CA ESD Plenary Meeting

Guidance on Energy Efficiency in Public Buildings

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EPEC guidance on Energy Efficiency in Public Buildings

- **Audience and background**
- **Guidance on the key phases of the PPP project cycle**
- **EU 27 Country Sheets**
- **Conclusions**

Audience and background

Audience for EPEC report

- Designed to assist PPP task forces in the promotion of energy service contracts.
- Designed to help project developers and public contracting authorities at the municipal, regional and national levels deliver PPP projects based on the concept of energy service contracts for energy efficiency in public buildings.

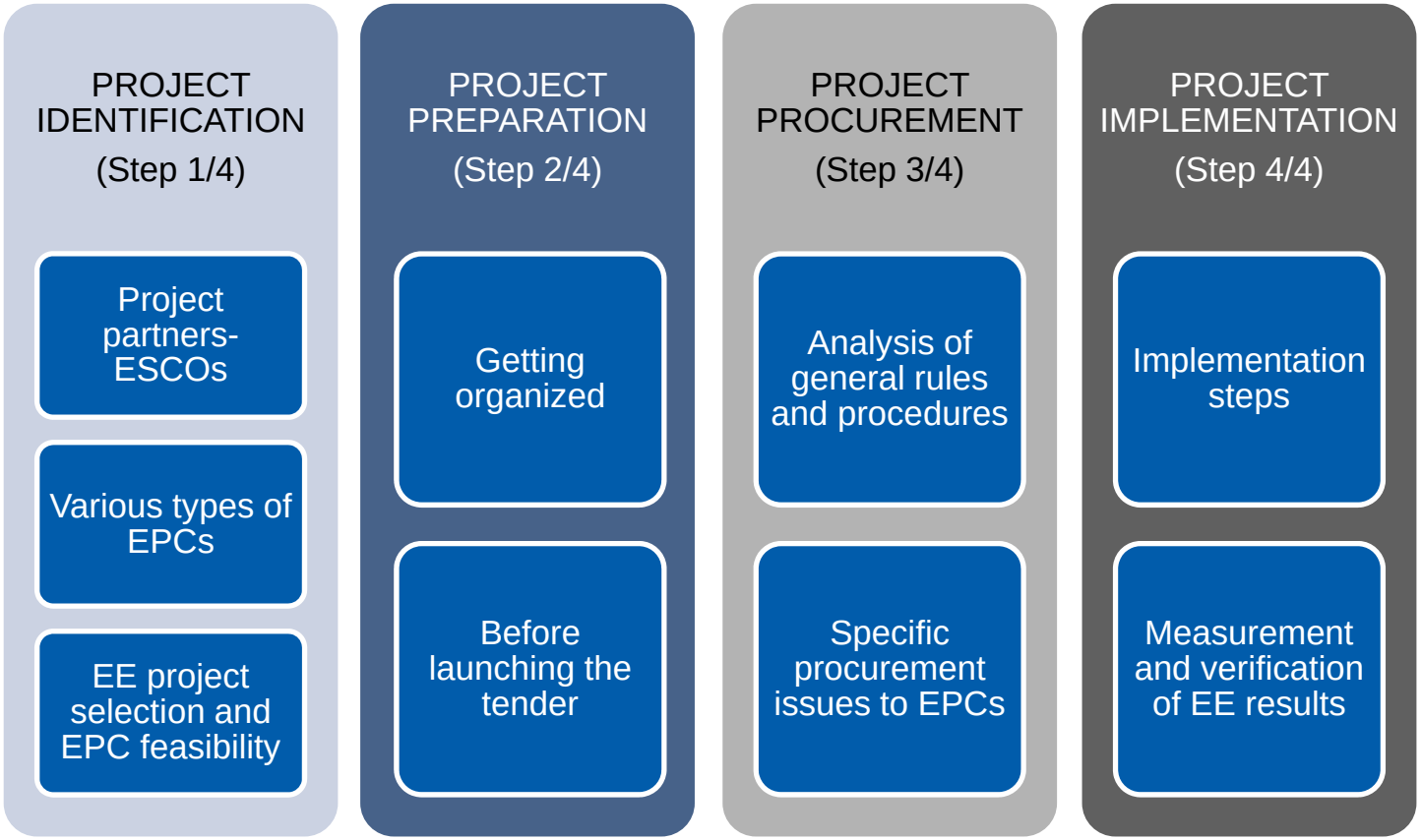
Addressed challenges for EE investments in Public Buildings

