EPC/ESC implementation model, where the contract is signed directly between the beneficiary and the ESCO. Managing the tendering process is typically part of facilitation services offered in case of EPC or ESC projects.

Integration: Integration means that the Program Delivery Unit (PDU) acts as an intermediary between the beneficiary on one hand and the contractors or subcontractors on the other hand. This means that the contract for the delivery of the energy efficiency is signed between the integrator and the beneficiary and that the integrator signs contracts with the (sub)contractors. This role is often associated with the Separate Contractor Based implementation model, although it can also be applied to EPC or ESC. In the integrating model, the Program Delivery Unit (PDU) takes on the technical risks of the project, except to have back-to-back agreements with the beneficiary on one hand and the ESCO on the other hand (in the case of EPC/ESC model).

Financial Advice: see below

Financing: see below

Assessment: Assessment is the role by which the PDU evaluates the technical and financial viability of an energy efficiency project and decides whether or not the project gets implemented and/or financed. The PDU will typically use a number of criteria to judge whether the project is acceptable or not.

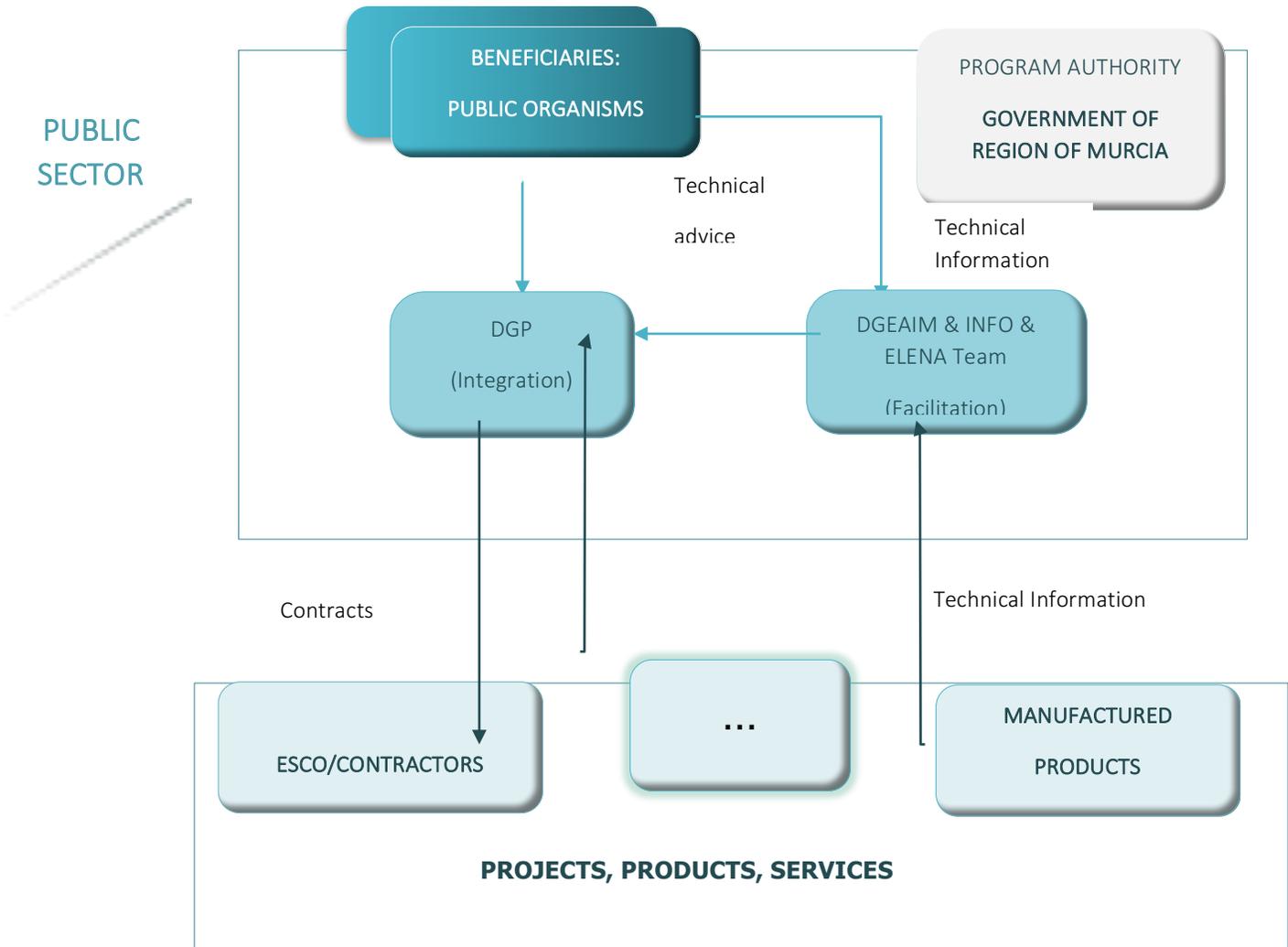


Figure 1. ORGANIZATIONAL STRUCTURE

Key questions to address

Marketing	Comments
What are the knowledge, resources and staff required to market?	In our case the marketing service is not a type of service delivered by the Program Delivery Unit (PDU).
How to market the program?	
What are the funding requirements to market the program?	
Facilitating vs. integrating	Comments

<p>What are the knowledge, resources and staff required to facilitate the projects?</p>	<p>Energy Efficiency assessment: DGEAIM has an internal team experienced in the field. In addition, DGEAIM will hire external consultants to handle audits and studies. In addition, technical assistance from the Elena-Fuensanta team of INFO.</p> <p>Public procurement: DGEAIM will work in cooperation with a Centralized Purchase office (DGP) that has internal team experienced in public procurement but has a no experience in EPC contracting and/or Competitive Dialog.</p> <p>Project management: DGEAIM has an internal team experienced in the field.</p> <p>Public Finance: DGEAIM has an internal team experienced in the field.</p>
