



IEA DSM TASK XVI

**“Competitive Energy Services
(Energy Contracting, ESCo Services)”**

Financing Options for Energy-Contracting Projects – Comparison and Evaluation

A Manual for ESCos, ESCo Customers
and ESCo Project Developers
including Good Practice Examples and
Calculation Tool



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1 Summary

Availability of financial resources is one of the key success factors for the implementation of **Energy-Contracting**¹ projects. (Pre-) Financing energy efficiency investments has become increasingly burdensome for ESCo's as well as their customers, because they reach their credit lines, credit liabilities and fixed assets burden balance sheets and Basel II and international accounting guidelines like US GAP cast their shadows.

Consequently, **innovative finance options** like operate, finance lease or "pure" forfaiting options have to be considered (and developed further!) and compared to classical finance instruments like credits. Also the question of who is best capable of providing financing – customer, ESCo or a finance institution (FI) as a third party has to be considered. ESCo's are not necessarily the best source for finance themselves. But they can certainly help to arrange for financing.

The approach of this manual is to start from the perspective of ESCo's and their customers (companies, real estate owners or public institutions), who wish to lend money for project financing (demand side). We introduce a comprehensive **customer demand profile** to describe the customers financing requirements and specific framework. The customer demand profile encompasses criteria such as

1. Direct financing cost
2. Legal aspects
3. Securities/collateral required
4. Taxation implications
5. Balance sheet & accounting implications
6. Business Management expenditures

On the **financial supply side**, we describe properties of different finance offers (credit financing, operate and finance leasing and forfaiting) with regard to the criteria introduced in the customer demand profile. The properties are also summarized in a **comprehensive matrix** in the appendix.

For further illustration, **good practice examples** from Task XVI participating countries and others are provided.

To conclude, we compare the above financing offers with the customer demand, discuss their advantages and disadvantages and give recommendations for the finance preparation. We consider factors such as financing cost and fees, tax aspects, balance sheet effects, credit lines, Maastricht criteria, applicability of subsidies as well as suitable project sizes.

¹ Also referred to as "ESCo or Energy Service". We prefer the term "Energy-Contracting" to emphasize the difference to a standard fuel supply or maintenance contract, which does not imply any outsourcing of risks or provision of guaranties for the overall system performance (see also Figure 2:).

As a result **we advocate a comprehensive look at the sum of all business implications of any finance option**. A sole look at direct financing cost as expressed in interest rates or fees will not deliver your optimal financing solution. The best finance package depends on the borrower's background, subsidies as well as the specific project cash flow. And it requires the integration of bookkeeping and tax consultancy into the financing decision.

The proposed customer demand profile offers this comprehensive perspective and may serve as a **checklist** to be adapted to the specific situation of the customer. Likewise, the attached comparison and evaluation matrix of the different finance options allows taking a comprehensive look at the variety of implications, which can be individually adapted to compare concrete finance offers.

Finally we propose to take advantage of **innovative financing options**, which in return require knowledgeable (leasing) Finance Institutions. For future development, e.g. a **"pure" forfaiting** finance option based on selling the future project cash flow to an FI would be a very desirable from the customer perspective. This kind of finance model would also help to overcome some of the current balance sheet problems and share project risks according to the project partner's strengths and capabilities.

Another goal of this manual is to bring the complex landscape and language of financing closer to those professionals, whose business is to develop and implement energy efficiency projects. We want to support the education of project developers and multipliers such as energy agencies or others to become more knowledgeable partners to financing institutions and real estate owners. And vice versa.

In order to promote a financial approach towards energy efficiency projects we also introduce an **opportunity cost approach**. The calculation tool aims at a rough estimation and a graphical visualization of monetary energy saving potentials as well as the opportunity costs, which occurs if no energy saving measures are taken. The calculation tool is a good instrument for energy consultants and market facilitators for the motivation of decision makers in the first consulting phase as well as for more detailed financial analyses.