- Technical
- Economic
- Budget
- Legal and institutional

EPEC guidance on Energy Efficiency in Public Buildings

- **Audience and background**
- **Guidance on the key phases of the PPP project cycle**
- **EU 27 Country Sheets**
- **Conclusions**

Guidance on all key phases of the PPP project cycle for Energy Efficiency (EE) projects



ESCO analysis (1/2)

PROJECT IDENTIFICATION
(Step 1/4)

- Project partners-ESCOs
- Various types of EPCs
- EE project selection and EPC feasibility

Types of ESCO services provided

- Consulting engineering
- Energy analyses
- Project financing
- Performance guarantees
- Sustainable energy savings
- General contracting
- Project management
- Training
- Energy measurement
- Risk management.

Characteristics of successful ESCOs

- Energy system analysis and technology integration
- Mobilisation and market penetration capability.
- Financial, legal and contract capacity.
- Project and quality management.
- Delivering sustainable energy savings.

ESCO analysis (2/2)

PROJECT IDENTIFICATION
(Step 1/4)

- Project partners- ESCOs
- Various types of EPCs
- EE project selection and EPC feasibility

Example of criteria for ESCO Selection

OWNERSHIP	TARGETED MARKET		SERVICE SPECIALISATION	TECHNOLOGY	GEOGRAPHIC PREFERENCE	PROJECT FINANCING
Private company	Hospital	Medium-scale project	Engineering design and analysis	Lighting	Local/ regional company	Internal financing
Utility or manufacturer subsidiaries	Educational building	Medium-scale project	M&V	HVAC	Country-based company	Private third-party financing
Non-profit company	Office building	Large-scale project	Installation and O&M	Regulation and control	European-based company	Funding mechanism financing

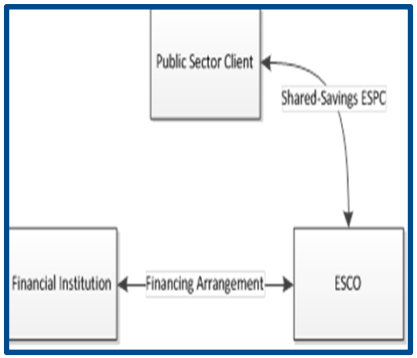
Energy Performance Contracting (EPC)

PROJECT IDENTIFICATION
(Step 1/4)

- Project partners- ESCOs
- Various types of EPCs
- EE project selection and EPC feasibility

Types of Energy Performance Contracting (EPC) structures

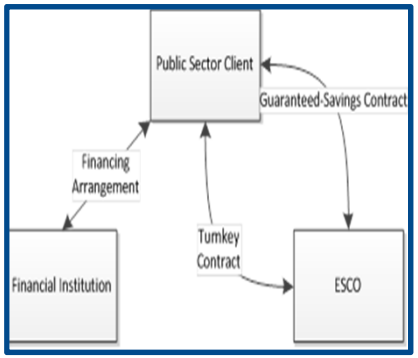
Shared-savings EPC



The contractor fully finances the EE measures implementation over a fixed time-period against a share of the savings after the retrofit.

A "fast-out" EPC is a variation of standard shared-savings EPC, where payments are made until the total project cost/ agreed amount is fully paid to the ESCO.