<p>What are the funding requirements to facilitate the projects?</p>	<p>The funds needed for the facilitation and integration of the projects are part of the budgets of the Regional Government.</p>
<p>What are the knowledge, resources and staff needed to integrate the projects?</p>	<p>Knowledge on public procurement, centralized contracting and management of public (real estate)</p> <p>DGP is specialized in these matters. It has enough managers and architects to handle the contractions that are necessary.</p>
<p>What are the funding requirements to integrate the projects?</p>	<p>The funds needed for the facilitation and integration of the projects are part of the budgets of the Regional Government.</p>
<p>What is the desired level of integration of the program management? (= Suitable for integration)</p>	<p>The level of integration is high because DGP signs all contracts on behalf of the beneficiaries.</p>
<p>Is integration (in particular those of the separate contracting model) desirable to have a uniform level of service and risk profile to offer? (= Suitable for integration)</p>	<p>Yes, integration into large-scale projects allows acquiring useful knowledge for new tenders.</p>
<p>Is there sufficient "value added" to integrate the contracting process (e.g. single point of contact, risk management, economies of scale)? (= Condition for integration)</p>	<p>We believe that the integration and centralization of contracting can take advantage of economies of scale and manage risks more efficiently.</p>
<p>Does the Program Delivery Unit (PDU) have the knowledge and resources (in terms of staff and funding requirements) to integrate the program? (= Condition for integration)</p>	<p>Yes (as part of the work of DGP)</p>

Can the Program Delivery Unit (PDU) take the "residual" risk on? (= Condition for integration)	N/A.
Assessment	Comments
What are the knowledge, resources and staff required to assess the projects?	Energy Efficiency assessment: DGEAIM has an internal team experienced in the field. In addition, DGEAIM will hire external consultants to handle audits and studies, and we have technical assistance from the Elena-Fuensanta team of INFO.
How to market the program?	N/A
What are the funding requirements to assess the projects?	The financing costs of assessment are mainly labor costs for technical staff (engineers in DGEAIM and INFO, architects in DGP) and administrative and management staff. At the moment we are in the process of economic valuation of these costs.

