



“Exchanging of Best Practices in Public-Private Cooperation between Bulgaria and Greece”

The Role of Energy Service Companies (ESCOs) in Energy Performance Contracting (EPC) –IEE project “TRANSPARENSE”

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EPC Basics

Definition by Energy Efficiency Directive (2)



- EU Energy Efficiency Directive (EED) **2012/27/EU** defines **Energy Performance Contracting (EPC)** as:
 - “contractual arrangement between the beneficiary and the provider of an **energy efficiency improvement measure**, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are **paid for in relation to a contractually agreed level of energy efficiency improvement** or other agreed energy performance criterion, such as financial savings”



- Guaranteed savings are key characteristics of EPC also according to the EED:
 - **Annex XIII** specifies that „**Guaranteed savings** to be achieved by implementing the measures of the contract.“ are listed among the minimum items to be included in energy performance contracts with the public sector or in the associated tender specifications
 - **Art. 18** specifies, that Member States shall promote the energy services market and access for SMEs to this market, inter alia, by disseminating clear and easily accessible information on available **energy service contracts** and clauses that should be included in such contracts to **guarantee energy savings** and final customers' rights

EPC Basics

Typical EPC project



- **Turnkey service** - the **Energy Service Company (ESCO)** provides all of the services required to design and implement a comprehensive project at the customer facility, from the initial energy audit through long-term Measurement and Verification (M&V) of project savings
- **Comprehensive measures** - the project consists in a comprehensive set of measures to fit the needs of a particular facility, include energy efficiency and in addition, can include renewables, distributed generation and water conservation
- **Financing** - if the client wishes, the ESCO arranges for long-term project financing that is provided by a third-party financing company, typically in the form of a bank loan.



EPC Basics

Key elements of EPC project (1)



- A precise **definition of energy performance goals** to be achieved within certain duration of time
- **Savings guarantee:** The EPC provider guarantees the achievement of the contracted level of savings of energy and/or related costs. The ESCO is obligated by the contract to repay savings shortfalls over the life of the contract. At the end of the specific contract period the full benefits of savings revert to the facility owner.



EPC Basics

Key elements of EPC project (2)

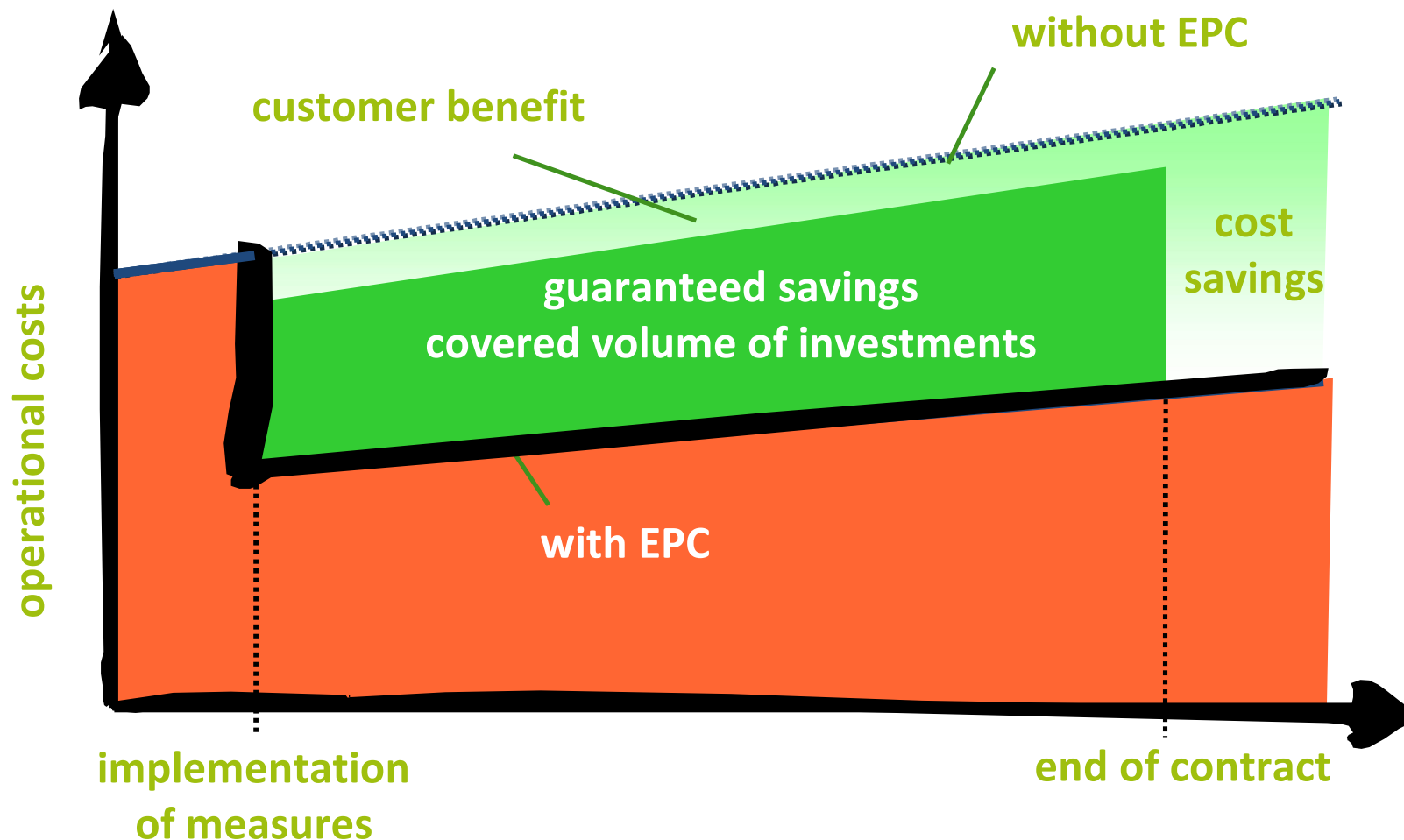


- **Measurement & verification** of energy consumption and energy efficiency gains
- EPC provider **bears risks of technical implementation and operation** and guarantees the outcome and all inclusive cost of the services for the duration of the contract. EPC provider takes over negotiations and business arrangements for the client, thus decreasing the commercial risks on the client side.



