



Recommendations for public authorities



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FRESH Project Partners

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GLOSSARY OF TERMS

CDC	Caisse Des Dépôts et Consignations
CECODHAS	Comité Européen de Coordination de l'Habitat Social (European Federation of social, cooperative and public housing)
EIB	European Investment Bank
ESCO	Energy Service Company
EPC	Energy Performance Contract
EU	European Union
FRESH	Financing energy Refurbishment for Social Housing
GHG	Green House Gases
HVAC	Heating, Ventilation and Air-Conditioning
ICE	International Consulting on Energy
IPMVP	International Protocol on Measurement and Verification of Performance
JESSICA	Joint European Support for Sustainable Investment in City Areas
JRC	Joint Research Centre - European Commission
M&V	Measurement and Verification
PPP	Public Private Partnership
ROE	Return on Equity
SHO	Social Housing Operator
TPF	Third-Party Financing

1. Foreword

Lack of adapted funding is a major barrier to the energy retrofitting of Social Housing in Europe. The Energy Performance Contract (EPC), under which an Energy Services Company (ESCO) invests in a comprehensive refurbishment (building insulation and renovation of the heating systems) and repays itself through the generated savings, could be seen as a possible financial solution. EPCs have not been used until now in Social Housing because of the absence of visibility on the business model, although the market is well identified.

FRESH – Financing energy Refurbishment for Social Housing – is a European co-operation project that aims to pave the way and demonstrate to Social Housing Operators (SHOs) that EPC can be used for highly energy efficient refurbishment on a large scale. Within the project, SHOs and ESCOs from France, United Kingdom, Italy and Bulgaria proposed to address EPC in Social Housing aiming at comprehensive refurbishment. At the pilot sites identified, FRESH project partners worked out the technical and monitoring measures, along with the many contractual, legal and financial issues of EPC. One major goal of these pilot experiences was to raise awareness about the existing opportunities but also pitfalls lying in EPC for comprehensive refurbishment programs.

This document encompasses the lessons learned from the project and draws attention on the key legal and organizational developments that could trigger the large scale development of EPC in the Social Housing sector in Europe. It lists the obstacles and provides solutions to decision makers, at EU and national levels, who will judge their appropriateness. Most of these recommendations have already been presented by project partners, both at national and European levels.

The first chapter of this document resumes the main issues associated with energy refurbishment of Social Housing and the opportunities offered by Energy Performance Contracts.

The second chapter presents 17 recommendations for EPC to become an effective financing tool for energy renovation in Social Housing.

Finally, the third chapter proposes the establishment of public/private third party investors and operators that could help develop a large-scale financial engineering and structure an integrated EPC offer that could tackle the challenges of Factor 4 in Social Housing.

SYNTHESIS OF RECOMMENDATIONS

Recommendation 1: Define EPC as a family of several operational concepts

In order to improve understanding by potential clients of the possibilities and risks related to EPC and facilitate the marketing of their services by ESCOs, it would be useful to clarify the underlying characterizing concepts behind EPC and provide more operational definitions for market actors.

Recommendation 2: Clarify applicable procurement rules

Though EPC is compatible with current EU public procurement rules, the complexity of the tendering requirements, real and perceived, is still an obstacle for a large scale use of such contracts and can discourage many SHO proceeding in this direction. Clarification of the rules applicable to EPC may encourage a larger use of such contracts.

Recommendation 3: Allow long-term contracts

Considering current investment costs for comprehensive refurbishment and current energy prices, as well as the fact that in most cases the SHO is not allowed by law to recoup all energy savings from tenants, an extension of the maximum contract duration should be considered for EPC, to better fit the profile of investment.

Recommendation 4: Clarify the possibility to externalize debt through EPC

The possibility for SHOs to externalize the debt related to energy retrofitting through EPC, and thus maintain their capacity to invest in their core business, is essential in the interest of the social housing sector towards such scheme. A clarification by national and/or EU authorities on the way to consider EPC liabilities in public accounts is required.

Recommendation 5: Create quality labels and voluntary certification schemes

The creation of quality labels and voluntary certification schemes for energy services could improve confidence in the services offered by ESCOs and facilitate the marketing of their services to potential clients.

Recommendation 6: Introduce a specific status for EPC in recoverable housing charges

Currently, the energy charges that can be recovered from tenants are related directly to energy consumption and operation and small maintenance of the installations, in case of collective facilities. A specific status should therefore be created in the recoverable housing charges that could allow reasoning in global cost for the housing.

Recommendation 7: Introduce the possibility to increase the rent when EPC is involved

Alternatively, it could be allowed to increase the rent ceiling following an energy refurbishment under an EPC, as long as this increase is compensated by a decrease in charges and the stability of prices is guaranteed.

Recommendation 8: Introduce the possibility to charge an energy efficiency service

The limits currently imposed on the energy savings that can be recouped from tenants reduce sharply the financial interest for comprehensive refurbishment through an EPC. The law could therefore be adapted and improved to push toward deeper energy retrofits.

SYNTHESIS OF RECOMMENDATIONS

Recommendation 9: Switch to “warm rents”

A system of “warm rents”, where tenants pay a total fee for their rent and energy charges, already exists in countries like Sweden and Germany and could be introduced in other countries, possibly first on an experimental basis.

Recommendation 10: Support research on behavioral EPC approaches in the housing sector

Support to behavioral EPC approaches in the housing sector is still needed at this stage. It could notably result in the definition and dissemination of templates of tripartite conventions between SHO/ESCO and tenants that could greatly help market actors in defining their own EPC.

Recommendation 11: Improve governance of the condominium sector

Considering the specificities of Eastern European Social Housing sector, the mandatory creation of a legal entity formed by the owners of the dwellings under a Condominium Law is a prerequisite for implementation of an EPC.

Recommendation 12: Harmonize support mechanisms between SHOs and ESCOs

Through issuing tax instructions or decrees, allow access to existing subsidies and tax-rebates for the ESCO working for and on the behalf of a SHO through an EPC.

Recommendation 13: Support further pilot operations in the housing sector

Considering the significant differences among EU Member States in terms of taxation and accounting regimes, procurement, budgeting etc., there is still a need for the member states to develop specific assistance and guidelines related to EPC in their national context.

Recommendation 14: Create voluntary certification for EPC independent auditors

Create a voluntary certification for EPC independent auditors who could impartially verify compliance with the commitments throughout the implementation of an EPC.

Recommendation 15: Develop insurance mechanisms

Support the development of insurance mechanisms, and notably guarantee funds to mutualize the risks among investors, to trigger market uptake and to allow access to the market for SMEs.

Recommendation 16: Allow access to low cost finance

The rules of access to the existing subsidized loan schemes should be modified in order to allow their access to private actors, working for and on behalf of a SHO through an EPC with third party financing.

Recommendation 17: Allow the combination of EPC and Structural Funds

Create or adjust the relevant legislations to allow successful replication of the scheme experimented by the EBRD in Latvia. Notably adopt the relevant rules for the utilization of the EU Structural funds, allowing inclusion of ESCO as a contracting party.

2. Interest of EPC in Social housing

2.1. General context and objectives

2.1.1. Current trends in the housing sector

Buildings account for 40 % of Europe's energy use and a third of its greenhouse gases (GHG) emissions. Given the context of rising energy prices, fuel poverty affecting millions of households across Europe and the need to mitigate climate change, it is crucial to massively refurbish the existing housing stock at strict energy consumption standards.

Since 1997, the "Factor 4"¹ has been officially included as a target in several national policies (e.g. France, UK, etc.) to refer to a 75% reduction in GHG emissions by 2050 compared to 1990. Recent works show that, even in countries with low carbon electricity production and large biomass potential like France, a Factor 4 target on GHG emissions cannot be reached in the residential sector without dividing beforehand useful energy needs by at least a Factor 2².

2.1.2. Comprehensive energy retrofitting

Energy savings measures can be achieved in housing through investment in improved energy management, regulation systems, heating and domestic hot water equipments, switching to renewable energy sources and investment on the envelope insulation (windows, ceilings, ground floors, and facades).

These investments have different cost levels and impacts in terms of energy savings and the natural tendency of building owners and investors is to focus first on the simplest operations, well known by operators, with relatively short payback period (< 10 years). In particular, the majority of the EPCs signed to date focus on the refurbishment of energy production / distribution systems (e.g.: replacement of boiler, insulation of the distribution systems...), without impact on the useful energy demand (e.g.: insulation of the frontages, replacement of the door frames...).

A large energy saving potential is therefore lost, at least for a generation before the next refurbishment program is undertaken: considering an average lifetime for energy production systems of 15 to 20 years and the fact that most building owners prefer waiting for them to completely depreciate before engaging in new investments, refurbishment will not take place more than 2 times during the following 40 years. Therefore, having signed minimal EPCs (weak target) is likely to pose a serious problem for building owners in the medium to long term. In fact, they may have no more room to contract on a package of complementary, jointly efficient

¹ The concept originally refers to improving by a "factor 4" the productivity of resources. FACTOR 4. "Factor 4: Doubling wealth - halving resource use: a report to the Club of Rome", Earthscan Publications Ltd., London, 1997.

