Energy Efficiency Projects: financing tools for energetic modernization of buildings

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Florence, 21st June 2012

Structure of the Presentation

1. Energy Efficiency: Operational Framework
2. EU Regulatory Framework and main EU Funds
3. Financial structures, issues and proposals of solutions

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Energy Performance Contract in steps

Energy Contracting - also labeled as EPC – is a comprehensive energy service concept to execute energy efficiency projects in buildings or production facilities according to minimized project cycle cost

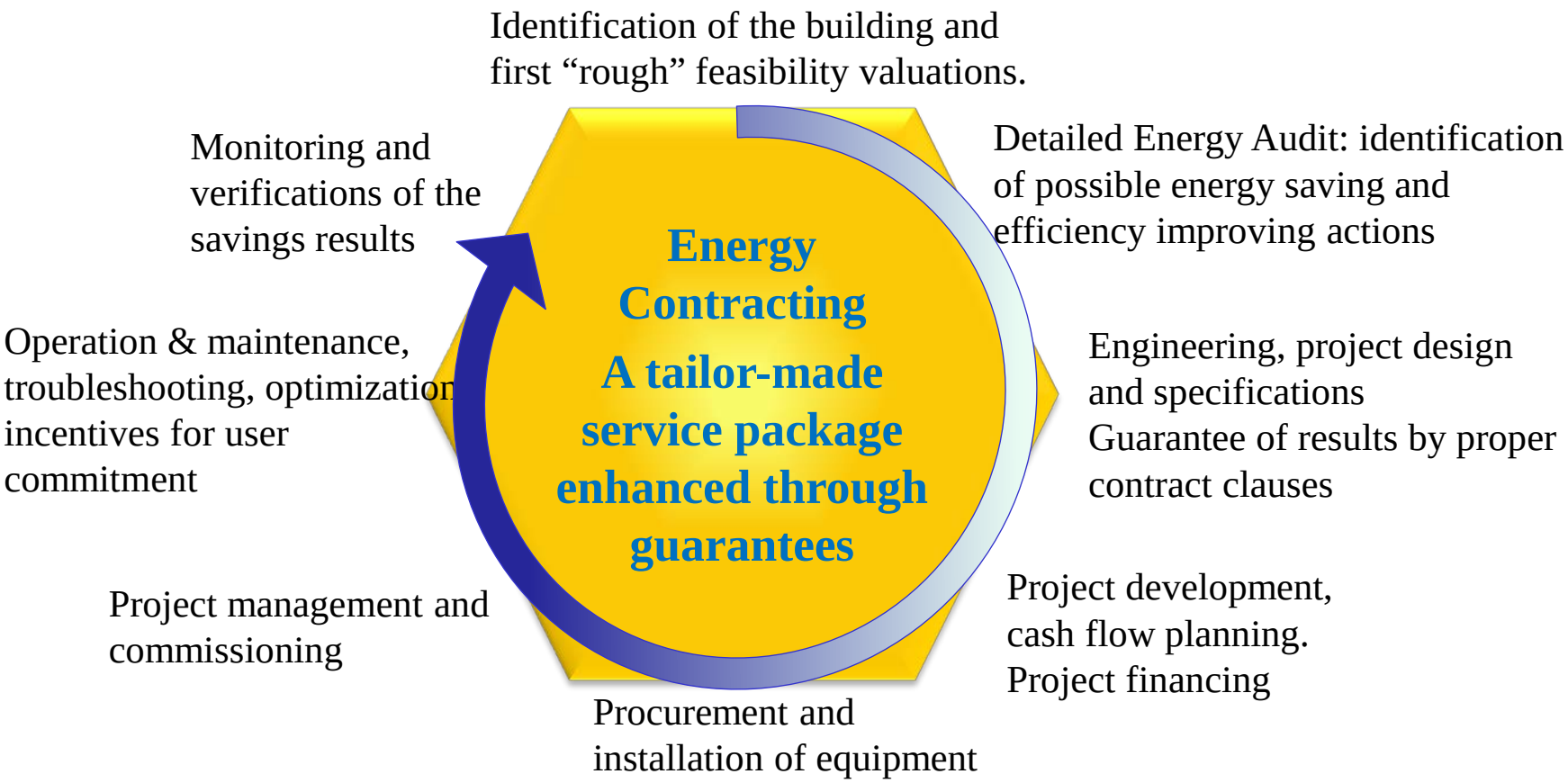
The main steps to build an EPC are:

1. Identification of the building and first “rough” feasibility valuations
2. Detailed Energy audit: identification of possible energy saving and specific efficiency improving actions
3. Engineering and project design and specifications
4. Guarantee of the results by proper contract clauses
5. Project development, cash flow planning, project financing
6. Procurement and installation of equipment
7. Project management and commissioning
8. Operation & maintenance services of facility and equipment for the contract period
9. Monitoring and verifications of the savings results