EPC Basics

Cost savings in EPC



EPC Basics

Typical EPC project characteristics



- **Duration of a contract**
 - typically 4 to 10 years
- **Share of energy savings on the consumption**
 - typically 15% to 50%
- **Investment volume**
 - typically 50 thousand to 5 million EUR



- **Split incentives between owners and property managers, particularly in the public sector**
 - The building operator who pays for the energy costs often differs from the owner of the building
 - EPC implementation must be approved by the owner who, however, does not pay the energy bills
- **Transformation of money saved on operation into investment funds is complicated**
 - In the public sector, it is difficult to use savings on operational costs to finance installments for the implementation of energy efficient technologies (i.e. partial investment repayments)
- **Public tender preparation and process is demanding**
 - Tendering for an energy-service public contract in compliance with the Act on Public Contracts is more demanding and, therefore, more costly than tendering for equipment delivery
- **Many countries have unclear rules concerning the accounting of assets acquired within an EPC contract**

EPC Basics

EPC strengths



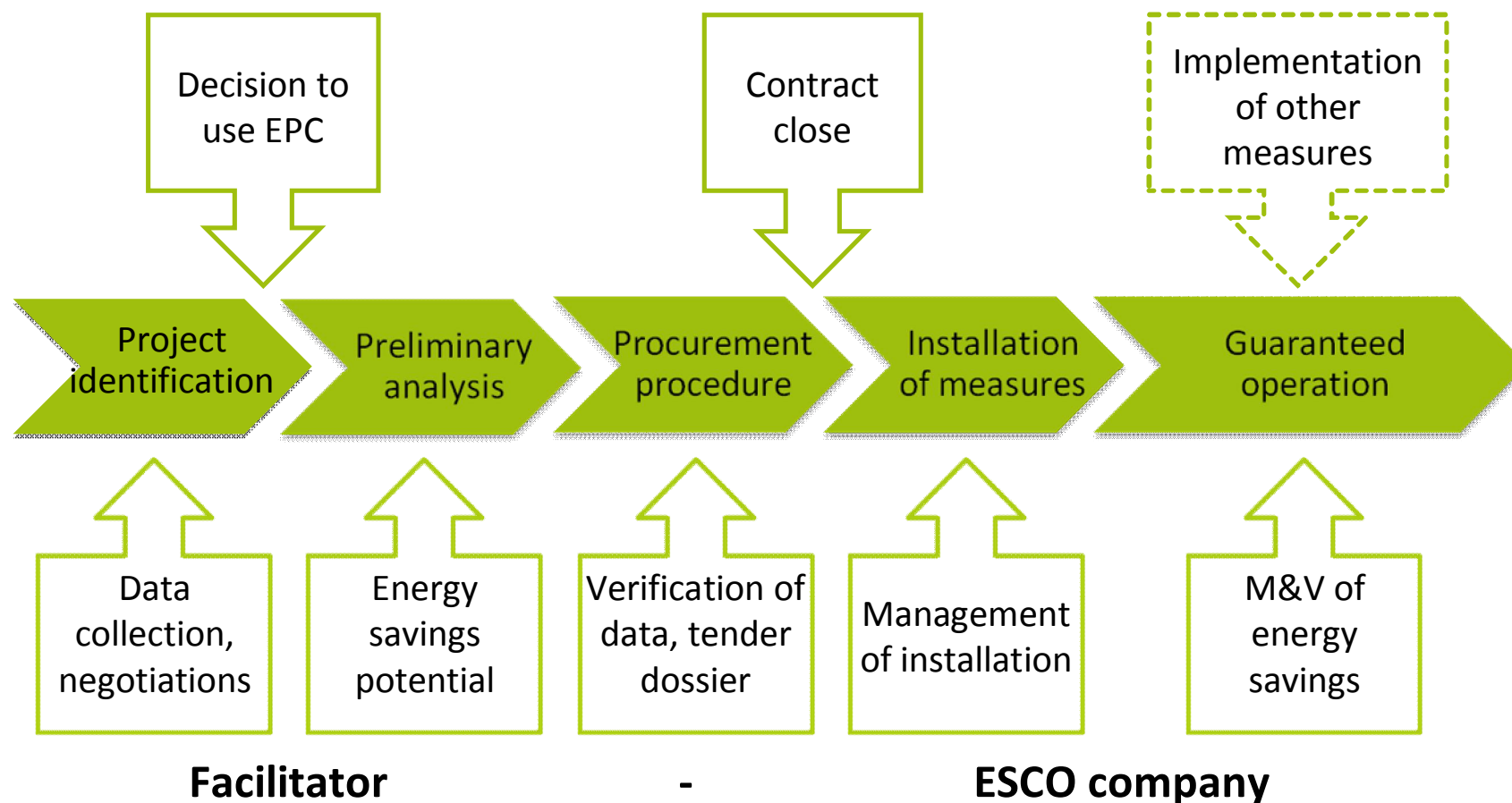
- **Service provider has the same interest as the client**
 - Economically efficient volume of investment and volume of energy savings
- **The contract encompasses a complete service**
 - Design, project, implementation, operation launch, liability for correct operational mode, M&V of savings
- **Contractual savings are guaranteed in the contract**
 - If the contractual level of savings is not met, the provider pays for all surplus energy consumption (the client needs no financial backup to pay additional charges for surplus consumption)



