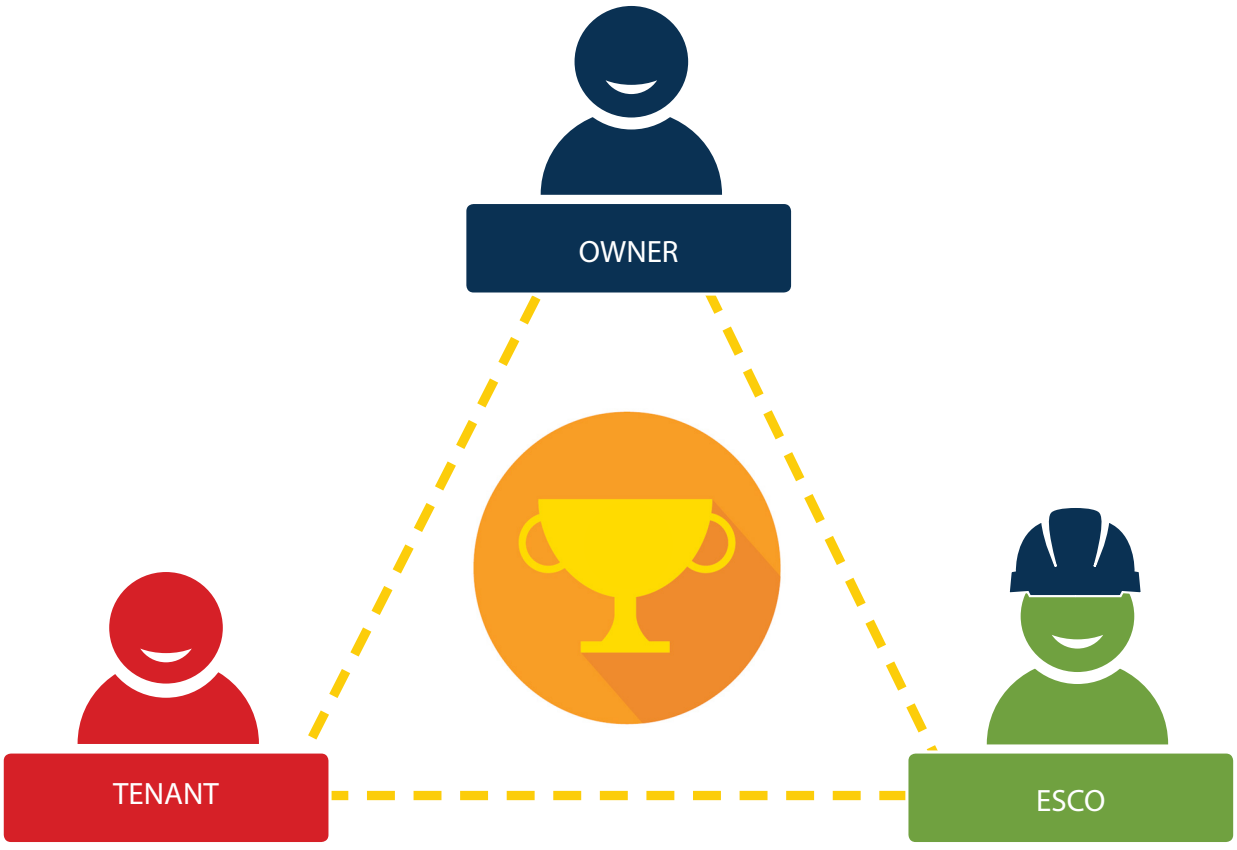
guarantEE
Building Energy Services in Europe

Energy Performance Contracting

Triple-Win-Solutions
for the Split-Incentive-Dilemma



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Content

The Split Incentives Dilemma

The split incentivews dilemma may be the single most significant challenge to the economisation of energy efficiency projects worldwide. The problem, that benefits of energy saving investments (usually done by the building owner) are not enjoyed by the owner but the user, results in a severe modernisation backlog. This problem is not only restricted to rented residential or commercial premises. It also occurs within private and especially public administrations, where energy efficiency investments (capex) and the resulting savings of operational expenses (opex) are often divided organisationally. Consequently, necessary and economic investments are not undertaken, purely because the investing department or budget is not benefitting from the savings.

When energy service models such as EPC are used, significant parts of the benefits have to be made available to the investing ESCO. This is challenging in almost all contexts where the building owner is not the user. To overcome this dilemma, solutions giving all 3 parties (owner, user/tenant and ESCO) a fair share of the costs and benefits (triple-win approach) are required.

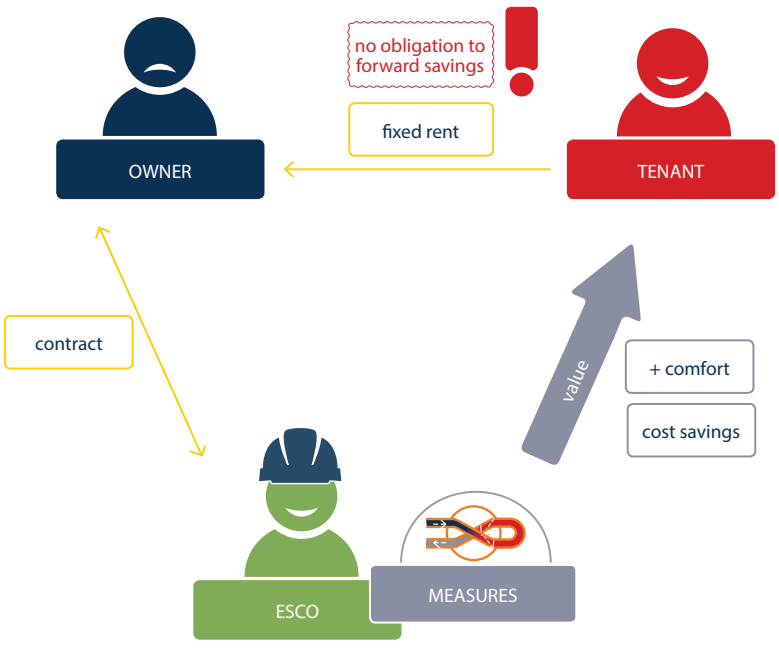
To implement this, a contractual framework between the three parties has to be established. While generally such a framework is achievable, the expected high transaction costs of such a set-up so far prevented any significant progress in the past years. An important factor in this is that traditionally the owner (landlord) and user (tenant) do not share the same interest. So bridging this gap and initiating a cooperation project in an atmosphere of mistrust can be a highly difficult task.

