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For further information on the project or on products of the project see: www.fresh-project.eu

FRESH Project Partners
Acer Reggio Emilia | Bulgarian Housing Association | International Consulting on Energy | Fontenergy | Places for People | Société Immobilière des Chemins de Fer (ICF)

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http://ec.europa.eu/energy/intelligent/index_en.html

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<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>AMP</td>
<td>Asset Management Plan</td>
</tr>
<tr>
<td>CECODHAS</td>
<td>Comité Européen de Coordination de l'Habitat Social (European Federation of social, cooperative and public housing)</td>
</tr>
<tr>
<td>CER</td>
<td>Certified Emission Reduction</td>
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<tr>
<td>CHP</td>
<td>Combined Heat and Power</td>
</tr>
<tr>
<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
</tr>
<tr>
<td>ECM</td>
<td>Energy Conservation Measure</td>
</tr>
<tr>
<td>EOI</td>
<td>Expression of Interest</td>
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<tr>
<td>EPC</td>
<td>Energy Performance Contract</td>
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<tr>
<td>ESCO</td>
<td>Energy Services Company</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FRESH</td>
<td>Financing Energy Refurbishment for Social Housing</td>
</tr>
<tr>
<td>GHG</td>
<td>Green House Gases</td>
</tr>
<tr>
<td>HVAC</td>
<td>Heating, ventilation, and air conditioning</td>
</tr>
<tr>
<td>ICE</td>
<td>International Conseil Energie</td>
</tr>
<tr>
<td>IDDRI</td>
<td>Institute for Sustainable Development and International Relations</td>
</tr>
<tr>
<td>kWh\textsubscript{pe}</td>
<td>kiloWatt hours of primary energy</td>
</tr>
<tr>
<td>M&amp;V</td>
<td>Measurement and Verification</td>
</tr>
<tr>
<td>MVP</td>
<td>Measurement and Verification Plans</td>
</tr>
<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
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<tr>
<td>RFP</td>
<td>Request for Proposals</td>
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<tr>
<td>SHO</td>
<td>Social Housing Operator</td>
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<tr>
<td>TPF</td>
<td>Third-party financing</td>
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<tr>
<td>VAT</td>
<td>Value Added Tax</td>
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<tr>
<td>UNECE</td>
<td>United Nations Economic Commission for Europe</td>
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1. Foreword

Lack of adapted funding is a major barrier to the energy retrofitting of Social Housing in Europe. The Energy Performance Contracts (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 energy performance contracting in Social Housing aiming at comprehensive refurbishment. This Handbook encompasses lessons learned and best practices of EPC introduction in these countries and highlights a general framework and practical insights for the successful EPC implementation in Social Housing in Europe.

Although, in practical terms, this handbook addresses concrete issues for SHOs (by drawing attention on the key developments of energy efficiency in Social Housing sector in Europe, containing a set of technical guidance, proposing practical solutions and template documents, etc.), it may concern any potential stakeholders or party interested in Social Housing energy improvement (ESCOs, government departments, tenants or tenant groups, utilities...).

This document aims at presenting the main results and conclusion on how EPC schemes can be used for comprehensive refurbishment of Social Housing, as well as pointing out barriers for their large and rapid uptake.

The document is divided into six parts:

- Overview of the main results from the FRESH project,
- Overview of the energy issues in the Social Housing sector,
- Specific national approaches in the FRESH project,
- Methodological framework for implementing an EPC,
- Recommendations for up-scaling EPC in Europe,
- Recommendations for structuring an EPC offer to reach the factor 4 and concluding remarks.

The Annex encompasses useful tools and template documents for EPC implementation.
## 2. Main results from the FRESH project

<table>
<thead>
<tr>
<th>Specific Objectives</th>
<th>Result Indicators</th>
<th>Results achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test life-size implementation of energy performance contracting for comprehensive refurbishment in the housing sector</td>
<td>Development and signature of Energy Performance Contracts</td>
<td>4 reports (state of the art on social housing, state of the art on EPC, description of the pilot sites and refurbishment scenarios) were produced, explaining the various necessary steps before EPC can be implemented. 3 specific Energy Performance Contracts signed in France, UK and Italy.</td>
</tr>
<tr>
<td>Refurbishment of sites (works undertaken)</td>
<td>3 pilot sites selected for refurbishment (refurbishment finalized in UK; ongoing refurbishment in France and Italy).</td>
<td></td>
</tr>
<tr>
<td>Monitoring of energy consumption to assess energy savings and contractual performance</td>
<td>Energy indicators and Measurement and Verification protocols defined in each EPC signed. 3 monitoring campaigns (ongoing monitoring in the UK; monitoring in France and Italy will be initiated once refurbishments are completed.</td>
<td></td>
</tr>
<tr>
<td>Direct energy savings</td>
<td>Minimum of 35% energy savings expected on the pilot sites. Ex-post analysis to be performed under the contracts signed. In the long term, corresponding reduction of energy costs for tenants</td>
<td></td>
</tr>
<tr>
<td>Produce tools encouraging stakeholders to take action (SHOs, ESCOs, Homeowners, public authorities, energy agencies, financial institutions, architects and contractors)</td>
<td>Production of contract models</td>
<td>French, Italian and UK handbooks present national contract models. Bulgaria produced in their handbook a workable concept adapted to their specific national context.</td>
</tr>
<tr>
<td>Production of a financial simulation tool in order to confront technical scenarios to investment packages</td>
<td>1 generic financial simulation tool (spread sheet) available for download at the project website.</td>
<td></td>
</tr>
<tr>
<td>Production of a methodology to undertake EPC targeting CR in the social housing sector</td>
<td>A generic European Handbook and 4 national handbooks presenting the lessons learnt and the results after the monitoring campaign.</td>
<td></td>
</tr>
<tr>
<td>Production of recommendations towards public authorities</td>
<td>4 national reports presenting recommendations on legal and regulatory frameworks (in France, UK, Italy and Bulgaria) were produced. Based on the national experiences, EU recommendations were also produced and disseminated.</td>
<td></td>
</tr>
<tr>
<td>Gather feedback and raise awareness, during the project and by disseminating the produced tools</td>
<td>Informed tenants/homeowners</td>
<td></td>
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<tr>
<td></td>
<td>At least 2 meetings targeted tenants were performed per country.</td>
<td></td>
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<td></td>
<td>Communication material targeting tenants was produced and used for informing the tenants at the pilot sites.</td>
<td></td>
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<tr>
<td>Informed stakeholders</td>
<td>12 stakeholders' committee meetings (3 per country) were organized throughout the project (gathering social housing federations, ESCO federations, tenants' unions, public and local authorities...)</td>
<td></td>
</tr>
<tr>
<td>Involved stakeholders</td>
<td>1 website in 4 languages is available at <a href="http://www.fresh-project.eu">www.fresh-project.eu</a></td>
<td></td>
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<tr>
<td></td>
<td>Over 70 articles were published at national and European levels. Project partners gave speech at over 50 conferences at national and European levels.</td>
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</table>
4 national workshops targeting SHOs and involving ESCOs’ representatives (with information folders and evaluation – 50 participants each): Presentation of project outcomes, financial models, EPC content, barriers, opportunities for expending the economic model

1 European workshop involving both SHOs and ESCOs was organized in Roma on the 30th May. Also an event was organized at EU parliament on the 15th May, on the invitation of MEP Mario Pirillo.
3. Energy retrofitting challenges in Social Housing

3.1. 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 2\(^2\).

With an overall stock of over 200 million homes in the EU-27\(^3\), and considering the current dynamics in the residential sector (approximately 2.3 million of new homes built per year\(^3\) and 0.15% of the stock destroyed per year\(^4\)), we can estimate that nearly 70% of the residential buildings stock in 2050 is already built in 2005. In addition, if we consider that only 0.3% of the stock is actually subject to a comprehensive energy refurbishment per year\(^5\), we can estimate that, on average and following current trends, most of this existing stock (over 90%) will remain as it was in 2005, without having been energetically refurbished by 2050 (see Figure 1).

That means that even if we make the strong assumption that all new homes are built at 0 kWh\(_{pe}/m^2\) (meaning they produce all the energy they consume) and all refurbishments are very ambitious and lead to strict energy consumption of 80 kWh\(_{pe}/m^2\), considering an initial average consumption for the actual stock of 250 kWh\(_{pe}/m²\), the overall stock in 2050 would still consume on average 149 kWh\(_{pe}/m²\) (see Figure 2).

Considering the inertia of the residential sector, a Factor 4 (or at least a Factor 2) on its average energy consumption will hardly be met without accelerating sharply (at least multiply by 10) the rhythm of refurbishment at strict energy consumption standards.

---

Under those strong hypotheses, 70 to 180 million of homes need to be refurbished at strict energy consumption standards before 2050 in order to reach the Factor 4. Assuming an average cost of 23,000 Euros per comprehensive refurbishment per dwelling\(^6\), we can anticipate a need of approximately 1,500 - 4,000 billion Euros to be invested in energy

\(^6\) Based on a survey of prices from construction companies and feedbacks from building sites, the Institute for Sustainable Development and International Relations (IDDRI, 2010) estimated a cost of refurbishment ranging from 13,000 up to 25,000 Euros per dwelling in France only for building measures. If we add 2,000 to 6,000 Euros for HVAC, an average cost for comprehensive refurbishment could amount 23,000 Euros. Obviously, the very diverse conditions of intervention (access to the building site, areas, type of housing, etc.) imply a large variability of costs and this average figure can only be indicative.
refurbishment of the EU residential sector before 2050. Annualized over the next 40 years, this means between 40 and 100 billion Euros per year on average to be dedicated to the sole residential sector refurbishment at European level.

3.2. The Social Housing sector

3.2.1. Definition of Social Housing in Europe

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 concept.

Social Housing can be described by some common elements that enable to outline a common definition, according to which the sector:

- is assigned specific missions of general interest (providing decent housing for low-income households, housing vulnerable groups like refugees or victims of natural disaster, ...);
- intends to increase the offer of affordable housing by constructing, managing, purchasing, selling and/or renting Social Housing;
- addresses target groups (either in socio-economic terms, or in terms of vulnerabilities of various types).

Embodying these features, Social housing represents nearly 35 million homes across Europe (17% of the overall stock), mostly built before 1975 and housing 120 million people. Most of the rental Social Housing is managed by specific entities we refer to as “Social Housing Operators” (SHOs).

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 it has been for a large part created by the corporate sector and civil society, Social Housing has become for most European public authorities one of the major enforcement levers of the housing policy.

3.2.2. High potential for massive energy retrofitting

SHOs are one of the key players to be mobilized in order to reduce energy consumptions and GHG emissions in the housing sector. They are the only institutional actors specialized in housing management, a sector where the level of professionalism is often low. All SHOs have very similar features, and they manage a considerable housing stock compared to a private landlord. They have a much better decision-making capacity than condominiums (even though they may be limited by financial resources and local governance problems).

Further information can be found in the FRESH document «Survey on Social Housing in Europe», available at the Fresh project website: www.fresh-project.eu


SHOs 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 compared to private housing companies or individual landlords.

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.