EPC process

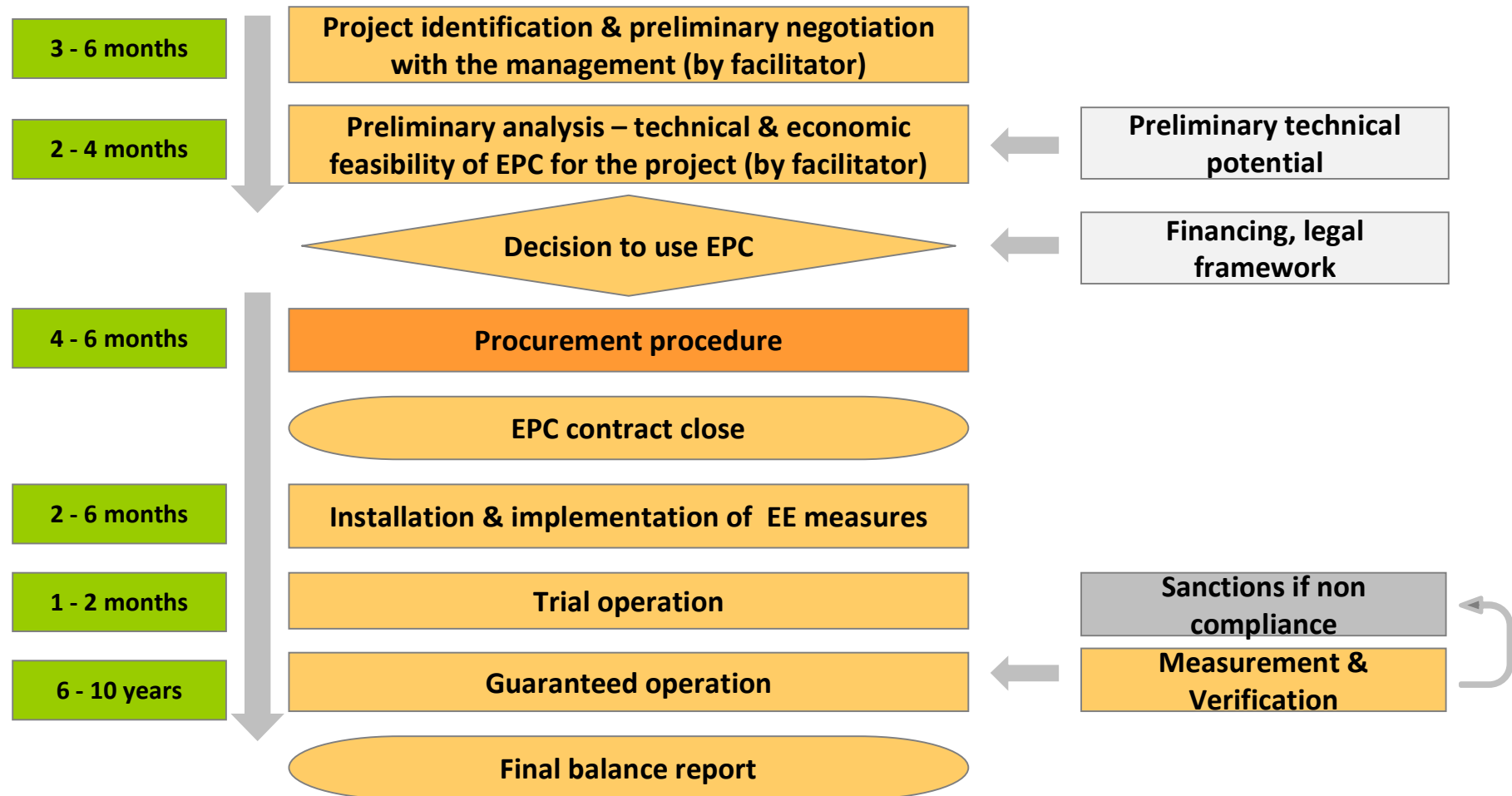
Main stages of EPC process

Customer



EPC process

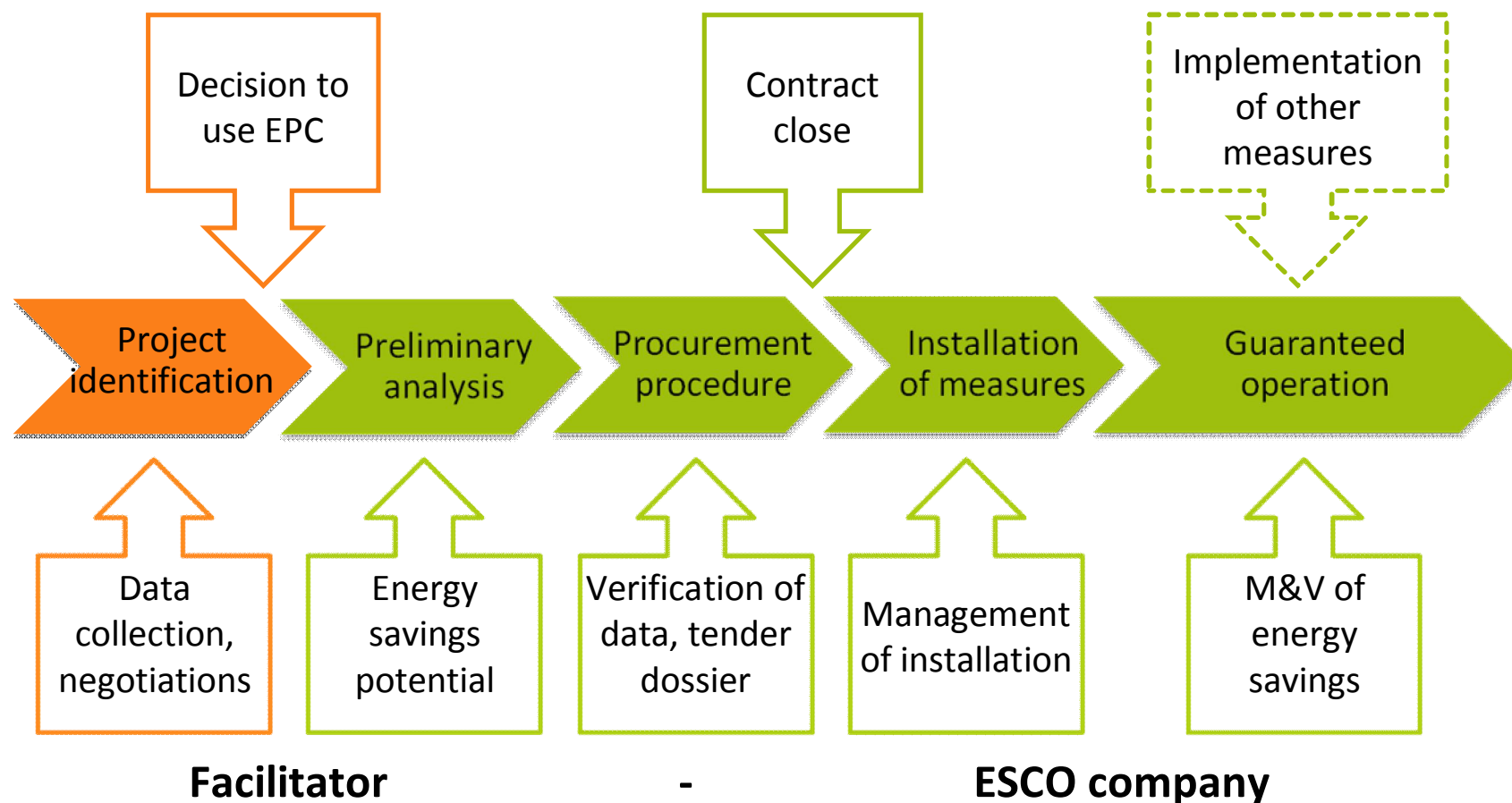
Timing of EPC process



EPC process

1. EPC Project Identification

Customer



1. EPC Project Identification

Defining scope of measures



- The client decides which of the following is needed:
 - to reconstruct the energy system in the building
 - to decrease the energy-consumption operating costs
 - to provide for automatic collection of information on the energy consumption in the building
 - to optimize energy consumption and decrease the environmental impact