Summary

DGEAIM/DGP will act as a facilitator/integrator to execute the projects on behalf of the beneficiaries:

Program Management: DGEAIM leads the program implementation and follow-up.

- Projects preparation: DGEAIM will execute the energy audits, make economic and technical assessments to define the scope of works to be executed within the projects, organize the phases of execution (pool of works and/or buildings) on the timeframe of implementation (2016-2020). DGEAIM also draft the technical specifications required for the Projects tendering.
- Projects tendering: DGP will manage the tenders up to the contract awarding through a Central Purchasing Office. DGP is the contracting authority.
- Works follow-up: DGP will manage the monitoring, supervision and acceptance of works.

PDU establishment budget estimates: Direct staff costs DGEAIM/DGP

These calculations are still under development.

Categories of staff to work on the project	Monthly salary incl.social security charges (EUR)	Number of work months on project	Total direct staff costs
<i>Technical Expert 1</i>			
<i>Technical Expert 2</i>			
<i>Administrative support 1</i>			
<i>Administrative support 2</i>			
Total direct staff costs			

External experts / subcontracts DGEAIM/DGP

Type of activities / support	Description of tasks to be carried out	Total [EUR]
<i>Project Implementation Unit</i>	<p><i>Support to manage and provide project development services, of which:</i></p> <p><i>Training on basic economic and technical aspects of EPC contracts versus SBC operational model;</i></p> <p><i>Travel to Brussels on a study-tour</i></p>	
<i>Audits, mapping, feasibility studies</i>	<i>External advice to execute audits, buildings mapping, feasibility studies needed to finalize the master plan.</i>	
<i>ECMs technical specifications</i>	<i>External advice to draft technical specifications of ECMs (for SBC-based project) needed to launch the tenders.</i>	
<i>EPC tenders documents</i>	<i>Legal and contractual external advice to draft standardized EPC tenders documents</i>	
<i>EPC tenders assistance</i>	<p><i>Legal and contractual external advice to facilitate the first EPC tenders:</i></p> <p><i>project preparation</i></p> <p><i>final tenders documents drafting</i></p> <p><i>bidders selection</i></p> <p><i>bids analysis and negotiation</i></p> <p><i>Measurement & Verification plan establishment</i></p> <p><i>contract implementation follow-up)</i></p>	
Subtotal external experts / subcontracts		
Total costs		

DGEAIM Project staff: two engineers and an officer are working on the development and implementation of the Plan. Coordination and general supervision of the plan is made by the Director of DGEAIM.

Actions to undertake

No	Action	Due	Owner	Status
1.	Estimate the final funding and staff requirements (DGEAIM/DGP) depending the final choice of the implementation model	31.12.2016	DGEAIM/DGP	On-going

Financing & Funding Vehicle

The Funding Vehicle is the entity that is used to finance the projects. Typically, the models/programs that where analyzed make use of the following funding vehicles (or a combination of):

Investment fund: the Program Authority (PA) or the Program Delivery Unit (PDU) set-up a public, public-private, public-citizens fund to provide total or partial project financing of the program. The fund can work on a stand-alone basis, in cooperation with the Program Delivery Unit (PDU) or be integrated into the Program Delivery Unit (PDU). In this case, the fund takes on the financial risk of the project.

PDU financing: the Program Delivery Unit (PDU) acts as the funding vehicle, providing financing, either through an own fund (or the Investment fund) or by packaging external financing solutions into an integrated financing service. In this case, the Program Delivery Unit (PDU) takes on the financial risk of the project.

ESCO financing: the ESCO or contractor acts as the funding vehicle, providing financing through either EPC financing or ESC financing. In this case, the ESCO takes on the financial risk of the project. The Program Delivery Unit (PDU) can support the beneficiary with financial advice and financial engineering services providing guidance and consultancy on ESCO financing for his project

Conventional financing: the beneficiaries pack internal (own funds) and external financing (financial institutions, utility funds, etc.) solutions in order to finance his projects. In this case, the beneficiaries take on the financial risk of the project. The Program Delivery Unit (PDU) can support the beneficiary with financial advice and financial engineering services providing guidance and consultancy on available funding for his project.