Indeed, the conflict is the following:

- The owner wants to maximize his profit by minimizing his costs, e.g. by avoiding the cost of an ESCO, especially when savings will take effect on other parties accounts.

- The tenant wants to maximise his profit by reducing his energy and maintenance cost, thus by engaging an ESCO.

Thus, although value (i.e. cost savings, increased comfort, increases asset value) could be created for the owner and the tenant together, this does not happen due to different interests/objectives of owner and tenant. Innovative contracting procedures are necessary to solve this conflict.



Triple-Win-Solutions

If an EPC-project is developed for a client, who is owner and user of a facility, it is considerably easy to visualize the added value in all respects (energy savings, additional asset value, improved comfort etc.), because their exact assessment in terms of hard numbers is not that crucial. If the owner regards the benefits as interesting enough to engage in an EPC with the ESCO, this is sufficient.

When a third party is involved, because owner and user/tenant are not in personal union, the rating of the newly generated values (and also losses) becomes highly relevant to distribute cash flows, investment shares and risks between the involved parties.

Moreover, it is necessary to bring all three parties on board. In case there is no obligation for certain partners to agree on a contract, there must be an attainable benefit for them. The 3 parties are:

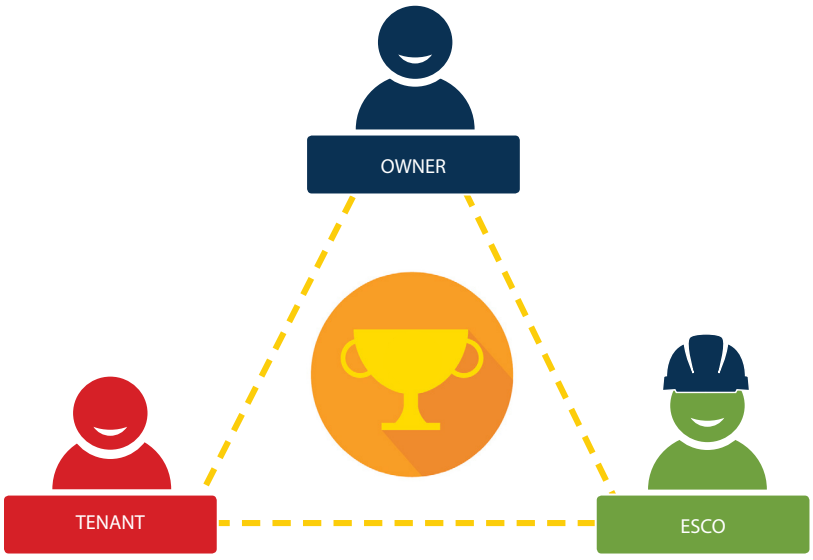
- The owner of a facility;
- The tenant/user of a facility;
- The ESCO performing the energy saving measures (ESM).

Generally it is advisable to look for solutions that generate benefits for all involved parties. The question is how benefit is defined – it doesn't always have to be money. This concept is described on the next page.

If convincing all 3 involved parties should prove not to be possible, it is necessary to aim for solutions avoiding to include the third party in the contractual frameworks, while still aiming to keep as many potential negative side-effects away from this party. To achieve this, there are essentially two available variants:

1. **Bilateral agreement between owner and ESCO**, e.g. through all-inclusive-rents with guaranteed comfort-conditions, supported through technical appliances for their monitoring and management.
2. **Bilateral agreement between tenant and ESCO**, e.g. by billing the energy efficiency investments directly to the tenant, e.g. through on-bill-financing within an energy-supply-contract.

As EPC markets in the Europe have very different framework conditions, the various cases and according solutions are presented in a general way.



Case 1: Owner and tenant concluding an EPC-contract with an ESCo

Applicable for:

- public entities in rented facilities
- commercial properties
- residential sector (optionally)