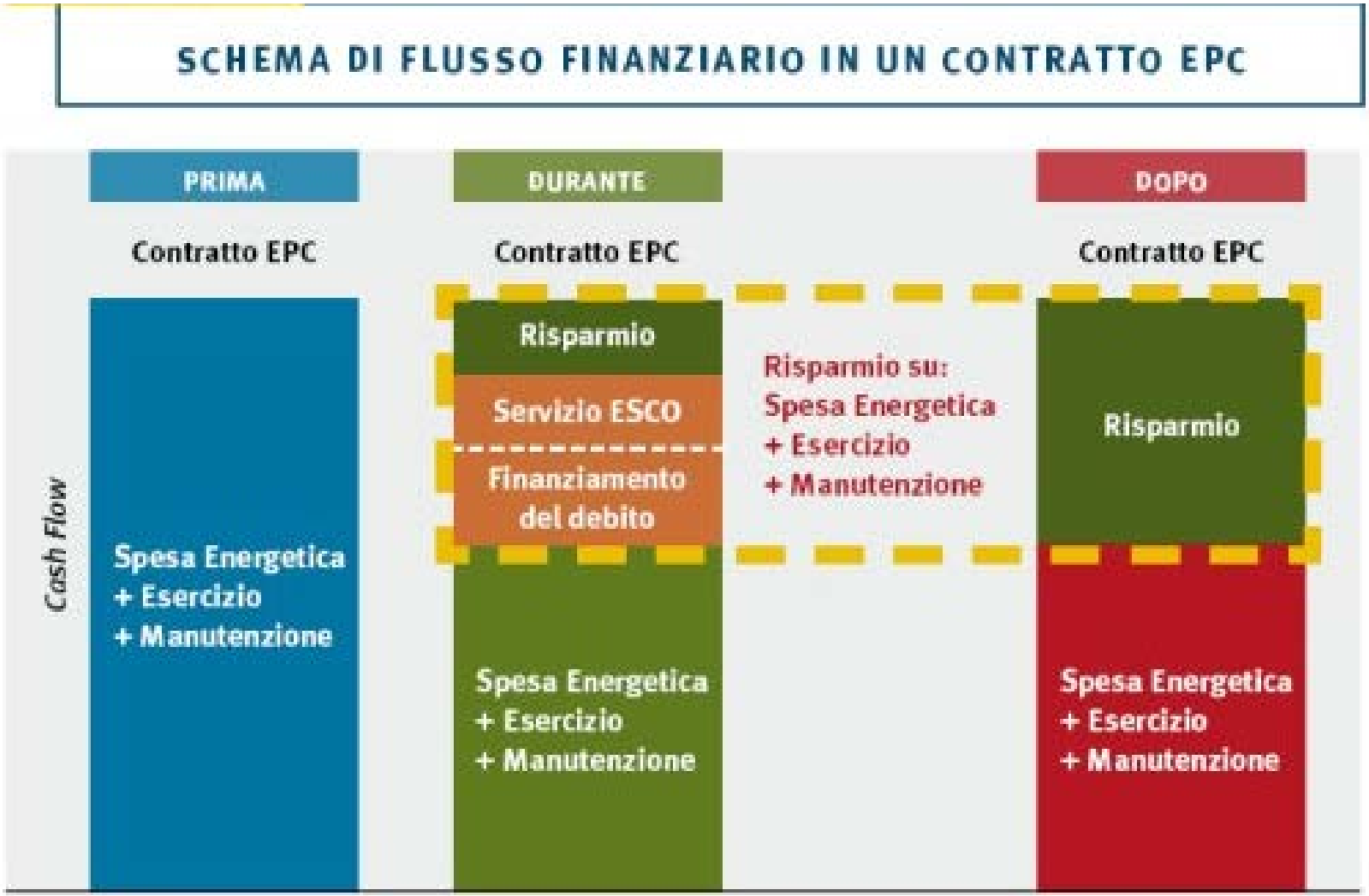
Main issue in addressing energy efficiency projects: achieve sufficient savings from reduced energy consumption to cover the financing of the project

ESCo: typical Energy Performance contract

Energy contracting is the guarantee that the system performs according to initial specifications, over the whole contract term



Economic Structure in EPC[1]