Key questions to address

Main topics	Comments
What is the funding need of the program	Using the ESCO model, for a first group of buildings, the annual cost of the contract for the Program Authority will always be less than the annual cost of energy for that group, plus the cost of maintenance (That is, current expenditures are a higher upper limit of the bidding cost of contracts. The actual cost will be substantially lower) The other investments (Improvement and replacement of equipment) made by the ESCO company will be financed with the own savings obtained.

	<p>The exact cost will depend on which is the most favorable offer in the process of bidding and awarding the contracts.</p> <p>ESCO model will be used for the first group of 24 buildings. If the experience is positive its use will be extended to other groups of buildings, although other financing options have not been ruled out.</p> <p>The exact cost will depend on which is the most favorable offer in the process of bidding and awarding the contracts.</p>
Are there existing local, regional or national financing instruments to fund the program (e.g. ERDF)	<p>Yes, there are two national schemes (JESSICA-FIDAE and Programa Pareer-Grece) but they ended their terms this year.</p> <p>The financing of the planning and advisory work is done with own funds coming from the budget of the Regional Government.</p> <p>In order to finance the specific technical projects of each building, ESCO funding will be used principally, although other possibilities are not ruled out.</p>
Is it eligible for EU funding (e.g. EIB)?	Yes, this funding source is possible.
Who can bare the financial risk?	N/A
What is the bearable impact on public balance sheet and/or beneficiary balance sheet (debt capacity)?	ESCO financing is not indebted (in the sense that there is no creditor and repayment term for a loan). However, it is an instrument that must be used with the utmost precaution.

Conventional financing	Comments
Are financial advice and financial engineering services to the beneficiary sufficient?	N/A
Can beneficiaries count on their own funding (own debt capacity)?	The specific beneficiaries are part of the Regional Government. They do not use their own funds, since these funds are destined to their own activities (education, health, etc).
Can beneficiary take the financing risk on?	No

Is bank financing available for the kind of projects?	Yes. It is not the preferred option but it is not discarded either.
Can the Program Authority (PA)/Program Delivery Unit (PDU) set up an agreement with financial institutions (public and private) on a structural funding scheme for your program?	It could do this, but this is not the chosen option.
Does the beneficiary need partial credit guarantee or portfolio guarantee to finance his projects?	No
Can the Program Authority (PA)/Program Delivery Unit (PDU) set up a credit guarantee fund to support the program funding through beneficiaries?	Yes
ESCO Financing	Comments
Does local private ESCO's (market) provide funding?	Yes. There are several ESCOs that provide funding
Is the ESCO financing competitive compared to conventional (or PDU) financing?	Yes, it is competitive. However the other options are completely discarded.
Could the local private ESCO's market meet the program size (funding volume)?	Yes, although we may have to hire more than one ESCO.
Can the Program Authority (PA)/Program Delivery Unit (PDU) set up an agreement with financial institutions (public and private) on a third party structural funding scheme for your program?	Yes. This is possible.
Does the ESCO need partial credit guarantee of portfolio guarantee?	All companies that contract with the Regional Government must present sufficient guarantees. Contracts legislation is very strict in this area.
Can the Program Authority (PA)/Program Delivery Unit (PDU) set up a credit guarantee fund to support the program funding through ESCO's?	Option not considered at this moment.
PDU Financing	Comments
Is it necessary and/or cheaper to integrate the project financing within the model?	In our case, the PDU does not act as a financing vehicle. It will not act as a financier or investor for the final beneficiaries.
Can the Program Delivery Unit (PDU) take the financing risk on?	No

What is the desired level of integration of the program funding in the role of aggregator/facilitator/integrator?	N/A
Does the Program Delivery Unit (PDU) have the financial expertise and resources to fund the program?	No
Can the Program Delivery Unit (PDU) have access to sufficient funding to meet the program size?	N/A
Can the Program Authority (PA)/Program Delivery Unit (PDU) set up an agreement with financial institutions on a third party structural funding scheme for your program?	The Program Authority (PA)/Program Delivery Unit (PDU) can set up agreements with financial institutions on a third party structural funding scheme. It is a possibility that is not completely ruled out.