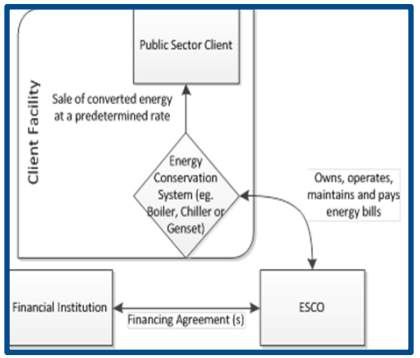
Guaranteed Savings EPC



The client obtains project funds directly from a third-party financier and takes up the financial risks.

The ESCO gets payment for providing support activities and facilitates the financial arrangement between the client and a financial institution by providing a guarantee of a minimum level of energy savings, which will allow for reimbursement of the loan.

Rebate ("Chauffage") EPC



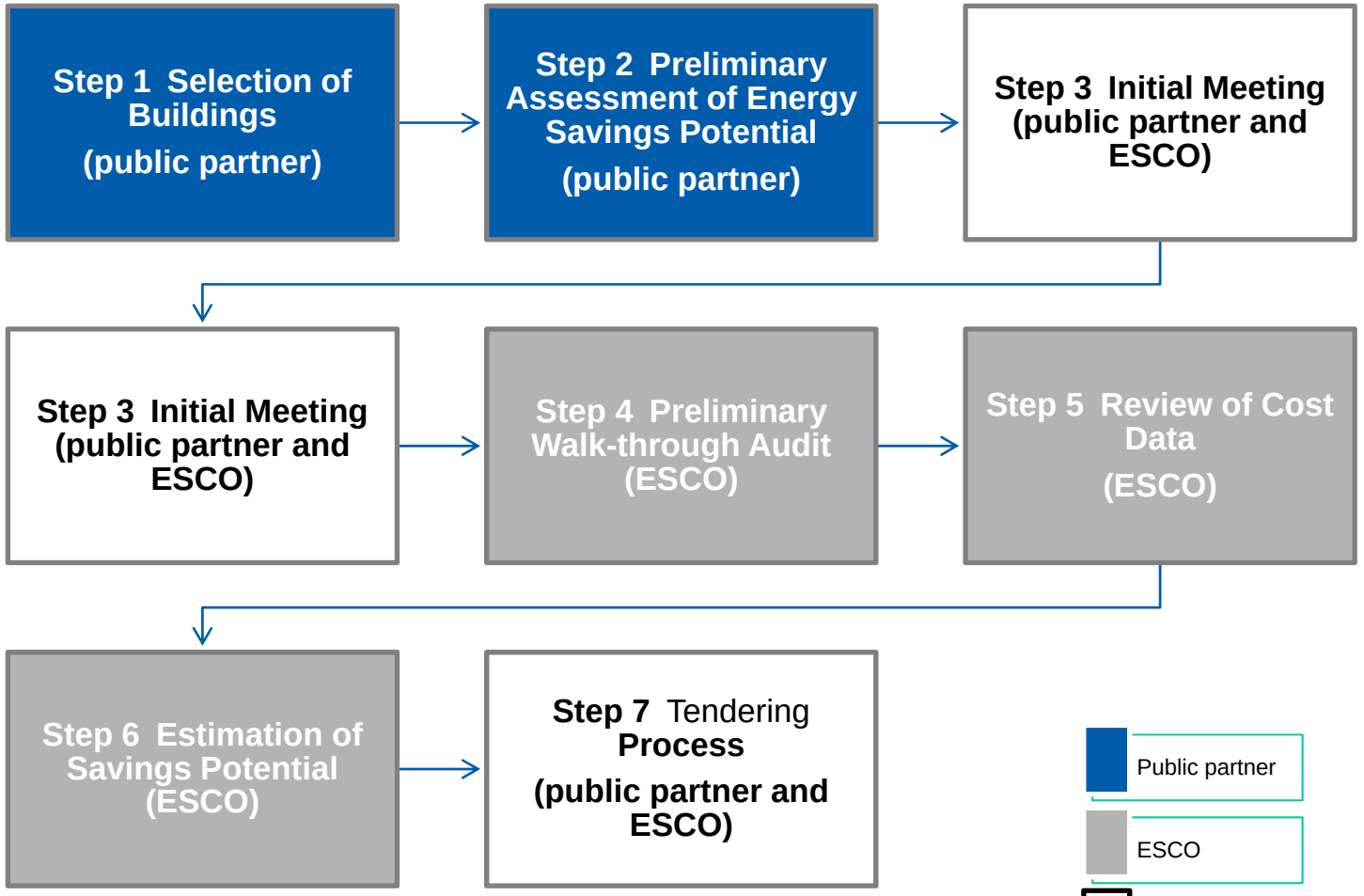
ESCO assumes responsibility to pay owner utility bills; the owner agrees to pay the ESCO a percentage of its historical energy costs.

