TRAINING

Quality certification frameworks for Energy Efficiency services to scale up responsible investment in the building sector

- Module 1: Introduction to Energy Efficiency Services, project phases and processes, financing energy performance contracting, European Code of Conduct

This project receives funding from the European Union's Horizon 2020 research and innovation programme.

QualitEE project summary

The QualitEE project aims to:

- Standardise the quality related aspects of energy efficiency services and institutionalize the quality assurance process:
  - Development of a standardized set of "Quality Criteria"
    - Technical and financial guidelines
    - Lean but powerful tool to assess different EES offerings
    - Criteria that can be incorporated in service contracts by clients
    - Each technical quality criterion contains a set of assessment criteria
  - Implementation of national quality assurance schemes in partner countries
    - Establishment of 11 national promotion teams
    - Introduction of national discussion platforms
- Reduce the complexity of energy efficiency services and increase service quality
  - Application of Technical Quality Criteria in 24 pilot projects
    - 3 pilots in Germany and Austria, 2 pilots in 9 further countries
    - Incorporation of technical quality criteria in service contracts and tender dossiers
    - 33 training workshops for market players and rising their awareness
  - Dissemination of quality criteria and quality assurance models
    - Easy-to-use EES market database
    - Distribution of newsletters, press releases and social media postings
    - 68 national and international presentations
- Increase responsible investment in energy efficiency services in the building sector
- Improve the trust level of clients and financial institutions in energy service providers

MODULE 1

- Introduction to Energy Efficiency Services with specific focus on Energy Performance Contracting
- Project phases and processes
- Financing products for energy performance contracting
- European Code of Conduct

Target group

- Public and private clients → those who are interested in developing EE measures. Owners and facility managers of:
  - Schools and universities
  - Hospitals and health care
  - Hotels
  - Large scale multi-family houses
  - Etc.

- Energy service providers → in particular those who plans to deliver energy services or are already engaged and would like an introduction to quality criteria

- Financial Institutions → with potential interest in financing energy efficiency projects or also are already financing providers, clients and bears (part of) the project risk

Aim of training

- Common understanding of “good quality”
- Training shall foster the widespread application of quality criteria in EES projects. This leads to improvement in service quality and recognition for the best performers
- Better informed investors, increased transparency and trust will expedite investment decisions
- Module 1 provides necessary background information on Energy Efficiency Services, Energy Performance contracting and the way this projects are financed

Energy efficiency services

'*energy service*' means the physical benefit, utility or good derived from a combination of energy with energy-efficient technology or with action, which may include the operations, maintenance and control necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances has proven to result in verifiable and measurable or estimable energy efficiency improvement or primary energy savings [Article 2, Directive 2012/27/EU on energy efficiency]

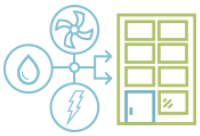
Four key considerations:

- Viable
- Capital
- Risk
- Savings

Source: Trust EPC South, D4.2 Training modules for tertiary sector actors, slide 80, 2016

Types of energy efficiency services

Energy **P**erformance **C**ontracting: according to the EED, "EPC means a 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."



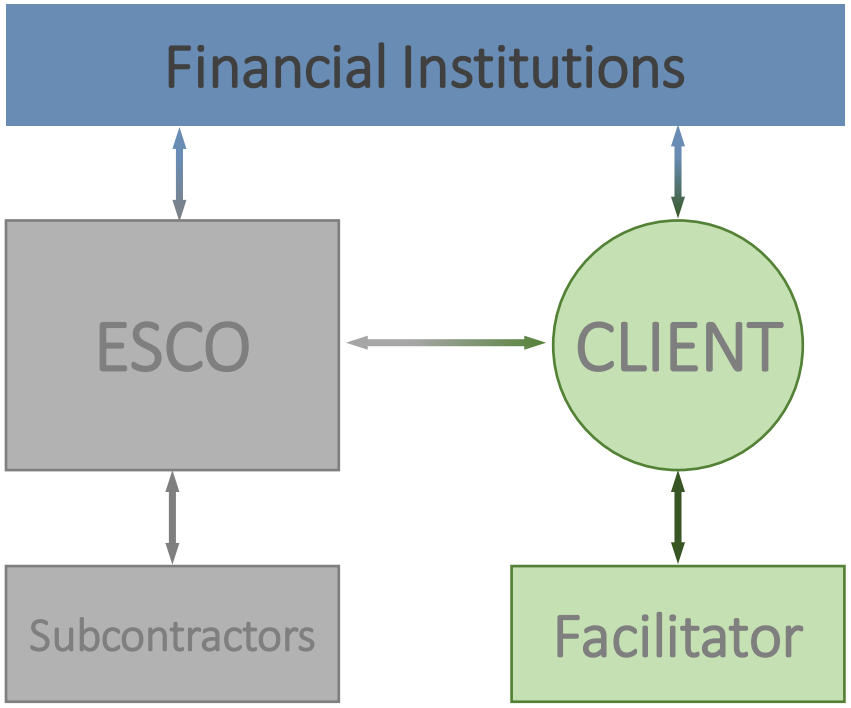
Energy **S**upply **C**ontracting: "ESC means a contractual arrangement for the efficient supply of energy. ESC is contracted and measured in Megawatt hours (MWh) delivered"

Operational **C**ontracting: Energy performance operational contracting (OC) is a type of EPC without major investments and is here included under the term Energy Performance Contracting

Integrated **E**nergy **C**ontracting: Integrated energy contracting (IEC) means a combination of energy efficiency measures with energy supply contracting typically with short term 'operational verification' rather than ongoing measurement and verification

Energy Performance Contracting
General introduction

Players



Financial institutions: provides capitals for the implementation of the energy efficiency measures

Energy Service companies (ESCO): energy service providers under the EPC. An ESCO may have **subcontractors** for the supply of installation, components, services. Subcontractors are liable to the ESCO, not to the Client

Client: the owner or a mandated property manager of an asset (like an office building, a residential property, public lighting, etc.) either private or public

Facilitator: an experienced entity assisting the Client in entering into an Energy Performance Contract with an ESCO.