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

- Considering SHOs’ social mission and dependency on public funding, the sector is usually targeted as a priority and assigned the strongest regulations in terms of energy performance.
- Reducing tenants’ energy bills is a way for SHOs to secure the solvability of the formers, thus limiting the amount of unpaid rents and vacancy.
- As long-term managers of their housing stock, SHOs have to anticipate upcoming regulations on (existing) buildings in order to avoid any extra costs of future 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 SHOs have a long-term perspective.

3.2.3. 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.

Applying the above analysis to the sole Social Housing sector, we can estimate that 11 - 27 million of social houses need to be retrofitted at strict energy consumption standards before 2050 in order to reach the Factor 4 in the sector. That means roughly 270 up to 670 billion Euros to be invested in the EU Social Housing sector before 2050, an annual average of 11 up to 27 billion Euros for the upcoming 40 years.

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 the Factor 4. The number of dwellings to be refurbished at strict energy consumption standard and the associated financial needs for reaching the Factor 4 target exceed largely the direct investment capacity of even the wealthiest SHOs. This constraint is even more challenging considering that most SHOs are required by public authorities to invest in new affordable housing.

In addition to direct financial constraints (access to appropriate funding), SHOs face specific barriers that are slowing down the rhythm of energy retrofitting and/or lowering the energy saving targets:

- SHOs generally cannot, under the constraint commonly linked 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 has been lowered after refurbishment;
- When SHOs invest in energy efficiency measures, they do not get return on investment in the short run, whereas the tenants benefit from reduced energy bills ("split incentive" barrier);

- Debt capacity of SHOs may limit generalization of low energy refurbishment. Indeed, once the debt to income ratio will reach the maximum acceptable level, and this will rapidly happen since energy retrofitting requires large investments, banks will stop crediting the SHO, even for its current/core business.

3.2.4. 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.

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\textsuperscript{10}. Dividing this bill by 2 or 4 could generate the required long term resources to make energy refurbishment investments viable.

3.3. Energy Performance Contracting

3.3.1. EPC: structuring the business model

Energy retrofitting differs from other investments (e.g. construction of new dwellings) 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)\textsuperscript{11} is a contractual arrangement under which an energy service company (ESCO)\textsuperscript{12} designs and implements an energy retrofit with a guaranteed level


\textsuperscript{11} 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 report « State of the art – EPC survey », available at www.fresh-project.eu.

\textsuperscript{12} 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.”
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.

3.3.2. 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.

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, EPC may allow the SHO to externalize its debt, with limited risk (contractual guarantee), and thus provide a solution to overcome the reluctance of building owners to dedicate their investment capacity to energy retrofitting.

3.3.3. Third-party financing: mobilize external capital

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

Different financing solutions can be considered for financing the same guarantee scheme. In an EPC, investments can be financed by the building owner\(^\text{13}\), by an ESCO or by a financial institution (Third-Party Financing - TPF), 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 thus defining the optimal financing mechanism and finding the appropriate financial products, in order to render the project acceptable for all parties involved (i.e. building owner, tenants, ESCO, third-party financer, if any).

In the FRESH project, we focus on EPCs involving not only utility 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 TPF

\(^{13}\) 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
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 3).

![Organization of an Energy Performance Contract](image)

**Source:** ICE

In the case the investment is supported by the ESCO and charged to the building owner over the contract duration, it should be noted that, considering the current level of energy prices, still not sufficiently high to justify the substantial investments related to comprehensive refurbishments, energy savings will usually not be large enough to repay the investments within a usual contractual duration (5 to 15 years). In most cases, the building owner will have to support an additional charge to payback investment (see Figure 4).

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 thus, is more attractive.
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 to their core business, but also to 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 the way for private capitals to be invested in energy savings, providing an alternative to the insufficiency of available public funds.

### 3.4. Comprehensive energy retrofitting

Energy savings measures can be achieved in housing through investment in improved energy management, regulation systems, heating and domestic hot water equipment, switching to renewable energy sources, and investment in the building envelope insulation (windows, ceilings, ground floors, and facades). These investments have different cost levels and impacts in terms of energy savings, which are illustrated in the Figure 5. It should be noted that, at the European level, this type of analysis is very general and has mostly a heuristic value. In particular:

- Energy savings depend largely on climate conditions and on the initial level of energy performance;
- Investment costs depend in particular on national and local labor costs;
Payback period is highly conditioned by local energy costs and energy price evolution. Due to its unpredictability, the latter is usually not taken into account by financial experts.

Figure 5: Factor 4, long-term investments and EPCs

The natural tendency of building owners and investors is to focus on the more profitable investments, which is in contradiction with the general interest of climate change mitigation.

Currently, EPCs are generally limited to the simplest operations and most mature technologies, 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 boilers, insulation of the distribution systems...), without any 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 (weak target) EPCs is likely to pose a serious problem for building owners in the medium to long term. In fact, they might have no more room to contract on a package of complementary, jointly efficient 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.

In a nutshell, if implemented in accordance with current market practices, EPC may focus only on the “low hanging fruits” and once those have been picked, building owners may never be able to finance the required interventions on the building envelope, which represent very high costs with long payback periods. Consequently, without a more ambitious energy retrofitting strategy and employment of appropriate business models (e.g. third-party financing EPC), the
building owners may lose the possibility of reaching a Factor 4 on their GHG emissions at an acceptable cost. It is therefore necessary to demonstrate to the market actors that it is possible and worthy to implement EPCs for comprehensive energy retrofitting, including investments on the building envelope.

3.5. **Current obstacles for EPC implementation in the Social Housing sector**

EPC scheme as presented above could be used to finance massive energy retrofitting of the Social Housing sector. Yet, a series of obstacles currently limit the use of ambitious EPC:

- On the one hand, the demand side is subject to regulations that need to be adapted;
- 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.

This section presents the main difficulties one should be aware of before engaging in an EPC in the Social Housing sector. Further developments and recommendations can be found in the specific report « Recommendations to public authorities » available at www.fresh-project.eu. They are based on feedbacks from the FRESH project partners during their pilot site experiences and complemented, when relevant, with a state of the art review.

3.5.1. **Asset management in Social Housing**

In most cases, energy refurbishment of Social Housing is integrated within a comprehensive management strategy of the SHOs assets. Indeed, SHOs manage housing assets in the long run. Houses are generally built or purchased with the view to be kept and not for the purpose of resale in the short or medium term, unlike in the private housing sector. SHOs implement a policy of maintenance and continuous rehabilitation of their assets, which leads to significant reinvestments in the buildings where technical conditions or commercial quality require so. It is generally estimated that buildings are rehabilitated every 25 years.

Most SHOs establish strategic plans that, based on a diagnosis of technical conditions, commercial appeal and profitability of each of their properties, provide operational orientations. Depending on their investment capacity, SHOs establish multiyear action plans, which define actions to be implemented, including estimations of the investments required for each building.

Moreover, in some countries like France, SHOs are required to sign conventions of social utility with the State and/or the relevant local authorities of the territories where they own assets. It marks the willingness of governments and local authorities to monitor more closely the Social Housing activities. Energy refurbishments form a consistent part of contractual issues and enforcement mechanisms are progressively being implemented.

The SHOs’ asset management is therefore strongly determined by a set of constraints:

- Technical constraints, related to the technical condition of their assets, and the level of maintenance (sometimes inadequate) that has been practiced.
- Social constraints related to the tenants and possible difficulties at a number of locations.
- Policy constraints, notably related to the urban renewal policies.
SHOs have to rationalize the allocation of their financial resources, due to the strong budget constraints they currently face:

- gradual decline of State support;
- high requirements for SHO’s equity to finance new construction, especially in cities where housing markets are tight;
- stagnation of revenues from rents due, on the one hand, to the weakness of the rent indexation mechanism and, on the other hand, to the fact that many of the rents have already reached the regulatory ceiling and cannot be increased to face refurbishment costs;
- increase of the default rates (number of tenants that do not pay their rent and charges), as a consequence of the economic crisis since 2008.

SHOs do not therefore plan "pure energy" refurbishments, which are almost always included in global rehabilitation operations targeting primarily the comfort and quality of dwellings’ usage. Indeed, doing so reduces the costs for energy renovation, considering fixed costs for engineering, conducting operations and for site installation.

Currently, it appears that most SHOs’ asset management strategies do not address the Factor 4 target by 2050, and probably neither do they allow to reach the EU goals by 2020. Considering the SHOs’ poor asset management strategies and current financial constraints, there is an obvious risk that EU’s GHG emissions goals may not be achieved.

3.5.2. Recoupment of energy savings from tenants

The major problem SHOs are facing in energy retrofitting is that they are not always allowed to recoup energy savings from tenants. This is known as the “split incentive” barrier, when those responsible for paying energy bills are different from those making capital investment decisions and paying for upgrades.

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 usually not sufficient to face investment engendered by comprehensive energy refurbishment, especially when rents are already close to the ceiling because of previous refurbishments and annual rent increase policies.

Except for a few countries, regulations prohibit any attempt to charge an energy efficiency service or raise rents in order to recoup energy savings. The exceptions introduced in the French and Italian regulations still present important weaknesses:

- 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;

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14 In December 2008, the EU adopted an integrated energy and climate change policy including ambitious targets for 2020: (i) cutting greenhouse gases by 20% (30% if international agreement is reached) (ii) reducing energy consumption by 20% through increased energy efficiency (iii) meeting 20% of its energy needs from renewable sources.
• The French system enables to recoup energy savings, but limited to 50% of the conventional\textsuperscript{15} 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.

Although recouping energy savings from tenants raises political issues, the economic point of view cannot be ignored. Using energy savings as a financial resource for Factor 4 is a critical issue, conditioning EPC models’ viability in Social Housing. The following mechanisms should therefore be considered:

• “Warm rents”, a system where tenants pay a global fee for their rent and energy charges, thus enabling the SHO to transfer energy costs to rents after an energy retrofitting;
• The possibility for SHOs to recoup up to 100% of energy savings from tenants, based on a performance guarantee;
• The possibility to index the recouped savings on energy prices;
• The possibility to recoup energy savings during the whole payback period of the investment, whether or not the energy price evolution is taken into account;
• The possibility to recoup energy savings without an official agreement of all tenants.

At this stage, it should be emphasized that:

• Although tenants benefit from lower energy costs, they will never invest in the energy retrofit;
• We do not propose to increase energy charges for the tenants, but 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.

3.5.3. Equal access to public incentives

In several EU countries, SHOs benefit from various public incentives, linked to their general interest mission and their specific statute: tax exemptions, subsidies, subsidized loans... This induces a clear preference for financing by SHOs compared to third-party financing. At the same time, the reduced debt capacity of SHOs slows down the possible large scale replication, while the third-party financing would be a viable possibility to deal with large stock refurbishments.

Consequently, regulations should be adapted in order to enable ESCO and third-party financers to have the same advantages than SHO when they finance energy retrofitting in Social Housing. Those advantages would not be linked to the statute of the actor but to the activity he is carrying out. It is justified by the fact that Social Housing tenants remain the final recipient of the energy savings, and that the ESCO would not be substituting the SHO but rather working on its behalf.