² IDDRI 2010. "Habitat Facteur 4. Étude d'une réduction des émissions de CO2 liées au confort thermique dans l'habitat à l'horizon 2050", Institut du Développement Durable et des Relations Internationales (IDDRI), Les cahiers du CLIP n°20, November 2010.

operations. Having mutualized costs and risks between investments with weak energy impact but short payback period (e.g. HVAC systems) and investments securing high energy savings but with longer payback period (e.g. building envelope) would have ensured a global profitability of the operation, acceptable from an investor point of view.

It is therefore necessary to redirect current practices towards more comprehensive energy retrofitting, including investments in the building envelope, and to create schemes capable to serve the collective target of Factor 4.

2.1.3. The Social Housing sector

Social Housing has been developed in various times and forms across Europe and is characterized by such diversity of national housing context, conceptions and policies that it is difficult to address “Social Housing in Europe” as a homogenous concept³. Social Housing represents nearly 35 million homes across Europe (17% of the overall stock), mostly built before 1975 and housing 120 million people⁴.

Most of the rental Social Housing is managed by specific entities we refer to as “Social Housing Operators” (SHOs). SHOs are one of the major players to be mobilized in order to reduce energy consumptions and greenhouse gases emissions in the housing sector. They are the only institutional players specialized on housing management, a sector where the level of professionalism is often low. SHOs have very similar features, and they manage an important housing stock compared to a private landlord.

Addressing a limited number of SHOs, it is possible to reach quickly a very large number of dwellings. The replication potential for energy retrofitting is therefore quite high.

2.1.4. Massive financial needs

The main obstacles for SHOs to reach Factor 4 are technical, organizational and financial. While technical and organizational problems are progressively being solved through technical innovations and training programs, there is no clear answer to the financial difficulties.

Energy retrofitting in Social Housing is currently financed through equity, grants and subsidized loans. None of these resources will be available in sufficient quantities to reach Factor 4.

2.1.5. Lack of adapted financing mechanisms

Simulations show that, though current market trends do not enable to reach the collective target of Factor 4, it is hardly possible to imagine that the required amount of investment could be mobilized each year at the European level with traditional public incentive mechanisms (such as subsidies, tax rebates or subsidized loans). Indeed, public resources to support investment are scarce, not sustainable by nature and may not have sufficient gearing effect to address the issue of Factor 4 with the appropriate volume and rhythm.

³ CECODHAS 2007. “Housing Europe 2007. Review of social, co-operative and public housing in the 27 EU member states”. www.cecodhas.org.

⁴ TACKOBST 2007. “Newsletter #1”, TACKOBST project, Spring 2007.

Energy savings seem to be the only resource adequate with the amounts to be mobilized. In France for example, an inhabitant spends on average 590 Euros for domestic energy per year⁵. Dividing this bill by 2 or 4 could generate the required long term resources to make energy refurbishment investments profitable.

2.2. Energy performance contracting

2.2.1. A mean to structure the business model

Energy retrofitting differs from other investments (e.g. improvement of comfort) because it does not produce a direct income but rather an avoided cost. Energy savings are usually not considered tangible by financial institutions, in particular because of the uncertainty on the actual savings, which may sometimes not be achieved due to an inappropriate design, implementation and/or operation of the building.

An Energy Performance Contract (EPC)⁶ is a contractual arrangement in which an Energy Service Company (ESCO)⁷ designs and implements an energy retrofit with a guaranteed level of energy performance. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on meeting the other agreed performance criteria. In an EPC, the achievement of actual improvement of the energy performance is one of the conditions for the ESCO to be paid.

2.2.2. Performance guarantee: a key to secure investments

Considering the uncertainty on the actual energy savings that can be achieved in the building sector, banks and financial institutions usually require traditional guarantees to cover all the debt. This quickly limits the amount of investments a building owner can make, and hence prevents any strategy to reach Factor 4.

EPCs quantify and guarantee long-term energy savings. EPCs can serve as a basis for a business model where intangible energy savings are transposed into a secured cash-flow (guaranteed energy performance), so that they can be presented as counterpart to investment in energy performance and secure debt repayment.

⁵ Data for 2006, of which 71% heating, 13% light and appliances, 10% hot water and 6% cooking. INSEE 2008. D. BESSON, "Consommation d'énergie: autant de dépenses en carburants qu'en énergie domestique", INSEE Première n°1176, February 2008.

⁶ EPCs have been implemented in the industry for many years, and to a lesser extent in buildings. The definition used here is adapted to the specific perspective of comprehensive energy retrofitting of buildings. Further information can be found in the FRESH document « State of the art – EPC survey », available at the Fresh project website : www.fresh-project.eu

⁷ According to JRC (2007), an ESCO is a natural or legal person that delivers energy services and/or other energy efficiency improvement measures in a user's facility or premises, and accepts some degree of financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria.

With a performance guarantee, investment in energy efficiency may be required a lower risk premium as “income” is guaranteed for the time of the contract, thus lowering financial costs. Energy saving measures should therefore become more attractive to the financial sector, opening the way for massive investments.

In some cases, it can allow to externalize debt, with limited risk (contractual guarantee), and provide a solution to overcome the reluctance of building owners to dedicate their investment capacity in energy retrofitting, allowing thus an appropriate financing of Factor 4 operations in the Social Housing.

2.2.3. Third-party financing: mobilize external capital

Any EPC requires an investment, tangible or intangible, in order to change the energy characteristics of the building and to make possible an improvement of its energy performance.

Different financing schemes can be considered for financing the same guarantee scheme. In an EPC, investments can be financed either directly by the building owner⁸, by an ESCO or by a financial institution (third-party financing), either directly or, more generally, through a combination of financial products (equity, loan, grants, incentives schemes, etc.). Legal and fiscal consequences should be analyzed in each case. Besides technical and organizational issues, one major challenge with EPC is defining the optimal financing mechanism and finding appropriate financial products, in order to render the project acceptable for all parties involved (i.e. building owner, tenants, ESCO, third-party financier, if any).

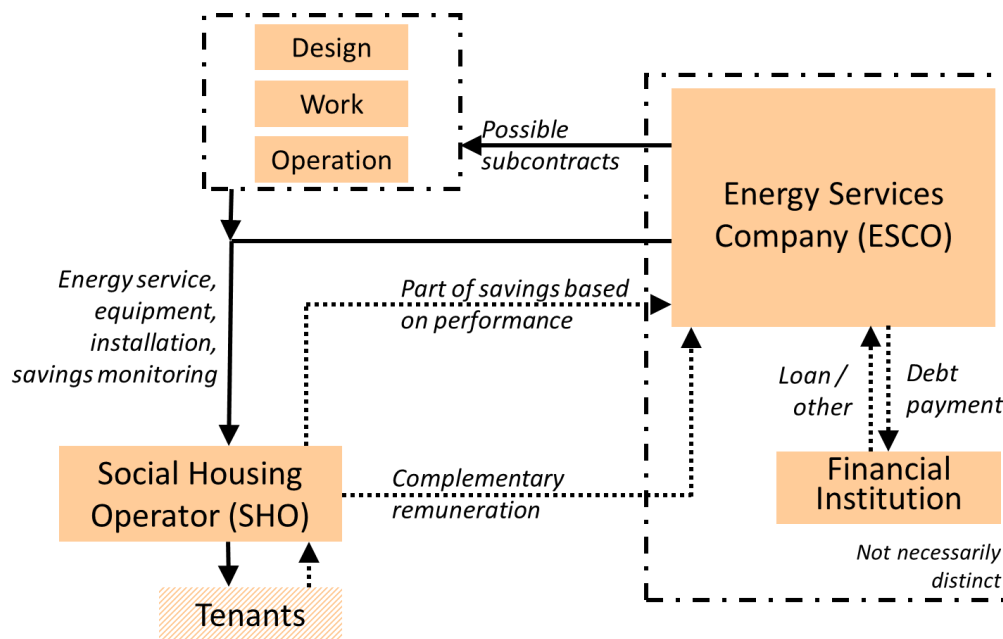
In the FRESH project, we focus on EPCs involving not only services (“Chauffage” in France or “Anlagen-Contracting” in Germany), but more comprehensive services including investments on energy systems and building envelope. We are therefore targeting the third-party financing (TPF) solution, which may allow externalizing the debt related to energy conservation measures. In particular, we analyze the scheme where investments are financed by the ESCO, eventually co-financed by the building owner (see Figure 1).

In the case investment is supported by the ESCO and charged to the building owner over the contract duration, energy savings will usually not be large enough to repay the investments within a usual contractual duration (5 to 15 years). This is explained by the current level of energy prices, still not sufficiently high to justify the substantial investments related to comprehensive refurbishments. In most cases, the building owner will have to support an additional charge to payback investment (see Figure 2).