EPC Facilitator

- Project development phase:
  - preliminary financial and technical analyses
  - comparison of different options, supporting Client in “make or buy” decisions
  - providing information on the procedures for clients and stakeholders
  - project pre-structuring
  - selection and adaption of ESCO business models
  - financial pre-structuring
- Project procurement phase:
  - selection of procurement procedure
  - definition of ESCO qualifications and selection criteria
  - drafting of tender documentation
  - ESCO contract design
  - Negotiations with the EPC providers and selection of best tender

Key elements

Turnkey service – the ESCO takes care of:

- **Project development**: energy audits, technical inspections, project design
- **Construction and installation**: directly or via subcontractors implementation of agreed energy efficiency measures
- **Services**: for the duration of the service period the ESCO is responsible for the operation and maintenance of the implemented energy efficiency improvement measures (directly, or via subcontractors, or in agreement with the Client maintenance staff)
- **Monitoring and Verification (M&V)** of project savings: the ESCO cooperates for the transparent measurement and verification of the energy savings guarantee

Comprehensive measures

- The ESCO tailors a comprehensive set of measures to fit the needs of a particular facility, and can include energy efficiency, renewables, distributed generation, water conservation and sustainable materials and operations

Source: TRANSPARENCE

Important in EPC

SCOPE: defines what the ESCO delivers and at which costs

RISKS: ESCO bears technical, financial and commercial risks

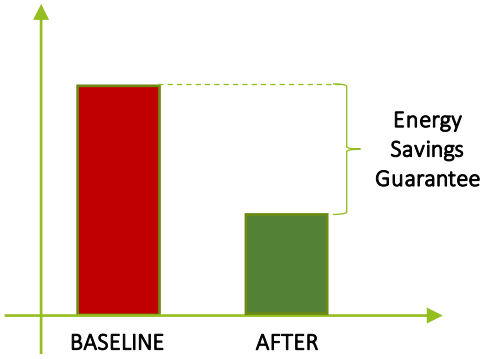
The EPC includes and explains:

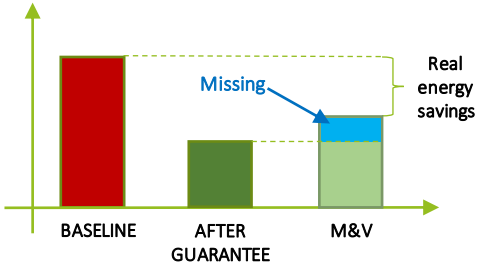
- **Energy savings guarantee** - the way savings are measured and verified
- The **terms** of the contract
- Client and the ESCO **rights and obligations**
  - During the construction and installation period
  - During the Service Period
- How to solve disputes, changes in conditions, unexpected problems

Energy Savings guarantee (1)

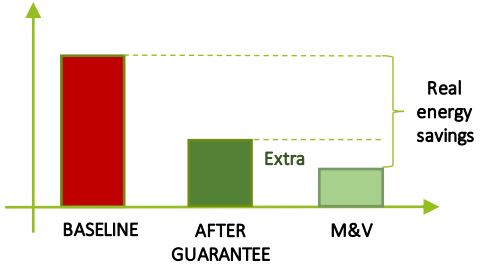
ENERGY SAVINGS

In the Energy Performance Contract the ESCO guarantees that energy consumption is reduced compared to the baseline and at the same climate and boundary conditions





The ESCO shall compensate the missing energy savings (Financial risk)



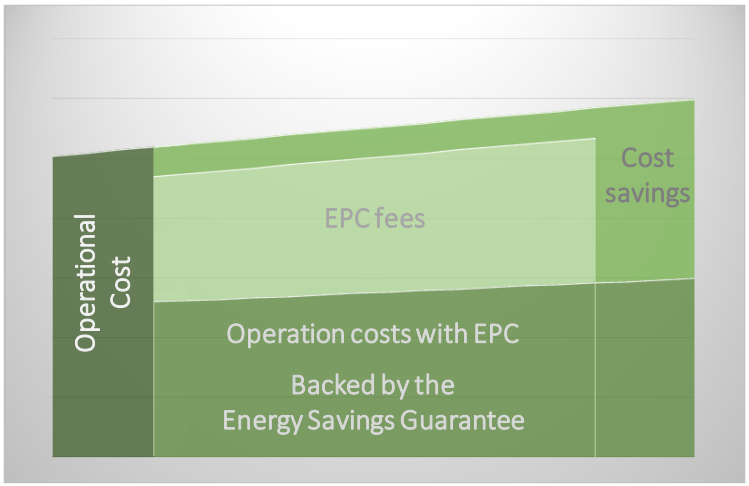
The revenue from extra energy savings is shared between the ESCO and the Client as agreed in the EPC .

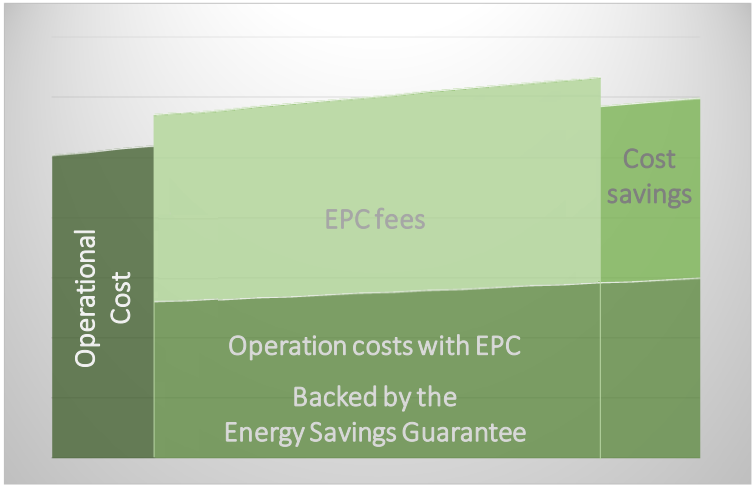
Energy savings guarantee indicated in the Energy Performance Contract