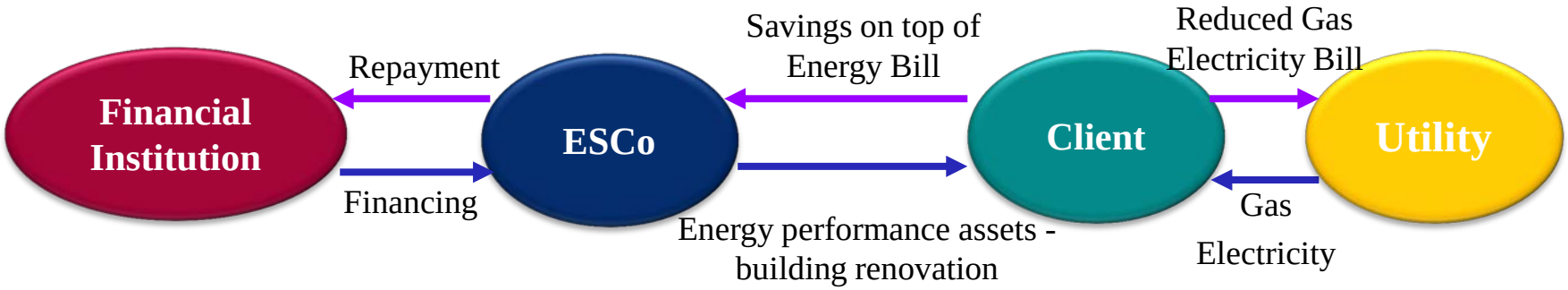


[1] Courtesy of Eng. Luigi Guerra, ACER Reggio Emilia

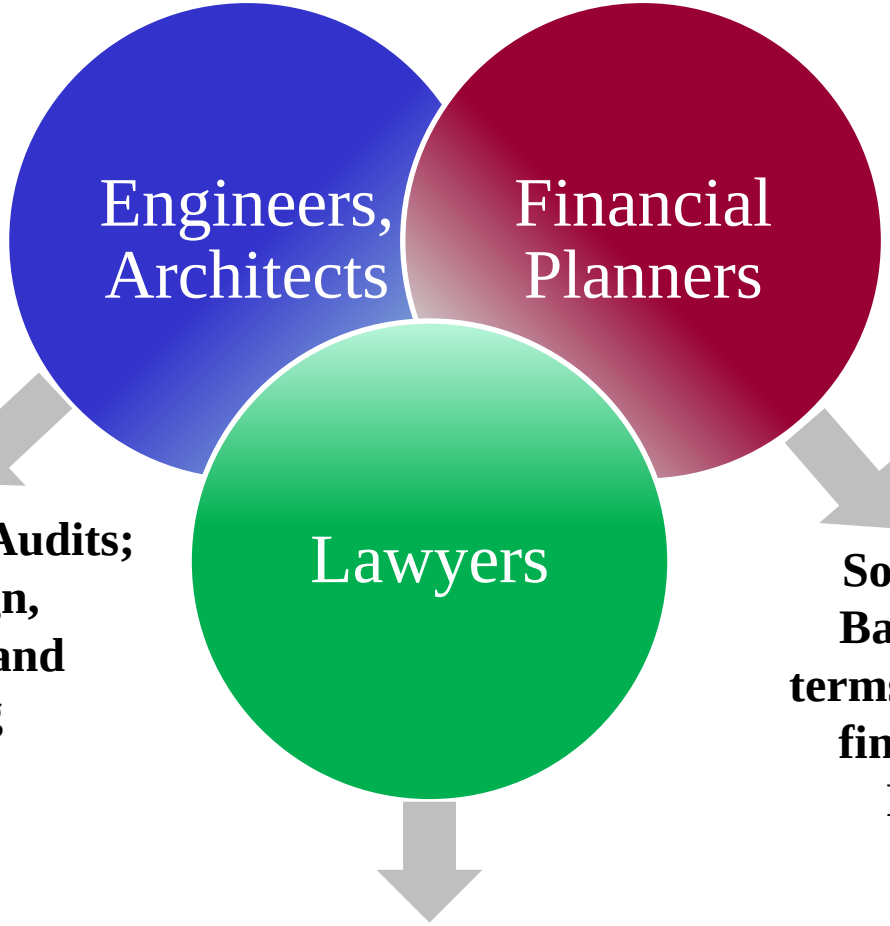
EPC in graphs

Basic contractual relationship in the Energy efficiency project

Basic cash flow overview



3 indispensable competencies to start the projects



Detailed Energy Audits; Project design, management and monitoring

Sound financial plans; Bargaining of contract terms with banks and other financial stakeholders; Risk management

Binding EPC Contracts; Clear and easy-to-access Public Auctions

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EU Energy Strategy for buildings

- The Europe 2020 Strategy in the Energy field sets 3 main objectives:
  1. to reduce consumption of primary energy by 20% by 2020
  2. to cut greenhouse gas emission by 20%
  3. to source 20% of its energy needs from renewable sources
- The first goal constitutes one of the cornerstones of the 2020 Energy Strategy. In this light, the EU adopted the Energy Efficiency Plan 2011[1]
- Among the instruments provided, the plan underscores the necessity to implement the means for reducing final energy consumption in **buildings**, as this sector is responsible for almost **40% of the final energy consumption** in Europe
- With the issuance of the Directive 2010/31/EU and the Commission Proposal 2011/370/EU, the EU set minimum requirements for new and existing buildings.
  - New buildings shall lead to nearly zero-energy consumption
  - Existing buildings shall undergo major renovation to have their energy performance upgraded

[1]http://europa.eu/legislation_summaries/energy/energy_efficiency/en0029_en.htm

Energy performance and instruments to achieve energy efficiency goals (I)

"Energy performance of a building: the calculated or measured amount of energy needed to meet the energy demand associated with a typical use of the building, which includes energy used for heating, cooling, ventilation, hot water and lighting"[2]

Instruments

1. **Energy performance certificates**
2. **European Commission** proposal to intensify energy taxation, carbon taxes and building renovation by means of the following tools:
   A. **Grants** (subsidies by EU and regional authorities)
      1. the LIFE+ programme
      2. the cohesion policy and structural funds
      3. ERDF
      4. The Competitiveness and Innovation framework Programme (CIP): Intelligent Energy Europe programme (2007-2013)
   B. **Intermediated funding** through EIB and EBRD loans, Jeremie funds of EIF
   C. The European Energy Programme for Recovery
   D. the Framework Programme for research, technological development and demonstration activities (2007-2013)

[2]http://europa.eu/legislation_summaries/energy/energy_efficiency/en0021_en.htm

Energy performance and instruments to achieve energy efficiency goals (II)

3. **ESCo** - Energy contracting
   A. Credit Financing
   B. Leasing Financing
   C. Cession and Forfaiting of contracting rates

   Different financing structures to gain lower financing costs for the modernization of buildings and reduce energy consumption

4. **National Measures** for energy efficiency investments
   A. Tax deductions. Ex: in Italy deductions from income/corporate tax of 55% of investments expenses, in Germany exemption on the payments of excise duties
   B. Public financing: funds from national bank for deposits and loans, regions, municipalities
   C. Guarantees by city hall or regions on ESCo investments to enhance private financing and lower financing costs

