



Energy Efficiency Project Development for South Attica

Project Presentation

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Efficiency Finance Market Place
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PRODESA is assisting

7 municipalities located in the metropolitan area of Athens to:

- develop showcase energy efficiency projects of
 - **20.2 m€** total investment
 - **116** municipal buildings
 - **22,000** luminaires of streetlighting
- **bundle** energy efficiency interventions in larger projects
- utilise innovative **financial tools** and attract private investments by means of energy performance contracting



PRODESA is financed by the 'Project Development Assistance' instrument of H2020

Partners – Cooperation of Municipalities

Five municipalities are developing projects and will proceed with tendering and contract signing:

- **ALIMOS (Project Leader)**
- **AGIOS DIMITRIOS**
- **GLYFADA**
- **VARIS - VOULA – VOULIAGMENI**
- **AGII ANARGIRI – KAMATERO**



Βάρης
Βούλας
Βουλιγαμένης



Municipality of Amarooussion

Two municipalities are participating as replicato. –

- **PALAIIO FALIRO**
- **AMAROOUSSION**



Results to be disseminated to all municipalities in Greece

- **CENTRAL UNION OF MUNICIPALITIES OF GREECE**

Facilitating Partners

- **EUDITI**

Energy and Environmental
Design LTD

Project management & coordination
support
Technical support



- **CRES**

Centre for Renewable
Energy Sources and Saving

Support on regulatory issues
Technical support



- **ENFINITY NV**

Support on project financing issues



- **ECN**

European Crowdfunding
Network

Support on crowdfunding issues



- **Kelemenis & Co. Law Firm**

Legal support



PRODESA is contributing to resolving barriers such as:

- **Lack of financing for Project Development**

- Due to the economic crisis, resources were allocated to more pressing needs, and investing in energy efficiency project development was ranked as a second priority;
- **PRODESA** supports the project development which is the most difficult phase to be financed