\textsuperscript{15} Obtained through calculation and numerical simulations, referring for example to the methods used for allocating energy labels.
4. Specific national approaches in the FRESH project

4.1. The FRESH project

Although the market is well identified, EPCs are currently not used for refurbishing the Social Housing stock because there is no visibility on the business model. Today, EPCs usually target the optimization of energy systems such as boilers, heating and ventilation, and control systems, but rarely include measures targeting the building's envelope. A large energy saving potential is therefore lost at least for a generation, before the next refurbishment program is undertaken.

The FRESH project\textsuperscript{16} aims at experimenting Energy Performance Contract (including third-party financing) for the comprehensive refurbishment of Social Housing, in France, UK, Italy and Bulgaria. FRESH partners identified pilot sites and worked out the legal, financial and technical framework for EPCs in Social Housing.

This section presents a synthesis of the national approaches undertaken by each project partner in regards to his specific national context and demonstrates how they make the decisions to carry out their contract at the pilot site. At the time of writing, the French, Italian and UK contracts were still under negotiation and the information and figures that can be provided are therefore limited. Further information, notably national implementation handbooks including template contracts, is available on the project website.

4.2. Presentation of the French approach

4.2.1. Situation in the Social Housing sector

In France, Social Housing is defined by the missions and statute of SHOs:

- Tenants are eligible and access Social Housing under income conditions;
- Rents are capped to a ceiling defined by the Government;
- SHOs have a specific legal statute and their competences are limited to their missions. They can be either local public companies (“Offices Publics de l’Habitat”) or private companies with limited profit (“Entreprises Sociales pour l’Habitat”), whose shareholders can be local authorities or private companies. This does not involve major differences in their activities.
- SHOs get subsidies and subsidized loans (with low interest rates) for the construction of new buildings and for retrofitting.

French Social Housing is considered thus by the European Federation of Public, Cooperative and Social Housing (CECODHAS) a “targeted” and “residual” system. Although, based on

\textsuperscript{16} www.fresh-project.eu. FRESH is financed by the Intelligent Energy Europe programme. The sole responsibility for the content of this paper lies with the authors. It does not necessarily reflect the opinion of the FRESH partners or of the European Communities. FRESH partners and the European Commission are not responsible for any use that may be made of the information contained therein.
current criteria, 65% of the population is eligible to Social Housing, the sector represents only around 4 million dwellings in France, i.e. 17% of households.

Social Housing is an economic activity where the rent has to represent the real costs of the SHO. Tenants receive rent allowances that support their paying capacity, whereas SHOs have special conditions (tax rebates, lower interest rates, grants), enabling them to provide lower rents (about half of the average rents in the private sector).

In France, construction of Social Housing is financed through public subsidized loans (covering around 60% of a project cost), national and local grants (10% to 40%), equity (up to 30%) and “1% housing” loans or grants (mandatory contribution of employers to Social Housing, which can be invested in construction or refurbishment in exchange for reservation of some dwellings). The French SHOs’ financial scheme depends a lot on the type of dwellings and on the local grant policy for Social Housing.

4.2.2. Specificities related to energy retrofit

Costs related to energy are paid as follows:

- Energy costs are always paid by tenants, who directly benefit from any energy retrofitting;
- Operation and small maintenance costs are charged to tenants;
- Major repairs are paid by the SHO;
- Creation or replacement of the energy production systems is paid by the SHO.

The rents being capped, SHOs cannot raise them above the legal thresholds defined by the government in order to finance their patrimony retrofitting, including when this involves a significant investment in energy savings. Moreover, the rents’ legal thresholds are hardly sufficient to balance investment costs for a regular retrofit. Consequently, energy retrofitting generally does not provide any return on investment.

Since the end of 2009, SHOs can recoup from tenants a fix amount of 50% of the energy savings after an energy retrofit, for a maximum duration of 15 years. This has been a major progress for financing energy retrofits but it is still not sufficient with regard to the very long payback time for a comprehensive refurbishment.

EPCs can be implemented with third-party financing as private contracts only by private SHOs. Public SHOs need to use PPP contracts, which entail the loss of fiscal benefits. Financing through EPC is therefore limited to private SHOs, which represent 42% of the Social Housing stock.

4.2.3. Pilot project approach and outcomes

The French pilot site is situated in Schiltigheim, a suburb of Strasbourg and consists in 64 units built in 1984. Once the site of Schiltigheim was selected, an important work of technical and energy diagnosis was performed (energy consumption is estimated at 247 kWh/m² according to conventional calculations). Significant work was also conducted early in the project to define the legal conditions for implementation of an EPC. A comprehensive legal diagnosis was conducted by Azan Avocats, the legal firm accompanying ICF, and is available in annex to this report.
The Schiltigheim project consists of several aspects:

- Refurbishment works for the classic comfort upgrading of the dwellings and common areas;
- Energy renovation with massive investments on the building shell to achieve a guaranteed level of energy performance;
- Energy performance guarantee for the buildings, through an operation and maintenance contract;
- Financing of energy renovations, which are progressively repaid by ICF on condition of achieving the guaranteed energy performance.

ICF initiated the tender procedure in accordance with the French law to select the ESCO for their EPC. ICF decided to go through a competitive dialogue procedure. 3 ESCOs have been selected in June 2010 for the competitive dialogue. The ESCOs have conducted their technical studies at the pilot sites during the summer and presented the 1st offers in November.

On 8 July 2011, ICF Nord-Est signed with SPIE the first energy performance contract with third-party investment in Social Housing in France. The contract is a private contract awarded under the regulations for public procurement transposed from European rules. As part of the EPC, the investment is carried by another actor than the owner, SPIE, which acts as third-party financer. The contract duration is 20 years.

SPIE guarantees ICF Nord-Est the level of energy consumption shown below, which is called the "target":

<table>
<thead>
<tr>
<th>Concerned uses</th>
<th>Annual value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating, DHW and auxiliaries</td>
<td>434 MWh final energy</td>
</tr>
<tr>
<td>DHW volume</td>
<td>2108 m3</td>
</tr>
</tbody>
</table>

The energy target guaranteed by the ESCO may vary according to two types of adjustment variables:

- Independent variables are intended to evolve over the contract, giving rise to periodic (annual) adjustments of the target.
- Static factors are considered stable over the duration of the contract, i.e. no periodic adjustment of the target will readjust their value permanently.

The energy performance contract is expected to generate 24,377 Euro savings per year for tenants, including operation costs which are recouped from tenants. Assuming an annual increase of 3% per year for energy prices (gas and electricity combined), and no inflation on operation costs, the investment will generate a cumulative total of 658,456 Euro savings over 19 years (i.e. 27% of investment costs). From the generated savings, ICF Nord-Est will recoup under the “third line of invoice” 12,189 Euro per year for 15 years, i.e. 182 828 Euro. The recouped savings correspond to 27% of the savings generated, and 8% of the amount of energy investments excluding financial costs.
The energy savings recouped from tenants by the housing company finance only a small proportion of the investments.

The works of this pilot project are funded by grants (20%), loans (9%), equity (12%), and third investment of up to 59%, i.e. the amount of the energy investments. Grants from the Urban Community of Strasbourg (CUS) and the General Council of Bas-Rhin fund refurbishment operations. 1% Housing is the participation of private companies in Social Housing. As a counterpart of grants and 1% Housing participation, housing companies yield the right to attribute some of the dwellings.

The valuation of energy saving certificates (white certificates) is increased by the use of standardized operation form energy performance contracting, which improves by 60% the amount of certificates obtained. Energy savings certificates and property tax rebates should cover 14% of total energy investments.

Awareness raising actions constitute an important part of the project. SPIE has subcontracted those actions to a local association, which performed a speech with just the tenants, organizing a lunch in the garden with workshops, writing a guide for the proper functioning of the refurbished dwellings and organized workshops for children and adults.

The good implementation of the contract is ensured by the establishment of a system of measurement and verification of energy performance following a measurement and verification plan defined in the contract.

A complete presentation of the Schiltigheim project and a presentation of its Measurement and Verification plan are available in annex to this report.

4.3. Presentation of the Italian approach

4.3.1. Situation in the Social Housing sector

In Italy, the State is responsible for “the offer of Social Housing” over the whole national territory under the Constitution, title V, part II, while the operative part (building, assigning and managing) is a competence of the Regions, under their “governance of the territory” prerogative. General guidelines for Social Housing were formerly regulated at national level (Law 431/1998 and 560/1993). Since 1998 (Legislative Decree D.L. 112/1998), all competences have been transferred to the regions, which now have to determine their own lines of action, goals, and finance, and define modalities for intervention and support.

The main actors involved in the Social Housing sector are now:

- The Regions with programming and coordinating functions;
- The Provinces with evaluation functions: in particular, they assess the housing needs of the municipalities under their area of influence;
- Each municipality performs administrative functions: it defines rents and rules for accessing Social Housing, and implements refurbishment programs.

Municipalities usually own social rental dwellings, and in some cases they also manage them directly (limited phenomenon). Management of the Social Housing stock is usually performed
by SHOs on behalf of local authorities. SHOs usually have a public statute and depend on the Province level.

Social Housing is in general a public housing (“edilizia residenziale pubbica”) allocated under household income and other criteria defined at the regional level. The Social Housing sector in Italy represents more than 1 million dwellings (about the 4% of the national housing stock).

Originally, Social Housing in Italy is a subsidized economic sector, in which the rents paid by tenants are very low and do not cover the actual costs of housing. Although rules vary from region to region, the rent is generally calculated as a proportion of the tenant’s income. Since Social Housing tenants are very poor, rents are usually low.

Italian Social Housing was traditionally financed through Gescal, a system similar to the French “1% housing”. Since Gescal disappeared in 1998, and the State conferred to local authorities the competence on housing matters, there are no secure financing schemes for Social Housing in Italy. The structural deficit of SHOs used to be covered by the State. With the decentralization process, regions and municipalities are always more reluctant to finance the Social Housing deficit. This has impelled some SHOs to progressively sell part of their existing stock, as well as to develop the sale of new homes, in order to finance the retrofit of the existing stock.

4.3.2. Specificities related to energy retrofit

Costs related to energy are paid as follows:

- Energy costs are paid by tenants;
- Operation and maintenance costs are paid by the SHO;
- Major repairs are paid by the building owner (SHO or local authority);
- Creation or replacement of the energy production systems is paid by the building owner (SHO or local authority).

As a general rule, retrofits are financed through equity and market loans. Energy savings certificates have not been used so far in the Social Housing sector, although this system exists in Italy. In the case where retrofit produces energy savings, it can trigger more interest and incentives for SHOs. Rents can be raised in order to finance a refurbishment, but this requires a 100% agreement of the tenants. This possibility is rarely used and the possible rent increases are not important enough to cover the retrofit costs. Hence, retrofit, and even more energy retrofit, is not a profitable investment as there is no payback.

Italy has a specific regulation for energy performance contracting. In particular, in accordance with Italian Law, the duration of EPC is limited to 12 years, with a possible extension to 15 years.

4.3.3. Pilot project approach and outcomes

To engage in the refurbishment project at the pilot site, ACER (Italian SHO, partner in the FRESH project) requested official approvals from the municipality and from all the tenants, which have been obtained in 2011. These approvals from both parties represented an essential precondition to sign an EPC. In accordance with the Laws defining the rules of the
competitive dialogue procedure in Italy, in regards notably to the foreseen size of investment, a public tender was launched at the end of 2011.