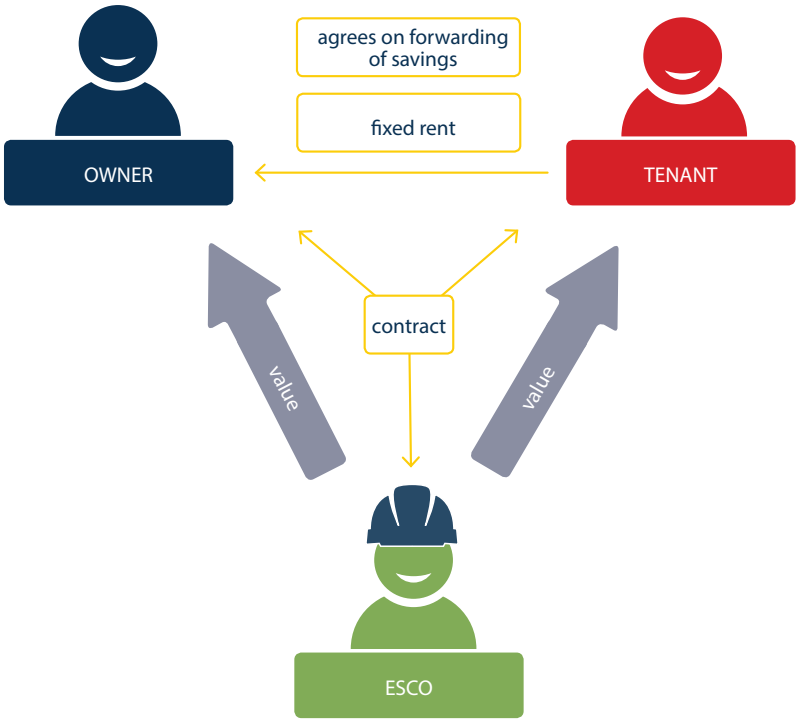
Idea: This would be called the ideal solution for optimizing project results as needs of both the owner and the tenant can be addressed concretely. The main pre-condition is that owner and tenant can achieve a general agreement of the need to address certain technical measures in the building. Moreover a common understanding that a fair sharing of costs and benefits is required to make them happen.

More concretely, the following aspects play an important role:

- Agreement between both parties, that significant energy cost saving potentials exist in the building, possibly (but not necessarily) with rather short payback period.
- While the owner sees the modernisation potential, he is not ready to invest as it is difficult for him to re-finance the investment (e.g. by raising the rent).
- The tenant understands that he must contribute financially to the implementation of the measures (as he would strongly benefit from the energy savings), but he would like to have the energy savings guaranteed, so that his warm rent will not be increased. Moreover most energy conservation measures would also lead to immediate increased comfort – a fact that the tenant only can enjoy.
- Both partners are ready to involve a private ESCO to pre-finance the measures and guarantee for a certain level of energy savings.
- Optionally: Both partners are ready to involve an EPC facilitator to assist them in the project development, procurement and possibly also in moderating conflicts (e.g. with the ESCO).

Factors to be considered are:

Benefits for the owner:	Benefits for the tenant :
Corrective maintenance for / replacement of old appliances (can be expressed in €).	Cost savings from reduced energy consumption (€).
Cost Savings on maintenance and repair (can be expressed in €).	Improved productivity (through reduced illness, less overheating in summer, etc.)
Increased building value (possibly with an improved Energy Performance Certificate), which can be (potentially) realized (in €) in new rental contracts or in increased mortgages.	Stable/improved comfort conditions, (non-monetary) (this is only a strong argument, if the baseline comfort conditions are not regarded as sufficient).
Optionally: energy cost savings in common areas (e.g. staircases, cellars, connecting corridors in shopping malls).	It is possible to add also not energy related building improvements.
Public image.	Availability of periodic and real time data and benchmarks on consumptions/costs, comfort, etc.



In this case the rights and duties have to be distributed between the partners in a transparent and fair way. Effectively it is a re-distribution of cash flows and risks, including the question who may enjoy bonuses in case of over-performance.

It is advisable to hire a facilitator for this process to find a fair balance for all parties, considering the benefits listed below.

He must prepare the project involving both user and owner, support the choice of a well-qualified ESCO and control the achievement of the guaranteed savings. The preferred solution is that the project facilitator is hired and paid by owner AND tenant. This way it can be ensured that the facilitator is impartial between owner and tenant[1].

Pros and cons:

PROs	CONs
Common intention on both sides to go for the project avoids upfront problems.	Rare situation that both sides want to become active.
Legal barriers can be overcome easier with both-sided commitment.	Project is unlikely if tensions / mistrust exists between owner and tenant.
Support of experienced facilitator increases chances for success.	High number of tenants makes communication complicate.
	Individual situations impede standardisation of process and documents.

[1] If a combined awarding of one project facilitator is not possible, the two parties could also hire an EPC-consultant each seperately. Although this approach would raise the transaction costs slightly, it could improve trust in the project and its performance.

Case 2: Owner concluding an EPC contract

Bilateral agreements between owner and ESCO are very promising for solutions of the split-incentives-dilemma as in most cases this type of client owns a facility long enough to have a re-financing of the implemented measures. On the other hand the re-financing sources out of energy savings must be made available to the financing entity instead of producing immediate budget relief for a third party (i.e. a tenant).

Case 2a: EPC-contract with forwarding of savings

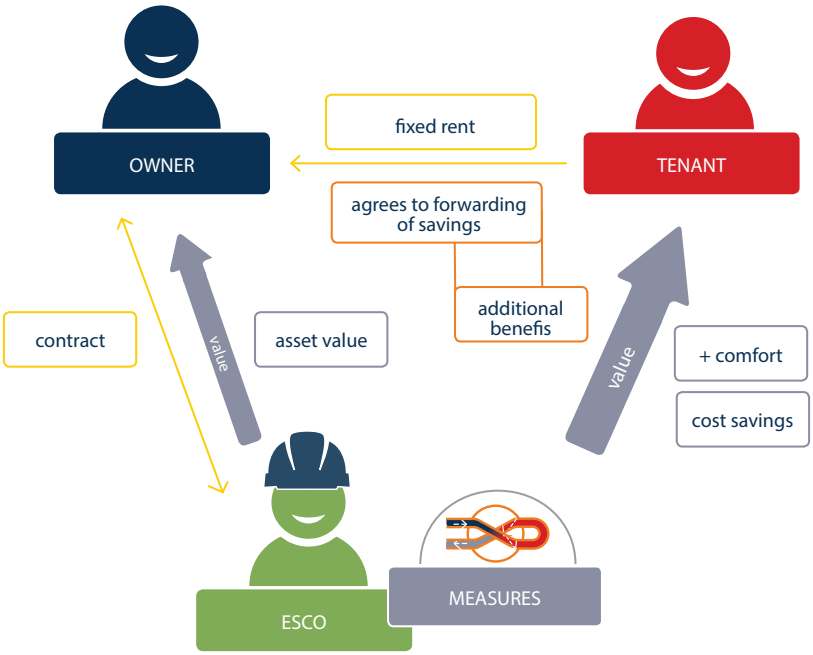
Applicable for:

- residential buildings
- commercial office buildings

Idea: In a regular owner-tenant-contract, in which the tenants pay the energy bills in relation to their consumption, it is necessary to find an agreement between owner and tenants, that forwards the achieved (or guaranteed) savings to the owner (or the ESCO, if the financing is provided by him). This is the case, if a legislative obligation to forward those savings does not exist (or seems unrealistic and too complicate to achieve).

For reaching such an agreement it is necessary to offer a significant advantage to the tenant. While the cost-savings should be largely used for the re-financing of the investment, it will be necessary to find packaged benefits that include energy efficiency AND other benefits (also known as multiple benefits), e.g.:

- Photovoltaics and green electricity for the tenant;
- Green facades;
- Improved lighting-conditions, fresh air, reduced noise (only applicable, if the conditions were not according to standard);
- Smart technologies (e.g. smart heating controls);
- New/additional balconies or shading devices;
- Making available attractive public funding / financing options.



Pros and cons:

PROs	CONs
Increasing asset value.	Additional investment cannot be re-financed through energy savings only.
Marketing value for both parties (e.g. for shops).	Project is unlikely if tensions / mistrust exists between owner and tenant.
Cases of new rental contracts make establishment easier (e.g. after complete refurbishment).	Individual confirmations with tenants necessary – the more tenants the more effort and risk, that some are reluctant to sign.
Support of experienced facilitator increases chances for success.	

Best practice: This concept has been practiced in a pilot project with a private housing association in Berlin. Berlin Energy Agency acts as an ESCO guaranteeing an increased efficiency due to improved operation of the largest residential solar thermal plant in Berlin and the heating system leading to fuel cost savings.

Case 2b: EPC-contract on own accounts of the owner

Applicable for:

- residential buildings
- commercial office buildings

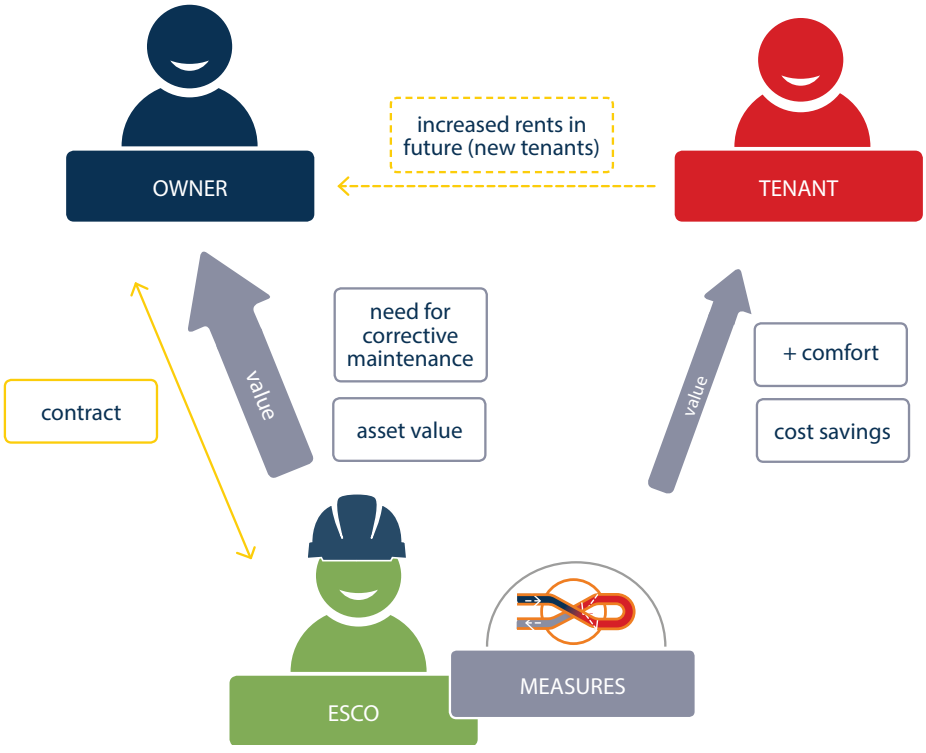
Idea: If it is not possible to convince the tenant about the advantages of an EPC-project, the owner can still seek to perform the project on his own accounts, accepting that immediate financing through (forwarded) savings cannot or only partly be realized. The factors to be considered are:

1. Use of accrual for corrective maintenance, that would be necessary anyway;
2. Reduced costs for repairs, operation and maintenance (to be forwarded to the ESCO);
3. Savings of energy costs of common areas (e.g. staircases, cellars, connecting corridors in shopping malls);
4. Increase of asset value (potentially higher rents; higher mortgages).

It is important to stress that in terms of the portfolio management the increase of the asset value can only be realized if there is a change of tenants (depending on the average tenants fluctuation of the facility) or if the asset is sold.

Such a project may only be realistic, if one or more of the following conditions apply:

1. There is a significant need for corrective maintenance (i.e. façade, boiler, ventilation system, heat distribution system,etc.).
2. The tenants fluctuation rate to be expected is significant (to realize the increased asset value).