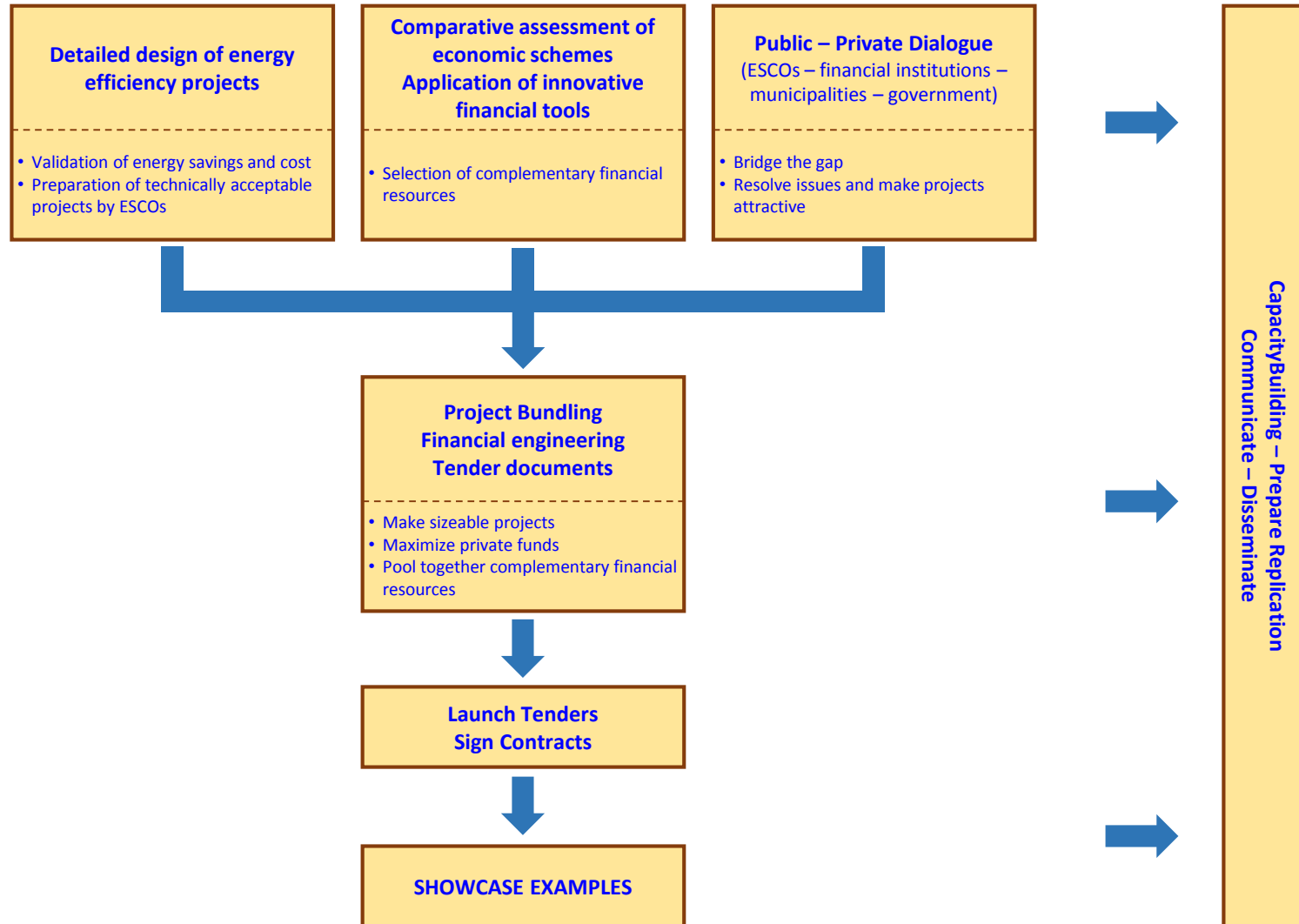
- **Non-developed ESCO market**

- Only few project with involvement of ESCOs have been carried out in Greece
- **PRODESA** will result in real large scale examples in the public sector with 'Data Evidence' on energy performance contracting so as to increase confidence

- **Municipalities' reluctance**

- Municipalities are reluctant to adopt new financing mechanisms such as energy performance contracting
- **PRODESA** develops blueprints of new approaches and tendering procedures that are necessary to support implementation and replication

Project Structure



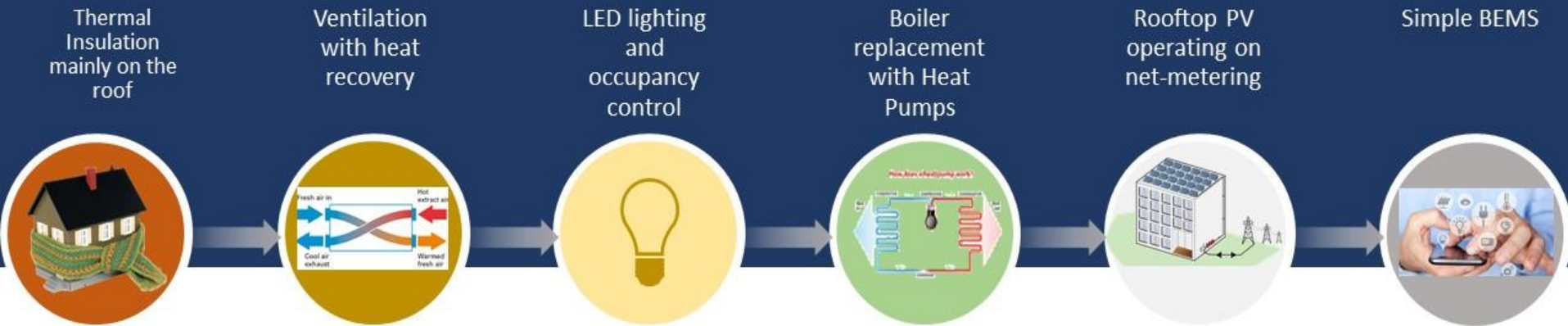
Foreseen Investments and Preliminary Financing Schemes

Building energy efficiency interventions

- Main building types
 - **schools** (mainly)
 - office buildings
 - open care centres for the elderly
 - cultural centres
- Most buildings are about **30 years** old
- Thermal protection needs improvement for the majority of the buildings
- Most of the heating systems are inefficient and need replacement
- Only a couple of buildings have photovoltaic system



Building energy efficiency interventions



- Replace the current oil and gas burning heating systems with heat pumps, and
- Use on-grid rooftop photovoltaic systems to supply electricity

- Current average primary energy consumption 88 kWh/m² y
- 40% improvement due to the energy efficiency interventions
- PV electricity covers, on average, 45% to 55% of the remaining load
- Overall improvement 65% to 70%

Streetlighting energy efficiency interventions

3 Municipalities

- 6.3 MW or 22,000 luminaires to be replaced with LED and monitoring system
- Current primary energy consumption **60 GWh/y**
- Estimated primary energy savings of app. **63%**