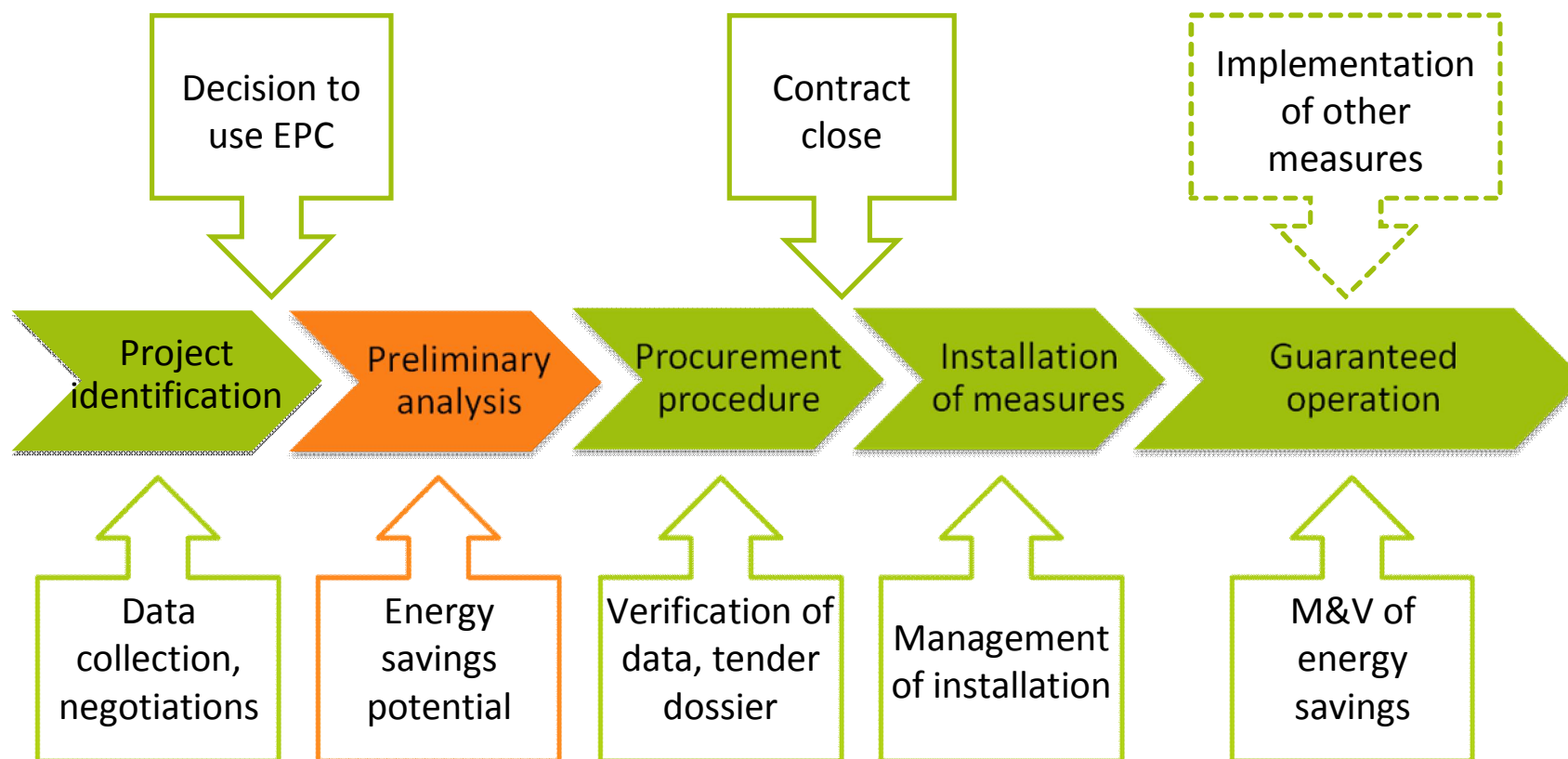
- **Defining scope of the energy management**
- **Choice of energy efficient measures**



EPC process

2. Preliminary Analysis

Customer



Facilitator

-

ESCO company

2. Preliminary Analysis

Introductory assessment



- The outcome of the introductory assessment is a recommendation whether the building is suitable for an EPC project
- Sources of data for building selection:
 - Energy audit is a primary source of information (if it exists)
 - Data on energy consumption (invoices etc.)
 - Documents and contracts on energy delivery, management etc.
 - On-site visit