ESCO becomes the owner of an energy conversion system and sells the converted enegry at a predetermined "rebate" rate, complying with minimum quality levels agreed.

Step-by-step EE Project Selection /EPC feasibility

PROJECT IDENTIFICATION
(Step 1/4)

- Project partners-ESCOs
- Various types of EPCs
- EE project selection and EPC feasibility



Internal organization, plan and schedule

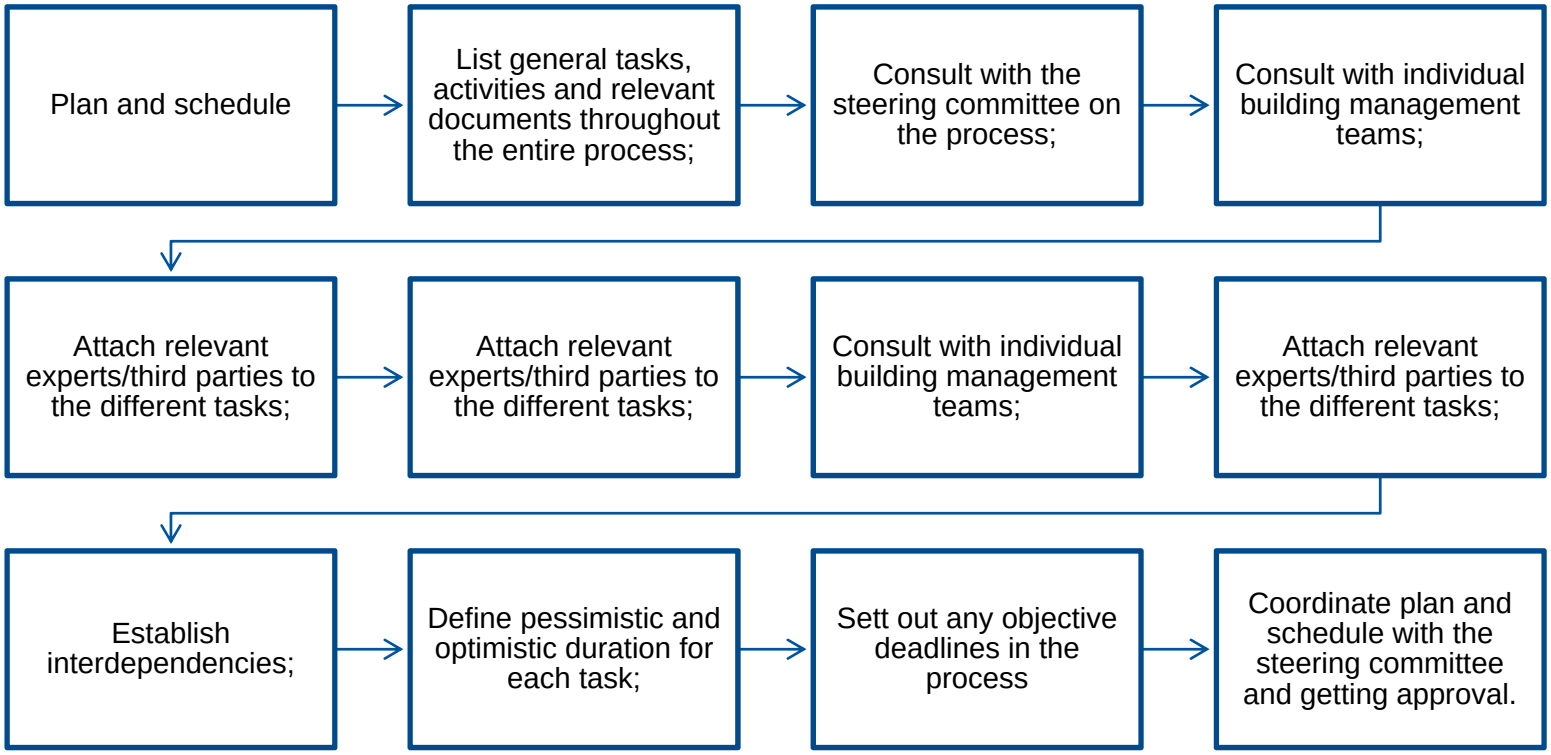
PROJECT PREPARATION
(Step 2/4)