This additional charge or fee (if paid to ESCO for financing service) can however be justified by the value added to the property, both because of its energy performance (“green value”) and because the refurbished building offers more comfort and is thus more attractive.

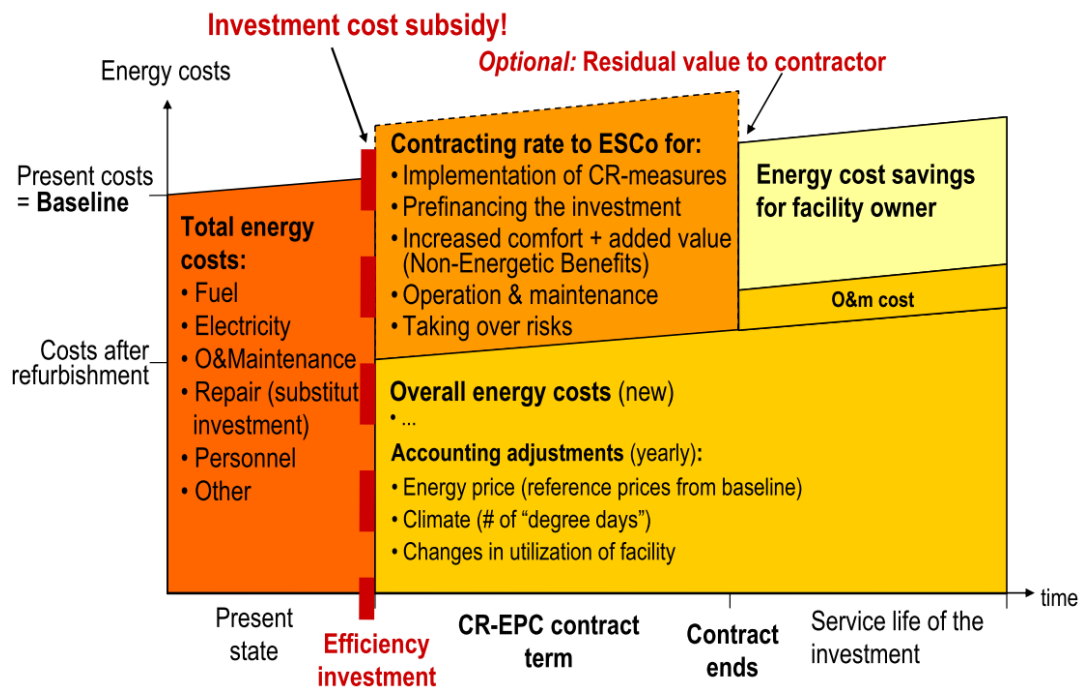
⁸ Considering the transaction costs related to the signature of an EPC, the building owner will more likely be a professional managing a sufficiently large building stock. Implementing EPC in private households would require an intermediate body capable of gathering several small refurbishments under a common EPC

Figure 1: Organization of an Energy Performance Contract



Source: ICE

Figure 2: EPC scheme for comprehensive energy retrofitting



Source: BLEYL and SCHINNERL 2008

The following results can be expected from a large-scale EPC implementation with TPF:

- Energy savings guarantee a positive cash-flow, so that they can become a counterpart to investments in energy efficiency and secure debt repayment.
- Building owners do not need to invest directly in energy efficiency: debt linked to energy retrofitting does not appear on their balance sheet, which maintains their capacity to invest.
- Building owners can thus allocate their equity and debt capacity to other investments, mainly their core business, but also other energy efficiency investments that would not be made through EPCs. Indeed, it cannot be expected that all investments would be realized through EPCs.
- Involving third parties (of different size and statute) in financing energy efficiency, EPCs open thus the way for private capitals to be invested in energy savings, providing an alternative to the insufficiency of available public funds.

2.2.4. Opening way for Social Housing refurbishment market uptake

SHOs are one of the major players to be mobilized in order to reduce energy consumptions and greenhouse gases emissions in the housing sector. As institutional players specialized on housing management, a sector where the level of professionalism is often low, they have a much better decision-making capacity than condominiums, even though they may be limited by financial resources and local governance problems. They manage in the long term (30-50 years) the housing they build, which is an incentive to reduce future operational and maintenance costs. Their technical expertise, including in terms of energy performance, is also much better than the competences of private housing companies or individual landlords.

Furthermore, SHOs have several incentives for the energy retrofitting of their housing stock:

- Considering its general interest mission and its dependency on public funding, the sector is usually targeted as a priority and is subject to the strongest regulations in terms of energy performance.
- For SHO's, reducing tenants' energy bills is a way to secure their solvability, hence reducing the amount of unpaid rents and vacancy.
- As long-term managers of their housing stock, it is worth for SHO's to anticipate future regulations on existing buildings, in order to avoid forced retrofitting before complete depreciation of previous investments, reduce the costs of future refurbishments and postpone the following refurbishments.
- The "green value" generated by the energy performance of buildings is progressively integrated in financial approaches, as a result of rising regulations and energy prices, all the more as SHO's have a long-term perspective.

EPC scheme as presented above could be used to finance massive energy retrofitting of the Social Housing sector. Yet, it is largely limited by a series of obstacles which concern:

- On the one hand, the demand side, subject to regulations, needs to be adapted; SHOs generally cannot, under the constraint related to their institutional mission, raise rents to balance their investments for energy savings, nor they can, in most cases, charge an additional service for energy efficiency, even if the overall bill after refurbishment is lower than before;

- On the other hand, the supply side needs to be stimulated in order for the ESCO sector to develop a new offer meeting the needs of Factor 4.

The following chapter presents the main recommendations for the up-scaling EPC market based on the experimentations conducted in France, Italy, Bulgaria and the UK within the FRESH project.

3. Recommendations for up-scaling

3.1. Legal basis⁹

The first difficulties encountered while applying EPC in Social Housing are of a legal nature. They are primarily linked to the innovative character of EPC and derive from the difficulty for market actors to deal with innovation. They can be explained by the absence of an explicit operational definition for EPC, by the variety of possible contracts and by the unstabilized content behind the energy performance guarantee.

Other legal obstacles are related to the procedures for awarding such contracts in the public sector and the integration of EPC in the pre-existing contractual framework.

3.1.1. Need for operational definitions

The legal framework applicable to Energy Performance Contracts is derived, on the one hand, from EU legislation and, on the other hand, from national legislations. In the case of the FRESH project countries, neither of these frameworks has provided an “operational” definition for EPC, that is to say sufficiently explicit to establish the elements, conditions and modalities of implementation.

At the EU level, the core document is the Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services. This document defines EPC as *“a contractual arrangement between the beneficiary and the provider (normally an ESCO) of an energy efficiency improvement measure, where investments in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement”*

The observation of EPCs effectively implemented so far in the EU clearly shows that behind this common EU definition, distinct families of contracts already exist in the emerging energy services markets. In practice, one can still observe confusion and misunderstandings among market actors and the characterizing clauses that effectively define an EPC are still unclear.

In order to **improve the understanding by potential clients of the possibilities and risks** related to EPC and **facilitate the marketing of their services by ESCO**, it would be useful to clarify the underlying characterizing concepts behind EPC and provide more operational definitions for market actors. Instead of one single generic definition, it would be preferable to define several precise operational definitions.

Most market actors would agree that an EPC definition should necessarily consider the following four components:

a. **First characterizing element: the object.**

The object of an EPC is to lower energy consumption and not the execution of works or the supply of goods or services. One could therefore agree that this essential characteristic should

⁹ This chapter is freely inspired from ORTEGA 2011 and AZAN 2010.

constitute a necessary condition in all operational definitions. However, it should not be considered as a sufficient condition, given that at some point, any building refurbishment operation may integrate an environmental dimension.

b. Second characterizing element: the energy performance guarantee.

A **guarantee** is understood classically as a mechanism that protects a person (the owner) against pecuniary loss. In an Energy Performance Contract, the guarantee is the **obligation for the ESCO to compensate the owner of the pecuniary loss suffered**, i.e. the difference between the energy performance contractually agreed on and the actual energy performance measured, all other things being equal. It seems unrealistic though to ask the ESCO to assume, beyond the technical risk, the risk on energy prices: the guarantee mechanism should therefore neutralize the evolution of energy prices which will weigh on the client.

Notwithstanding, **energy performance** can be understood in three different ways:

- The first way is to assimilate energy performance to **energy savings** after refurbishment, i.e. the difference between a reference situation (the average normal energy consumption before refurbishment) and the actual consumption measured on site (adjusted by several factors, notably the climate or the usage of the building). This approach is the closest to the conceptual approach of EPC where investments in the refurbishment are paid, at least partially, by the savings generated on energy charges. However, its implementation can result complicated in most cases in the Social Housing sector, as it requires precise knowledge of past consumption, which is often impossible where tenants have direct contracts with energy providers.
- A second way is to assimilate energy performance to **energy consumption** after refurbishment, i.e. an absolute value of consumption measured on site (also to be adjusted by several correction factors). This significantly simplifies the definition of the guarantee, as well as the monitoring of the contract, as the number of parameters to be considered in order to adjust the consumption target is greatly reduced. In Social Housing, this approach seems to be the most appropriate considering the difficulty to access historical consumption data and the fact that tenants benefit from the actual energy savings.
- Finally, it is possible to assimilate energy performance to a level of **energy efficiency** improvement (current EU definition), i.e. a reduction in the input energy required (e.g. gas, biomass, etc.) for a given useful energy provided (e.g. heating, lighting, etc.). This approach should be considered cautiously though, as in some cases it may result inconsistent with what we consider to be the first necessary condition in an EPC: to lower energy consumption.