As a result of the 12 years limit posed on the EPC duration, and considering the size of the Italian pilot site (12 dwellings), Italian experiment focuses on heating and hot water systems: the collective gas boiler will be changed and hot water supply will be switched from electric boilers to a collective boiler. The envisaged target is a 35% reduction in energy consumption.

ACER conducted at its own costs an initial energy audit and established the baseline for energy consumption and performance of the building. All candidates participating in the competitive dialogue received this detailed description of the pilot site. Candidates were then free to plan their interventions within the constraints set out in the tender (ex: the apartments have to remain accessible for tenants). All refurbishment and services were to be included under one single contract, including design, execution of works, financing, management of the services, meeting the performance guarantee and other contractual obligations.

Proposals were evaluated in regards to the following criteria:

- kWh/m²/year saved (min 35%);
- tons of CO₂ saved;
- energy label after refurbishment.

The EPC here is not a tripartite contract between the landlord, the tenants and the ESCO, as no direct legal link exists between the ESCO and the tenants. Indeed, two separate contracts define relationship among parties:

- A first contract, binding the tenants with ACER.
- A second contract, the energy performance contract, binding ACER and the ESCO which contains:
  - complete technical program for refurbishment of the site, with design and execution based on a preliminary plan proposed by ESCO,
  - ordinary and extraordinary maintenance plan,
  - management of the operation,
  - fuel supply for winter heating,
  - monitoring of consumption,
  - transfer of the installations at the end of the contract.

This means the relations with tenants will still be managed by ACER. The benefits of the operation for tenants are ensured by a higher level of comfort and an attributed effective saving of 10% of the energy costs. ACER is responsible for the distribution of the energy costs savings between tenants.

The ESCO services are subject to bimonthly payments, based on fix and variable rates linked to the energy consumption of each dwelling. The financial arrangements are settled first between ESCO and ACER, then between ACER and its tenants. The performance guarantee is defined based on the energy savings obtained. The ESCO is committed to pay a penalty in case of failure to reach the targeted level of savings. Indexation of prices is directly linked to the index
given by the AEEG (Authority for Electricity and Gas in Milan) and on the basis discussed during the competitive dialogue.

The control over the completion of the objectives will be performed by ACER, by carrying out an energy audit in 2012, during the first year of the EPC. The cost of this ex-post control will be charged to the ESCO.

4.4. Presentation of the UK approach

4.4.1. Situation in the Social Housing sector

In the United Kingdom (UK), Social Housing is defined by its missions and the statute of SHOs. Social Housing is rental housing for low-income households, with rents regulated by public authorities. As for France, British Social Housing is considered by CECODHAS a “targeted” and “residual” Social Housing system. The rent has to represent the real costs for the SHO while tenants receive housing benefits to help them pay the rent (currently 61% of Social Housing tenants receive housing benefits).

Social Housing is provided by local authorities and Housing Associations, which altogether manage around 3.9 million dwellings. Local authorities are public bodies and Housing Associations are regulated by government and non-government bodies. Until recently, only Housing Associations were able to build new units of Social Housing and many homes formerly managed by local authorities have been transferred to Housing Associations. Though rents are their main form of income, Housing Associations also generate income from the sale of homes and are able to develop and manage “market rent” accommodation. Broadly speaking, Housing Associations have the freedom and capacity to develop new products and services, while local authorities are required to be given specific legal authorization from central government to develop new areas of activity.

In the UK, construction of Social Housing may be financed at up to 40% by public grants, the rest through loans and equity. Housing associations invest part of the income they generate by the sale of new homes in the construction of rental Social Housing. This model is currently under difficulty due to the economic crisis, which has entailed a decrease in the SHOs’ profits.

4.4.2. Specificities related to energy retrofit

Costs related to energy are paid as follows:

- Energy costs are always paid by tenants, who directly benefit from any energy retrofitting;
- There is no legal definition of who should pay for the operation and maintenance costs;
- Major repairs are paid by the SHO;
- Creation or replacement of the energy production systems is paid by the SHO.

Energy retrofitting does not benefit from tax discounts or low interest rates, but energy savings certificates delivered in the framework of the Carbon Emission Reduction target can finance up to 90% of investments. Rents cannot be raised above the legal ceilings in case of energy retrofitting, and energy savings cannot be recouped from tenants.
4.4.3. Pilot project approach and outcomes

Places for People is a Registered Social Landlord (SHO), one of the largest property management and development organizations in the UK. It owns and manages over 58,000 homes and operates throughout the UK.

Fontenergy helps developers and public authorities deliver onsite energy schemes that reduce carbon emissions while meeting commercial objectives. Its branch Fontenergy Power is an ESCO, set up to provide energy services including customer management, interface with the wider energy market, and operation and management of onsite assets.

Places for People and Fontenergy are associated in the FRESH project since inception and have taken a partnership approach towards developing an innovative contractual scheme.

The UK partners have chosen for their pilot site to focus on sheltered housing, i.e. retirement homes where the rent contract is a private contract between the SHO and the manager of the retirement home, which enables to recoup 100% of energy savings.

The UK partners have been developing a pilot site which is supported housing (known as IS within Places for People). Places for People undertook an audit of the heating plant at all 80 its IS sites. This preliminary work helped to identify the extent of the ‘problems’ and investment required into IS heating generally. This audit also identifies the specific sites which are priorities for action — and thus which are the first ones to be reviewed in the roll out phase.

The objectives for the pilot project were:

- Reduce tenants bills;
- Reduce CO2 emissions;
- Remove Places for Peoples requirement for capital expenditure on IS heating facility.

For the pilot project most of the simulation work has been undertaken by Fontenergy. This includes the energy modeling, the financial modeling and the technical review of options. In the pilot project the approach has been to include the staff from as many departments as possible and engage wider stakeholders. Most of the skills needed are contained ‘in house’ between the partners. As this is a pilot project, Places for People have sought to include any teams where there might be relevance. This includes areas such as: IS site managers, IS management, Gas team, Maintenance team, Asset management, Finance, Legal, Tenant bodies. There has been a great deal of tenant engagement at the pilot site.

The contract finally signed focuses on the replacement of the old gas boilers by a biomass plant, generating up to 80% savings in CO₂ emissions. The roll out phase has started in early 2011, after the St Pauls contract was signed and the facilities installed. The contract is planned for 15 years. The pilot and the roll out at these ‘easy’ supported housing sites are expected to act as a stepping stone to creating ESCO/EPC solutions.

The contractual approach differs significantly from the one taken by the other FRESH partners and is explained in details in the UK handbook, available on the FRESH project website.
4.5. **Presentation of the Bulgarian approach**

4.5.1. **Situation in the Social Housing sector**

Social Housing in Bulgaria is very different than in France, Italy or the UK. Until 1989, like in most Eastern European countries, new housing was built predominantly by the Socialist Government in a set of tight limits in size and quality. Unlike other socialist regimes, the property of the new dwellings was immediately transferred to the residents. Since there was almost nothing to privatize in the housing sector, the political and economic changes after 1989 modified insignificantly the ownership structure. As a result, Social Housing in Bulgaria is considered to embrace all the housing stock built by the State before 1989, which consists mostly of multi-family buildings with an extremely high owner occupancy share (currently about 97%).

This building stock is predominantly in bad technical conditions and highly energy consuming. In most cases, all investments and running costs are paid by the owners of the dwellings. The poor technical quality of the housing stock and the lack of investments in the past entail a high need for refurbishment in general, and energy retrofits in particular.

4.5.2. **Specificities related to energy retrofit**

So far, very few condominiums have carried out an energy retrofit, because of:

- the difficulty to make collective decisions in a condominium;
- the bad economic situation of most Bulgarian homeowners;
- the lack of professional actors able to manage a housing stock in a long-term perspective, which results in a quasi-impossibility to implement comprehensive energy retrofits in a large part of the housing stock.

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

In 2004 a National Housing Strategy was adopted by the government aiming to stop deterioration of the existing building stock and to introduce a mechanism for the provision of new affordable dwellings (owned and rented). In 2005, a National Program for Renovation of the housing stock was approved by the government foreseeing budget subsidies for large-scale renovation activities of condominium housing.

There are currently available financing facilities for retrofitting housing in Bulgaria: e.g. special loans from the European Bank for Reconstruction and Development (EBRD) distributed by retail banks, State grants from the National Renovation Program. But a major issue for the housing policies is the lack of actors specialized in housing management.

4.5.3. **Pilot project outcomes**

To this date, no ESCO operating in Bulgaria has implemented or is implementing EPC based project in the residential sector. Consultations by BHA on the scope and financial scheme of
comprehensive refurbishment program for a pilot building with potential EPC partners, mainly Overgas and Dalkia Bulgaria, has demonstrated that potential EPC partners are ready to get involved in covering only a part of the total renovation costs of a comprehensive refurbishment program based on EPC (building systems plus insulation of building envelope).

Indeed, the rent level and solvency of tenants at all pre-identified sites would not allow to repay ESCO investments and no ESCO would agree to take the risk at these sites. Considering that no pilot site could be found within a reasonable timeframe, discussions have been conducted with IEE project officer to modify the project scope of activities in Bulgaria.

Instead of the pilot implementation of an EPC in Bulgaria, the Bulgaria project partner BHA has consequently been investigating opportunities of subsidized co-financing sources to be used in combination with EPC in renovation schemes in Bulgaria, namely:

- EU Structural Funds,
- REECL2 Project,
- National Renovation program
- IWO subsidized loan facility
- Others?

BHA has also been formulating the necessary conditions for the success of the proposed models in regard to:

- Legal environment (proposal for necessary modifications, with the support of a legal adviser);
- Organizational framework for implementation.

In order to achieve concrete workable results, BHA worked actively with the Bulgarian authorities and notably the agencies in charge of activities related to the implementation of EU Structural Funds.

BHA also organized a workshop gathering public authorities, Bulgarian ESCOs’, financial institutions, EPC experts in Bulgaria and Europe.

As a result, BHA formulated possible models of implementation of EPC in combination with subsidies. These models are detailed in the Bulgarian handbook with all recommendation for application of EPC in the Bulgarian context, in combination with available subsidies. Those results are available on the FRESH project website.
5. Methodology for implementing an EPC

An EPC implementation process can be divided into 3 main phases\(^\text{17}\):

- Phase 1: Project(s) preparation;
- Phase 2: Selection of the contractor;
- Phase 3: Implementation of the contract.

5.1. Phase 1: Project(s) preparation

The project preparation phase is crucial because it determines the success of the subsequent phases. The following aspects should be addressed during this first phase:

- Identify relevant sites for an EPC;
- Decide to launch an EPC;
- Organize project management;
- Perform a series of on-site diagnoses;
- Define the objectives of the EPC.

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\(^{17}\) This chapter is freely inspired by BULLIER et al. 2011 and AEPCA 2000.
5.1.1. Identify relevant sites

The first step consists in identifying, through a series of preliminary diagnoses, the relevant sites where an EPC can be implemented.