Measurement and Verification
Indipendent

@ Settlement

Energy Savings guarantee (2)





Hanging fruits

Comprehensive set of energy efficiency measures

Energy savings: depending from project to project - typically 15% to 50%
More than 50% also possible in deep renovation projects

Deep renovation

Shorter EPC contract duration

Longer EPC contract duration to keep fees at affordable level

Example of EPC structure

SPECIFIC CONDITIONS

1. SCOPE	2. SERVICE PROVIDED	3. TERMS	4. COMPENSATION
A1. INFORMATION ABOUT THE ASSET	**A3**. COMFORT STANDARDS	**A5**. OPERATION AND MAINTENANCE MANUAL	**A7.** FINANCIAL FEE
A2. BUDGET AND SCOPE OF RENOVATION WORKS	**A4.** BASELINE & ENERGY SAVINGS GUARANTEE	**A6**. ENERGY RELATED FEES AND M&V	**A8.** OPERATIONAL AND MAINTENANCE FEE
			A9. AUTHORISED REPRESENTATIVES

GENERAL TERMS AND CONDITIONS

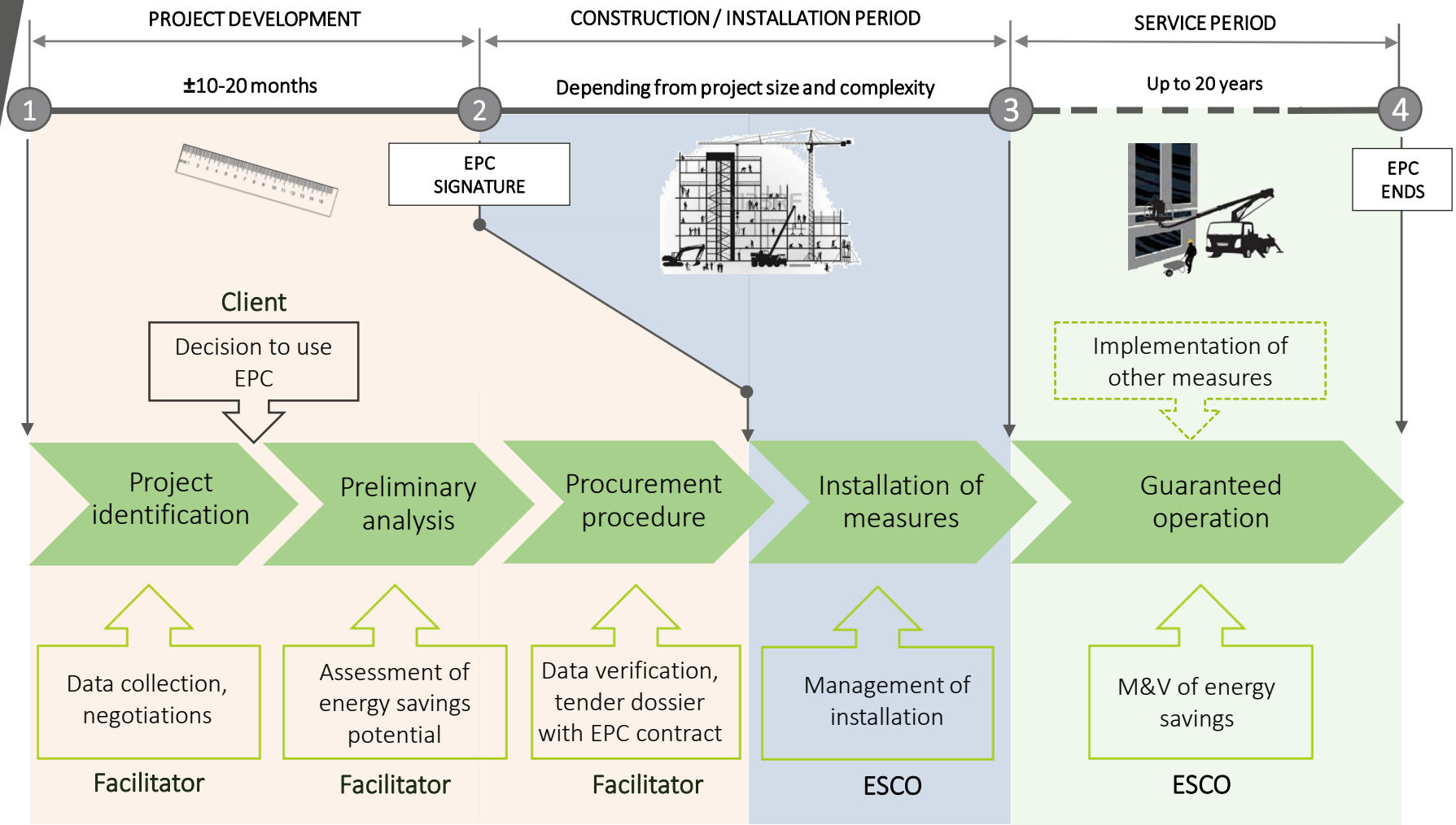
1. DEFINITIONS	**10**. M&V AND DATA MANAGEMENT	**19**. LIABILITY
2. ACCEPTANCE OF AGREEMENT TERMS	**11**. DISPUTE RESOLUTION PROCEDURES	**20**. TERMINATION OF THE AGREEMENT
3. SAFETY QUALITY AND COMFORT	**12**. MAINTENANCE OF THE MEASURES	**21**. FORCE MAJEURE
4. GUARANTEES	**13**. INSURANCE	**22**. CONFIDENTIALITY
5. RIGHT AND OBLIGATION OF THE ESCO	**14**. ASSIGNMENT OF CLAIMS	**23**. CONSLUSION AND AMENDAMENTS
6. RIGHT AND OBLIGATION OF THE CLIENT	**15**. TITLE OF THE MEASURES	**24**. REPRESENTATION OF THE PARTIES
7. SETTLEMENT PROCEDURES	**16**. SOFTWARE AND IP RIGHTS	**25**. NOTICES
8. TERM OF THE AGREEMENT	**17**. CHANGE IN USE OF THE FACILITY	**26**. SIGNATURE
9. LATENT CONDITIONS	**18**. DISPOSAL OF DISMANTLED EQUIPMENT	signature