Considering the diversity of results from those three different approaches, an operational definition should precise to which concept it refers.

c. Third characterizing element: measurement and verification of the performance.

The protocol to measure and verify (M&V) the contractually agreed level of performance is closely linked to the energy performance guarantee. Indeed, the commitment must necessarily be related to concrete data, as part of a contractually agreed protocol, objective and contradictory between the parties.

Most market actors seem to be moving towards a guarantee of **“real” performance** (based on measured data) over **“conventional” performance** (obtained through calculation and numerical simulations, referring for example to the methods used for allocating energy labels), with the notable exception of insurance companies who don’t want user’s behavior to have influence on their commitments.

d. Fourth characterizing element: the investment.

Any EPC requires investments, tangible or intangible, to adjust the energy characteristics of the building and to make possible an improvement of its energy performance.

One of the main interests of the energy performance **guarantee** is that it **secures energy savings**, so that they **can be presented as counterpart to investment** in energy performance to secure debt repayment. In some cases, it can allow to externalize debt, with limited risk (contractual guarantee), and provide a solution to overcome the reluctance of building owners to dedicate their investment capacity in energy retrofitting.

Different financing schemes can be considered for financing the same operation. In an EPC, investments can be financed either directly by the building owner, by an ESCO or by a financial institution (third-party financing), either directly or, more generally, through a combination of financial instruments (equity, loan, grants, incentives schemes, etc.).

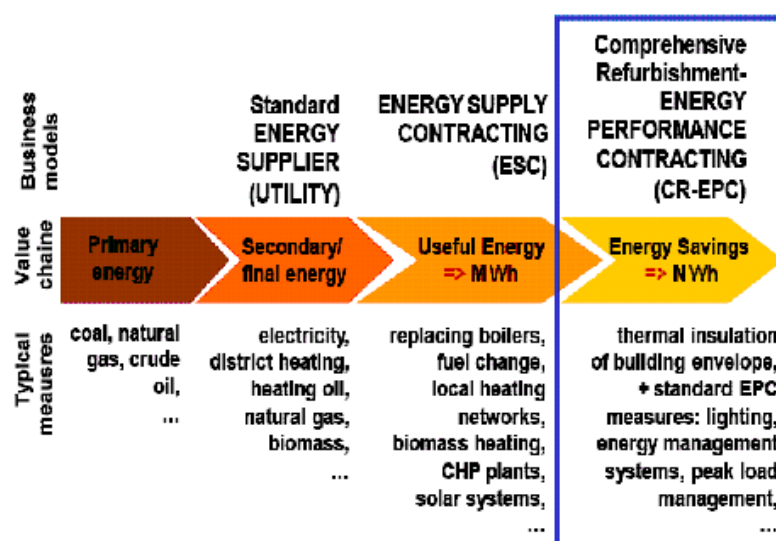
Legal and fiscal consequences should be analyzed in each case. Notably, in the case of third party financing, the question of property over the installations and buildings is central. Also, a particular attention should be paid to the role of tenants in designing the financing mechanism, namely to the amount of energy savings that can be recouped from them, which is regulated in most countries (see also 3.2.2). Besides technical and organizational issues, one major challenge with EPC is defining the optimal financing mechanism and finding appropriate financial instruments, in order to render the project acceptable for all parties involved (i.e. building owner, tenants, ESCO, third-party financier, if any).

An operational definition should precise whether or not a financial service is provided to the building owner.

e. Need for several definitions

If we look at the various existing contracts, the scheme in which the ESCO invests, guarantees a certain level of energy savings after a comprehensive refurbishment and is financially responsible for deviations, would correspond to the most sophisticated one, where the business model is based on savings guarantee compared to a predefined baseline, also labeled as NegaWatt hours (NWh).

Figure 3: Overview of Energy-Contracting models and typical measures



Source: BLEYL and SCHINNERL 2008

This type of EPC is often difficult to implement and is not easily marketable. The main barriers are the following:

- **Savings measurement is often difficult:** energy savings are not tangible but calculated over a series of assumptions, contractually agreed upon during contract negotiations;
- **Measurement & Verification may cause high (annual) expenses:** an equilibrium is to be reached between the accuracy of verification and the cost of measurement;
- **Too high expectations** (“energy savings should refinance 100% of the investment costs”): considering current energy prices and current investments costs for comprehensive refurbishment, energy savings will in most cases recover only part of the investment.
- **Transactions costs are particularly high:** in most cases, an EPC needs to be specifically tailored and negotiated, involving high technical, financial and legal expertise. This implies that an EPC implementation requires a minimum building size (or a pool of buildings) to compensate those transactions costs.
- **"NegaWatthours" (savings) cannot be touched:** in some cases the investor (e.g. a Social Housing Operator) may not be allowed by law to recoup the savings from the energy consumers who benefit from the energy savings.
- **ESCO's performance guarantee may be costly:** the stronger the energy performance guarantee is, the higher the associated costs will be to cover the risk taken by the ESCO (safety surcharges). In the housing sector, it is more likely that the ESCO will be reluctant to assume the risk of the tenants' behavior and will adapt its fees accordingly (see also 3.2.3). Also, it is likely that the ESCO proposes energy savings measures limited to the most reliable technical solutions in order to reduce its risk, even if it is technically possible to propose a solution with higher savings.

In order to allow massive market uptake for comprehensive refurbishment, an equilibrium has therefore to be sought between the strength of the guarantee that can be contractually agreed upon and the corresponding costs and risks for this guarantee. In our view, EPC should not be considered as a universal panacea but more likely as one of the possible tools for

massive uptake. Different contractual schemes should be considered and adapted for effective situations. Notably, considering the complexity for signing and EPC, and therefore the related transaction costs, it may be relevant in some cases, in particular for smaller buildings, to consider alternative holistic approaches.

Our first recommendation is therefore not to provide only one single EPC definition which may result viable/replicable only under very specific conditions and success factors but rather to **define EPC as a family of several operational subcontracts**, with their associated pros and cons.

It could definitely help market actors to develop highly replicable contracts, at current market conditions, for boosting the comprehensive refurbishment of Social Housing in Europe.

Based on the experience from the FRESH project, we could propose the following classification:

Energy Performance Contracts (EPC)	Energy Performance guarantee			Third-Party Financing (TPF)	
	Guarantee on energy savings	Guarantee on energy consumption	Guarantee on energy efficiency	without TPF	with TPF
Guaranteed Energy Savings without third party financing	X			X	
Guaranteed Energy Consumption without third party financing		X		X	
Quality Energy Service ¹⁰ without third party financing			X	X	
Guaranteed Energy Savings with third party financing	X				X
Guaranteed Energy Consumption with third party financing		X			X
Quality Energy Service with third party financing			X		X

Recommendation 1: Define EPC as a family of several operational concepts

In order to improve understanding by potential clients of the possibilities and risks related to EPC and facilitate the marketing of their services by ESCOs, it would be useful to clarify the underlying characterizing concepts behind EPC and provide more operational definitions for market actors.

Instead of one single generic definition which may result viable/replicable only under very specific conditions and success factors, it would be preferable to define EPC as a family of several operational subcontracts, with their associated pros and cons.

¹⁰ In this case, the EPC savings guarantee could be replaced by quality assurance instruments, which would secure the functionality and performance of the efficiency measures implemented, but not their exact quantitative outcomes. This approach should be deepened in relation with the Integrated Energy Contracting (IEC) concept developed by the Graz energy agency (see Bleyl 2009).

3.1.2. Integration of EPC in the pre-existing contractual and operational frameworks

The link between Social Housing and public policies is embedded in the mission of Social Housing, thus creating interdependence between SHOs and public authorities. Although Social Housing has been for a large part created by the corporate sector and civil society, a large share of SHOs conforms to public procurement rules.

To date EPC is not a specific contract under public procurement code, and it is not governed by specific laws and regulations (as it is the case for example for public service delegation). In strictly legal terms, EPC definition does not indicate the nature of the contract vehicle used, since it can be a public or private contract, a Public-Private Partnership (PPP), etc. At the discretion of the parties, the fees may be agreed as a lump sum or regular payments, EPC may include incentive clauses or not, present a predominant share of work or of services, etc.

The central question for qualifying such contract in regards to public procurement code is whether it is a contract of works or services: this qualification depends largely on the very nature of the refurbishment carried out, and notably on whether it deals with the building envelope or it is limited to the heating systems. The answer to this question is not easy: it is a contract whose very essence is a service, unless the cost of work exceeds the cumulative cost for services invoiced over the contract duration. Thus, the qualification depends directly on the financing plan.