2. Preliminary Analysis

Detailed information needed



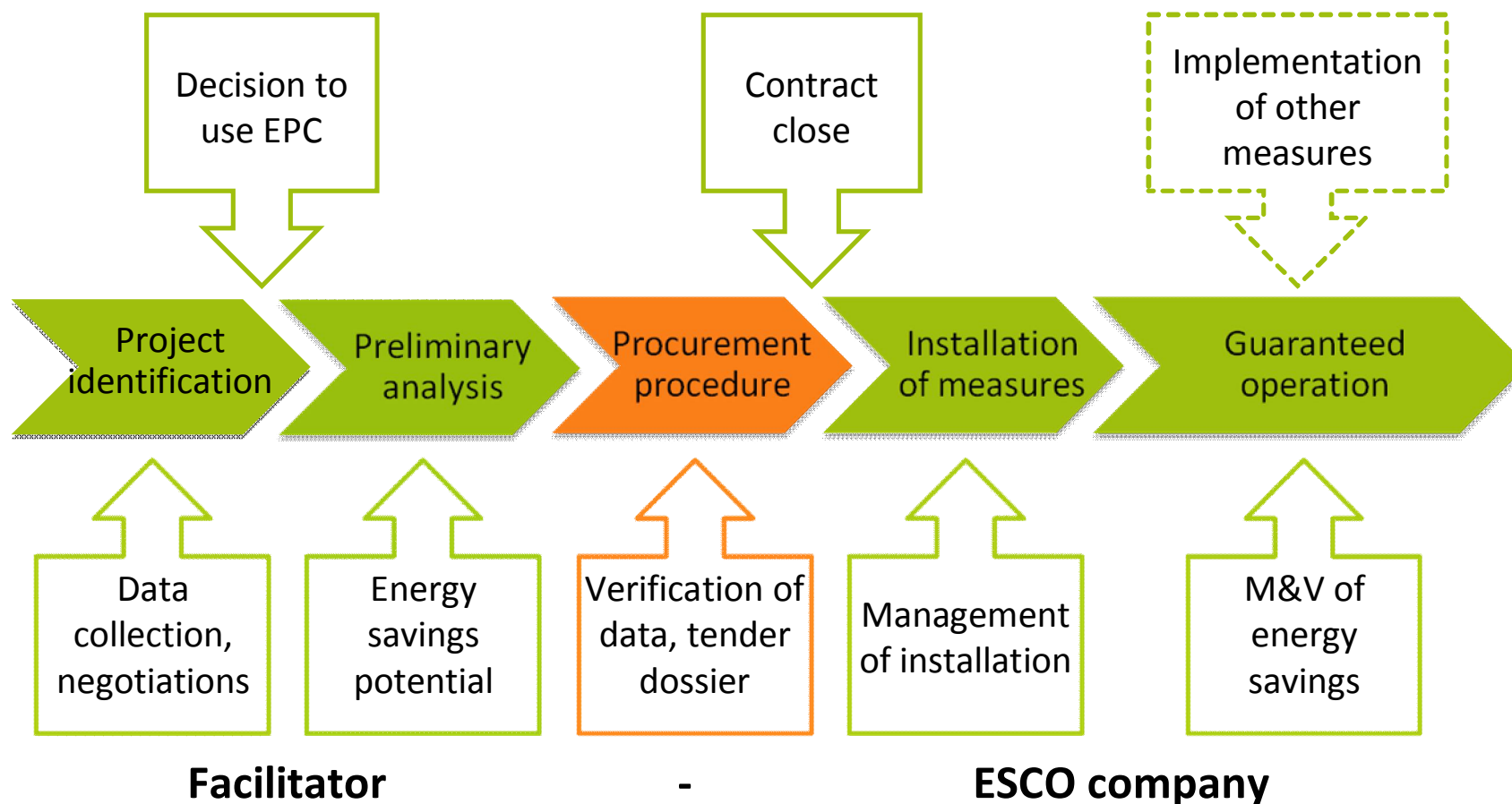
- **Energy consumption data** for at least 3 last years including monthly values (ideally, there is a proof of data, such as invoice copies), payments for energy and related costs, structure of heat price
- **Operating mode** and operating requirements shall be ascertained
- Existing contracts related to **energy management** shall be examined
- Feasibility of **related transaction cost** shall be checked
- Client's actual interests shall be detected



EPC process

3. Procurement Procedure

Customer



3. EPC Procurement Procedure

Negotiated procedure with a notice (1)