Getting organized

Before launching the tender

- Internal organization structure – EE expert, financial expert with EE financing experience, third-party consultants

- Planning and scheduling:



Funding sources and financing method selection

PROJECT PREPARATION
(Step 2/4)

Getting organized

Before launching the tender

Assessing the attractiveness of self-financing

Questions for public partner to answer

- Does this project have higher priority compared to other public projects competing for the same funding?
- Do the benefits to be achieved by the project outweigh the benefits that alternative projects will bring?
- Are alternative financing mechanisms more expensive than the returns of the project?
- Is timing of the project critical? Can the public partner afford to wait until it can raise alternative financing?

YES

Internal financing sources

- Asset-based finance
- Vendor Finance

NO

External financing sources

- ESCO Financing
- Innovative Debt Funding

- Grant schemes
- Revolving funds (JESSICA)
- Guarantees
- Receivables Purchase Agreements

Steps before launching EE tender

PROJECT PREPARATION
(Step 2/4)

Getting organized

Before launching the tender

Conduct Additional Preparatory Work, if needed

Prepare Detailed PPP Design

- Completion of project design
- Selection and design of tendering process
- Implementation conditions

Select Procurement Method

- Indefinite contracting
- Project bundling
- Quality and cost-based selection

Define Bid Evaluation Criteria

Prepare Draft PPP Contract

Technical Assistance (TA) for Project Preparation*

- EU Structural Funds
- National Support Schemes
- ELENA Facility
- European Energy Efficiency Fund (EEF)
- Mobilising local Energy Investment (MLEI)

** TA is available from a number of sources beyond those hereby presented.*

Analysis - general rules & procedures

PROJECT PROCUREMENT
(Step 3/4)

Analysis of general rules and procedures

Specific procurement issues to EPCs

Energy audit by client	Invitation to tender	Bid evaluation	Financing	Contract
• Client caries out pre-feasibility assessment or energy audit(s) of its building(s)	• Pre-qualification of bidders • Submission of detailed proposals	• Ranking of bidders • Negotiation with bidder ranked first	• Mobilizing finance • Pledges and collaterals	• Main components • Appendices

- While the major steps in EPC procurement are similar to most public procurement models, the following details make EE project procurement unique:
  - Pre-feasibility assessment
  - Financing mobilization in the context of ESCOs
  - Contracting (EPCs) and Measurement & Verification (M&V)

Relevant criteria* for ESCO pre-qualification – company level

PROJECT PROCUREMENT
(Step 3/4)

Analysis of general rules and procedures

Specific procurement issues to EPCs

Corporate Capabilities

- Strong core competencies in energy management and state-of-the-art technology
- Organizational depth for cost-effective and timely implementation
- Existence of documented standard operating procedures and scope of compliance
- Expertise and experience of the proposed project team (CVs and track record) and support staff

Corporate History and Experience

- History of business operations
- Track record in energy services projects
- List of satisfied clients
- Performance (savings) achievement on past projects?
- Comparison of the achieved results with original expectations

Scope of Services

- Discrete services provided under energy performance contracting
- Particular strengths of the ESCO