Public procurement code offers two possibilities to conclude an EPC: Public Private Partnership or public contract¹¹. Though PPP offers vast possibilities and seems well adapted to the specificities of EPC, it requires a complex procedure and generates high transaction costs, which can be justified only for the largest refurbishment projects. The use of public contracts is more appropriate for the simplest and/or smaller projects. However it is impaired by application of the rules that require a distinction between design, construction and operation but also prohibit differed payment. Jurisprudence in some countries, in France notably, allows the signature of a “global” energy performance contract, by derogation. But payment is still to be made through advance, interim and balance payments, in accordance with the work progress and the completion of services. The public purchaser (in our case, the SHO) is therefore required to ask the contractor to provide a “guarantee for the energy performance guarantee”, while a deduction from the payments would have been much simpler and lighter.

Clarification and simplification of the rules applying to EPC could clearly trigger a wider use of such contracts.

¹¹ See Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts

Recommendation 2: Clarify applicable procurement rules

Though EPC is compatible with current EU public procurement rules, the complexity of the tendering requirements, real and perceived, is still an obstacle for a large scale use of such contracts and can discourage many SHO proceeding in this direction. It stills require highly trained expertise and increases the transaction costs for signing the contract, which may results prohibitive for a large share of SHOs, especially the smaller ones.

Clarification of the rules applicable to EPC may encourage a larger use of such contracts. Since EPCs are still highly sophisticated tools, from both technical and legal points of view, clear guidelines and methodologies would also be extremely useful.

Recommendation 3: Allow long-term contracts

In some EU countries, contract duration in the public sector is restricted by law (e.g. 12 years in Italy, with possible extension of 3 years) which limits the ambition for an EPC (payback period for a comprehensive refurbishment, including work on the building envelope, frequently exceeds 20 years). Considering current investment costs for comprehensive refurbishment and current energy prices, as well as the fact that in most cases the SHO is not allowed by law to recoup all energy savings from tenants, an extension of the maximum contract duration should be considered for EPC, to better fit the profile of investment.

Recommendation 4: Clarify the possibility to externalize debt through EPC

The possibility for SHOs to externalize the debt related to energy retrofitting through EPC, and thus maintain their capacity to invest in their core business, is essential in the interest of the Social Housing sector towards such scheme.

The payments related to EPC are not exactly debt as they're based, at least partially, on the savings generated by the contract. However, there has long been controversy about the treatment of PPP liabilities in public accounts and the risk of evading public spending rules.

A clarification by national and/or EU authorities on the way to consider EPC liabilities in public accounts is required.

3.2. Market barriers

3.2.1. Current EPC offer on the market

According to the Joint Research Center¹², the awareness and understanding of the ESCO concept has increased in recent years, creating more confidence in the market, where potential clients start to consider energy efficiency services more business-as-usual than as a specialty. Yet, low awareness of the specifics of the ESCO model and skepticism towards its

¹² A. Marino, P. Bertoldi and S. Rezessy. "Energy Service Companies Market in Europe – Status report 2010", Joint Research Center (JRC), 2010.

advantages among both clients and financiers remains one of the most commonly reported barriers to the deployment of ESCO projects in the large majority of EU countries.

The lack of standardization is perceived as the most important motive for this mistrust. In addition, the lack of experience of clients, ESCOs and financial institutions and the inhomogeneous ESCO offer, which makes standardization of contracts difficult, have been identified as reasons for mistrust.

Recommendation 5: Create quality labels and voluntary certification schemes

In addition to facilitating the market's understanding of the ESCO concept by providing more operational definitions for market actors, the creation of quality labels and voluntary certification schemes for energy services could improve confidence in the services offered by ESCOs and facilitate the marketing of their services to potential clients.

Such schemes could be inspired by the experience initiated by the Graz Energy Agency with the Thermoprofit® impulse program¹³.

3.2.2. Split incentive barrier in the rental sector

One major barrier impeding investments in energy efficiency for rental housing is known as the split incentive, when those responsible for paying energy bills are different from those making capital investment decisions and paying for upgrades. Building owners hardly invest in energy efficiency improvements when tenants are the ones benefiting from the savings. Furthermore, tenants seldom invest in a property they do not own, even if they would enjoy the benefits of lower energy bills.

Rents in Social Housing are regulated by a statutory ceiling. In the case of a refurbishment, rents are generally increased to the ceiling, with the agreement of tenants. However, this increase is not sufficient to face investment engendered by comprehensive energy refurbishment, especially since rents are generally close to the ceiling because of previous rehabilitations and annual rent increase policies.

Except for a few countries, regulations prohibit SHOs to recoup energy savings from tenants, as part of the recoverable charges. The exceptions introduced in the French and Italian regulations still present weaknesses:

¹³ The Thermoprofit® network consists of energy services suppliers who commit themselves to the Thermoprofit® quality standards and are certified and regularly assessed by an independent commission, to confirm they comply with the pre-set standards. The Graz Energy Agency coordinates the network and acts as a turntable for Thermoprofit® issues. The Thermoprofit® quality label guarantees reliable high quality proposals by ESCOs using the label. In addition, the “eco-label” denotes quality of ESCO services and compliance with Thermoprofit® standards. This example has already spread to other regions as well. See www.thermoprofit.at.

- In the Italian system, SHOs can recoup 100% of energy savings from tenants if all tenants give their agreement. As a result of the negotiation processes, SHOs tend to recoup less than 100% of energy savings.
- The French system enables to recoup energy savings, but limited to 50% of the conventional¹⁴ savings for a maximum duration of 15 years, and without any energy price adjustment. These limitations reduce by far the financial feasibility of the operation. The agreement of tenants is not required, but a consultation has to be carried out.

Even though this raises political issues to recoup energy savings from tenants, the following mechanisms should be considered. Beforehand, it should be emphasized that:

- If they benefit from lower energy costs, tenants never invest in the energy retrofit;
- We do not propose to increase energy charges for the tenants, but suggest rather not to award the entire reduction in energy charges, as this is the case now.
- The retrofit adds value to the building ("green value"), and therefore it is legitimate to consider that the building owner should pay part of the investment.

Recommendation 6: Introduce a specific status for EPC in recoverable housing charges

Regulation in the Social Housing sector is generally based on the principles that:

- The repayment of the owner's investments is received through the rent;
- Operating costs can be recovered from the tenant as part of the list of recoverable charges defined by Decree. Currently, the energy charges that can be recovered from tenants are related directly to energy consumption and operation and small maintenance of the installations, in case of collective facilities.

A specific status should therefore be created in the recoverable housing charges that could allow reasoning in global cost for the housing.

Recommendation 7: Introduce the possibility to increase the rent when EPC is involved

Alternatively, it could be allowed to increase the rent ceiling following an energy refurbishment under an EPC, as long as this increase is compensated by a decrease in charges and the stability of prices is guaranteed.

Recommendation 8: Introduce the possibility to charge an energy efficiency service

The French system enables to recoup energy savings. Though it constitutes an interesting first step towards financing energy retrofitting through energy savings in Social Housing, the limits currently imposed by the law reduce sharply the financial interest for comprehensive refurbishment through an EPC.

¹⁴ Obtained through calculation and numerical simulations, referring for example to the methods used for allocating energy labels.

The law could therefore be adapted and improved to push toward deeper energy retrofits:

- by increasing the share of energy savings that can be recouped from tenants;
- by extending the recoupment duration, to fit for example the Energy Performance Contract duration;
- by indexing the recouped energy savings on the evolution of energy prices, with a ceiling to protect tenants, in case energy prices rise sharply. The major danger is indeed that energy inflation could deplete the monetary savings for tenants, thus creating discontent and increasing risks of fuel poverty.
- by a combining several of these options.

Recommendation 9: Switch to “warm rents”

“Warm rents” is a system where tenants pay a total fee for their rent and energy charges, thus enabling the SHO to transfer energy costs to rents after an energy retrofitting and reduce input energy charges. In this system, warm rents vary depending on energy costs.

This system already exists in countries like Sweden and Germany and could be introduced in other countries, possibly first on an experimental basis.

3.2.3. No contractual link between tenants and ESCO

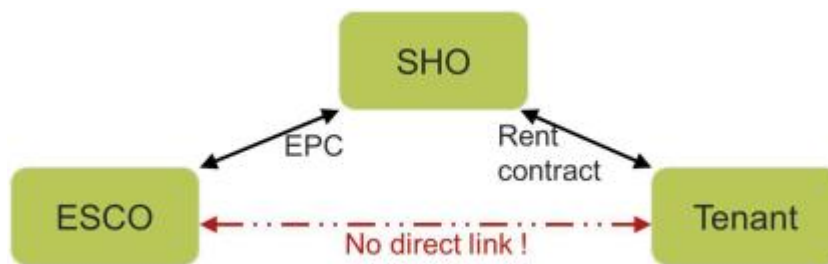
During the review of existing contracts, we haven’t identified EPC that involves a purely behavioral approach, that is to say only structured around actions to educate and train building occupants to reduce their energy consumption. Notwithstanding, any EPC should consider, in varying proportions, such behavioral dimension: the role of building users in energy consumption, which depends on the energy characteristics of the building, is considered by all market actors for the overall success of energy performance contracting.