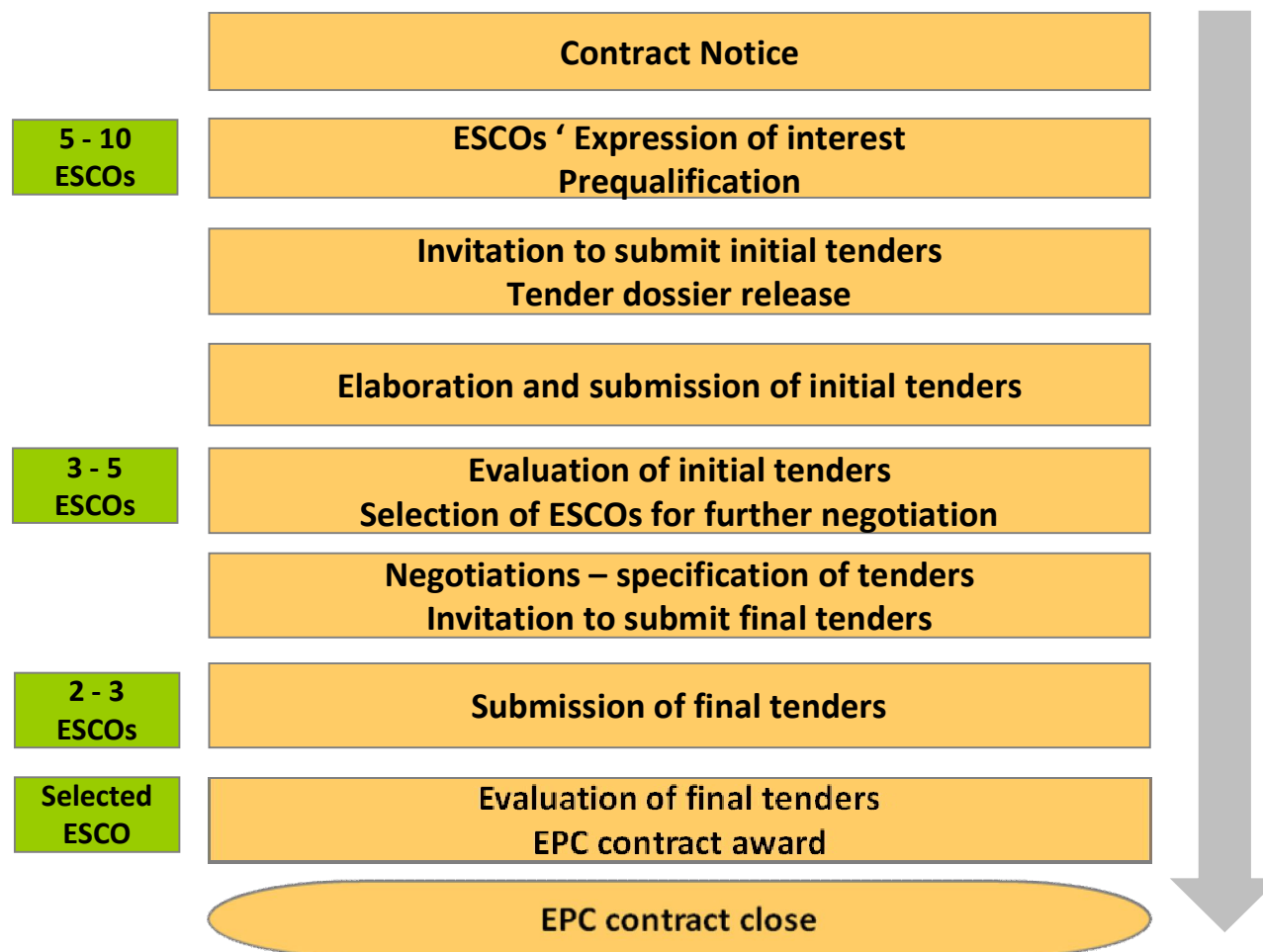


- For the EPC procurement above the threshold values, the **negotiated procedure with prior publication of a contract notice** is used for the following reasons:
 - single tenders (i.e. bids) can be adjusted during the negotiations with tenderers (i.e. bidders) within the award procedure
 - according to the Public Sector Directive, this type of award procedure can be used only in exceptional cases “when the nature of the works, supplies, or services or the risks attaching thereto do not permit prior overall pricing”
 - for the current threshold values see the public procurement legislation
- The alternative - open procedure – is not suitable for a complex design solution typical for EPC as after the submission of tenders, the content of particular tenders may not be adjusted



3. EPC Procurement Procedure

Negotiated procedure with a notice (2)



3. EPC Procurement Procedure

Content of tender dossier - general



- **Key requirements**

- such as minimum share of savings on the energy consumption/energy costs
- specification of obligatory and/or recommended energy efficiency measures
- is ESCO required to provide financing?
- deadline for the expiration of EPC contract

- **Formal requirements for tender**

- **Organisational aspects**

- what tasks should be carried out by the ESCO and by the client?

- **Contract terms and conditions**

- exact definition of the contractual relationship, or just the key essentials



3. EPC Procurement Procedure

Content of tender dossier - buildings



■ Technical aspects

- Description of the buildings,
- energy statistics (copies of invoices for consumption at least for 1 year, data on energy consumption - min 3 years back - in technical and monetary terms)
- calculation method for a baseline energy consumption
- operation times, list of equipment, building use, requirements for indoor climate (temperature, ventilation etc.)
- a detailed description of the current condition of energy system and management (energy audit etc.)



3. EPC Procurement Procedure

Criteria for evaluation of tenders



- **Usually assessed by the economic profitability**
 - multi-criteria evaluation (evaluation is specified in the tender documentation)
- **In guaranteed savings model the requirement of guaranteed savings should be included**
 - specification of guaranteed savings both in technical and financial terms (forms and charts in the tender documentation)
- **Setting the amount of energy savings**
 - future savings are difficult to quantify; it is necessary to clearly set and define comparable terms in the tender documentation
- **Assessment of the technical quality of the submitted tenders**
 - quality and suitability of combined energy efficient measures, financing, quality of the guarantees



3. EPC Procurement Procedure

Evaluation criteria – example



Criteria	Weight
Amount of guaranteed savings in all forms of energy during the contractual period (in physical or financial units)	45%
Bid price i.e. the total price to be paid by the contracting entity to the selected applicant for the duration of the contract	35%
Quality of the technical design and contract	20%



3. EPC Procurement Procedure

Negotiations with ESCOs



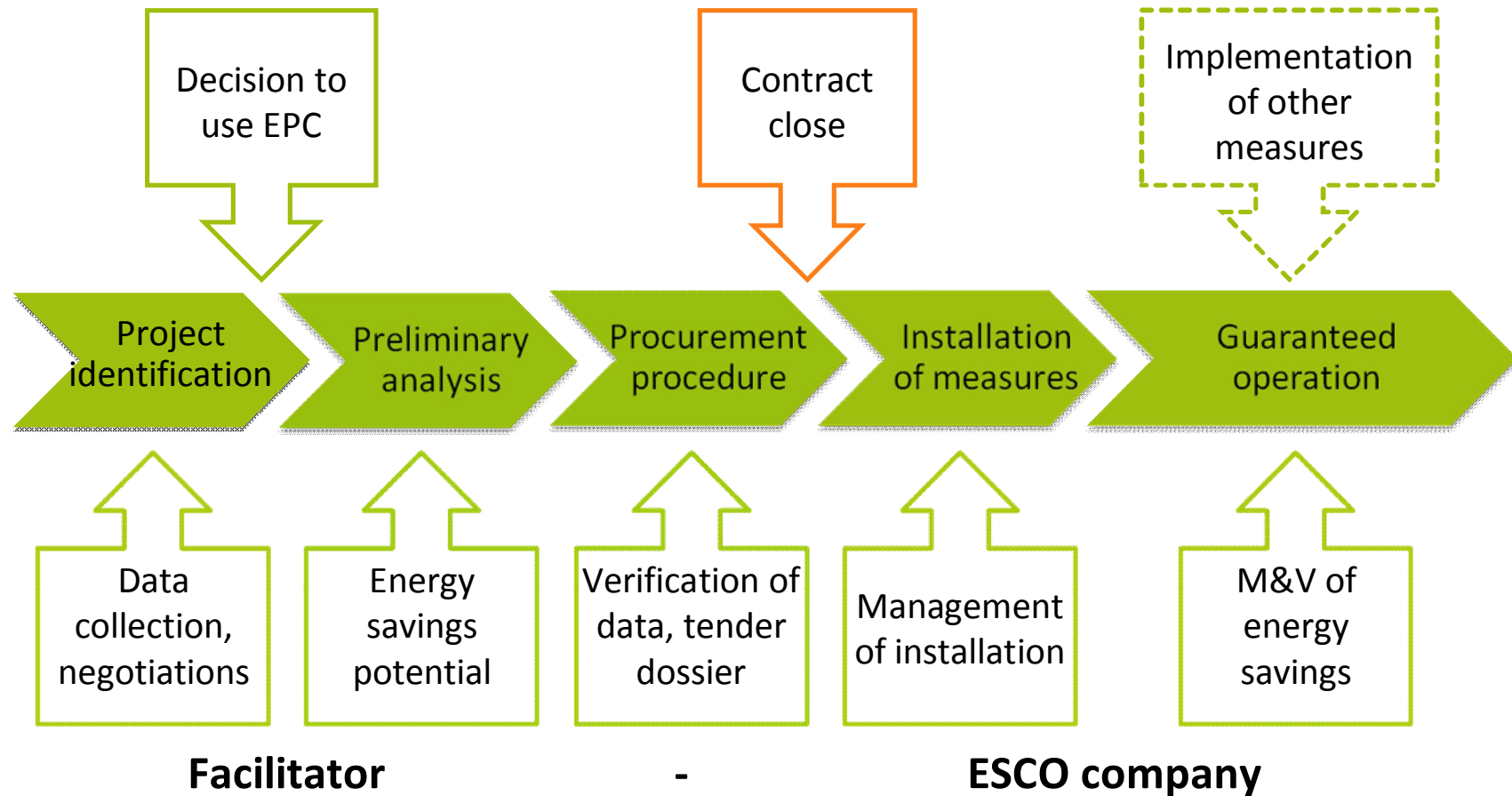
- **Subject of negotiations:**
 - Extent and quality of the designed measures
 - Preserving the requested parameters of internal environment, observing the existing standards and laws, compatibility with the existing equipment
 - Time schedule of activities
 - Calculation of guaranteed savings in referential and real prices
 - Determining the reward for the applicant, and the share of the contracting entity on extra savings
 - Contracting entity requirements, call to adjust the tender
- **Negotiation protocol** - a record of all agreed arrangements - shall be provided by the client to each ESCO