One must consider several criteria for selecting relevant sites. In order to be considered relevant for an EPC, the site(s) should notably allow for:

- Significant energy savings;
- Centralized control on energy consumptions;
- Mutualization of investments for energy savings with other rehabilitation programs and sites’ renovation, thus reducing marginal energy retrofitting costs.

a. Focus on energy intensive buildings

Considering its associated transactions costs, an EPC can be increasingly interesting as there is more room for energy savings. Indeed, this situation should reduce the investment payback period and the duration of the contract, thus making EPC more acceptable by average market actors.

In case they exist, it is relevant to make use of existing energy performance certificates and focus on the buildings with the worst energy performances (classes G, F and E, and in some cases class D). However, as energy performance certificates usually present primary energy consumption, one should pay attention to the possible misinterpretation of the conversion factor between primary and final energy in electrically heated buildings. Furthermore, the gain should be considered not only in terms of kWh/m²/year saved but also in monetary savings, especially when a switch in the energy source is foreseen.

b. Target collective heating systems

The presence of a system allowing centralized control over the tenants’ energy consumption for heating and hot water facilitates the optimization of energy management and helps the ESCO to guarantee energy performance at a sustainable cost. This normally excludes dwellings

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18 In application of the EU Directive 2002/91/EC on the energy performance of buildings, member States have to ensure that when buildings are constructed, sold or rented out, an Energy Performance Certificate is made available to the owner or by the owner to the tenant or potential buyer. The certification concerns such elements as building envelope, windows, heating, electrical and ventilation installations, lighting, heat sources (incl. boilers, CHP units) cooling systems and others.

19 The concept of primary energy is mainly used for energy statistics. Primary energy is the energy embodied in natural resources prior to undergoing any human-made conversions or transformations. Primary energy sources are for example coal, crude oil, sunlight or wind.

20 Final energy consumption covers energy supplied to the final consumer for all energy uses (that are not fuel conversion or transformation activities). In France, considering the electricity production and distribution processes, a convention establishes that 1 kWh of final electricity consumption should correspond to 2.58 kWh of primary energy consumption. Such conversion factor may distort the evaluation of potential energy savings achievable in an electrically heated building.
with individual production of heat and hot water. However, dwellings with individual heating systems may be treated under an EPC if the SHO is disposed to switch to a collective heating system, or at least if a possibility of centralized control over individual heating systems exists.

c. **Constitute a pool of buildings**

It may be worth to combine sites presenting significant energy savings potentials with sites where energy refurbishments present much longer payback periods. “Pooling” sites of different size and/or with different energy savings potentials may allow reaching the right financial equilibrium between, for example, the renewal of boilers (short payback period but limited energy savings) and the comprehensive interventions on the building envelope (longer payback period but larger energy savings).

d. **Integrate EPC in the rehabilitation programs**

EPC should be considered in relation to the “classic” rehabilitation operations (upgrade of comfort, security, common areas, etc.) foreseen in the SHO’s asset management strategy. In this case, an EPC should include two components: energy retrofitting and “classic” building refurbishment. Indeed, as stated in chapter 3.5.1, though some sites would require only energy renovation, in most cases the implementation process will have to integrate classic rehabilitation.

### 5.1.2. Decide to launch an EPC

a. **Current legal framework**

Although Social Housing has been created for a large part 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). Public procurement code offers two possibilities to conclude an EPC: public private partnership (PPP) or public contract 21.

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 simpler and/or smaller projects. However, public contracts are impaired by application of the rules that require a distinction between design, construction and operation, and also prohibit differed payment. Jurisprudence in some countries, 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 of the energy performance guarantee”, while a deduction from the payments would have been much simpler and lighter.

It is important to assess and be fully aware of potential legal or institutional hurdles before proceeding further.

b. Competitive dialogue procedure

In this handbook, we choose to present the approach based on a competitive dialogue procedure.

Institutions may sometimes be unable to define precisely the objective means for satisfying their needs or assess what the market can offer in terms of technical solutions, products or services. In particular, it may happen in the case of some innovative projects where:

- The market is not well established and the consumers do not have sufficient visibility,
- A variety of technical solutions are available,
- The legal or financial complexities of SHO’s requirements cannot be defined in advance and they need to be discussed with the potential bidders.

Developed quite recently in the European Union (introduced for public sector contracts in April 2004 by the EU Directive 2004/18/EC), the Competitive Dialogue is a procedure whereby an Institution is able to conduct dialogue with bidders directly with the aim of developing one or more suitable alternative solutions to meet its requirements. Individual bidders may develop more than one solution. The dialogue may be conducted in successive stages, with the option of reducing the number of solutions (and therefore bidders) at each stage. Solutions must be eliminated by applying the transparently defined award criteria.

The competitive dialogue therefore offers possibilities for public purchasers to improve the quality and innovativeness of the proposals made to them. It is a flexible procedure designed to allow the public authority to discuss with each candidate all aspects of a project, while preserving the competition between economic operators. In addition to allow support in the definition of the SHO’s needs, the competitive dialogue has, in relation to a tender, the advantage of allowing a more complete and comparative overview of the technical, financial and/or legal solutions that the market can offer, as bidders are not constrained in the formulation of their proposals by any predefined, too precise technical specification.

However, it should be noted that the competitive dialogue is a procedure which can only be used in the specific circumstances expressly provided for in the EU Directive 2004/18/EC. In order to resort to a competitive dialogue procedure, the SHO must demonstrate the complexity and/or the urgency of the project that justify the use of such procedure.

A competitive dialogue is a special procedure that requires compliance with a set of rules. The first rule is the confidentiality of the bids that are transmitted, which requires special attention for respecting the anonymity of the competitors as well as not transmitting any information from a candidate to its competitors.

We suggest a dialogue in two rounds, but SHOs are free to set the number of rounds of dialogue they consider essential depending on their project complexity. It is useful to reserve
in the competitive dialogue regulation the possibility to add an extra round of auditions, if estimated to be necessary during the project phase.

5.1.3. Organize project management

The structuring of project management is crucial to the success of the project. Indeed, an EPC is a complex, furthermore new, instrument that requires specific skills and organization. The project team shall comprise a core group dedicated to the management of the project, as well as experts with solid managerial, technical, financial and legal skills.

a. Organize internal team

Obtaining approval from key decision-makers within the company can be a long and slow process. It is therefore necessary to secure the support of key decision-makers before any effort is made to progress beyond the initial exploratory stage. Concretely, it is important to secure buy-in at all levels:

- Top managers (at the level required to approve the necessary investment) must fully support the initiative, understand the economics and impacts of the project on the company’s activities, and provide leadership;
- Operational managers must be involved in the technical and economic development and provide endorsement to whoever will sign the final approval, ensuring that all technical and operational risks are appropriately managed;
- Financial managers must assess the financial outcomes of the project and provide the required support to obtain final approvals from top managers, ensuring that: the economic benefits outweigh costs, all financial risks are managed, and the financial priority of the project can be assessed against other business opportunities.

An ESCO may be working with SHO’s different management levels simultaneously. This means that it is important to assign a “Project Team” for the overall coordination of the project. The Project Team will assume the responsibility to ensure that all internal procedures for project approval are followed and that all the right people at the appropriate levels are involved as required.

b. Select external expertise

An independent facilitator experienced in EPCs can provide guidance through the procedure. Independent consultants with experience in EPC negotiation can identify the issues one should be aware of before the EPC is signed. They can facilitate the negotiation process by providing an expert review of the proposals prepared by ESCOs, allowing thus the parties to arrive at a mutually advantageous final agreement.

External expertise may be used either for global assistance throughout the process or for specific tasks, for example:

- Define the general scope of works;
- Perform preliminary audits, identify energy savings potentials and estimate related investment costs;
Prepare documents for procurement (such as the call for Expression of Interest and the Request for Proposals);

- Assist in the selection of candidates and the evaluation of their proposals;
- Review the proposed works’ specification including the proposed energy conservation measures;
- Review the proposed Measurement and Verification plans (M&V plans);
- Review the final EPC to be signed between the SHO and the selected ESCO;
- Provide guidance for disputes’ resolution, etc.

As the future ESCO contractor will propose both project design and implementation, this external expertise has to be fully independent and has to provide advises in the exclusive interest of the SHO.

The exact missions of this external expertise should be adapted depending on the project’s needs and the skills already available within the SHO Project Team. Consequently, we do not necessarily distinguish the external expertise later in the document and include it under the SHO’s Project Team.

5.1.4. Audit the buildings to be refurbished

Once the relevant building(s) are identified (see 5.1.1), it is necessary for the SHO’s Project Team to perform an initial diagnosis that should be as comprehensive as possible.

In a “classic” refurbishment operation, the diagnosis is often performed by the prime contractor and iteratively refined as the project progresses. This is not possible in a competitive dialogue insofar as candidates must present a firm and definitive proposal in terms of costs and performance.

Technical analyses (e.g. urban studies, diagnosis of asbestos and lead, etc.) that are not conducted in advance by the SHO would have to be realized during the competitive dialogue, considering they may result necessary for the good elaboration of the ESCOs’ proposals. This may seriously delay the project, increase costs and, in case these studies are to be conducted by each ESCO individually (instead of being provided by the SHO to all candidates), it may reduce the resources allocated by candidates for energy and financial studies, which are the real challenges of the competitive dialogue.

In addition to the general technical analysis, detailed energy audits will be necessary. Indeed, the EPC will be based on an energy consumption baseline (average normal energy consumption before refurbishment) to determine the energy performance guarantee. This baseline needs to be agreed on by all parties in the EPC and has to be included in the M&V plan. This energy consumption baseline should not be disputable as it would undermine the energy performance guarantee.

a. Documentation review

The SHO’s Project Team should first collect all available documents related to the targeted building(s):
• Original plans and, if any, technical advices on the construction process;
• History of original works executed;
• History of subsequent interventions on the structure;
• History of past interventions on the building(s);
• Reports on the balance of building(s)’ charges over the last three years;
• Any other document that may provide information on the building(s).

b. Technical diagnosis

A technical diagnosis should constitute a comprehensive inventory of the building(s)’ characteristics and identify any malfunctions. The diagnosis must be precise enough to allow candidates in the competitive dialogue to have a good knowledge of the building(s), although it will be supplemented by site visits. In this regard, photographs are important as they could provide a quick understanding of the technical issues on the site.

c. Energy audit and refurbishment scenarios

This task aims at establishing a precise description of the current state of the targeted building(s) and evaluating their present and future energy performance.

The energy audit is a crucial step in preparing the EPC. It should be sufficiently clear and comprehensive in order to be accepted by the candidates and included in the contract. A dynamic thermal simulation can be relevant as it gives a reliable theoretical consumption of the building(s).

Several energy refurbishment scenarios should be studied and quantified in terms of energy savings and related costs. Those energy refurbishment scenarios will have no contractual value, since the candidates will be mostly free of the energy conservations measures to be implemented in order to achieve the energy performance commitment. However, the scenarios will help the SHO’s Project Team evaluate the quality of the offers made and the commitment of the candidates.

d. Urban Studies and administrative authorizations

It is important to consider the local urban regulations as they may limit the possibilities of interventions (facades, outdoor ...). Therefore, the SHO’s Project Team should get from the local authority a certificate summarizing all the urbanism constraints applicable to the building(s).

e. Other studies

Depending on the building(s), a number of additional studies could be performed in order to have sufficient knowledge of the site(s). They may include:

• Diagnoses of asbestos and lead before work;
• Study of soil;
• Identification of underground networks;
Air tightness of existing buildings;
Other...