For newly closed tenancy agreements the owner has two possibilities to adapt to the increased asset value:

1. The rental agreement can be switched to an all-inclusive-agreement with a flat rate for energy (or at least partly, excluding only electricity). The owner is thus incentivised to go for further energy efficiency improvements, because all additional savings achieved reduce his energy bills immediately. For following this strategy, the owner is recommended to closely check the respective member state's regulation whether it allows for this.
2. The rent can be increased in relation to the decreased running costs (no increase in the warm rent) while keeping the same overall costs for future tenants. The rent could also be increased beyond this level, if the infrastructure and/or the comfort conditions have been improved through the EPC-project. This possibility works in any case and the effort for it is low, but future energy-efficiency-measures again can only be realized on own accounts of the owner.

Pros and cons:

PROs	CONs
Direct commitment of tenants is not necessary .	Profitability more difficult to achieve.
Legal barriers can be overcome easier with both-sided commitment.	All-inclusive rents may increase the rebound effect on the tenants' side.

Case 2c: Sequential improvement of quarters

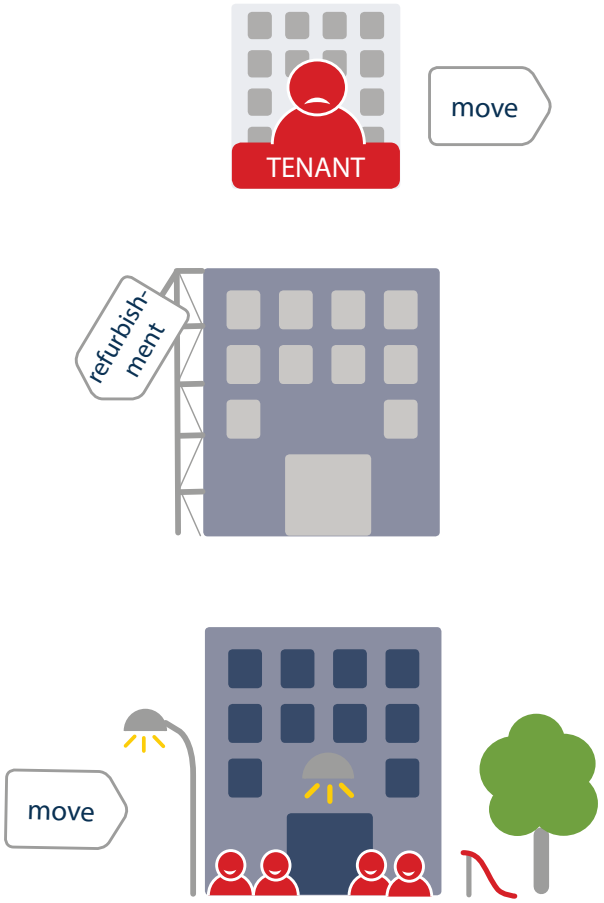
Applicable for: social housing (large quarters):

- heat deep retrofit
- heating
- ventilation
- air conditioning (HVAC)
- domestic hot water (DHW)

Idea: For the re-financing of investments through immediately increased rents there is also the possibility to implement measures only in case of vacancies. This would of course be complex, when the vacancies in one building just occur occasionally and exclude measures that can only be implemente d for the whole facility (i.e. heat distribution system).

In certain cases the status of complete vacancies can be provoked as it has already been practiced in the social housing sector with large quartiers in constellations of pro-active portfolio management.

One building is freed from all inhabitants, renovated and rented out anew to new tenants on a higher rate. As this is only possible if the owner has the means to shift and motivate the original tenants to another building, which could be a new or newly renovated building that features more comfort than the to-be-renovated building. This approach works well for large quarters (i.e. social housing).



Pros and cons:

PROs	CONs
Immediate re-financing through increased rent.	Possibility to shift tenants between buildings might be rare.
Combination with comprehensive refurbishment.	Needs a long-term programme.

Best practice: This concept has already been practiced, e.g. in the case of the residential neighbourhooed „Karlsruhe-Rintheim“, Germany. 45 buildings including 1,308 flats on 87,000m^2 living area were refurbished successively from 2008-2015. Around 3,000 tenants were concerned by the refurbishment.

Further information: „Integrales Quartiers-Energiekonzept Karlsruhe-Rintheim“, R. Jank, R. Kuklinski Fraunhofer IRB Verlag, Stuttgart (2015)