Among all measures, the most spread one in EU is **ESCo**.
Nevertheless, **EU and national funds** constitute a cornerstone for the functioning of the ESCo market, while other incentives such as **Energy Performance Certificates** spur private investment, as they increase the value of the buildings

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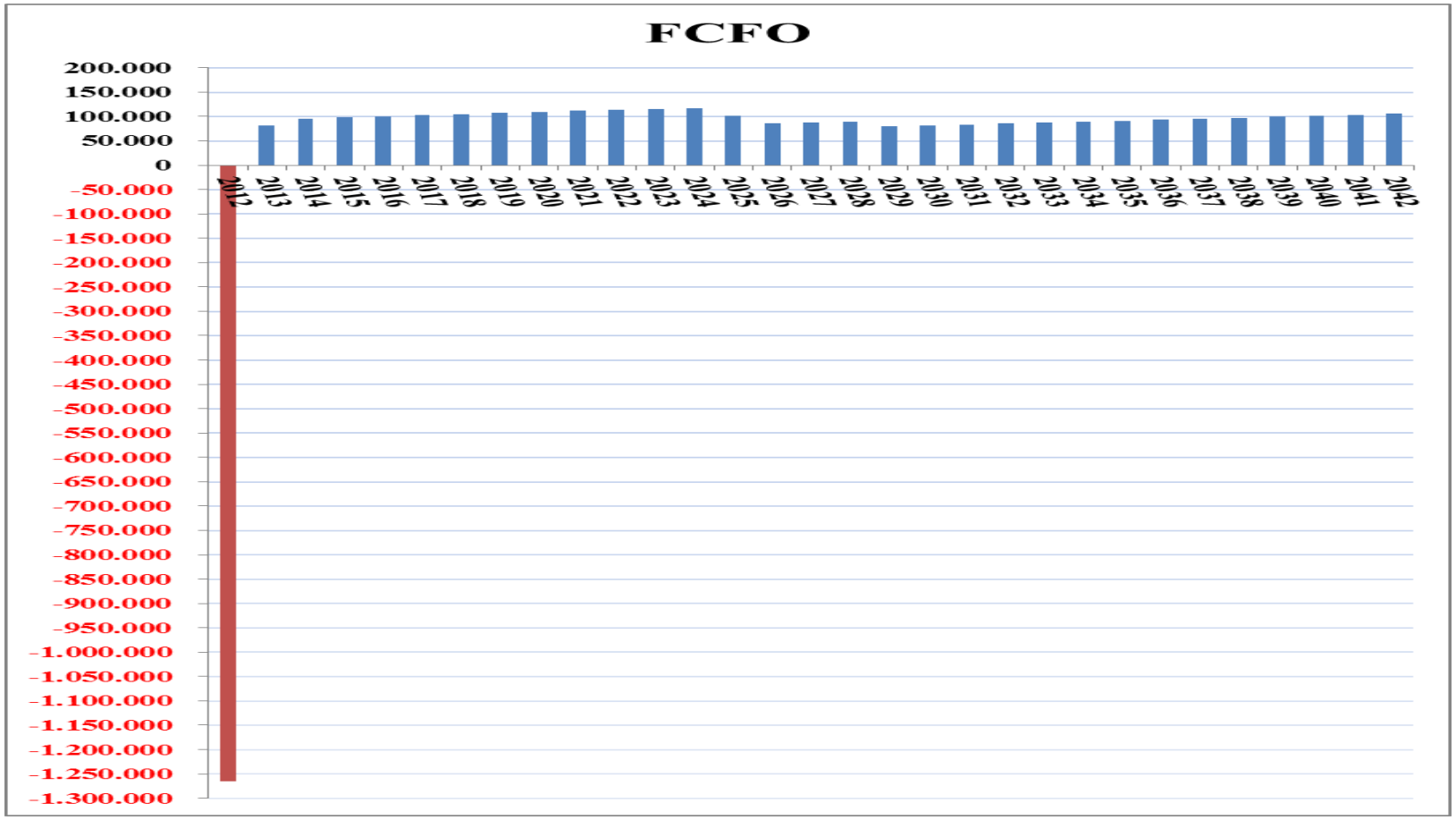
Energy Efficiency Projects: typical cash flow structure and issues

Realization of a cogenerator for public buildings in the Reggio Emilia:

High initial investment costs, compared to size of following positive FCFO

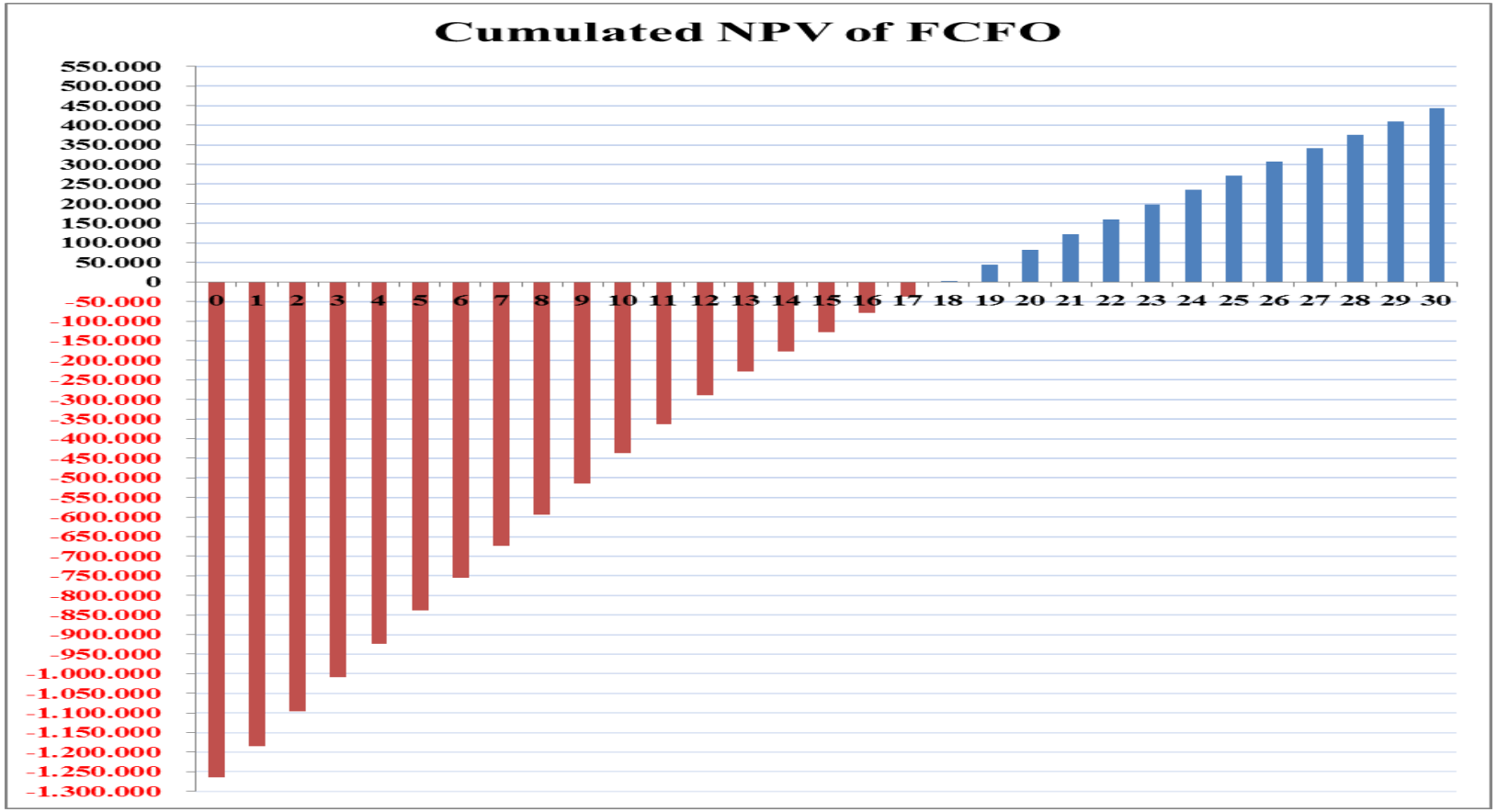


FCFO: Free Cash Flows from Operations. This financial valuation takes into account only separately the financing structure of the operation, in order to understand the profitability of the project before deciding if to finance and realize it.

Energy Efficiency Projects: typical cash flow structure and issues

Realization of a cogenerator for public buildings in the Reggio Emilia:

Long-term horizon of the project and break-even after 18 years



The Cumulated Net Present Value of FCFO in each year is the sum of NPVs of the FCFOs up to that year

What solutions then?

1. **New financing structures and innovative contractual terms such as non recourse financing from Banks and Government (Kyoto funds from the "Cassa Depositi e Prestiti")**
2. **Involvement of Public Administration in the role of project designer, project manager and final controller, possibly ultimate guarantor of the project cash flows: Public-Private Partnership projects**
3. **EU Programs and Funds. The Commission and the European Investment Bank provide technical assistance, grants and loans at favourable rates**

I will illustrate point 1 and 2, while point 3 has already been partially discussed previously

The Cumulated Net Present Value of FCFO in each year is the sum of NPVs of the FCFOs up to that year

1. ESCo: financing tools
A. Credit Financing

Credit Financing presents 2 options for the project realization:

1. ESCo is financed by a "Third-Party" financial institution

2. The Client is financed by a "Third-Party" financial institution

In both cases, The ESCo is responsible for the energy efficiency measures.

The total financing costs depend on the risks that the FI attributes to the borrower

Therefore option 2 is advisable if the client can obtain better financing conditions than the ESCo

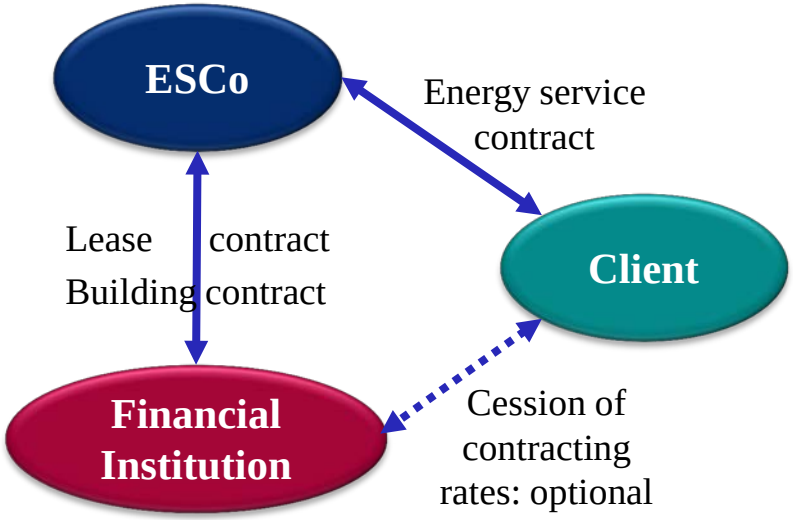
On average, a credit covers 70-80% of the project financing needs.