** All criteria must be considered in the context of country specificities, particularly with regard to EPC.*

Relevant criteria for ESCO pre-qualification – project level

PROJECT PROCUREMENT
(Step 3/4)

Analysis of general rules and procedures

Specific procurement issues to EPCs

Project Implementation

- Experience in minimizing the disruption to the workers in the public building(s) renovated
- Training to be provided to the public building operations staff
- Public manager input in project design, construction and implementation
- Public manager input in equipment, supplier and installer selection
- Any restrictions or bias regarding equipment, suppliers and installers

Project Performance

- Degree of ESCO guarantee the recovery of all project costs and interests' costs through the savings to be achieved within a guaranteed period of time
- ESCO guarantee for all savings or just a portion of savings
- Degree of ESCO responsibility for all elements of the project

Project Capabilities

- Typical improvement measures installed
- Design and project implementation procedures
- Software support systems
- Project management process
- Selection, use and control of subcontractors

Project Capacity

- Number of concurrent projects that can be comfortably performed
- Project managers and their respective project team

Relevant criteria for ESCO pre-qualification – EPC financing

PROJECT PROCUREMENT
(Step 3/4)

Analysis of general rules and procedures

Specific procurement issues to EPCs

Experience in EPC

- Description of energy efficiency and conservation projects during the last three years, where payment was not predicated on actual savings
- Description of experience in training of building operators, provision of building mechanical and electrical maintenance services, and energy use measurement
- Description of EPC projects completed and in progress

Financial Stability

- Sufficient working capital and access to project financing
- Demonstration of adequate skills in financial engineering at ESCO management level
- Adequate and appropriate insurance
- Ability to comply with bonding requirements

Project Financing

- Financing scheme and interest rate
- Degree of project cost exposure and provisions for additional expenses
- Value-for-money assurance
- Assurance of fee consistency through the entire project

Project implementation steps

PROJECT IMPLEMENTATION
(Step 4/4)

Implementation steps

Measurement and verification of EE results

Preparation of the implementation

- Design/ engineering approval
- Pre-implementation measurement
- M&V baseline establishing

Implementation

- Installation
- Training of operators and employees

Measurement of the performance

- Measurement results
- Report to the client

Operation and maintenance

- Measurement results
- Staff training

Energy Service Payments

- Recovery of costs based on savings

Measurement & Verification of EE Results

PROJECT IMPLEMENTATION
(Step 4/4)

Implementation steps

Measurement and verification of EE results

Benefits of M&V	Improve engineering design and project costing
	Boost energy savings through proactive adjustments in facility operations
	Document financial transactions
	Enhance financing for efficiency projects
	Manage energy budgets
	Enhance the value of emission reduction credits
	Support evaluation and development of broader efficiency programs
	Increase understanding of energy management as a public policy tool
Factors influencing appropriate M&V level and costs	Value of projected savings
	Complexity of efficiency equipment
	Total amount of equipment
	Number of interactive effects among resource-consuming systems
	Level of uncertainty of savings
	Risk allocation for achieved savings between the public building and ESCO
	Other valuable uses of M&V data (e.g., optimizing O&M, carbon credits)
	Availability and capability of an energy management system

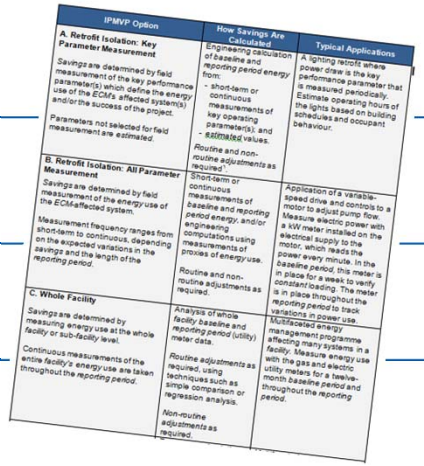
PROJECT IMPLEMENTATION
(Step 4/4)

Implementation steps

Measurement and verification of EE results

International Performance Measurement and Verification Protocol (IPMVP)

- Principles
  - accurate, complete, conservative, consistent, relevant, transparent
- Comparison of different options and associated costs

IPMVP Option	Percentage, total project costs	Savings calculation methodology and typical applications
Retrofit Isolation: Key Parameter Measurement	1-5%	
Retrofit Isolation: All Parameter Measurement	3-10%	
Whole Facility	1-3% (if meters are already installed)	
Calibrated Simulation	3-10%.	