5.1.5. Define the EPC’s goals

On the basis of the diagnoses made, SHO’s Project Team must define the objectives of the EPC. They should be validated internally by the technical and financial specialists beforehand, since it could be complicated to change them once the competitive dialogue has been launched.

a. Nature of the EPC

It is essential at this stage to define the nature of the EPC, which can vary from one site to another:
- Inclusion or not of non-energy “conventional” refurbishment elements (e.g. compliance to sanitary norms, decoration, outdoors works, etc.);
- Fuel supply to be included or not in the contract: this choice changes the economic equilibrium of the contract for the ESCO and may reduce the scope of potential candidates to the few operators who are able to supply energy;
- Third-party financing or direct financing by SHO?

b. Energy goals

Regarding energy results, the competitive dialogue is a design-build contract, which means that the SHO fixes the level of energy performance to be achieved, while the means used to achieve such level of performance fall under the responsibility of candidates.

c. Program of works for conventional refurbishment elements

To limit the costs of study for candidates, it is recommended to precise and to specify the work program for the conventional refurbishment elements, as it would have been done in a “classic” refurbishment operation.

5.2. Phase 2: Selection of the contractor

5.2.1. Prepare and issue the call for Expression Of Interest

The call for Expression Of Interest (EOI) sets out the type and format of any information required from respondents. It should request as much information as necessary in order to make candidates’ evaluation as easy as possible.

The call for EOI documentation should state the SHO’s interest in entering into an EPC, with general information about the project scope and a request for respondents to describe their work approach. It should provide a minimum of information on:
- the overall objective of the project, the scope of work required;
- the respondent’s professional skills to perform the required work(s);
- the respondent’s approach on EPC and especially on energy performance guarantee;
• the respondent’s proposed financing solutions, with specific information on third-party financing.

For further guidance, a template Call for EOI is enclosed in Annex 1.

Depending on the project size and complexity, the call for EOI may be advertised in the local, national and/or European specialized press, with the aim of identifying the maximum potential contractors able and willing to engage in the competitive dialogue procedure.

5.2.2. Select qualifying respondents for the competitive dialogue

In order to be qualified for the competitive dialogue, the respondent should prove that:

• He understands what EPC is, he is likely to offer such service and he meets the pre-qualification criteria;

• His resources match the requirements (technical, financial, geographical, etc.) of the project;

• He has valuable experience in this field.

At this stage, the selection of candidates is quite simple, based on their technical, financial and human resources, as well as on the relevant references of the candidates in the field of EPC.

The weighted selection criteria must be defined and specified in the call for EOI. Each application will be rated on the basis of these criteria and the ranking will be established accordingly.

EPC implies a long-term financial relationship between the SHO and the contractor. The SHO may wish to receive comprehensive information on the candidate’s financial situation and its ability to support the proposed energy performance guarantee. The financial stability of the candidate should therefore be a major criterion in the evaluation.

For an effective competitive dialogue, we suggest to limit the number of prequalified candidates to three, if possible, in order to ensure a good competition between proposals while limiting the costs and time required for their evaluation by the SHO’s Project Team.

5.2.3. Prepare and issue the Request for Proposal (RFP)

While the ESCOs are preparing their EOI, the SHO may start preparing the Request for Proposal (RFP) that will be sent to all selected candidates.

The RFP documentation should include the following documents:

• The rules of the consultation during the competitive dialogue;

• The full description of the site(s) to be refurbished;

• A functional program of the building(s) with all its (their) annexes (dynamic models, plans, description of the site(s), etc.). The program shall describe the functional performance requirements with regards to energy, as well as other non-energy elements;

• A framework of answer to RFP for candidates;

• A draft EPC contract.
This RFP should be sent to all preselected candidates, accompanied by a letter of invitation to the competitive dialogue phase.

5.2.4. Competitive dialogue

a. Sites’ visit

The ESCOs will almost certainly require access to the building(s) in order to conduct their own audits and ask operation managers for whatever information they deem necessary to facilitate accurate drafting of their proposals (this is one reason to limit the number of proponents to three).

There is no strong reason to restrict the access to the sites for candidates as long as the SHO’s Project Team is informed. However, one must be careful to ensure that candidates do not meet and establish contacts during these visits, in order to avoid possible agreement between them.

b. Questions from candidates

Once the site visits have been conducted, sufficient time must be left to candidates to study the project and ask all the questions they have in mind. These questions can be submitted electronically (through an Internet dedicated website and/or by emails). Responses from the SHO should be sent to all candidates anonymously.

c. Intermediate offers

Sufficient time should be left to candidates to write a first proposal that will be discussed during the first round of auditions.

The proposals should describe how the ESCOs would carry out the outlined work(s), explain how they would structure fees for that work(s) and any provided service, and give estimates of the potential energy savings and the implied costs.

All documents have to be sent to the SHO in the specified format. Given technical requirements and the size of electronic files, they may be sent by regular mail on CD-ROM / USB drive.

d. Analysis of intermediate offers

Analyze of intermediate offers is fundamental for preparing the upcoming candidates’ auditions.

This phase requires a good coordination of the evaluators, bringing all the necessary skills for this task (e.g. legal, financial, technical expertise...). The roles of evaluators should be clearly defined and the agenda established. A screening matrix should be defined in advance based on the elements required in the RFP, in order to easily and fairly compare proposals.

In addition, this phase allows to prepare questions for the candidates, as well as to define the agenda and organize the auditions.
e. Questions to candidates and invitations to the auditions
Candidates must be invited to the auditions by registered mail, in which the SHO’s Project Team shall specify the place, date, time, agenda for the audition and the equipment available to the candidates (e.g. overhead projector, laptop ...).

The invitation to auditions is also an occasion for the SHO’s Project Team to send to candidates the list of questions he formulated through the analysis of the preliminary proposals. The questions can serve as basis for the discussions during the auditions.

f. Auditions of the candidates
Each candidate shall be interviewed separately. The auditions aim at:

- on the one hand, specifying the SHO’s needs, and
- on the other hand, getting answers from the ESCOs to the questions sent in advance by the SHO, allowing ESCOs to clarify their proposals.

The initial presentation of his project by each candidate is fundamental. During the auditions, the SHO must be very careful not to be influenced by one particular idea or technical solution, trying to impose it to other candidates.

Industrial property litigation can arise if the elements from a proposal do not remain strictly confidential and are forwarded to other competitors. The SHO must compartmentalize the auditions with the greatest rigor and ensure the confidentiality of the proposals submitted by the candidates.

If some issues were raised during the first round of auditions, modifications to the functional program (as defined in the RFP) can be introduced, but only at the margin and under specific conditions.

g. Minutes of auditions and instructions for the following proposals
Following each audition, the SHO should write the minutes resuming the decisions that have been taken. Corresponding minutes should be sent to each candidate individually, who should sign them in return, if approved.

It is also possible for the SHO to clarify by mail some issues that were not clearly settled during the auditions or items that were requested during these meetings. These elements should not be part of the minutes of individual meetings but should be communicated in a transparent manner to all candidates, unless they are really specific to a solution proposed by a particular candidate.

h. Final proposals
A second or a third round of auditions may be conducted if there is need to refine issues discussed around the first proposals. It should not be particularly different from the first round in terms of methodology.

Following the auditions, a request for final proposal should be sent to all candidates. It is important to allow sufficient time for candidates to develop high quality final proposals.
Indeed, the candidates’ rating and the selection of the contractor can only be based on the final offers developed by candidates, and not on intermediate offers.

By carrying out an assessment against the evaluation criteria defined in the RFP, the SHO selects the candidate with the best proposal. In the case where final offers include options or alternatives (if allowed in the RFP), it is important to keep in mind that only the main part of the proposal, without options or alternatives, can be considered during proposals’ evaluation and comparison. Options or alternatives proposed by a candidate can be considered only if his main offer is the most advantageous.

5.2.5. Select the contractor

Once the best proposal has been identified, a letter of notification should be sent to the candidates who were not selected, indicating the financial compensation, if any, to be paid in order to cover the costs of the studies carried out by the candidate.

For a better understanding of the final evaluation decision, all letters should indicate the clear and objective reasons for rejection and, in particular, the rating of the candidate against the criteria established in the RFP.

A maximum delay must be established, during which unsuccessful candidates may appeal the negative decision of the SHO. Once this delay has been elapsed, the EPC can be signed between the SHO and the winning ESCO.

In practice, there are little chances for the contract to be ratified immediately after the selection of the winning ESCO, as both parties most probably will have to introduce small adjustments.

5.3. Phase 3: Implementation of the Contract

Once both parties have signed the EPC, they can proceed with its implementation.

5.3.1. Implement Energy Conservation Measures

With the detailed works specification and schedule in place, the ESCO proceeds with hiring sub-contractors, if necessary, and organizing the site for works under the project. All the construction phase must be coordinated with the SHO, to ensure its special requirements or restrictions are taken into account (planned shutdowns, critical periods of operation, holidays, vacations etc.). Indeed, the SHO should have clarified to the ESCO its needs regarding the timing of installation (e.g. whether the improvements need to be installed during a maintenance shutdown). During the implementation, it is the SHO’s responsibility to ensure that the ESCO respects the pre-established schedule and commitments, including the actual installation of equipment and the submission of documents and reports.

22 “Small adjustments” means modification of some details of the proposal at the margin, but it cannot mean modification of issues linked to the awarding criteria.
The SHO should ensure that any equipment delivered and installed does in fact match the specifications set out in the ESCO’s proposal. Not respecting such specifications can be a matter of contention between the SHO and the ESCO, where one of the parties has entered into the contract under false assumptions.

Commissioning is typically performed by the ESCO, but the participation of the SHO is strongly recommended as a way to improve the SHO’s understanding of the performance aspects of the project. Commissioning is not a static process but more likely a process of ‘fine-tuning’ until the Energy Conservation Measures (ECMs) deliver the expected energy savings, particularly when several ECMs are involved. As in the construction phase, the commissioning process should be well documented and scheduled according to the SHO’s requirements.

The commissioning process is an ideal opportunity for training the SHO’s operational staff on the details of each of the ECMs and SHO’s participation is therefore recommended.

5.3.2. Measure and Verify the energy savings

Once the project has been fully implemented, the M&V period begins.

As laid out in the EPC, both the SHO and the ESCO will be required to fulfill maintenance obligations. In addition to carrying out the maintenance, both parties are normally required to report on the maintenance that has been undertaken. This is done to assure the other party that all maintenance requirements are being complied with; hence, the maintenance issues should not cause lower than expected savings. Both parties must ensure that the staff is adequately trained to enable the expected energy savings to be achieved and, to avoid alienation, is fully informed as the project progresses. The SHO should ensure that the agreed maintenance schedules are being fulfilled by the ESCO, both in terms of frequency and of work content.

M&V of the energy savings is typically performed by the ESCO according to the terms laid out in the contract. The SHO should occasionally check, directly or by subcontracting an independent expertise, the methods used by the ESCO in producing M&V reports and monitoring the actual energy saving, in order to ensure it complies with the terms of the contract.