1. ESCo: financing tools
B. Leasing Financing

Leasing is a contract between the owner of an asset (lessor) and the user (lessee), wherein the lessor grants exclusive rights to use the assets for a certain period (basic lease term), in return for payment of a lease

2 types of lease are relevant for Energy-Contracting

1. The ESCo enters leasing agreement



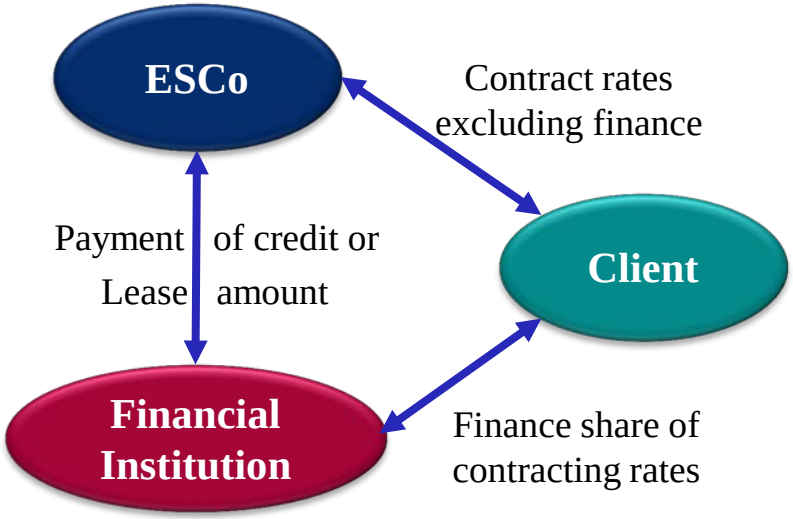
2. The client enters the leasing agreement

In this case, the Financial Institution offers financial and administrative services, bears risks also on the assets, and concludes lease contract either with the ESCo, sometimes including a cession agreement for part of the contracting rate, or with the client

1. ESCo: financing tools
C.1 Cession

Cession of contracting rates is not a stand alone financing option but an additional collateral for the Financing Institution to the credit or lease agreem.

ESCo's claims to the client are legally transferred to the FI (cession). The client pays the (finance share of the) contracting rates directly to the FI, which are used to amortize the ESCo's debt



Various types of cessions are available: open, half open and hidden cession of the receivables

They differentiate between:

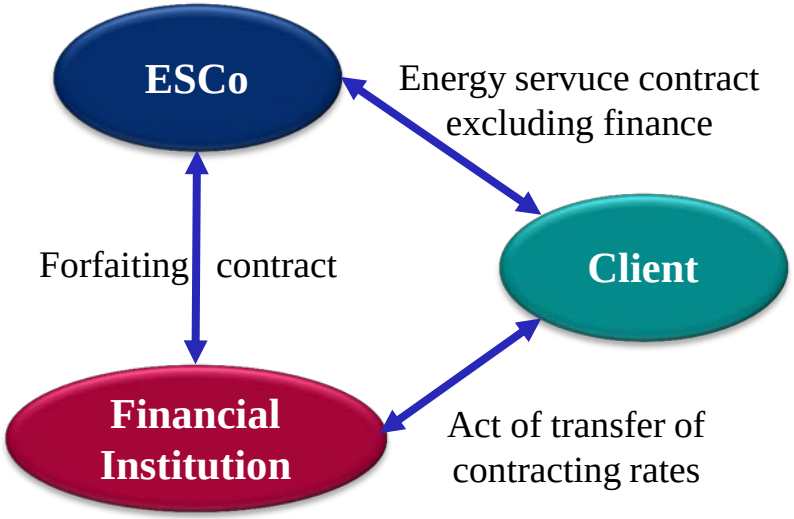
a) Cession of the client's liabilities through an open or half open agreement with the Client

b) Cession through a quiet agreement between ESCo and FI without the client's accordance or knowledge

The latter allows to avoid the resistance of clients to projects involving Finacial Institutions

1. ESCo: financing tools
C.2 Forfaiting

In **Forfaiting** contracts, without an underlying financing agreement (credit or leasing), the ESCo sells the prospective contracting rates to a FI in return for a discounted payment equal to the present value of those rates.



Forfaiting constitutes an economic advantage, if the client's creditworthiness is better than the ESCo's, or in the cases where the project cash flows can serve as main collateral[4]

When the clients are public, creditworthiness is mainly ensured, but in all other cases an assessment by a bank is necessary to define whether forfaiting allows lower interest rates

A main advantage of forfaiting consists in its flexibility:

- the extent of financing, either part of the total investment or even 100% of it.
- Financing length, from 6 months to more than 5 years, but usually below useful life time.