Contract duration

- Mostly linked to
  - Project investment costs
  - Energy saving potential
  - Costs of energy
  - Financial plan and cost of funding
- Example:
  - Projects targeting lighting, heating ventilation and air conditioning , energy management typically between 4-10 years
  - Comprehensive building renovation up to 20 years

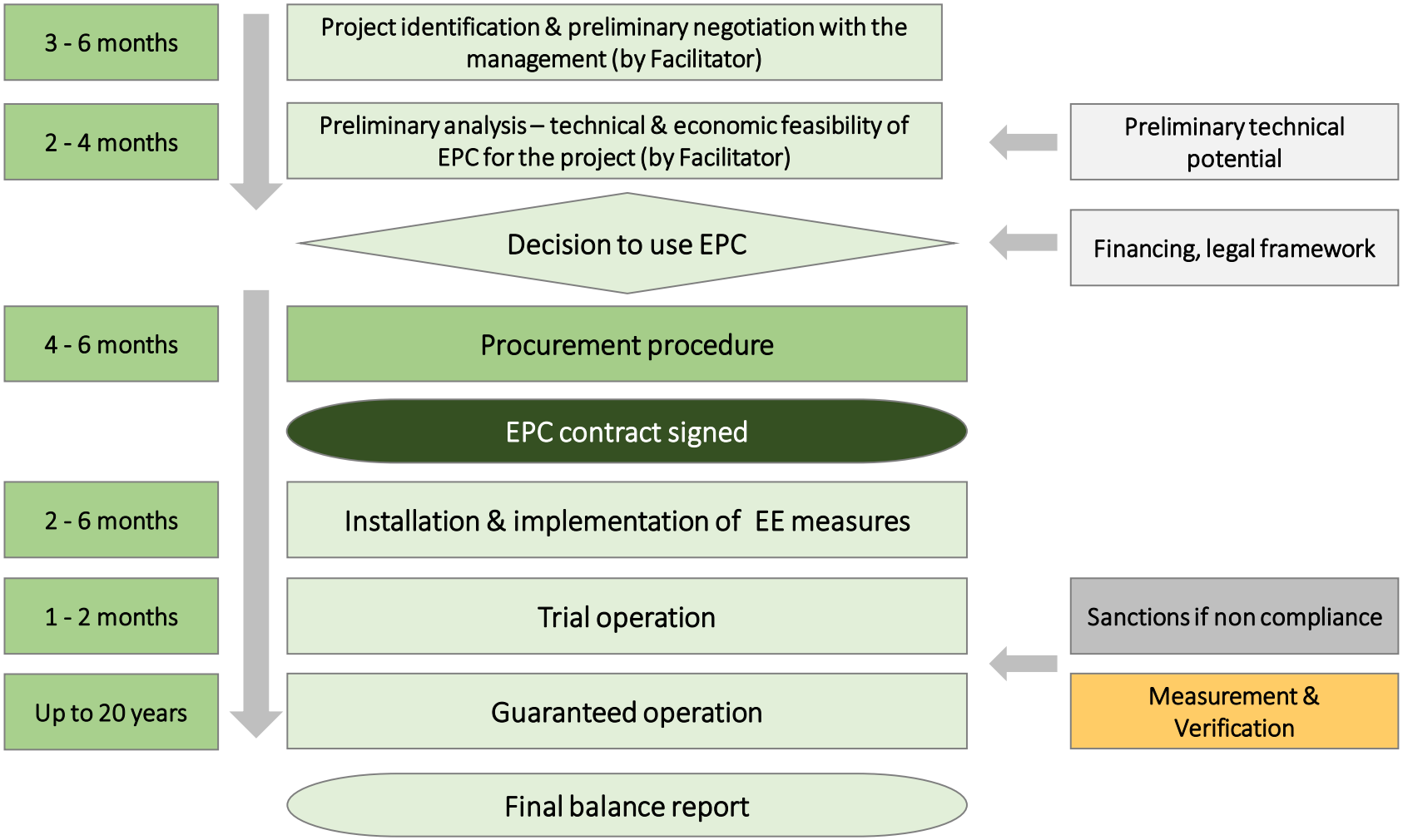
Energy Performance Contracting PROJECT PHASE and PROCESSES

General process



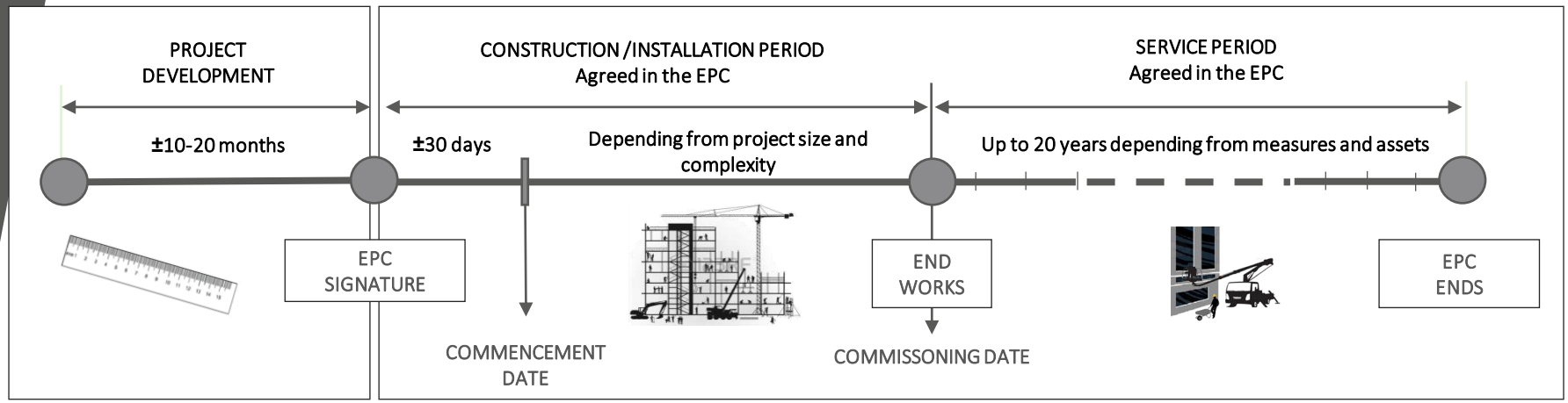
Source: modified from TRANSPARENCE

EPC process timing



Source: TRANSPARENCE

Process risks assessment



Development risks
Separated from the EPC
Mitigated by support and grant programmes