Summary

As the size of the program is bearable on the regional budget, financing of the projects will be made by the Regional Government, sourced totally from its own funds.

Actions to undertake

No	Action	Due	Owner	Status
1.	Investigate local TPF/ESCO market	31.09.2016	DGEAIM/DGP	Done
2.	Refine the funding requirements to finance the projects to revise the impact sheet.	31.12.2016	DGEAIM	On-going

Action plan summary

The Government has mandated, through its Government Council, the Directorate General for Energy, Industry and Mining (DGEAIM) of the Regional Ministry of Economic Development, Tourism and Employment to develop Energy Efficiency Plan for the renovation of the Public Building stock owned by the regional authorities. This plan is part of a global Energy Plan 2016-2020 for the Region. The DGEAIM works in close cooperation with INFO-Murcia and to set-up and execute the plan.

Beneficiaries are the nine departments of the Regional Department, four autonomous public organizations and five other public entities. The regional building stock counts 409 buildings with a yearly consumption of 107 Gwh and 26,6 millions € of energy bill. The building stocks is composed as following:

CONSEJERIA DE PRESIDENCIA: 6

CONSEJERIA DE HACIENDA Y ADMIN PUBLICA: 36

CONSEJERIA DE AGRICULTURA Y AGUA : 46

CONSEJERIA DE DESARROLLO EC. TURISMO Y EMPLEO : 8

CONSEJERIA DE EDUCACION Y UNIVERSIDADES: 111

CONSEJERIA DE FOMENTO E INFRAESTRUCTURAS: 7

CONSEJERIA DE SANIDAD (incluido SMS): 101

CONSEJERIA DE FAMILIA E IGUALDAD DE OPOR: 4

CONSEJERIA DE CULTURA Y PORTAVOCIA: 10

ORGANISMO AUTONOMO AGENCIA TRIB, REG. MURCIA: 1

ORGANISMO AUTONOMO IMIDA: 4

ORGANISMO AUTONOMO IMAS: 36

ORGANISMO AUTONOMO SEF: 26

ASAMBLEA REGIONAL: 2

CONSEJO ECONOMICO Y SOCIAL: 1

BORM: 1

CONSEJO JURIDICO: 1

CONSORCIO EXTINCION DE INCENDIOS: 8

The Energy Efficiency Plan in Public Buildings intend to realize 23% energy savings (25 Gwh, 6,2 millions €). Projects include the followings Energy Conservation Measures (ECMs):

Façade renovation (mix between windows replacement and opaque facades placement)

- Inside lighting renovation (relighting with leds)
- Boiler retrofitting (biomass boilers)
- Air conditioning retrofitting (technical equipment replacement)
- Energy management (commissioning and regulation of the equipment)

The number of planned projects is 100 for large buildings, 79 projects for medium-size buildings and 230 projects for small buildings. However, this number of planned projects is subject to evolve depending the results of energy analysis (in process) and the conditions of the first contracts signed with ESCOs. The renovation program will be implemented in 8 phases over the life of the plan.

Implementation of the plan follows the procedure below:

- Execution of energy audits and diagnoses (DGEAIM)
- Impact sheet and technical specifications drafting (DGEAIM)
- Tender execution up to contract (DGP)
- Monitoring, supervision and acceptance of works (DGP)

The table below details the phases foreseen at this stage of the master plan (draft paper):

Stages	Number of buildings in stages and sizes			Finish Date
	Big	Medium	Small	
I	47	8	7	2017/03
II	38	12	0	2017/03
III	15	35	0	2017/07
IV	0	24	30	2017/09
V	0	0	50	2017/11
VI	0	0	50	2018/01
VII	0	0	50	2018/03
VIII	0	0	43	2018/05
Subtotal	100	79	230	

This strategic planning is being updated as the plan progress. However, the plan implementation has already begun. At date, DGEAIM/DGP is busy to finalize the first stage with the drafting of the technical specifications to tender, award and sign a first EPC contract for a pool of 24 administrative buildings for which energy audits and diagnoses have been already executed. For the elaboration of these technical specifications DGEAIM is receiving technical advice from ELENA team integrated in INFO Murcia.