[4] Examples of projects where the cash flows can serve as collateral are the installation of a high power boilers or co-generation systems

2. Public-Private Partnership projects in Italy
Main actors

ACER = Azienda Casa Reggio Emilia

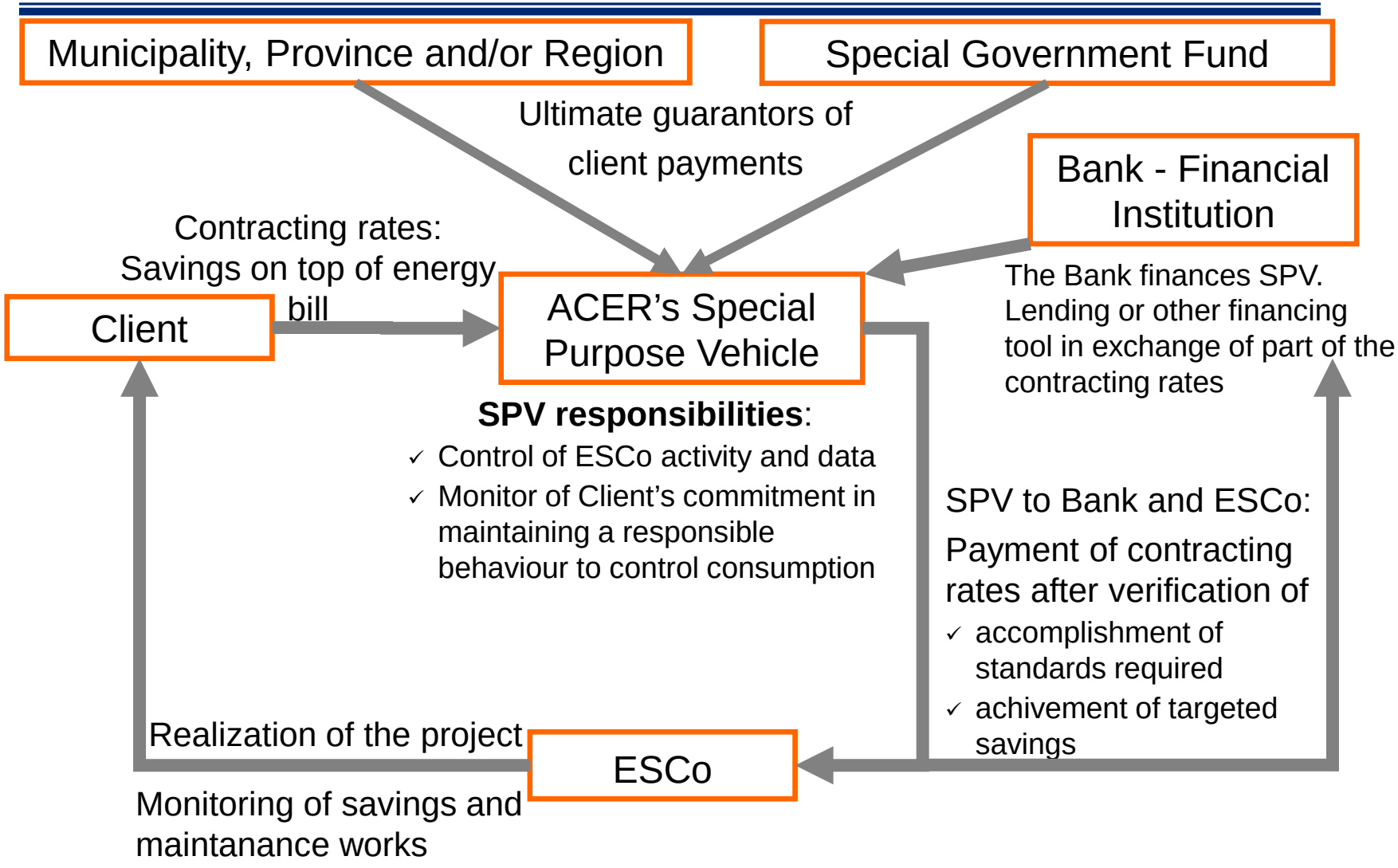
- company owned by the Municipality and Province of Reggio Emilia
- Manager of residential buildings belonging to the municipality of Reggio Emilia and to other public authorities in the province of Reggio Emilia.

ESCo = companies interested in participating into a tender to renovate residential buildings in Reggio Emilia through energy efficiency projects.

Financial Institutions = insitutional (EIB, EC funds) or private lenders providing money for the project

Client = the buildings to retrofit

Project Financing and Public-Private Partnership



How the project works (1)

ACER will create a Special Purpose Vehicle and this last one will get financing from banks on its own balance sheet.

The Bank which will finance SPV is selected through a public tender defined and organized by ACER.

The money provided by the Bank goes to SPV to realize the energy efficiency project. So SPV can partially finance the realization of the project. Usually the contract between SPV and the Bank lasts between 10 and 15 years (no more than 15 years).

Then ACER organizes a public tender to realize the project. The ESCo winning the tender will receive the money from SPV and will deliver the project.

The ESCo, in order to receive finance from SPV, enters an Energy Performance Contract with SPV in which the ESCo undertakes to provide maintenance works on the assets and monitoring of energy consumption to achieve the energy savings defined in the contract.

How the project works (2)

The renewed buildings (“Client” in the slide of the structure of the project) don’t pay any money for the realization of the project. At the end of the renovation works, they pay their energy bill to SPV. The Client forgoes part of the energy savings realized through the energy efficiency improvements, in order to repay the project for all the duration of the Energy Performance Contract (EPC).

In this example (see next slide), out of 35% of Energy Savings, the Client retains 7% savings of their original energy bill.

SPV gets 28% of the savings from the energy bill: this 28% is paid by the Client to SPV. SPV will redistribute part of the 28% to the ESCo and part to the Bank.

SPV will undertake the management of the payments, bearing the risk of arrearage in the payments by the Client.

The Municipality/Province/Region/Government may constitute a fund, as a guarantee for the payments to the Bank and the ESCo, or it may be directly involved as a Guarantor for SPV’s payments to the Bank and the ESCo.