Case 2d: All-inclusive-rent already in place

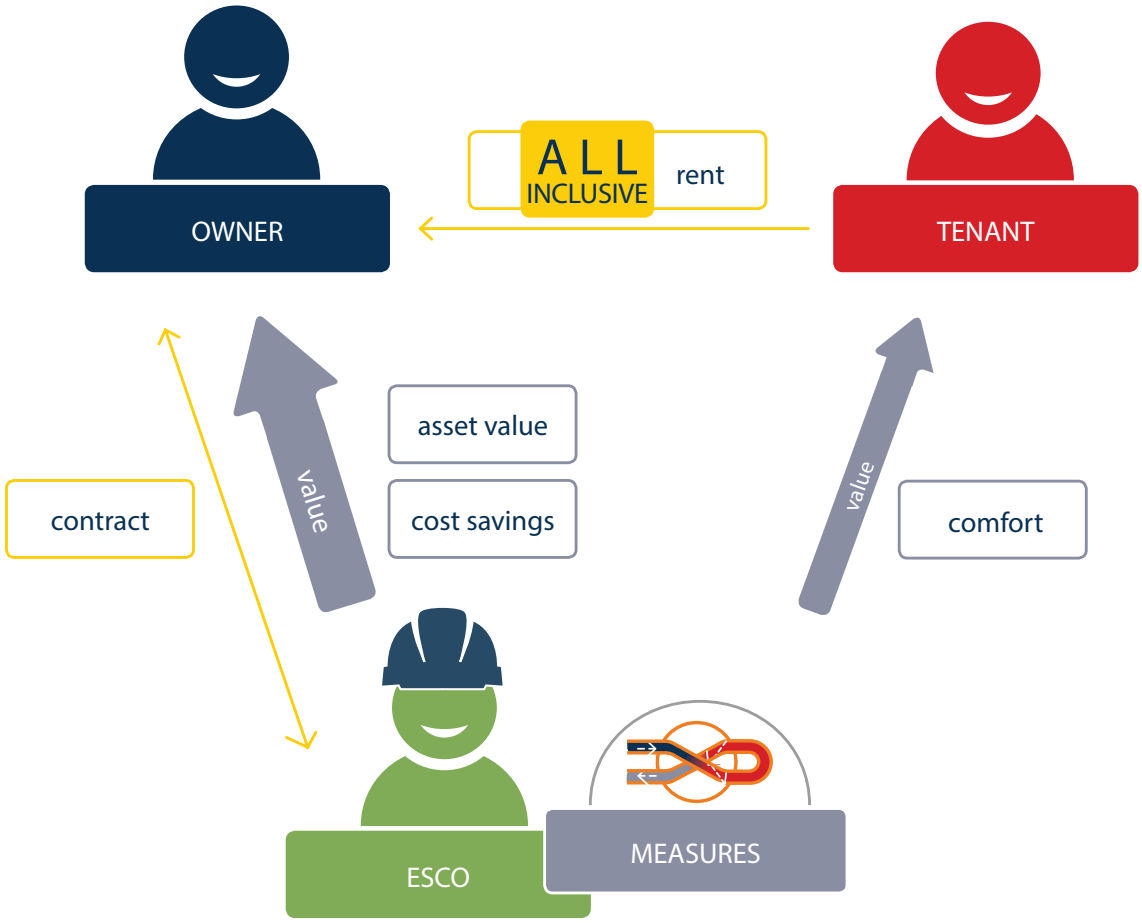
Applicable for:

- student homes
- elderly homes
- shopping centres
- commercial office buildings
- nearly-zero-energy-buildings

Idea: There are certain sectors, that allow all-inclusive-rents (including flat rates e.g. for heating and DHW). Those agreements normally/sometimes include implicitly clauses that guarantee certain comfort conditions for room temperature, humidity, etc.

Under these preconditions all achieved savings (while the comfort parameters are still achieved) are leading immediately to energy cost savings for the benefit of the building owner and can therefore be used for the refinancing of the energy-efficiency-investment.

To ensure that the energy saving effects are not foiled by improper use (e.g. ventilation) causing so-called rebound effects, the use of technical appliances (e.g. room temperature sensors, window sensors, smart heating controls) should be considered. In parallel, those sensors can be used to document the regular reaching of the agreed comfort conditions.



Pros and cons:

PROs	CONs
Owner profits immediately from savings.	Only applicable for certain customer groups.
No additional consent by tenant necessary.	
Almost identical to standard EPC in public buildings.	

Case 3: Tenant's intention for an EPC-contract

Case 3a: EPC contract with owner's consent

Applicable for:

- ► departments in public organisations
- ► sale-and-lease-back objects
- ► long-term rental agreements

Idea: In most rental agreements the tenant pays the energy costs proportionally to the real energy consumption. This is standard for electricity and mostly standard for space heating. Therefore the tenant has a direct motivation to improve the energy performance in his premises. On the other hand for many tenants there is the risk, that in case of an early termination of the rental agreement (before the payback of the measures is reached) the investment into energy-efficiency is simply not profitable. So this approach is only realistic, if either the tenant intends to use the facility longer than the aspired contracting period. Or possibly also if the energy saving technology comes along with other benefits he would like to enjoy (e.g. smart home features).

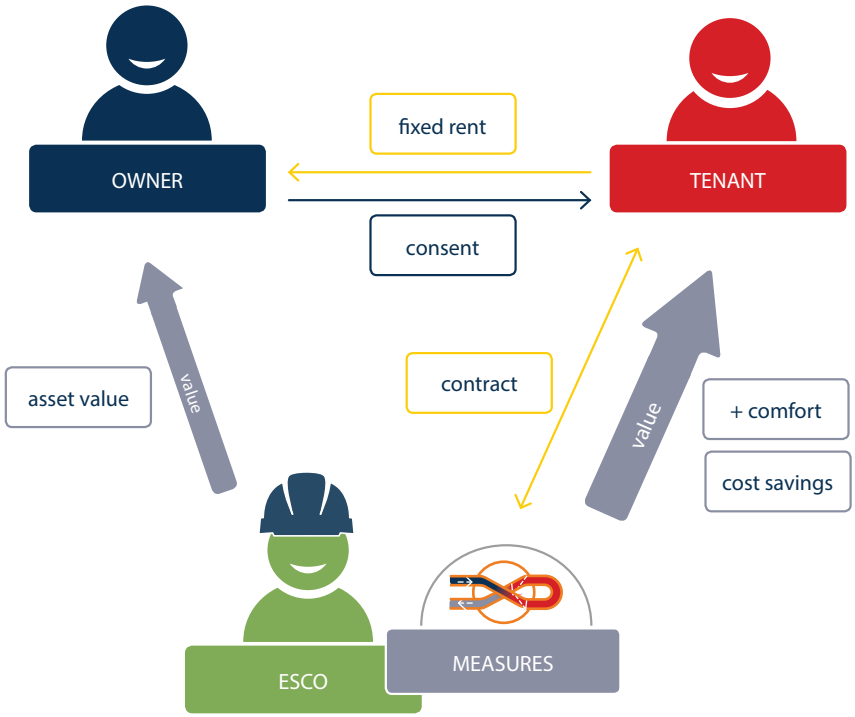
In this case the owner only has to agree, that measures in the framework of an EPC-contract can be implemented. If this consent is not possible, the range of measures is limited to those that are reversible when the tenant moves out.