- Experienced facilitator
- Project feasibility
- Tender / contract legal templates
- Analysis of client credit and default risk

Execution risks
Typical of the building construction industry

- ESCO experince in managing and delivering construction and installation projects
- Dedicated site management and supervision
- Proved technical solutions, equipment and material

Payment risk, typical of utility industry

- Client payment discipline
- ESCO suitable operational and maintenance of implemented energy efficiency improvement measures
- Insurance
- Communication

All benefits and responsibilities back to the **client**

Source: modify from SUNShINE – Investment guidelines of the Latvian Baltic Energy Efficiency Fund

- Before identification:
  - Client highly motivated
  - Clear and committed decision making
  - Access to information and facilities
- EPC provider or facilitator
  - Collection and analyses of energy consumption data
  - Benchmarking
  - Energy audit
- Client expectation
  - Assessed since early stage
  - Respected

Source: TRANSPARENCE

- Delivery of a first report with the recommended measures that should be implemented
  - Beginning of the business base that helps to gain project support and management approval
- The EPC provider / facilitator estimates the energy and costs impacts that would result from the implementation of the proposed measures
  - Profitability indicators like simple payback (SP) or net present value (NPV) are commonly used as financial metrics at this stage
- Also cost saving benefits should be counted
  - avoided GHG emissions
  - better comfort standards (light quality, indoor temperature and air quality)
  - Avoided maintenace costs

Source: EnPC-INTRANS

Project identification | Preliminary analysis | **Procurement procedure** | Installation of measures | Guaranteed operation

- Each entity follows its own standards concerning procurement procedures
- If an EPC facilitator has developed all previous steps, it would typically also help during this step
  - EPC facilitators have gained experience in the energy efficiency market and, therefore, would know which are the more suitable EPC providers to develop the specific project and the best way to procure them
- The EPC provider will define energy savings, contract duration, financial savings, guarantees and maintenance (if necessary) and every other general condition to develop the project
  - an EPC facilitator can also develop the desired conditions of the contract with the Client and support the selection of the appropriate provider to develop the project
- During the procurement procedure the financing of the projects is one of the most relevant factors
  - The choice of the appropriate financing option depends of several factors, such as, economy of the project, available financial sources and financing options within the country

Source: EnPC-INTRANS

- After the contract is signed, the EPC Provider develops the project according to the agreement established by contract
  - A timeframe should be established for all measures to be implemented and regulated by the terms of the EPC
- All energy efficiency measures implemented must comply with national norms and standards
  - The EPC facilitator could verify that and supervise that this condition is fulfilled
- The EPC provider should offer an appropriate training in order to insure the client has a correct utilization of new equipment
  - This would help obtaining maximum profitability from implemented measures
  - The EPC facilitator can also provide training for the customer

Source: EnPC-INTRANS

- The EPC provider render the agreed operational and maintenance services in the Facility
- Of agreed periodic basis measurement and verification of the energy savings:
  - Energy savings are established by comparing measured energy use before and after implementation of energy efficiency improvement measures with adjustments for changes in weather, occupancy, opening hours, production, etc.
  - When planning to measure and verify savings, a fundamental consideration is the **boundary** (all facility or only a portion)
  - The concept shall be agreed in the EPC and based on established protocol, such as the International Performance Measurement and Verification Protocol (IMPVP)
  - Certified Measurement and Verification Professionals can provide guidance
- All contractual obligations regarding energy efficiency, financial savings and others have to be fulfilled by the EPC provider