The next step is the diagnosis of a second pool of 37 buildings (educational buildings).

DGEAIM has been designated as the Program Delivery Unit to handle and facilitate the program execution with the support of the DGP (Dirección General de Patrimonio e Informática) that will act as the contracting authority while INFO-Murcia will take in charge the reporting requirements within the CITYnvest project. With the support of INFO-Murcia, the CITYnvest team assists the DGEAIM/DGP to implement the program operationally.

After studying the different models presented in WP1, the approach to be adopted by DGEAIM will be based on the following:

Hybrid Facilitation/Integration model: The organization to carry out the Energy Efficiency Plan in Public Buildings is based on an hybrid facilitation/integration model, with two Murcia Regional Administrations at work on behalve of beneficiaries: DGEAIM team leads the organization, execution and follow-up of the

plan and prepare/facilitate the projects pipeline (Execution of energy audits and diagnoses, Impact sheet and technical specs drafting) for the DGP Team which is in charge of the tender execution up to the contract awarding (through a Centralized Purchasing Office) and the monitoring, supervision and acceptance of works. DGP will act as the Contracting Authority.

FI financing model: Beneficiaries finance the projects on their own resources. The funding of the projects will be provided from the regional budget sourced totally or partially on existing national energy efficiency funds available to regions (JESSICA-FIDAE, Programa Pareer-Grece.)

Implementation model: the EPC option has been chosen by DGEAIM to execute the projects.

The DGEAIM/DGP will be funded to implement the plan (as part of his on-going work).

EPC Contracting is the preferred model of implementation for the Region of Murcia, but this model could evolve depending the final results of the first EPC contracts.

DGEAIM/DGP will act as a facilitator/integrator to execute the projects on behalf of the beneficiaries:

Program Management: DGEAIM leads the program implementation and follow-up.

Projects preparation: DGEAIM will execute the energy audits, make economic and technical assessments to define the scope of works to be executed within the projects, organize the phases of execution (pool of works and/or buildings) on the timeframe of implementation (2016-2020). DGEAIM also draft the technical specifications required for the Projects tendering.

Projects tendering: DGP will manage the tenders up to the contract awarding through a Central Purchasing Office. DGP is the contracting authority.

Works follow-up: DGP will manage the monitoring, supervision and acceptance of works.

Action plan summary

No	Action	Due	Owner	Status
1	Presentation of the Energy Efficiency Plan (first draft) to the government of the Murcia Region.	25.03.2106	DGEAIM	completed
2	Refine the impact sheet	29.06.2016	DGEAIM	Completed
1	Execute Energy Audits and Diagnoses for the first pool (24 administrative buildings)	30.09.2016	DGEAIM	Completed

2	Draft Technical Specs for the first pool (24 administrative buildings)	30.12.2016	DGEAIM	On-going
3	Execute the tender for the first pool (24 administrative buildings)	01.04.2017	DGP	On-going
4	Execute energy audits and diagnoses for the 2d pool (37 educational buildings)	30.12.2016	DGEAIM	On-going
5	Calculate potential savings and investment needed for the 2d pool (37 educational buildings)	30.12.2016	DGEAIM	On-going
	Refine the Impact Sheet with on-going results	30.12.2016	DGEAIM	On-going
1	Investigate local TPF/ESCO market	30.09.2016	DGEAIM/DGP	Completed
1	Estimate the final funding and staff requirements (DGEAIM/DGP) depending the final choice of the implementation model	31.12.2016	DGEAIM/DGP	On-going
1	Investigate local TPF/ESCO market	31.09.2016	DGEAIM/DGP	Completed
2	Refine the funding requirements to finance the projects to revise the impact sheet.	31.12.2016	DGEAIM	On-going