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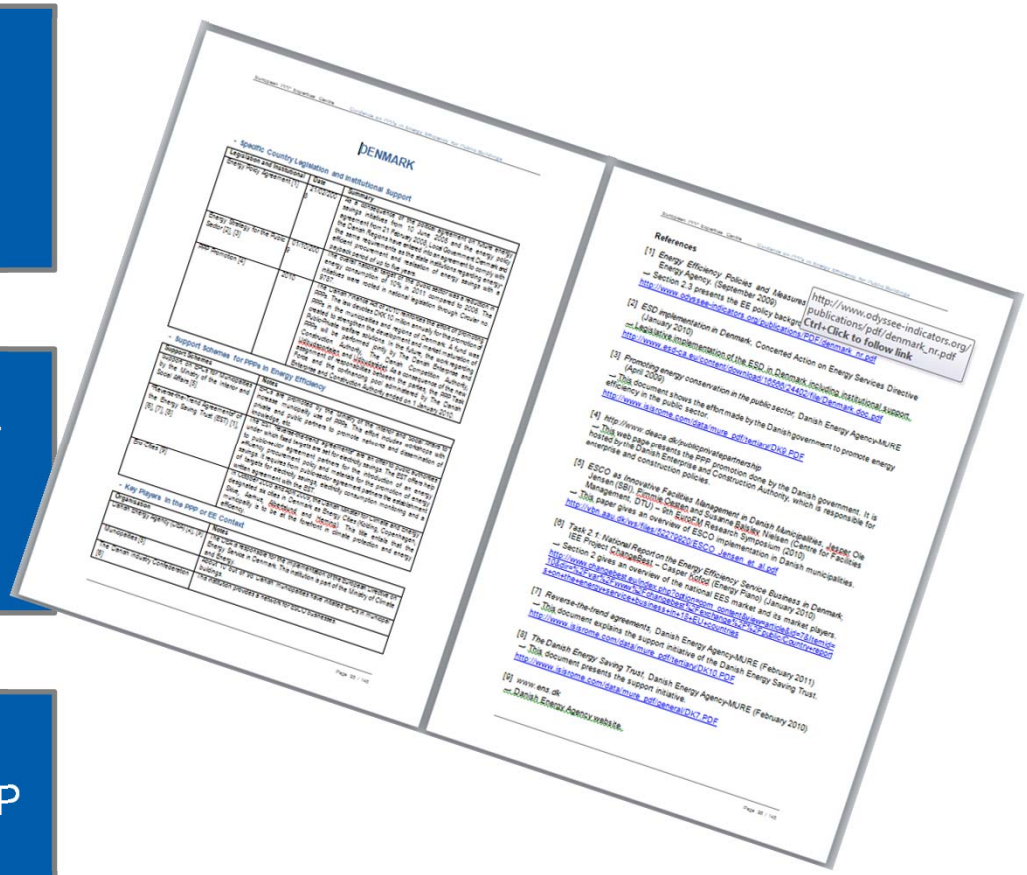
European Country Sheets

Specific Country Legislation and Institutional Support

Support Schemes for PPPs in Energy Efficiency

Key Players in the PPP or EE Context



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Conclusions

- Energy Efficiency PPPs for public buildings are fairly standardised projects with limited upfront costs.
- ESCOs need a certain market size to enter into new markets.
- PPP task forces are potentially good partners when planning EE projects as they understand PPP models and contracts.
- European support is coming from structural funds, JESSICA, ELENA, EEEF, EPEC and, potentially, JASPERS.

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