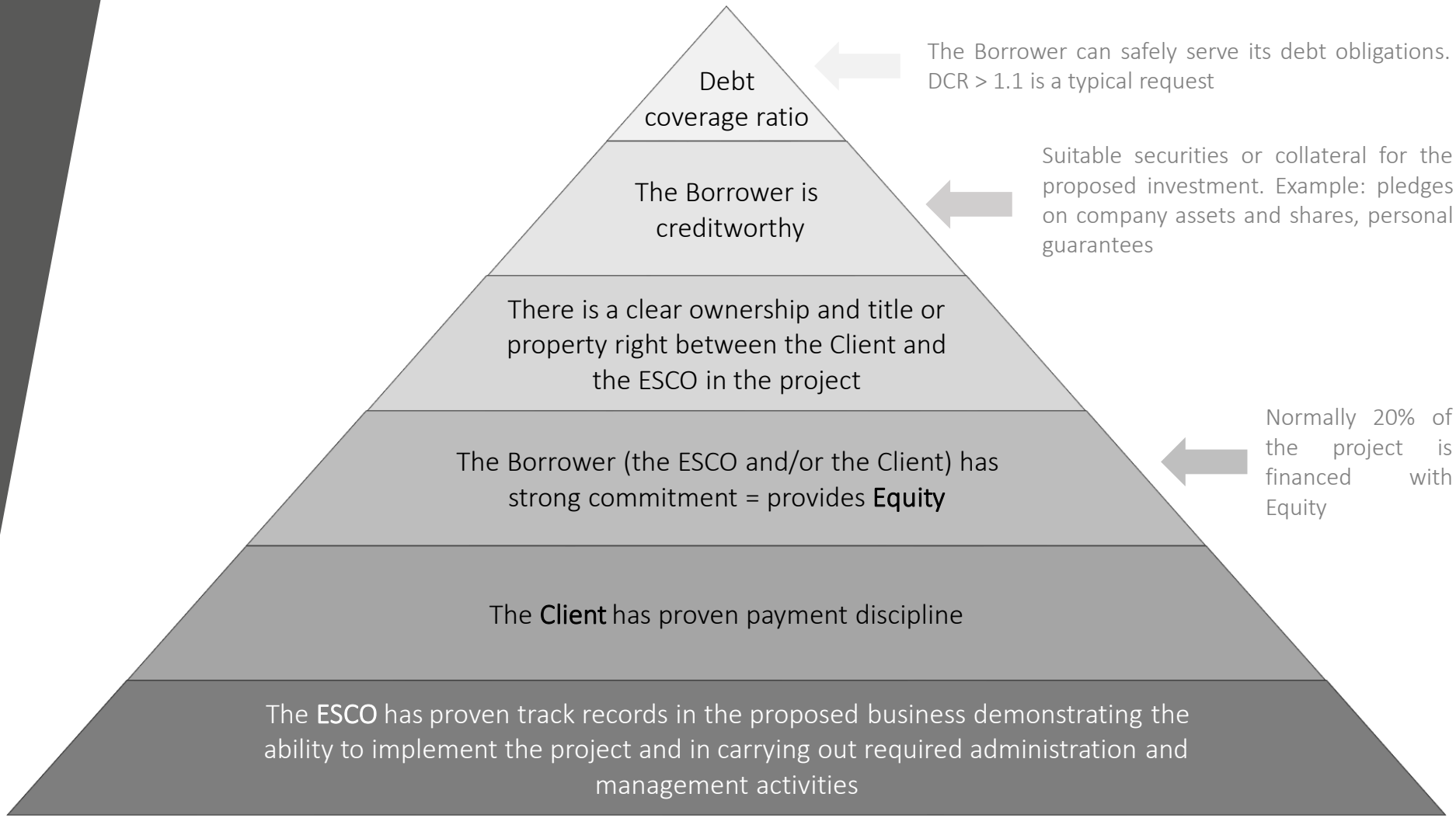
Source: EnPC-INTRANS

Energy Performance Contracting
FINANCING

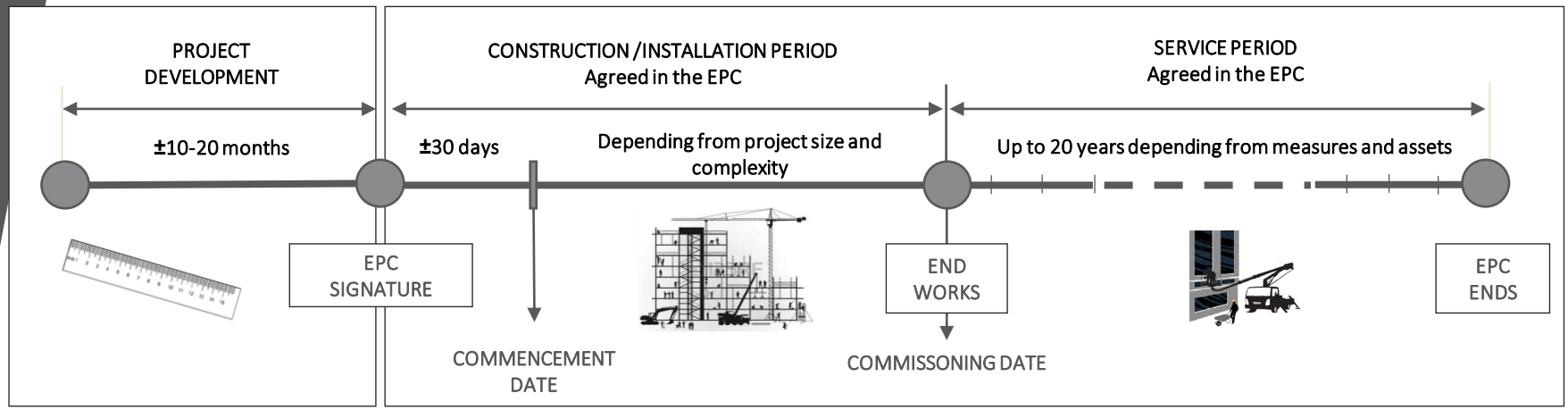
Financing Energy efficiency

PROJECT	Replace your old car	Buy your new house	Energy efficiency
			
Own financing	Equity	Equity	Equity
FORM OF CAPITALS	+	+	+
Third party financing	Debt (Leasing)	Debt (Mortgage)	Debt (?)
	• Leasing and Mortgage are highly standardised financial products. • Clear collateral and securities • No execution risks (the car and the house are already built)		• Low level of standardisation • What is the financial product? What sort of debt capital? • Leasing? Project financing like for real estate development and infrastructural projects?

Basic principles in financing



Financial products for EPC



- **Project development:**
  - Equity financing
  - Quasi-equity financing
  - Grants / technical assistance

- **Project execution:**
  - Equity financing
  - Quasi-equity financing
  - Debt financing
    - Loan
    - Leasing
  - Grants

- **Project service period:**
  - Equity financing
  - Quasi-equity financing
  - Debt financing
    - Loan
    - Leasing
  - Re-financing (project execution loans)
  - Cession
  - Forfaiting
  - Securitized instruments