EPC Process

4. EPC Project Contract

Customer



4. EPC Project Contract

Contract items - guaranteed savings



- **Guarantee of savings**
 - the ESCO guarantees a certain amount of savings to be achieved throughout the duration of the contract, where the amounts are specified per pre-agreed periods, mostly in yearly amounts
- the contract has to clearly define what happens if
 - guaranteed savings are not achieved, i.e. there has to be a clear description of how the ESCO settles the negative difference between guaranteed savings and actual achieved savings
 - guaranteed level of savings is exceeded, i.e. method of distribution of access savings between the client and the ESCO
- **Method of recalculation of the guaranteed savings** in case any of the input parameters differs from the presumptions defined in the reference (baseline) energy consumption scenario



4. EPC Project Contract

Examples of Annexes to the contract



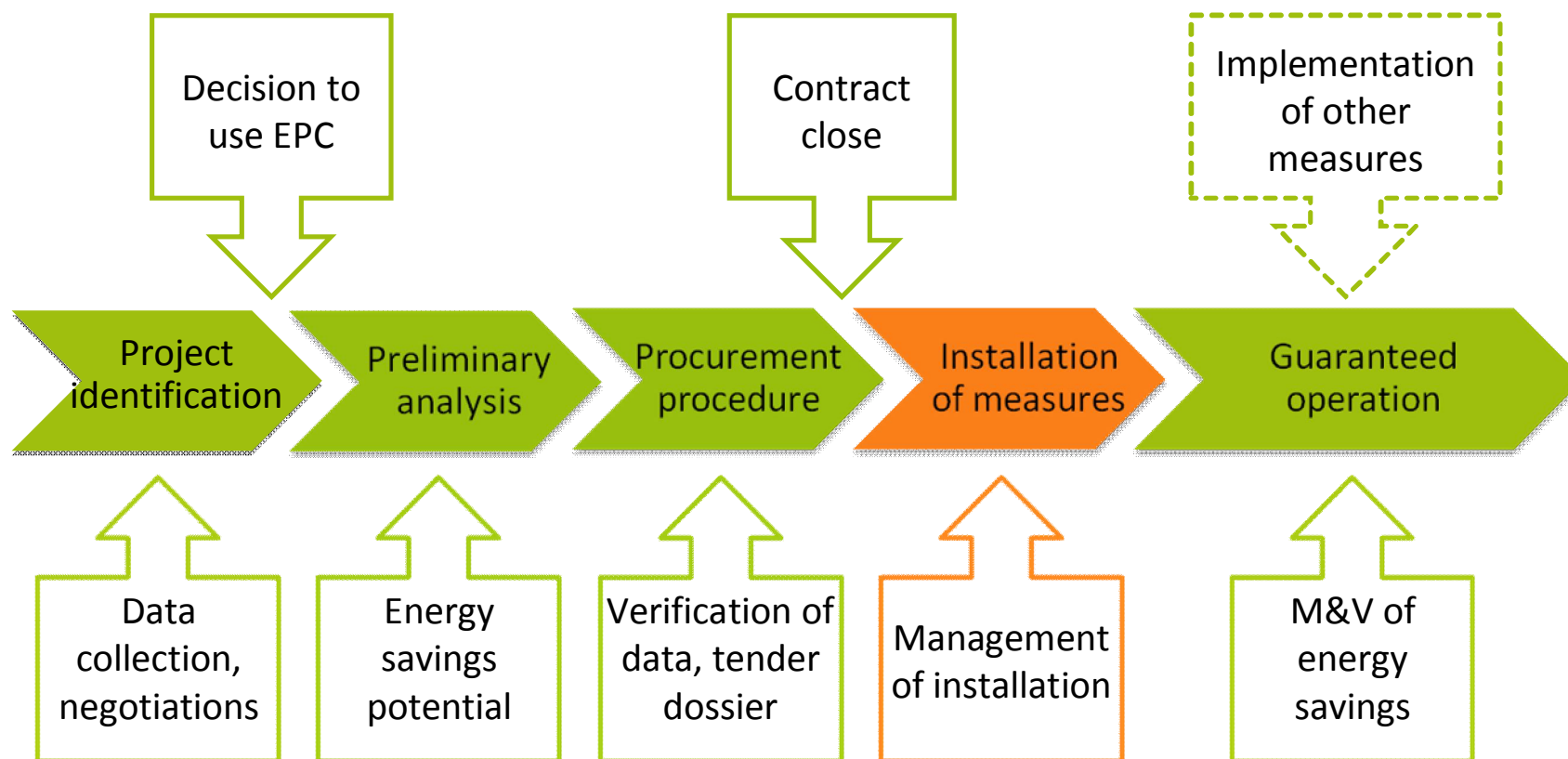
- A detailed description of the energy system and management status quo, incl. baseline calculation
- A detailed description of basic energy efficient measures
- Price calculation and the installments
- Project implementation timetable
- Amount of guaranteed savings, sanctions in case of failure to achieve the guaranteed savings and a bonus for exceeding the guaranteed savings
- Achieved savings evaluation method
- Energy management properties
- Specification of competent persons
- List of subcontractors