Certain topics have to be considered for this solution:

- ► If there is a potential/risk that the tenant will rent the facility shorter than the EPC's duration, the owner would have to agree that in case of termination of the rental agreement he must either step into the EPC contract instead of the tenant or pay a residual value to the tenant. In the first case the contract must foresee a possibility to transfer the contract on the client's side to another entity, in the latter case the EPC-contract must give the opportunity to be "terminated for convenience".
- ► The maximum payback also has to be oriented onto the expected rental period. Otherwise, the investment would not be economic for the tenant, except that other benefits resulting out of the measures make the investment reasonable. Those multiple benefits could be:
  - Security of supply, load management (capacity limits of lines)
  - Public image and marketing, sustainability reports, CSR, GHG emissions, local emissions
  - Health and well-being
  - Productivity and employment

Pros and cons:

PROs	CONs
Contractual client profits immediately from savings.	Risk of earlier termination of the rental agreement.
Contractual client and user are in personal union, thereby the motivation for proper user behaviour already exists.	Financing can be difficult due to lack of securities.
	Consent of owner necessary.



Best practice: An example for such a case is the project Aquanova Wiener Neustadt in Austria, an indoor swimming pool. The owner of the building is a lessor, while the municipality rents the building on long-term. The owner had to agree to the project in general, but had no further obligations. Nowadays, the public authority of Wiener Neustadt saves 214,000,- € of energy cost per year.

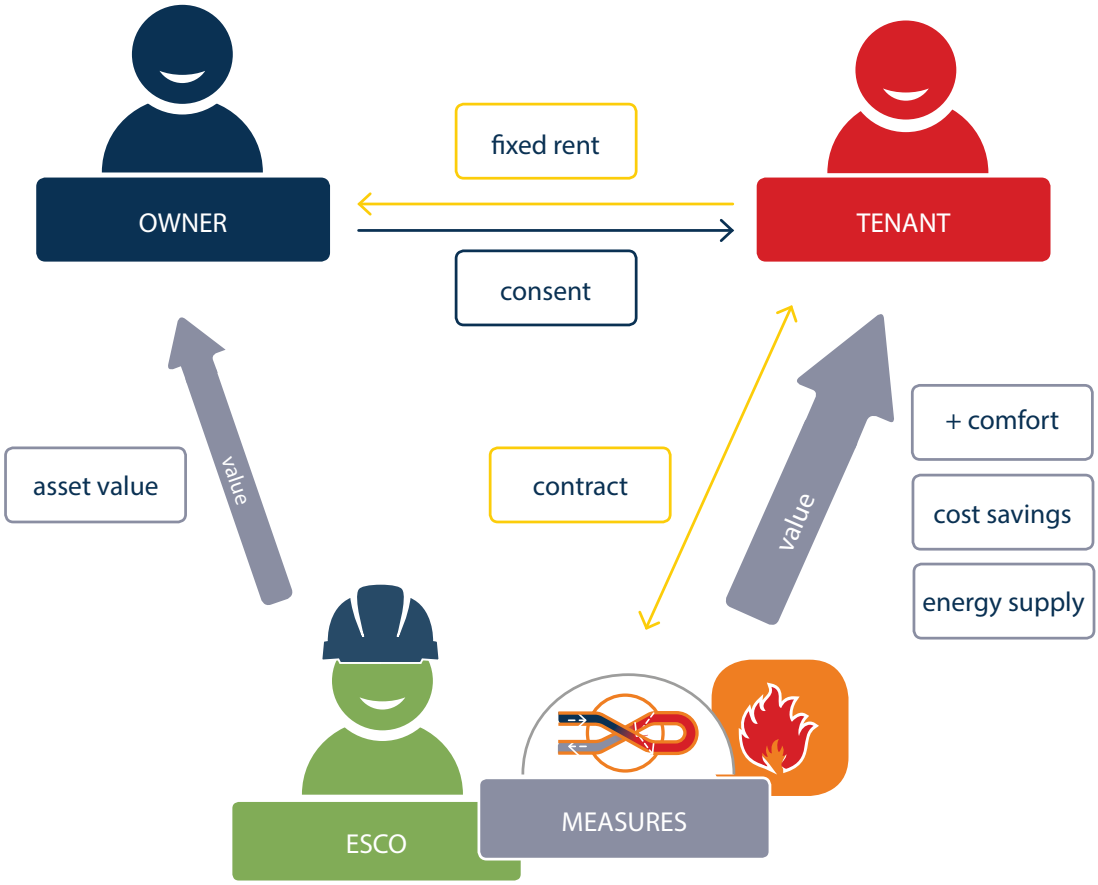
Further information: http://guarantee-project.eu/au/bestpractice/

Case 3b: Direct contracts with tenants, combined with energy supply

Applicable for:

- residential tenancy sector
- commercial tenancy sector
- sub-departments and expositions in large organisations (public, industry, hospitals)

Idea: If a client has energy supply contracts directly with energy suppliers or utilities, this opens up the possibility to finance measures through on-bill-financing. Upfront the tenant has to check whether the energy supplier can be switched (i.e. electricity) or not (i.e. district heating). In the latter case the tenant depends on whether the concrete provider is offering this service. This is particularly a good solution for organisations where processes for approval and budget planning are lengthy and complicated. Similar to case 3a it must be considered that the measures' payback is no longer than the expected tenancy period.