Total investment up to now: 25.2 m€, 25% >GA

Alimos 5.3 m€	20 bldg, 2.3 m€	Streetlighting 0.85 MW, 3.0 m€
Ag. Dimitrios 2.4 m€	29 bldg., 2.4 m€	
Glyfada 6.8 m€	26 bldg., 1.1 m€	Streetlighting 3.2 MW, 5.7 m€
Voula 2.8 m€	20 bldg., 2.8 m€	
City of AAK 8.2 m€	27 bldg., 4.2 m€	Streetlighting 3.2 MW, 4.0 m€

Preliminary financing scheme

A mix of public and private financing resources:

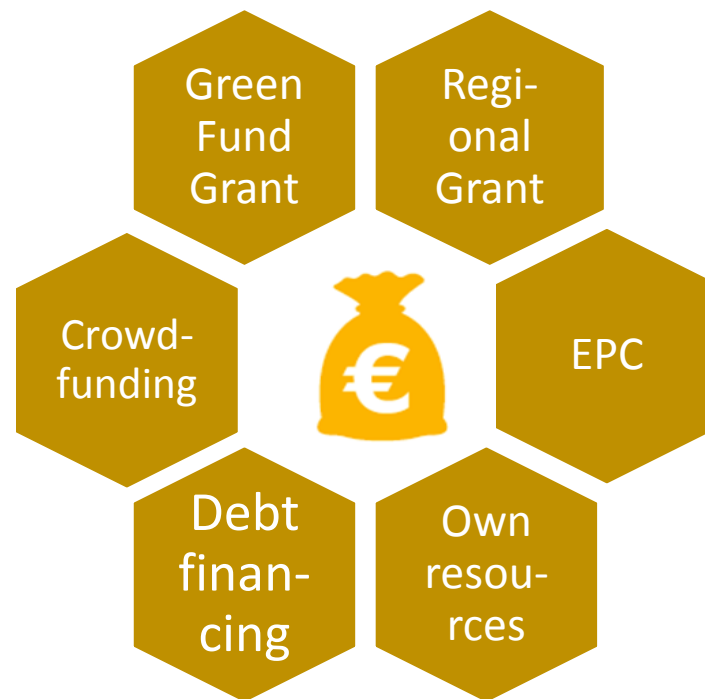
Buildings

- EPC: 35% to 45%
- Public grant: 55% to 65%
- Municipal own resources or debt financing: 15% to 35%
- Crowdfunding combined with EPC: (possibly for a 2.4 MW PV investment)

Streetlighting

EPC: 70% to 100%

Municipal own resources or debt financing: up to 30%



Enabling mixing of financial resources

- Depends on the **availability** of the resources (i.e. Calls for public grants)
- Must identify and plan to meet timely the **requirements** imposed by each financing entity such as:
 - **economic** (e.g. bankable projects, subsidy caps)
 - **administrative** (e.g. state aid, commissioning terms, fully discrete energy efficiency interventions vs whole energy refurbishment)
 - **technical** (e.g. energy saving targets, energy efficiency evaluation method, asset method as opposed to energy consumption)

Contribution of PRODESA to enabling mixing of financial resources

- A 'Generic' **tender document** for the design procurement of the energy efficiency interventions which includes terms ensuring the eligibility of the investments for public grant award
 - An **economic assessment tool** with assumptions acceptable by the financing entities
 - **Resolution of administrative barriers** such as 'state aid'
 - Cooperation with the 'Consignments and Loans Fund' to **provide guarantee of payments** to the ESCOs during the whole energy performance contract duration
 - **The Fund is recently empowered to do so (Law 4643/2019, article 28)**
- Such a guarantee may be enabled through an 'escrow account' kept by the Fund

ESCOs and Energy Performance Contracting (EPC) is one of **the main pillars** of the financing sources brought together in the PRODESA project

ESCOs in the financing scheme

ESCOs and Energy Performance Contracting (EPC) is one of **the main pillars** of the financing sources brought together in the PRODESA project

The ESCO market in Greece

- Market is still in **an early stage**
- Many companies are registered as ESCOs, but **only few EPC projects** have actually been implemented **only in the private sector** (i.e. tertiary and industry)
- Especially in the public building sector some attempts have been made in the past, but implementation of EPCs **has not been deployed yet**
- Only recently there are few examples in street lighting projects

ESCO Dialogue

1st & 2nd ESCO Dialogue

WHY: Establish a communication line, understand difficulties from both sides in implementing EPC

WHO: Participating Municipalities, ESCO companies, financial institutions, Directorate of Energy Policy and Energy Efficiency of the Ministry of Environment & Energy (YPEN)

WHAT: Tendering procedures, EPC model contracts, M&V methods, Financing models, Guarantees, Existing Barriers

Outcomes of ESCO Dialogue

- **1st dialogue: a generic Dialogue**

Set all the different approaches under discussion and obtained the point of view of stakeholders on the different topics

- **2nd Dialogue: a focused Dialogue**

The outcomes of the 1st Dialogue were utilized, as well as the advancement in the other WP and a specific approach was formulated in what concerns the:

- type of procurement procedure
- financing scheme
- guarantees
- obligations of the ESCO
- M&V scheme to be followed within the PRODESA

This approach was then set to discussion with the market and their point of view was obtained.