Performing EPCs

Short term financing

Long term financing

Description of financial products

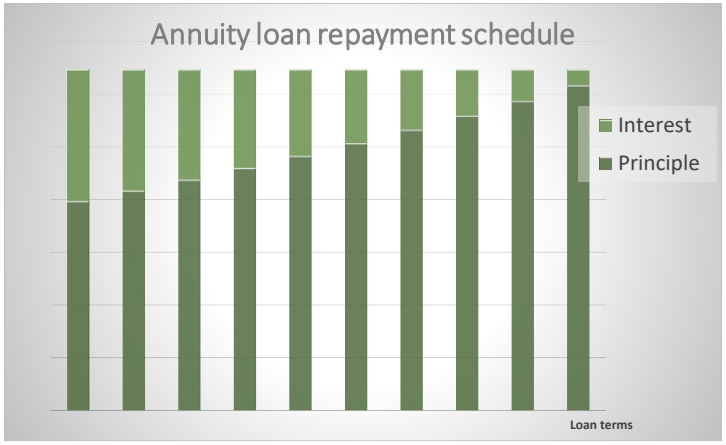
1

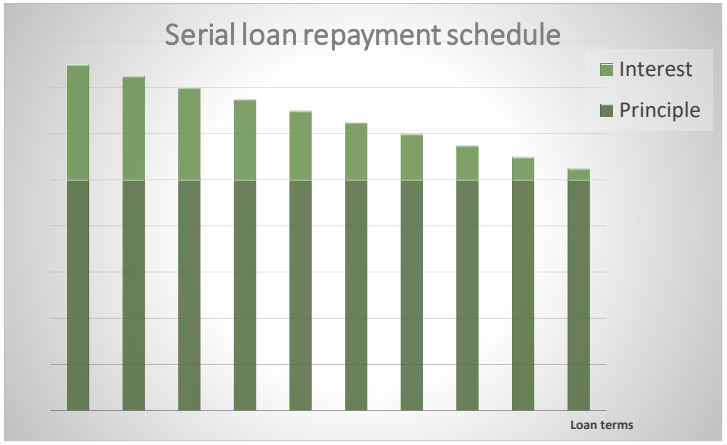
- Equity financing
  - Simplest and most important source of funding
  - Basically needed in each project involving debt financing
  - Financial institution requires equity for disbursing debt financing products
  - The riskier the project the larger the equity contribution
- Equity raised by shareholders or in the capital market or via venture capital and equity funds. Usually these last are rather limited for energy efficiency projects due margins what could be offered in the deep retrofit projects
- Quasi-equity
  - Is a form of debt with the functionality of equity. For example:
    - Subordinated shareholder loans
    - Mezzanine loans
    - Venture debt
  - Like equity, quasi-equity is largely unsecured and is considered junior to any other debt

Description of financial products

2

- Debt financing
  - Most common source of funding
  - Lenders are entitled to a payment of fees and interest and the re-payment of the principle
  - In most of the countries interest payment is considered as cost and therefore tax deductible
  - Most typical form of debt financing is loan and leasing
- Loan
  - Bank credit ranks among the most common forms of financing and normally it is possible to choose between serial loan and annuity loan (see figures)
  - Fees apply to enter in a loan agreement depending from creditworthiness of the borrower, available guarantees, type of project





Description of financial products

3

- Leasing
  - often closely linked to a certain technology (for example, with setting up a boiler plant, a ventilation unit, etc.)
  - frequently accompanied by additional maintenance services
  - leasing is associated with financing of assets with specific characteristics:
    - The asset is removable → both legally and physically
    - The asset has a secondary market
    - The asset has its own identification and property documents
  - Two basic types of leasing
    - Operational lease
    - Financial lease
- Grants
  - Grants increase the net cash flow of the project and thereby lower the risks of the project and enhance its attractiveness to potential lenders
  - Limited and typically do not finance 100% of the project
  - Creates additional risks as often subject to tight time constrains resulting in less attention to proper project development
  - Can be in the form of capitals to cover a share of the project costs without repayment, or in the form of subsidised loan with no interest or below market benchmarks for interest rates

Description of financial products

4

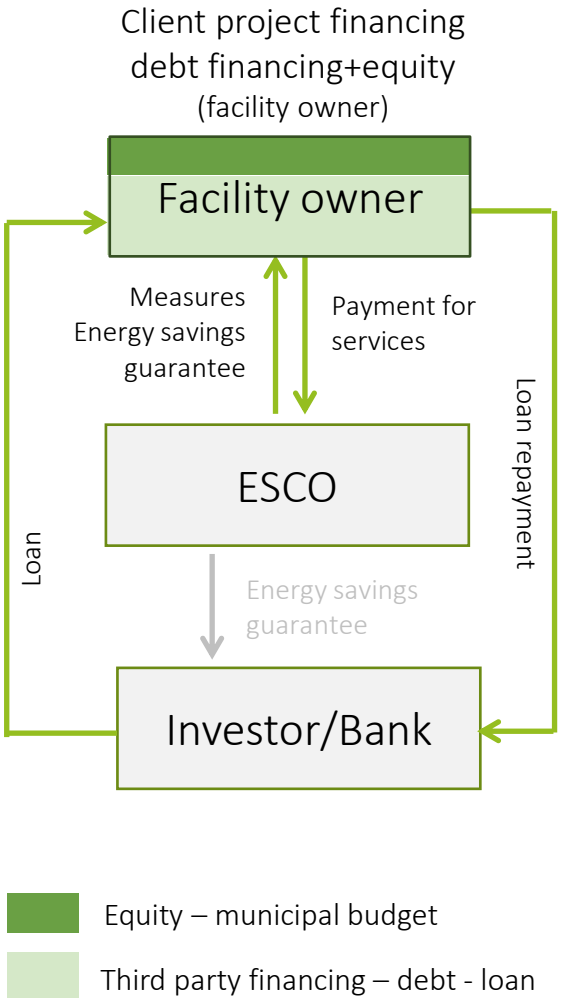
- Re-financing
  - Process of replacing existing loans with new loans with better conditions
  - For example at the end of the construction and installation phase of an EPC execution risks are eliminated, the borrower may seek for better loan conditions:
    - Lower interest rate
    - Extension of the loan terms
    - Lower debt/equity ratio
  - Re-financing typically does not improve the debt position of the borrower
- Sales of future receivables
  - At the end construction and installation of the energy efficiency measures execution risks are eliminated. After one M&V period it is also possible to assess the performance guarantee of the ESCO
  - Future Client' payments to the ESCO → cash flow that the ESCO can capitalize to repay debt financing and free equity:
  - f the Cession → assignment of payment rights from the ESCO to a third party (typically a financial institution like a bank or a fund). The ESCO cedes the right to claim payment from the Client. The financial institution gains this right
    - Forfaiting → a financial transaction where the ESCO sales at a discount rate the future receivables from an EPC to a financial institution
    - Other financial instruments → if the ESCO organizes its projects via an SPV, receivables from several EPCs can be structured into an Asset-backed security (ABS) like a bond collateralized by the cash flows from a specified pool of underlying assets (no prospectus required for private placement)