EPC Process

4. Installation of Measures

Customer



Facilitator

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ESCO company



4. Installation of Measures

Project implementation



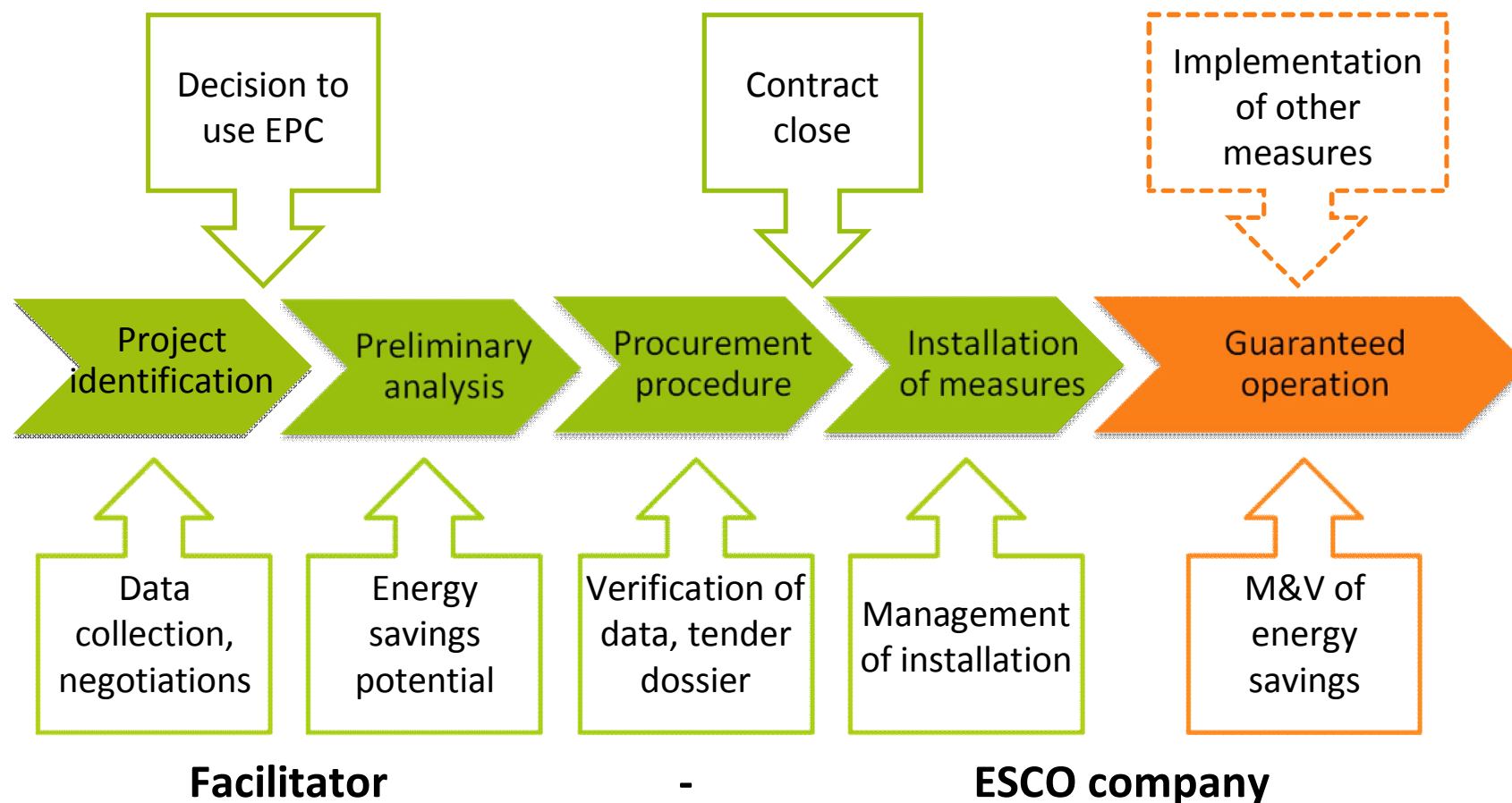
- The installation of the measures begins when the building subject to contract – the „construction site“ - is handed over
 - all fundamental items must be negotiated already during the final contract negotiation
 - the contractor prepares and records data into the „construction journal“
- It is necessary to ensure the client is in contact with the subcontractors and their roles and competencies are clearly defined
- It is necessary to agree on how to dispose of the dismantled material
- An important phase is the final installation and operation tests (handover based on protocol – evidence for invoicing)



EPC Process

5. Period of Guaranteed Savings

Customer



5. Period of Guaranteed Savings

Monitoring & verification (M&V)



- **After the equipment handover, it is necessary to provide M&V frequently**
 - a rather frequent M&V in the beginning, conducted internally by the ESCO (at least weekly)
- **It is recommended to record any change in the way the buildings are being used**
 - the changes are reported in the annual calculation of savings
- **It is important to evaluate any deviation from standard conditions**
 - must be checked and recorded on an on-going basis
- **Preparation to hand over the installed equipment**
 - ESCO may offer to continue and provide services (M&V)



5. Period of Guaranteed Savings

Monitoring report



- The monitoring report is elaborated by the ESCO and submitted to the client at least once a year
- The monitoring report must follow the construction of referential costs and calculation of savings set in the contract
- The content of the reports differs based on the complexity of the buildings, types of equipment and implemented energy efficient measures (heating vs. lighting)
- Of crucial importance is the monitoring of the total energy consumption (related to invoiced values) – the measured values are always entered into the calculation
- Conversion of heat consumption used for heating in relation to degreesdays – interdependance on climate condition changes (used in calculation)
- Other parameters may differ contract from contract