The savings reconciliation in the reporting process should identify if any payment has to be made to the SHO (penalty for ESCO: i.e. savings have fallen below the minimum guaranteed amount) or to the ESCO (bonus for ESCO: i.e. there are excess savings in subsequent years). Such savings reconciliation and associated payments would typically be performed on an annual basis.

As the M&V and maintenance tasks are being performed, especially during the first year or two of the contract, the ESCO will be constantly fine-tuning the savings from the ECMs in order to maximize energy savings and thus to reduce its risks. This task may include identifying ECMs that are not performing as planned, and introducing new ECMs to compensate the loss in savings. This continuous improvement is likely to identify new savings opportunities in the SHO’s premises and, from time-to-time, the ESCO might present these opportunities.

This last point is one of the main advantages of EPC compared to a traditional refurbishment operation. Indeed, an essential part of an EPC being the energy performance guarantee, the
ESCO should be left free to implement additional ECMs to those originally covered by the scope of works. These will normally be at the ESCO’s cost, and should be discussed and agreed with the SHO in advance.
6. Recommendations for up-scaling

6.1. Legal basis

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.

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

6.1.1. Need for operational definitions

The legal framework applicable to EPC is derived from both EU and 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 constitute a necessary condition in all operational definitions. However, it should not be

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23 This chapter is freely inspired from ORTEGA 2011 and AZAN 2010.
considered as a sufficient condition, given that at some point, any building refurbishment operation may integrate an environmental dimension.


A guarantee is understood classically as a mechanism that protects a person (the owner) against pecuniary loss. In an EPC, the guarantee is the **obligation for the ESCO to compensate the owner for the pecuniary loss endured**, 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, information that is often impossible to gather where tenants have direct contracts with energy suppliers.

- 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 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 ownership 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 6.2.2). 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 financer, 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).
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 6.2.3). 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 an 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 contracts, with their associated pros and cons.

Such operational definitions 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:

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**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 contracts, with their associated pros and cons.

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24 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).
6.1.2. 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 works exceeds the cumulative cost for services invoiced over the contract duration. Thus, the EPC qualification depends directly on the financing plan.

Public procurement code offers two possibilities to conclude an EPC: Public Private Partnership or public contract. 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 public contracts are impaired by the application of the rules that require a distinction between design, construction and operation and 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.

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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 SHOs 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 in order 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.
6.2. Market barriers

6.2.1. Current EPC offer on the market

According to the Joint Research Center\textsuperscript{26}, 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, still insufficient awareness of the specifics of the ESCO model and skepticism towards its 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\textsuperscript{®} impulse program\textsuperscript{27}.

6.2.2. 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.


\textsuperscript{27} The Thermoprofit\textsuperscript{®} network consists of energy services suppliers who commit themselves to the Thermoprofit\textsuperscript{®} 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\textsuperscript{®} issues. The Thermoprofit\textsuperscript{®} 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\textsuperscript{®} standards. This example has already spread to other regions as well. See [www.thermoprofit.at](http://www.thermoprofit.at).
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 where rents are already 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:

- 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 conventional 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 recouping energy savings from tenants raises political issues, the following recommendations should be considered. Beforehand, it should be emphasized that:

- Although 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.

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

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;
- extending the recoupment duration, to fit for example the Energy Performance Contract duration;
- 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.
- 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.

6.2.3. 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 essential 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 EPC;
- 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 8: Contractual links between SHO, tenant and ESCO**

Under these conditions, the ESCO may 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 in order to deal with this issue.

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 their energy consumption by getting 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”\(^29\): 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 global over-consumption should be redistributed equally among all dwellings.

\(^{29}\) i.e. potential energy savings partly being offset by a more intensive use of energy-driven products.
tenants, creating a virtuous system where the tenant who over-consumes will receive back only a small fraction (1 / 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 by the Fresh partner 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.

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 for 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 their 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.

**6.2.4. 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 dwelling 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.

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.

**Recommendation 11: Improve governance of the condominium 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.

### 6.3. Financing of operations

**6.3.1. 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 induces a clear preference for direct financing by SHOs compared to third-party financing. At the same time, the reduced debt capacity of SHOs slows down the possible large scale replication, while third-party financing would be a viable possibility to deal with large stock refurbishments.

Consequently, regulations should be adapted in order to enable EPC providers financing 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 that shouldn’t be lost through an EPC.
6.3.2. 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 risks. This feedback could contribute to lower the risk premiums that financial and insurance institutions 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.

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 14: Develop insurance mechanisms

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

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 IPMVP\(^{30}\) 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 15: 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.

### 6.3.3. 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 building 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 ESCO or financial institution that may borrow on the market at less favorable terms than the SHO, which makes EPC comparatively less interesting.

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. The ESCO would not be substituting the 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.

### 6.3.4. Possible use of Structural Fund in Eastern European countries

Consultations conducted by FRESH Bulgarian partner (BHA) with potential ESCOs concluded that the later 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, in order 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 that 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 challenge 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 allocated; 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.
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 SHOs 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 in order 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.
SYNTHESIS OF RECOMMENDATIONS

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.

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: 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 15: 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.
SYNTHESIS OF RECOMMENDATIONS

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.
7. Structuring an EPC offer to reach the factor 4

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.

7.1. 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 9). TPFOs would be endowed with the legal, financial and technical resources necessary to the implementation of EPCs.

Figure 9: Possible Scheme for Third Party Financing Operator.

Source: CDC 2010

31 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 reserved to a small number of large companies due to the size of investments.

7.2. 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.

7.2.1. 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 expected effectiveness, the overall contract profitability could be considered close to the one of a public bond.

Therefore, public entities (State, local authorities,...) seem to be relevant actors 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.

7.2.2. Different levels of ambition in an EPC portfolio

A TPFO could manage a portfolio of operations with variable ambition and profitability. Some EPCs 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 of its portfolio appears to be lower than 10 years (CDC 2010).
7.2.3. 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 (EIB), 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

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

JESSICA is a financial mechanism created in 2006 by the 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 in the dedicated urban development funds any returns/receipts generated from the investments made in urban development or return them to the managing authorities for reinvestment in other urban regeneration projects;
- Associate private capital.
JESSICA Funds could be used either as equity, debt or guarantee investment, which could be eventually combined.

**Figure 11: How JESSICA funds are channeled (EIB 2008)**

![Diagram showing how JESSICA funds are channeled](image)

Source: EIB 2008

Funding for EPC projects in Social Housing would probably be eligible to JESSICA 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.
8. **Concluding 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 to massively refurbish at very low energy standard the existing housing stock, and notably Social Housing stock.

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 with third-party financing: the business model is still largely to be defined in the social housing sector but the potential is huge.

FRESH project partners have worked out some of the legal, financial and technical framework for EPC in Social Housing and established pilot EPCs in their respective countries. Implementation handbooks including template contracts have been published and disseminated at national and EU levels.

The results of their work and further analysis can be found at the FRESH project website: [www.fresh-project.eu](http://www.fresh-project.eu)
REFERENCES


ANNEXES

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Annex 3: Competitive dialogue modalities .............................................................................. 78
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ANNEX 1: TEMPLATE CALL FOR EXPRESSION OF INTEREST (EOI)³²

PREAMBLE

As part of a commitment to saving energy, [SHO] is seeking Expressions Of Interest from parties to supply energy performance contract services. Interested organizations are invited to provide the information requested in this document.

Expressions of Interests must be lodged by 10 a.m. on the closing date of [date/month/year].

BACKGROUND

[SHO] is planning to negotiate an Energy Performance Contract (EPC) to [aim of the contract]. The purpose of this EOI is to identify interested and capable candidates to carry out an EPC for this assignment. It is anticipated that a maximum of three registrants will be short-listed based on evaluation of received EOI to develop a proposal for an EPC for [SHO].

Interested organizations have to be capable to supply the following as a ‘turnkey’ project across the facilities:

- carrying out detailed auditing;
- identifying energy saving opportunities;
- designing procuring and installing proposed changes;
- guaranteeing energy savings;
- monitoring and reporting results; and
- providing ongoing technical service and support, including staff training at all levels on energy efficient practices.

The work includes [details of work].

The major objective is to improve and maintain the existing functionality of the building while reducing energy and other operating costs.

REQUEST FOR PROPOSAL (RFP)

Following the evaluation of EOIs, [SHO] intends to prepare a RFP document reflecting its requirements. Once the RFP is completed, [SHO] will invite proposals to be submitted in accordance with the RFP.

Short listed organizations will be invited to submit an offer under the RFP.

ENQUIRIES

All enquiries in relation to this Expression of Interest must be directed to [name and contact details].

³² This annex is freely inspired by AEPCA 2000.
ABSENCE OF LEGAL OBLIGATION AND CONFIDENTIALITY

In inviting or receiving EOIs, [SHO] makes no representations, neither it intends to create any legal relationship with potential parties that choose to respond to the invitation. No part of the EOI shall be deemed confidential unless [SHO] and the potential registrant agree in writing. [SHO] has no obligation of liability to selected registrants if it decides not to proceed with the proposal.

EVALUATION CRITERIA

All EOIs will be evaluated in accordance with the criteria set out below. The criteria are not listed in any special order and may not be accorded equal weight. Some criteria may be regarded as mandatory for the purpose of registration (as suggested below). Non-compliance with a mandatory requirement may lead the corresponding registrant to not being further evaluated.

The criteria are:

- Essential prerequisites:
  - past experience with energy performance contracting;
  - performance contracting ability of the staff involved;
  - ability to identify running cost savings and efficiencies other than energy;

- Supporting factors:
  - method of monitoring energy savings;
  - approach to a performance guarantee; and
  - ability to provide ongoing support, service and training.

- Registrant’s details.

Registrants should note that [SHO] may engage the services of external organizations/experts for assistance in the evaluation of responses.

EXPERIENCE AND CAPABILITIES

Previous projects

Registrants are invited to provide details of experience in similar projects within the past five (5) years.

Details should include:

- description and value of projects;
- name of client and contact person for enquiries, including telephone number;
- corporate occupational health and safety management system;
- quality management system;
- staffing details, including support services and training;
- ability to identify running costs, savings and efficiencies;
- proposed methodology for the monitoring of energy savings; and
- demonstrated ability to implement comprehensive energy saving opportunities across a range of services, if required.

Other relevant experience

Registrants are invited to provide details of any area in which they have particular experience and expertise that may be of special relevance to this EOI.
ANNEX 2: TEMPLATE EOI EVALUATION TABLE

The purpose of this document is to set out an evaluation method to pre-select three (or more) energy performance contractors for entering the competitive dialogue procedure.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Maximum points</th>
<th>Actual points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understanding of the project’s requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understanding of the issues related to energy refurbishment in Social Housing</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Presentation of the work approach</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>Ability to implement EPC</strong></td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Ability to implement energy conservation measures on the building envelope</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Ability to implement energy conservation measures on the energy production and regulation systems</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Ability to operate the energy production and regulation systems, provide support and continuous services</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Ability to measure and verify energy savings</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Ability to provide Third-Party Financing solutions</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Financial stability and capacity to fulfill long-term commitments</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td><strong>Specific experience with EPC</strong></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Concrete previous EPC experience (projects)</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Members of the team have already implemented EPC</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
**ANNEX 3: COMPETITIVE DIALOGUE MODALITIES**

**PUBLICATION MODALITIES**

The Energy Performance Contract raises a first difficulty in its qualification as a work or services contract: 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. The only way to answer this question is to determine if the project involves a larger share of work or services in order to conclude on the nature of the contract.