(conclusions available on: <https://www.prodesa.eu/downloads/?lang=en>)

The approach followed in PRODESA

One-step procedure **Vs** two-step procedure

In the PRODESA project, the contracting Authority has specified the baseline consumption and the energy efficiency measures and has carried out the design before initiating the procurement procedure.

Buildings

- Open procedure (one-step procedure)
- Mixed contract of supply, services and works
- Award criteria based on the most economically advantageous tender (not based on price only, but taken into account weighting factors attributed to the technical aspects of each intervention)

Street-lighting

- Mixed contract of supply & services

For replication

In cases where the Authority doesn't have the means to perform such a preliminary work, the specification and design should be led by the ESCO by utilizing a two-step procedure, e.g. a competitive dialogue.

EPC model

Shared savings **vs** Guaranteed savings model

Guaranteed level of energy savings

- The ESCO guarantees to achieve a minimum level of energy consumption and of cost savings over the duration of the contract
- Energy consumption savings are expressed in kWh but also in monetary terms using an agreed energy price

The EPC makes it clear that the ESCO is responsible for ensuring that the design, construction, installation and performance of the EPC measures (including those specified and designed by the Authority) meet the standards set out in the EPC

Fixed operational payments towards the ESCO, given that the guaranteed levels are met (energy savings, RES production)

If there is a shortfall in actual achieved savings, then the ESCO pays the difference between the guaranteed and achieved savings to the Authority

Prerequisites for contracting authority

Set already in public subsidy programs:

- Clear legal ownership of the buildings
- Permission documentation depicting the current status of the building (e.g. additions, refurbishment)
- Primary Seismic Control Bulletin, showing adequate seismic capacity (macroscopic inspection of the building) (<http://www.oasp.gr/node/74>)
- Energy Performance Certificate (energy class of the building)

Additional:

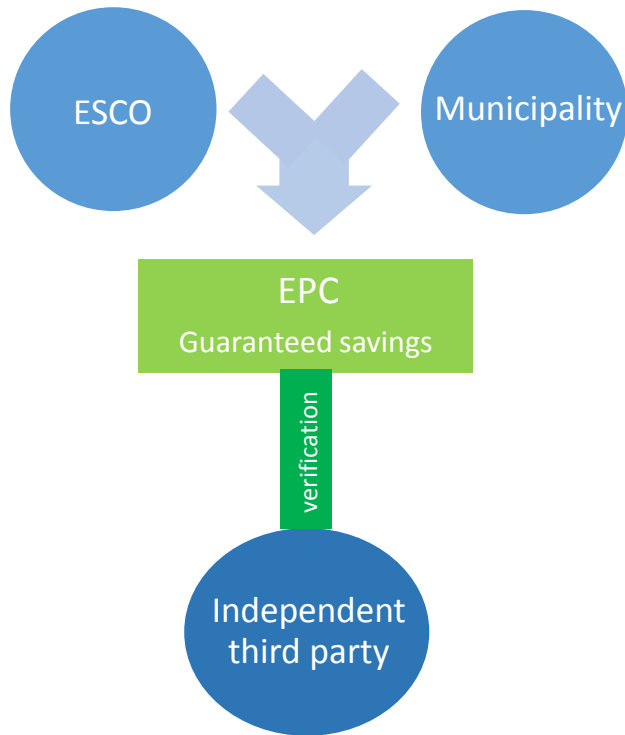
- Energy Audit (Baseline consumption)
- Identification of the technical solution and the energy upgrade that will improve the building class level (e.g. from class D to B+)
- Identification of the actual energy savings based on real consumption data

Prerequisites for contracting authority

The contracting authority:

- Provides the baseline consumption, **sets the targets to be achieved** (energy saving and RES production) and sets **minimum requirements of the M&V plan** (e.g. option of IPMVP)
- Sets the lifetime of the contract (e.g. 12 years), taking into consideration that the level of savings guaranteed should be **equal or greater** than the sum of all economic liabilities of the Authority during the lifetime of the contract (e.g. Operational payments to the ESCO, Loan installment, energy invoices)
- Asks the Tenderer to implement the specific technical solution already defined which will upgrade the building class to a certain level according to the national building code (KENAK 2017)
- Sets the Award criteria based on the **most economically advantageous tender** (not based on price only)
- Sets **minimum technical requirements** for the equipment. The Tenderer can provide more advanced equipment, taking into account that his offer will be scored based on the weighting factors set by the Authority and not only based on price
- Expresses the budget based on **market prices** and not listed prices