Under current regulations, EPC is not a tripartite contract between the building owner, the tenant and the ESCO: no direct legal link exists between the ESCO and the tenant. EPC is based on two separate contractual commitments:

- The first binds the building owner and the ESCO in an Energy Performance Contract;
- The second binds the tenant and the building owner in a classic rent contract.

The contractual chain allows the tenant to benefit from the energy savings. Energy services contracted by the building owner are then invoiced to the tenant under the lease in accordance with the national legislation, as it is the case of all operating contracts. In return, the building owner pays the provider, regardless of the payment of the tenant, and therefore takes the risk of payment default (as it does with the other rental charges in all its buildings). The EPC does not entail any direct payment by the tenant to the ESCO.

Figure 4: Contractual links between SHO, tenant and ESCO



Under these conditions, it is likely that the ESCO will be reluctant to assume a risk on the tenants' behavior. One of the perceived dangers of guaranteed energy performance is that tenants could feel they can consume as much energy as they want, because the extra consumption is to be paid by the ESCO.

At this stage, it seems essential to support specific research that aims at developing adapted approaches in the housing sector.

A behavioral EPC approach in the housing sector should first focus on rising tenants' awareness. The idea would be to place tenants in a reflective approach and lead them to question their energy habits and behaviors. Tenants could also be involved in monitoring over time the results of energy consumption by delivering directly accessible information, for example via a display of consumption in dwellings (in euros, kWh,...), in conjunction with other information (weather, public transport timetables, ...) that encourage the reading of energy information provided.

Also, individual billing for energy could help limit a possible "rebound effect"¹⁵: tenants would pay their actual consumption, even in case of over-consumption. Penalties for the ESCO would be triggered only if the total consumption of all dwellings is above the target, so that over-consumption can be offset by under-consumption of certain tenants. Penalties paid by the ESCO to the SHO in case of over-consumption should be redistributed equally among all tenants, creating a virtuous system where the tenant who over-consumes will receive back only a small fraction ($1 / \text{number of dwellings}$) of his extra consumption through the redistribution of penalties. The incentive to over-consume would therefore be greatly reduced. This scheme is actually the one implemented at by the Fresh partners ICF at the French pilot site in Schiltigheim.

In the case a financial bonus is to be awarded to the ESCO (case when energy consumption is below the guaranteed performance), a scheme where part of this bonus is distributed among tenants could also be designed to encourage collective emulation for sobriety.

¹⁵ The general principle behind the term "rebound effects" is that by reducing a product's energy consumption, pollution and use of natural resources are also reduced, but less energy use means lower running costs which encourage greater use of the product, limiting the benefits that the energy reduction should have brought.

As an outcome of these researches, templates of tripartite conventions between SHO/ESCO and tenants could be developed and disseminated.

Recommendation 10: Support research on behavioral EPC approaches in the housing sector

All EPCs should consider the role of building users in energy consumption, essential the overall success of the contract. A behavioral EPC approach in the housing sector should focus on rising tenants' awareness and study the possibility to involve tenants in the monitoring over time of the results of energy consumption.

Support to this research is still needed at this stage. It could notably result in the definition and dissemination of templates of tripartite conventions between SHO/ESCO and tenants that could greatly help market actors in defining their own EPC.

3.2.4. Lack of governance in the Eastern European housing sectors

Social housing in Eastern Europe is very different than in France, Italy or the UK. Until 1989, new housing was built predominantly by the Socialist Governments in a set of tight limits in size and quality. After 1989, ownership has been transferred to residents. As a result, Social Housing consists mostly of multi-family buildings managed by condominium associations and is predominantly in bad technical conditions and high energy consumption.

A major issue for housing policies is the difficulty for condominiums to reach collective agreements on investment decisions. So far, very few condominiums have been able to conduct comprehensive energy refurbishments. At the same time, it is a common practice for individual owners to insulate only their portion of the facade.

Multi-family buildings in Central and Eastern Europe were typically managed by state-owned housing companies, which operated in an uncertain legal environment. The privatization of the public housing stock was often followed by the implementation of a regulatory framework which laid down the owners' obligations with regard to the commonly owned property.

In many countries, including Bulgaria, the current legal framework does not create incentives for proper management, maintenance and energy efficient renovation of condominium buildings. In particular, in the case of Bulgaria regulations related to the management and maintenance of condominium buildings do not oblige dwellings' owners to constitute homeowners associations (HOA).

In addition, considering the very limited investment capacity of most dwellings owners, even with highly improved governance of the condominium sector, we're unlikely to observe a massive market uptake for energy refurbishment without tackling the financing difficulties of owners.

Recommendation 11: Improve governance of the condominium sector

Experience gained in Bulgaria under the FRESH project shows that signing an EPC for comprehensive refurbishment where there is no single legal body representing the building owners is almost impossible.

The mandatory creation of a legal entity formed by the owners of the dwellings under a Condominium Law is a prerequisite for implementation of an EPC.

3.3. Financing of operations

3.3.1. Harmonize support mechanisms between SHOs and ESCOs

In several EU countries, SHOs benefit from various public supports, linked to their general interest mission and their specific statute: tax exemptions, subsidies, subsidized loans... This causes disadvantage for third-party financing compared to direct financing by SHOs, slowing down the possible large scale replication, even if third-party financing seems to be a viable possibility to deal with large stock refurbishments, without being limited by the SHO debt ratio.

It appears that regulations should be adapted in order to enable EPC providers finance energy retrofitting in Social Housing to have the same advantages, which would not be linked to their statute but to the activity they are carrying out. It is justified by the fact that Social Housing tenants remain the final recipient of the energy savings, and that ESCO is not substituting the SHO but rather working on its behalf.

Recommendation 12: Harmonize support mechanisms between SHOs and ESCOs

Through issuing tax instructions or decrees:

- Allow access to existing subsidies for the ESCO working for and on the behalf of a SHO through an EPC.
- Allow access to existing tax-rebates for the ESCO working for and on the behalf of a SHO through an EPC. Notably, some energy-efficiency investments may benefit from a lower VAT rate which benefit shouldn't be lost through an EPC.

3.3.2. Generate investor confidence

Real and perceived high business and technical risks remain strong barriers for EPC, especially in the housing sector. Comprehensive refurbishment, including intervention on the building envelope, is still considered too risky by most market actors, which explains the limited current offer.

Indeed, a building's gross energy consumption is the result of the interactions between the building's characteristics and its usage. The techniques to reduce a building's energy consumption, including in renovation, have been mastered now for over a decade in several

European countries (notably in Germany and Switzerland). If a technical default is to occur, it is more likely to take place during the first years of the contract, revealing defective interventions on the building envelope. Having past those first years, the risk is mainly limited to the optimal conduct of the facilities, which is the core business of most ESCOs currently operating on the market.

The implementation of pilot operations could be a way for financial institutions and businesses to have a fair measure of risk and have a feedback to limit the risk premiums that they tend to apply to this new type of contract.

Recommendation 13: Support further pilot operations in the housing sector

Considering the significant differences among EU Member States in terms of taxation and accounting regimes, procurement, budgeting etc., there is still a need for the member states to develop specific assistance and guidelines related to EPC in their national context.

This support can be built on the outputs from various Intelligent Energy Europe (IEE) projects, but must be essentially grounded on the feedback from real pilot operations to show market operators the realities and effective risks associated to those contracts.

One of the main risks in an EPC is the evaluation of energy performance actually reached throughout contract duration. This assessment may be complicated, for example when the usage of the building changes, and it requires specific methodologies and training.

In addition, EPCs are long term contracts where monitoring is critical but often difficult to follow consistently because of workforce turnover. It would therefore be interesting to set up audits by independent third parties to validate the compliance with the energy performance guarantee.

The development of such expertise could be supported by public authorities through the creation of an independent auditor certification for EPC. This voluntary certification could notably be based on a certified training on IPMVP¹⁶ and on an ethics charter. Such independent experts' network could perform the function of a reference point for all stakeholders and bring confidence to the whole market.

Recommendation 14: Create voluntary certification for EPC independent auditors

Create a voluntary certification for EPC independent auditors who could impartially verify the compliance with the commitments throughout the implementation of an EPC.

¹⁶ The International Protocol on Measurement and Verification of Performance (IPMVP) is currently the most widely used methodological reference and it could be usefully developed and spread to deal with global refurbishment (options C and D), while it has so far mainly been used for partial interventions on energy production systems and appliances (options A and B).