Pros and cons:

PROs	CONs
Contractual client profits immediately from savings.	Risk of earlier termination of the rental agreement.
Contractual client and user are in personal union, thereby the motivation for proper user behaviour already exists.	Consent of owner necessary.
Financing doesn't need additional approval.	

Best practice: Similar projects have already been performed, i.e. GEA Projekt Retzhof – Integrated Energy Contracting. Three buidlings of different age were refubished energetically.

Further information: http://guarantee-project.eu/au/bestpractice/

The project guarantEE

Energy Performance Contracting

Energy services such as Energy Performance Contracting (EPC) help building owners in the modernisation of their facilities. The planning, financing, implementation and maintenance of a set of technical measures are outsourced to an experienced energy service company (ESCO). The ESCO

- ► finances all investments through future energy savings,
- ► guarantees energy and cost savings to the client,
- ► bears the financial, technical and performance risks.

Energy efficiency - guaranteed

guarantEE fosters the use of Energy Performance Contracting in the public and private sector across Europe by especially

- ► developing innovative EPC solutions for rented facilities,
- ► making EPC more flexible to better serve private sector clients,
- ► supporting EPC pilot projects with experienced facilitators.

The guarantEE project is being funded by the European Union's Horizon 2020 research and innovation programme.

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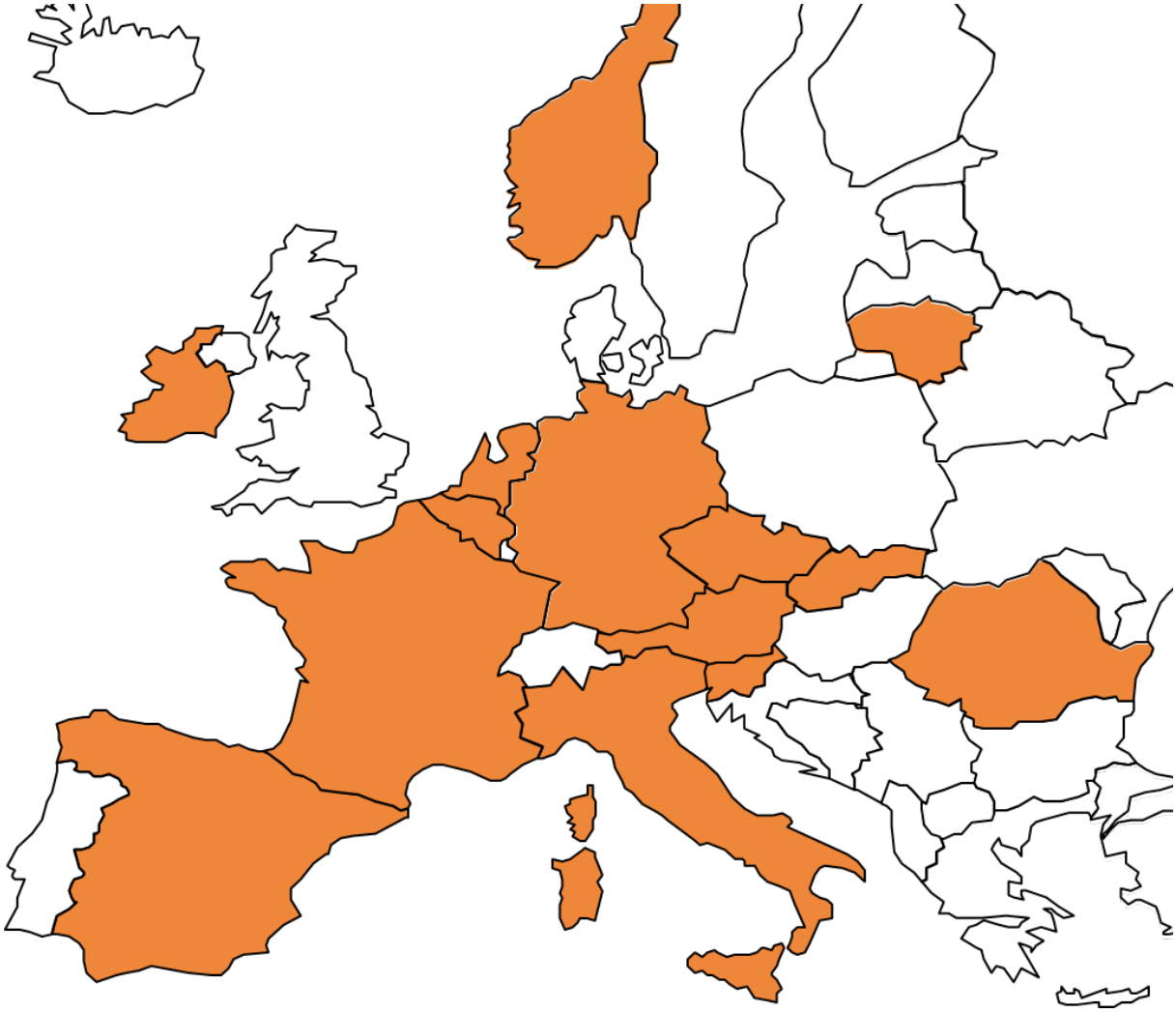

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WHAT IF...

...the investor is not the beneficiary of energy cost savings?
...the savings cannot be used for the re-financing of the investment?

TRIPLE WIN...

... shows solutions for re-financing
... allows all parties to benefit from the investment
... visualizes previously unrecognized additional values.