Financial plan

ESCO is always liable for the provided Energy Savings guarantee

100% arranged by the Client	Blended financing	100% arranged by the ESCO
Equity financing Quasi-equity financing Debt financing (Loan, Leasing) Other financial instruments Grants Financing contracts between the Client and Financial institution backed by the ESCO's Energy Savings Guarantee	Both the ESCO and the Client ensure project financing Eliminate disadvantages of single approach and supports their advantages Basis for much tighter business relations	Equity financing Quasi-equity financing Debt financing (Loan, Leasing) Other financial instruments Grants Financing contracts between the ESCO and Financial institution backed by Client payment discipline

Third party financing – examples 1



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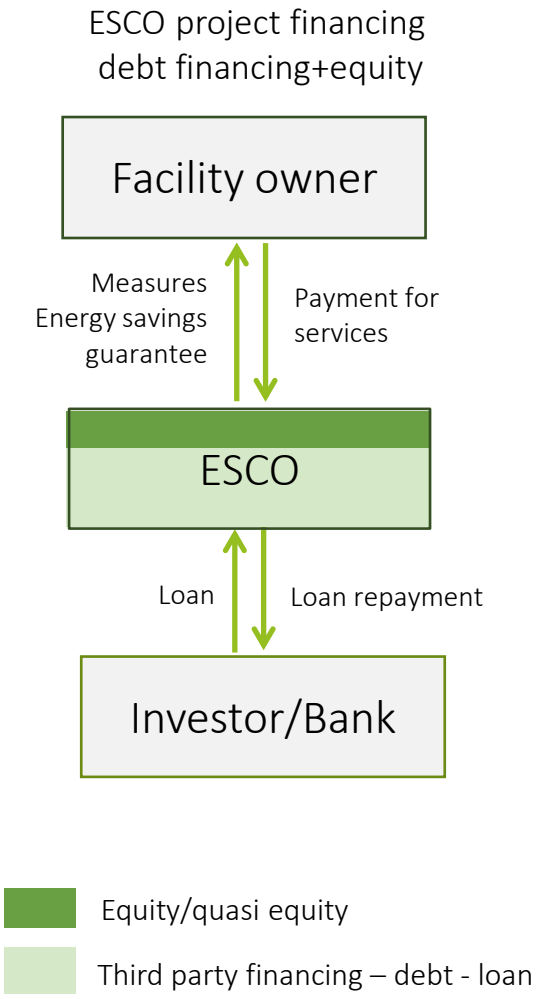
Third party financing – examples 2



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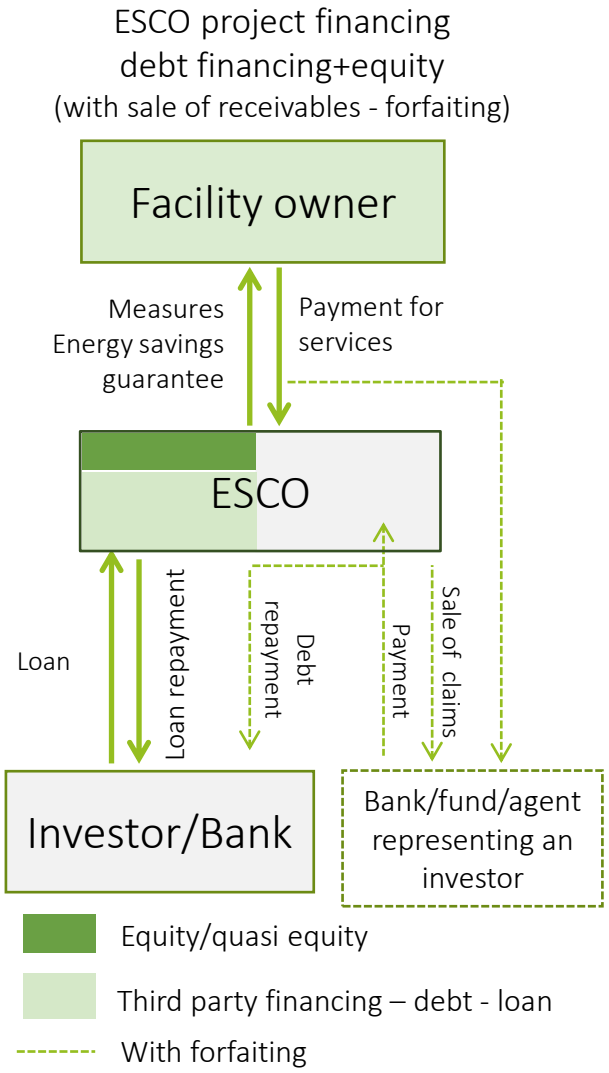
Third party financing – examples 3



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Financial plan

- Relevant aspects for the selection of financing products:
  - Cost of financing
    - What interest rates, fees and terms apply to the Client
    - What interest rates, fees and terms apply to the ESCO
  - Creditworthiness of the Client and the ESCO
  - Available equity, collateral and securities of the Client and the ESCO
  - Taxation
  - Balance sheet and accounting aspects
  - Management expenditures/transaction costs
- Important:
  - ESCOs are not banks:
    - Limited equity for short term
    - In case of SME also very limited balance sheet to attract long term debt

The European Code of Conduct for EPC

= voluntary agreement, conducted through a stakeholder engagement process

Basis for the QualitEE project is the single common European Code of Conduct for EPC:

- Finalised in 2014 to support transparent, trustworthy and high quality EPC markets
- Defines the basic values and principles that are considered fundamental for the successful preparation and implementation of EPC projects
- Prepared as part of the Transparense project - financed by the EU
- Discussed with stakeholders:
  - European level: eu.ESCO, EFIEES, EASME (EC), SC members
  - National level (national workshops): ESCOs, ESCO associations, policy makers, EPC clients and facilitators from 20 countries
- Approved and currently administered by European associations of EPC providers: EFIEES and eu.ESCO

Thank you

Claudio Rochas, Agris Kamenders

Ekodoma

www.qualitee.eu

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