**CONTENTS**

Two possibilities are available:

- Only one tender regulation is established and it rules the expression of interest and the competitive dialogue; or
- Two tender regulations are established, the first one defining the rules for the Expression Of Interest and the second one dealing with the competitive dialogue.

The second method presents the advantage that the call for EOI can be emitted even before all subsequent documents have been finalized.

In all cases, the tender regulation shall indicate if a financial compensation will be given to unsuccessful candidates in the competitive dialogue. Such payment should be substantial considering the work that must be provided by candidates in order to prepare good quality offers. Indeed, companies may not take the risk to participate in the competitive dialogue if after several months of work they do not even receive a compensation for their studies.

**RULES OF THE COMPETITIVE DIALOGUE**

The rules for a competitive dialogue should be established once all technical and legal diagnoses are made.

The essential point is the schedule of the competitive dialogue. Two positions must be reconciled: the SHO’s position who wants a rapid procedure for assigning as soon as possible the project and the candidates’ position, who requires a sufficient delay to prepare interesting offers without neglecting some of the issues.

Three particularly important points of discussion should be treated with the utmost attention:

- The contract awarding criteria;
- The definition of the tangible and intangible terms;
- The competitive dialogue procedure, especially during the auditions phase.

---

33 This annex is freely inspired by ICF, 2011.
Criteria for awarding the contract

It is difficult to propose awarding criteria that are valid for any possible EPC. Indeed, those criteria highly depend on the objectives of the SHO: does the EPC include work on the building envelope? Does it target only systems? Does it include third-party financing? Is integration of renewable energy a criteria for awarding the contract?

However, it seems normal that most of the criteria rely on the level of energy efficiency, the level of greenhouse gases emissions reduction or the cost for the SHO. For example, if the project involves elements of conventional refurbishment, it should not take precedence over the energy refurbishment.

Similarly, the EPC results in a guaranteed energy performance to be monitored over time: as a result, part of the awarding criteria should be based on the proposed operation and maintenance plan.

Indeed, one must keep in mind that if the EPC can present an important part of work, it is nonetheless a particularly rigorous maintenance contract as the energy performance is insured over a long period.

In all cases, it is necessary to establish weighted criteria, which are themselves divided into weighted sub-criteria. The table below shows an example of possible criteria:

Table 1: Example of criteria for awarding the contract

<table>
<thead>
<tr>
<th></th>
<th>Energy and technical performances</th>
<th></th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Level of energy savings and monetary savings</td>
<td></td>
<td>Maintenance and renewal plan</td>
</tr>
<tr>
<td></td>
<td>(%)</td>
<td>---</td>
<td>(%)</td>
</tr>
<tr>
<td>1.1</td>
<td></td>
<td></td>
<td>Compliance with the functional program</td>
</tr>
<tr>
<td>1.2</td>
<td>Level of GHG emissions reductions</td>
<td></td>
<td>(%)</td>
</tr>
<tr>
<td>1.3</td>
<td>Compliance with the functional program</td>
<td></td>
<td>Guarantees and Insurances</td>
</tr>
<tr>
<td>1.4</td>
<td>Quality of refurbishment services</td>
<td></td>
<td>(%)</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>---</td>
<td>Performance Guarantee</td>
</tr>
<tr>
<td></td>
<td>(%)</td>
<td></td>
<td>(%)</td>
</tr>
<tr>
<td></td>
<td>PARTY</td>
<td>---</td>
<td>Part of savings shared with the SHO</td>
</tr>
<tr>
<td></td>
<td>(%)</td>
<td></td>
<td>(%)</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>---</td>
<td>(%)</td>
</tr>
<tr>
<td></td>
<td>(%)</td>
<td>---</td>
<td>(%)</td>
</tr>
</tbody>
</table>
### Prices

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>-- (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Cost of the energy refurbishment</td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Cost of the third-party financing</td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Cost of the non-energy refurbishment</td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>Cost of operation and maintenance</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Design / Implementation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>-- (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Project organization</td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Compliance with the functional program</td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Schedule</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Definition of the non-negotiable terms**

The competitive dialogue is a process elaborated to determine the means to implement in order to achieve the desired objective. However, the competitive dialogue does not allow candidates to negotiate all elements of the proposed project, and the SHO must list the intangibles terms that will not be discussed.

It is therefore important to define beforehand the points that will not be negotiated but without defining too many of them, which could block the candidates in their proposals and even lower the interest for the competitive dialogue procedure.

**Dialogue process**

The competitive dialogue regulation should stipulate that the competitive dialogue with the candidates will start with the sending of a registered letter to each preselected candidate, in order to invite them to negotiations.

**Site visit**

The competitive dialogue must comprise at least one site visit for each candidate, during which they can ask any question they deem necessary.

It is essential to ensure that candidates do not meet and establish contacts during these visits. Attendance to the visits should be registered by getting each candidate's representative to sign a presence letter. Additional visits may be organized if necessary.
Questions from the candidates

The SHO shall foresee in the project planning two periods during which the candidates are free to ask questions. One series of questions could be sent following the site visit and before the first round of dialogue, and a second after the first round, for clarification of the remarks that could have been made during the first phase.

Organization of the dialogue phase

The SHO should decide in advance the minimum number of rounds he intends to apply for the dialogue.

First proposals from candidates should be sent to the SHO under the same format that the one for a final offer. Once the proposal has been submitted, the candidate is invited to discuss by registered letter with acknowledgment of receipt.

Duration of one day for one candidate’s audition seems appropriate. Indeed, the duration must be sufficient to be valuable, but not too long in order to remain constructive. Minutes of the audition should be sent for approval by the SHO to the candidate within the following day.

The whole process could be repeated as many times as necessary before the submission of a final and definite offer, but the number of rounds must be indicated in the competitive dialogue regulation. Therefore, if determination of the planning can be seen as a formality, the practice proves the contrary. It can be particularly difficult in case the SHO does not have a good knowledge of his project, allowing estimation of the time needed for companies to present interesting offers.

FROM INITIAL REQUEST FOR PROPOSALS TO FINALIZED CONTRACT

This section outlines the key points of some of the documents to be produced to prepare an EPC. Between issuing the initial request for proposals and signing the EPC, the status and content of documents is evolving. The diagram below shows the content of the initial documents and the final contract. The column on the left shows the documents that should be issued in the RFP and made available to all candidates. Those basis documents will be discussed and reviewed to be converted in the final stage into the documents presented on the right column, as annexes to the finalized contract.

The competitive dialogue procedure differs from a classical tender procedure. In this type of procedure the means to achieve the needs of the SHO are not defined which results in modifications in the typical tender package.

Consequently, the RFP package consists of the following:

- Rules for the competitive dialogue
- Functional program and its annexes (description of the sites)
- A draft contract to be negotiated
- A preformatted framework for the answer (tables allowing energy analysis, financial analysis, etc...)
The draft contract and the functional program will be changed during the dialogue and negotiations. The preformatted offer framework is a table allowing the presentation of the final offer.

In formulating their offer, candidates must produce a document called "offer" that will incorporate the intangibles terms and their proposal. The offer will therefore be composed of:

- A technical offer (functional program whose intangible terms remain unchanged but containing the proposals of the candidate)
- A legal offer (draft contract whose intangibles terms remains unchanged but containing the proposals of the candidate)
- The offer framework completed

Candidates must therefore perform an exercise where they must be creative while respecting some mandatory constraints. All these documents will form the final offer presented by candidates to the SHO for assessment against the criteria set in the RFP package.

![Figure 12: Evolution of documents between the RFP and the finalized contract](image)
## ANNEX 4: TEMPLATE CALENDAR FOR EPC IMPLEMENTATION

<table>
<thead>
<tr>
<th>N°</th>
<th>Step</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization of internal expertise and constitution of the project team</td>
<td>Variable</td>
</tr>
<tr>
<td>2</td>
<td>Selection of required external expertise</td>
<td>Variable</td>
</tr>
<tr>
<td>3</td>
<td>Preliminary diagnoses</td>
<td>Variable</td>
</tr>
<tr>
<td>4</td>
<td>Redaction of the call for Expression Of Interest</td>
<td>1 week</td>
</tr>
<tr>
<td>5</td>
<td>Publication of the call for Expression Of Interest</td>
<td>Variable (possible legal delay)</td>
</tr>
<tr>
<td>6</td>
<td>Redaction of the rules and specifications for the competitive dialogue</td>
<td>2 weeks</td>
</tr>
<tr>
<td>7</td>
<td>Selection of the candidates</td>
<td>3 weeks</td>
</tr>
<tr>
<td>8</td>
<td>Issuance of the rules and specifications for the competitive dialogue</td>
<td>Along with the notification to selected candidates for the competitive dialogue</td>
</tr>
<tr>
<td>9</td>
<td>Site visits</td>
<td>To be defined</td>
</tr>
<tr>
<td>10</td>
<td>First period for questions by the candidates</td>
<td>To be defined</td>
</tr>
<tr>
<td>11</td>
<td>Submission of first proposals</td>
<td>Reserve at least 3 months after publication of the rules and specifications for the competitive dialogue</td>
</tr>
<tr>
<td>12</td>
<td>Analysis of the offers</td>
<td>2 to 4 weeks</td>
</tr>
<tr>
<td>13</td>
<td>Questions from SHO to the candidates in preparation for the auditions</td>
<td>2 weeks before auditions</td>
</tr>
<tr>
<td>14</td>
<td>First auditions of the candidates</td>
<td>To be defined</td>
</tr>
<tr>
<td>15</td>
<td>Submission of second proposals</td>
<td>To be defined</td>
</tr>
<tr>
<td>16</td>
<td>Analysis of the offers</td>
<td>2 to 4 weeks</td>
</tr>
<tr>
<td>17</td>
<td>Questions from SHO to the candidates in preparation for the auditions</td>
<td>2 weeks before auditions</td>
</tr>
<tr>
<td>18</td>
<td>Second auditions of the candidates</td>
<td>To be defined</td>
</tr>
<tr>
<td>19</td>
<td>Invitation to submit final offers</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Submission of final offers</td>
<td>To be defined (possible legal delay after</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sending the invitation to submit final offers)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>21</strong></td>
<td>Tender commission: opening of the proposals</td>
<td>1 day</td>
</tr>
<tr>
<td><strong>22</strong></td>
<td>Analysis of the final offers</td>
<td>1 month</td>
</tr>
<tr>
<td><strong>23</strong></td>
<td>Tender commission: selection of the contractor</td>
<td>1 day</td>
</tr>
<tr>
<td><strong>24</strong></td>
<td>Official rejection letter to unselected candidates</td>
<td>Consider delay for distribution of the letter</td>
</tr>
<tr>
<td><strong>25</strong></td>
<td>Delay for appeal</td>
<td>Consider legal delay after reception of the official rejection letter; this time can be used for contract adjustments</td>
</tr>
<tr>
<td><strong>26</strong></td>
<td>Final notification and signature of the contract</td>
<td>After all delay for appeal are past</td>
</tr>
</tbody>
</table>