Main data of the project

Data on the energy efficiency project in case of deep intervention on real estate properties owned by Reggio Emilia municipality and other public entities

- ✓ Required investments: 6 mln €
- ✓ Energy bill before intervention: 100%
- ✓ Estimated annual energy savings: around 35% of bill
- ✓ Positive employment effect through project realization

GOAL of the project: achieve 35% annual savings on pre-project energy consumption

Pre-project consumption		After-project consumption	
100%	Energy Consumption before project realization (paid by Client to Utiility)	7%	Savings for the Client
		28%	Savings used to pay project realization (paid by Client to ACER on top of actual Energy Bill)
		65%	Actual Energy Consumption (Energy Bill) after project realization (paid by Clients to Utility)

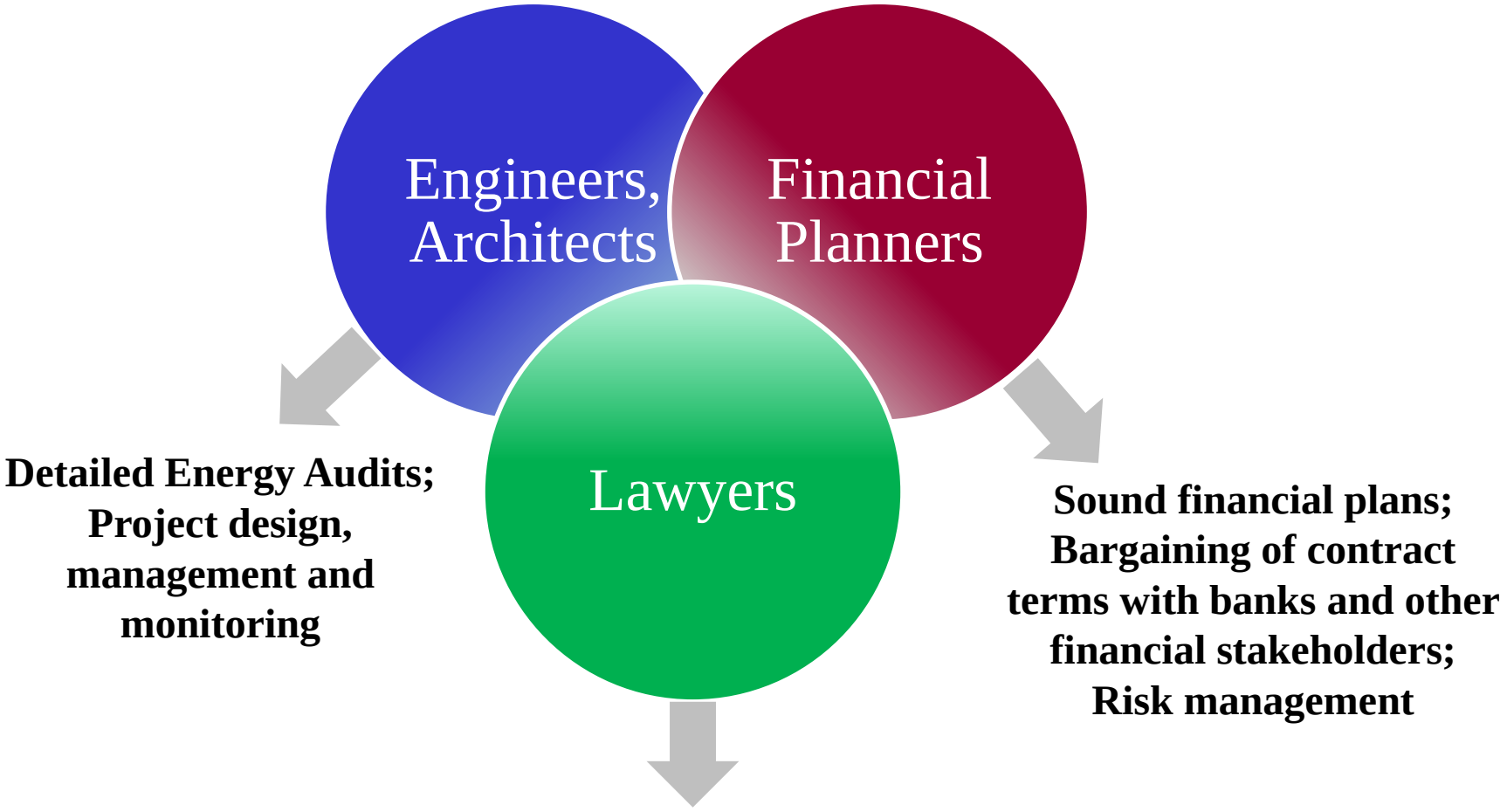
Issues in the Italian and EU market

1. Innovative type of tender, still not well known in the Italian industry
2. Few ESCo willing to participate, since the tender investments for single projects are still too low to attract international ESCo
3. Complex contractual agreements and burdensome administrative procedures
4. Fund raising: limited understanding of energy-efficiency and performance contracting by financial institutions.

How to overcome the drawbacks?

1. Reducing and simplifying the tender procedures while harmonizing national laws to promote ESCo contracts in line with European standards, such as EPC (Energy Performance Contracts)
2. Involving Institutional lenders such as EIB, EBRD, which provide also consultancy services and project financing loans at reduced interest rates
3. Involving public authorities as guarantors to subsidize the project and render it more credible for private investors (ESCO) and private lenders

Last remark: 3 indispensable competencies to realize the projects



Thank you for your attention

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