Considering possible defaults during the first year of the contract, contractors will quite naturally seek to secure the capacity of the ESCO to assume the financial consequences of the energy performance guarantee, if it was to be applied. The issue of securing the guarantee is certainly essential for the client himself, but also represents a crucial question for facilitating the access for SMEs to EPC markets. Without an insurance mechanism, clients will likely require a stand-alone or "corporate" guarantee that may limit the access to the market to the largest actors.

Recommendation 15: Develop insurance mechanisms

Development of insurance mechanisms seems necessary for EPC market uptake and to allow SMEs to access to the market.

Two types of interventions could be considered:

- Support the development by insurance companies of specific energy performance insurances
- Support the creation of a guarantee fund to mutualize the risks among investors.

3.3.3. Support long term sources of finance

The Return On Equity (ROE) associated with comprehensive energy retrofitting is lower than usual practices, and the payback period is longer. The requirements of banks and other financial institutions are too high to be met in comprehensive refurbishment investments at current energy prices.

Considering the urgency to refurbish massively at very low energy consumption standards, support to long term sources of finance should be developed in order to manage large investments with low profitability in very long term commitments (see also chapter 4).

In some countries, SHOs may have access to subsidized loans to conduct energy refurbishment of their stock (e.g. in France, Caisse des Dépôts et Consignations provides loans at 1,9% over 15 years). In an EPC with third party financing, the financing of investments is the responsibility of the provider that may borrow on the market at less favorable terms, which makes EPC comparatively less interesting than direct financing by SHOs.

The underlying logic of the subsidized loans available for SHOs is to compensate market failure to address energy refurbishment of the Social Housing stock. Therefore, the possibility to allow access to such subsidized loans for ESCOs can be problematic, as the presence of private actors operating with a certain level of profit may be seen as a proof that there is no market failure. Nevertheless, it seems legitimate to argue that:

- The purpose of the subsidized loan is the same as if it was contracted by a SHO, namely the retrofit of Social Housing which is ultimately beneficial to Social Housing tenants.
- The SHO remains the owner of the operation. ESCO would not be substituting SHO but rather working on its behalf.

Recommendation 16: Allow access to low cost finance

The impossibility for ESCO to access existing subsidized loan creates a disadvantage for EPC with third party financing compared to direct financing by SHO.

The rules for accessing existing subsidized loan schemes should be modified in order to allow their access to private actors, working for and on behalf of a SHO through an EPC with third party financing.

3.3.4. Possible use of structural fund in Eastern European countries

Consultations conducted by FRESH Bulgarian partner (BHA) with potential ESCOs concluded that they were ready to get involved in covering only part of the investment costs for a comprehensive refurbishment in the housing sector. Indeed, the sector is considered too complex and risky. Concretely, ESCOs' involvement would be limited to the energy production systems, covering from one third to 50% of its investment costs. In order to make the investment feasible, the rest of the costs should therefore be covered by a combination of other financial resources.

In Latvia, the European Bank for Reconstruction and Development (EBRD) implemented a financing scheme combining loan and use of the Structural Funds, to support energy refurbishments in condominiums. The scheme is structured around an intermediate structure, a housing management company, as follows:

- The ESCO signs an EPC contract with the housing management company for the building to be refurbished;
- The ESCO receives a loan from the EBRD credit line for renovation, through the local banks who manage the credit line;
- The ESCO implements the refurbishment financed by the EBRD loan;
- The ESCO receives a subsidy provided by the EU Structural Funds through the Latvian Government after the renovation has been executed;
- The ESCO assumes the performance guarantee and other contractual commitments under the EPC throughout the contract duration.

The scheme presents two advantages:

- The problem with long payback period of comprehensive refurbishment and reluctance of market actors is softened by the subsidy provided by the EU Structural funds.
- EPC is channeling the utilization of the Structural Funds dedicated to refurbishment of existing housing in a simplified way, allowing better control over efficiency of the subsidy spent; homeowners remain the final beneficiaries of the subsidy, but the disbursement through ESCOs limits the transaction costs.

Recommendation 17: Allow the combination of EPC and Structural Funds

Create or adjust the relevant legislations to allow successful replication of the scheme experimented by the EBRD in Latvia:

- Support creation of mandatory homeowners association (must exist in the building to be refurbished);
- Support the creation of housing management companies (should also exist in the building to be refurbished, though the scheme may be handed over to an ESCO in some cases)
- Adopt the relevant rules for the utilization of the EU Structural Funds, allowing inclusion of ESCO as a contracting party.

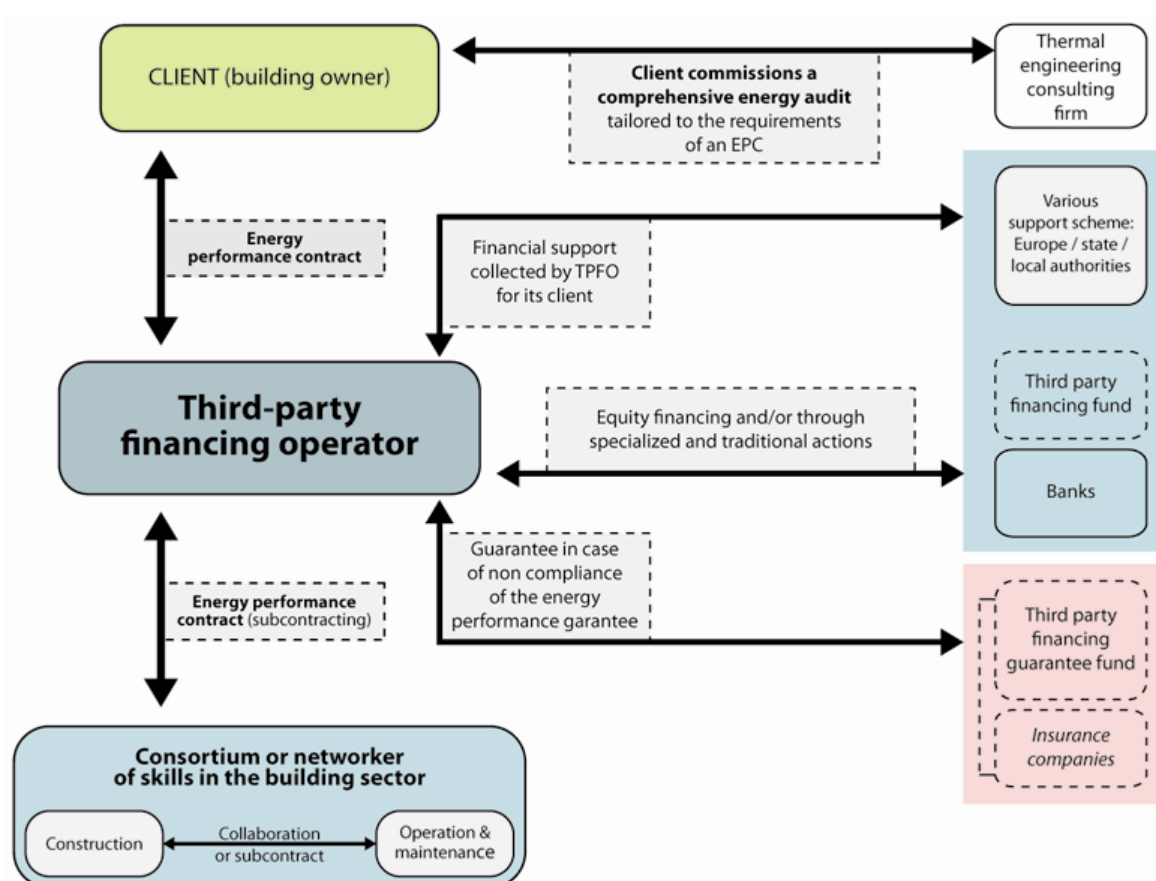
4. Structuring an EPC offer to reach the factor 4¹⁷

If implemented in accordance with current market practices, EPC may focus only on the highly profitable investments, thus endangering the possibilities to finance more ambitious energy retrofitting. It seems therefore necessary for public authorities to structure the EPC offer, in order to create schemes capable to serve the collective target of Factor 4.

4.1. The emergence of an integrated offer for EPC

The creation of Third Party Financing Operators (TPFOs) playing a role as skill assemblers appears to be necessary to respond adequately and massively to the demand for EPCs. Their role would be to assess the feasibility for an EPC, structure the financing and bear the risk of the contract, whose operational components would be outsourced to the relevant actors: construction companies, operators, etc... (see Figure 5). TPFOs would be endowed with the legal, financial and technical resources necessary to the implementation of EPCs.

Figure 5: Possible Scheme for Third Party Financing Operator.



Source: CDC 2010

¹⁷ Those recommendations were originally presented in MILIN and BULLIER 2011.

The emergence of TPFO would:

- Reduce the costs associated with the creation of consortium and project vehicles, whether by preserving the same structure or creating project companies from a template model;
- Facilitate the access for SMEs to EPC subcontracting markets, which are currently mostly limited to a small number of large companies due to the size of the investments.