Partnership



There is a need for an independent third party to verify the savings achieved

- Centre for Renewable Energy Sources & Savings (CRES) is the national energy agency of Greece
- CRES has already undertaken this role in the case of street-lighting projects funded by the program of 'Consignment and Loans Fund'
- CRES acts as the Technical Advisor of the Fund and verifies the savings achieved

Model EPC contract

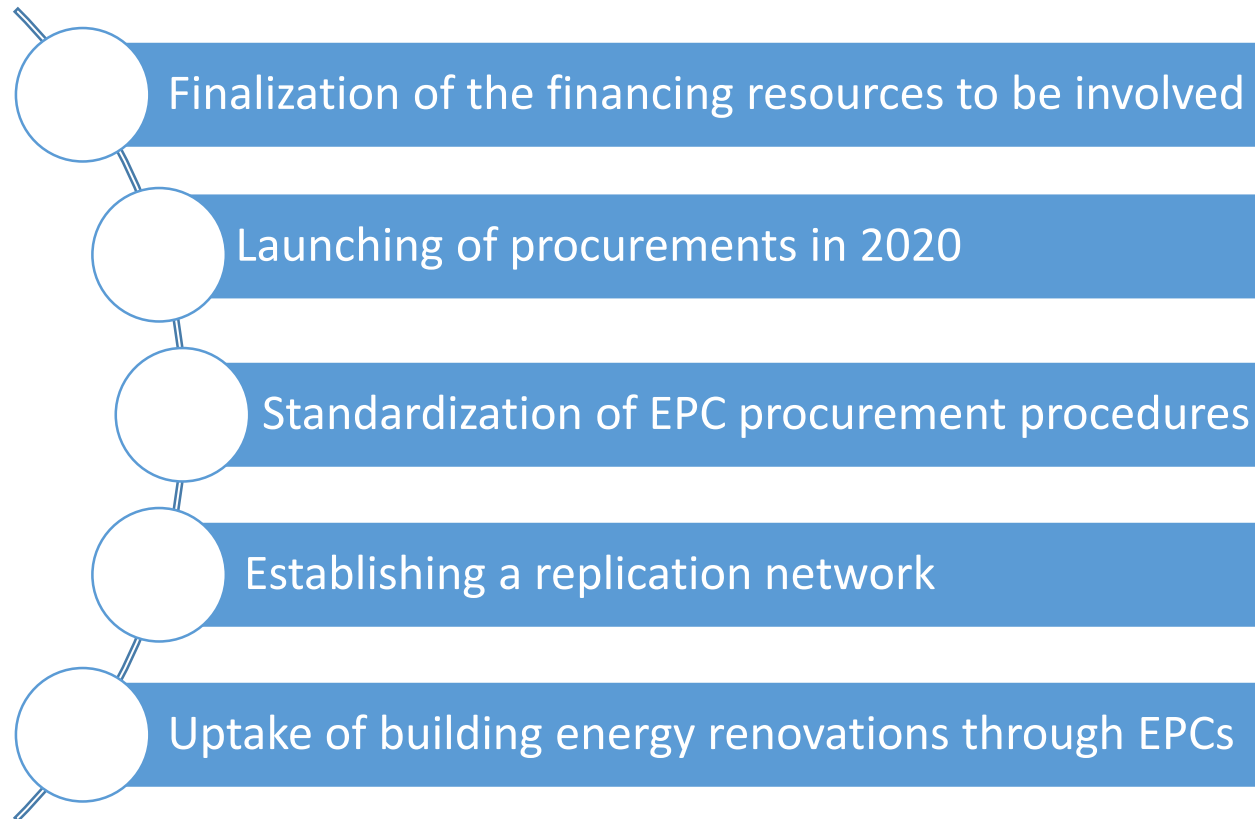
The model contract to be used for the EPC will take into consideration:

- **The minimum items in EPC, set in Annex XIII of Directive 2012/27/EC**

(e.g. list of the efficiency measures, guaranteed savings to be achieved , duration and milestones of the contract, list of the obligations of each contracting party, clear and transparent provisions on measurement and verification of the guaranteed savings achieved, penalties etc.)

- **EUROSTAT's guide to the statistical treatment of EPC** in order to keep the contract off-balance sheet

Next steps



Thank you

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