4.2. Developing financial engineering to reach Factor 4

The requirements from banks and other financial institutions are too high to be met in comprehensive refurbishment investments at current energy prices. Considering the urgency to refurbish massively at very low energy consumption standards, specific Third Party Financing Operators (TPFO) should also be developed in order to manage large investments with low profitability in very long term commitments.

4.2.1. A public impulse

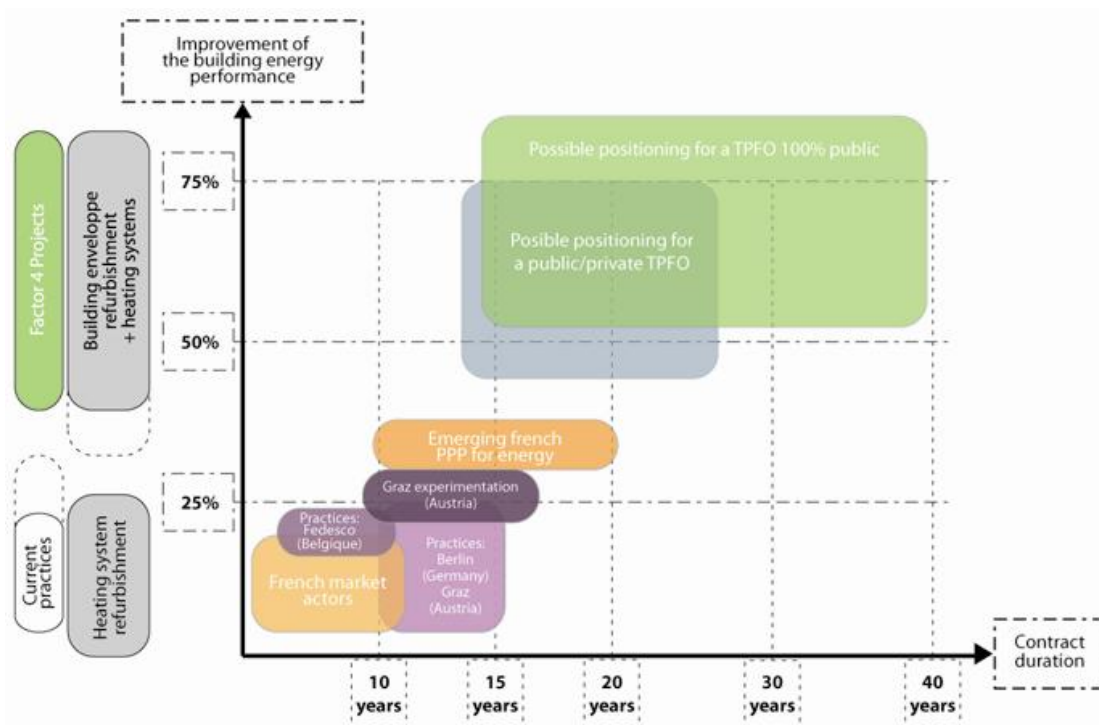
The Return On Equity (ROE) associated with comprehensive energy retrofitting is lower than usual practices, and the payback period is longer. However, as energy savings are contractually guaranteed in an EPC, once the first years of the contract have proved the savings, the overall contract performance could be considered close to the one of a public bond.

Therefore, public entities (State, local authorities,...) seem to be relevant investors for investing in such specific TPFOs. Though the creation of public TPFOs does not exclude the possible participation of private capital, the presence of public entities as stakeholders contributes to a greater credibility of the structure in front of the owners, whether they are public entities, Social Housing operators or condominiums. Indeed, trust in the operator is essential for the inception and generalization of long term EPC's.

4.2.2. Different levels of ambition in an EPC portfolio

A TPFO could manage a portfolio of operations with variable ambition and profitability. Some EPC's with higher profitability could compensate the lower profitability contracts so that the overall performance of the portfolio would remain acceptable. Managing a large portfolio could help overcome the logic which focuses only on the most profitable contracts. This seems to be the logic implemented by FEDESCO in Belgium, though the global payback period appears to be lower than 10 years (CDC 2010).

Figure 6: Market positioning for Third Party Financing Operators



Source : CDC 2010

4.2.3. Mobilizing low-cost financing

A public TPFO will finance a large part of its investment by debt. Its financing modalities are to be invented but could be based on:

- The mobilization of subsidized loans such as those granted by Caisse des Dépôts et Consignations in France, KfW in Germany, the High Energy & Environmental Quality Facility by the European Investment Bank, or EBRD loans in the new Member States;
- The creation of investment funds with reduced yield but higher environmental benefit, whether they are based on the Socially Responsible Investments (SRI) concept, or community savings (e.g. SOLIRA in France)
- debt securitization and emission of bonds for periodical refinancing

4.2.4. Mobilizing EIB grants for capitalizing a revolving fund (JESSICA)

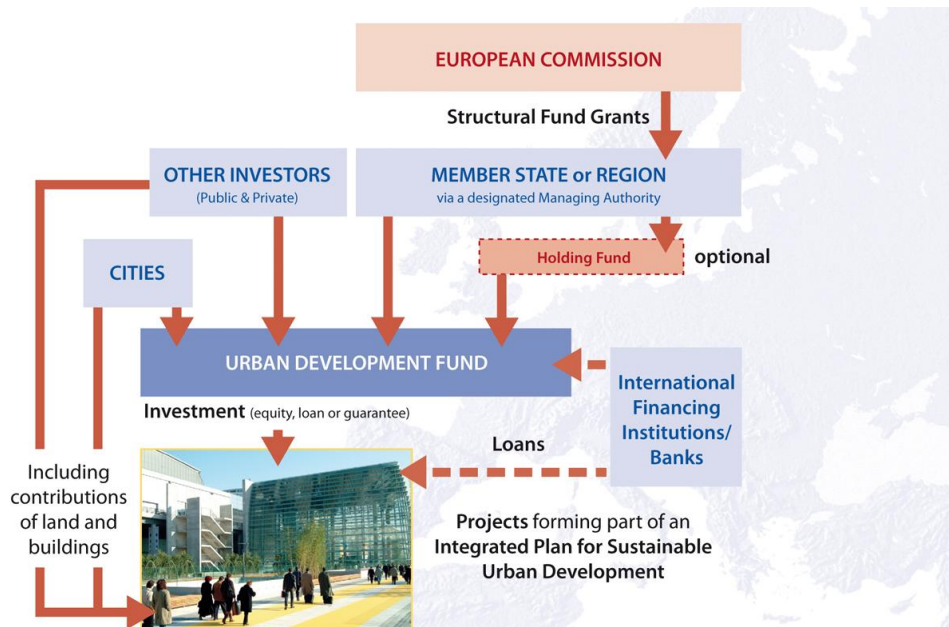
JESSICA is a financial mechanism created in 2006 by the European Investment Bank (EIB). It allows member states to:

- Mobilize grants from European Structural Funds (European Regional Development Fund and European Social Fund) in order to capitalize funds dedicated to urban development investments,
- Conserve any returns/receipts generated from the investments made in urban development in the dedicated urban development funds or return them to the managing authorities for reinvestment in new urban regeneration projects,

- Associate private capital.

Use of JESSICA funds could be used either by way of equity, debt or guarantee investment, which could be eventually combined.

Figure 7: How JESSICA funds are channeled (EIB 2008)



Source : EIB 2008

Funding for EPC projects in Social Housing would probably be eligible as energy retrofitting of Social Housing is eligible under the European Regional Development Fund since 2009. To our knowledge, JESSICA has already been mobilized for energy renovation of Social Housing in the UK and Estonia.

The modalities of implementation of this mechanism and its possible application to EPC are still to be assessed. It seems largely compatible with the other elements of financial engineering proposed earlier.

5. Conclusive remarks

Given the context of rising energy prices, fuel poverty affecting millions of households across Europe and the need to mitigate climate change, it is crucial that the existing housing stock, and notably Social Housing stock, be massively refurbished at very low energy standard.

Considering refurbishment trends, reaching the "Factor 4" objectives requires developing new adapted funding to generalize low energy refurbishment.

Funding could be found through Energy Performance Contracts (EPC) with third-party financing: the business model is still largely to be defined in the social sector but the potential is huge. FRESH project partners have worked out some of the legal, financial and technical framework for EPCs in Social Housing and concluded the pilot contracts in their respective countries. Implementation handbooks including template contracts have been published and disseminated at national and EU levels.

The major problem SHO's are facing in energy retrofitting is the restriction to recoup energy savings from tenants. Even though it raises many political questions, this limit should not be ignored, since it represents the major obstacle to use energy savings as a financial resource for Factor 4 in Social Housing. It should also be noted that if implemented based on current market practices, EPCs may focus only on the most profitable investments, thus endangering the possibilities to finance more ambitious energy retrofitting. It seems therefore necessary for public authorities to intervene and help structure Third Party Financing Operators, in order to create schemes capable to serve the collective target of Factor 4.

The challenge of a 75% reduction in greenhouse gas emissions cannot be met without a deep reorganization of regulations and governance, which currently prevent investments in comprehensive energy refurbishments.

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