If you have **questions or remarks to this manual**, your feedback is highly welcome. You can reach the authors at Grazer Energy Agency Ltd, attention to Jan W. Bleyl (bleyl@grazer-ea.at).

2 Motivation and Overview

2.1 Introduction

Energy-Contracting² (EC) is widely promoted as an instrument to overcome obstacles against the implementation of energy efficiency investments. Especially for the public sector this model of Public-Private-Partnership is considered to be one of the most effective tools to enhance energy efficiency in buildings and has been successfully implemented especially in Germany and Austria with other European countries following the example. Also other end-use sectors like commercial buildings³ are under development. The **European Commission** shares this view and promotes the concept within its directive on "Energy End-use Efficiency and Energy Services"⁴ issued in 2006.

Availability of adequate financial resources for the efficiency investments is a key success factor for the implementation of Energy-Contracting like energy performance contracting (EPC) and Energy Supply Contracting (ESC). At the same time **EC projects generate future cash flow from energy cost savings**. These savings can be used to (partly) re-finance the energy efficiency investments. The savings are guaranteed by an ESCo and backed by a payment obligation in case of non-performance.

Nevertheless, (pre-) financing of energy efficiency investments has become increasingly burdensome for Energy Service Company (ESCO's) as well as for their customers: Market partners reach their credit lines, credit liabilities and fixed assets burden balance sheets and require more equity capital. And also Basel II and international accounting guidelines like US GAP cast their shadows. And the EC concept is not understood well enough.

Consequently, innovative finance alternatives like operate or finance lease and forfeiting options have to be considered and compared to classical finance instruments like credits. Also the question of who is best capable of providing financing – customer, ESCo or a Finance Institution (FI) as a third party has to be considered?

In the past, the financing and the energy efficiency (EE) community have had rather little contact. The EE approach is often from a prevaillingly technical perspective rather than a business or finance oriented one. EE-actors are not necessarily educated in business management matters. They often have a technical, environmental systems or communicative background, using different approaches and languages than actors from the economics world. Conversely the same applies for the financing community.

² Also referred to as "ESCO or Energy Service". We prefer the term "Energy-Contracting" to emphasize the difference to a standard fuel supply or maintenance contract, which does not imply any outsourcing of risks or provision of guaranties for the overall system performance (see also Figure 2:).

³ An Austrian example of an impulse programme is www.ecofacility.at

⁴ Directive 2006/32/EC of 5 April 2006

One **goal of this manual** is to bring the complex landscape of financing closer to those professionals, who's business it is to develop and implement energy efficiency projects. We want to educate EE-project developers and multipliers such as energy agencies or others to become more knowledgeable partners to financing institutions and real estate owners and vice versa.

This goal shall be achieved by

1. **bridging "language barriers"** between the financing and the energy efficiency communities in order to facilitate a mutual understanding,
2. developing a **systematic approach** ("customer demand profile" and "comparison and evaluation matrix") to describe the complexity of financing demand and offers from a customer perspective (real estate owners or ESCo's) and
3. selecting and describing those **financing issues**, that are **relevant to the finance of energy efficiency projects and Energy-Contracting**,
4. **providing tools** to determine and optimize your individual financing solution.

External financing has implications on a variety of factors such as direct financing cost but also provision of securities, taxation and financial statements aspects. The sole look at direct financing cost, as expressed in interest rates or fees, will not deliver an optimal financing solution.

The key message of this manual is **to promote a comprehensive look at the sum of all business implications** of any external financing option before taking a financing decision. To put in other words: A comparison of the broad range of implications from the different categories could be accomplished by way of cost-benefit-analyses⁵, allowing integrating monetary and other criteria into one evaluation system. Depending on the specific situation of the debtor, the goal is to optimize the sum the effects.

The **scope of this manual** is limited to external financing offers such as **credits, operate and finance leasing and forfeiting**. Self-financing and project financing e.g. through independent project corporations with additional equity from partners are not dealt within this manual, but could be interesting for further examinations. Also the wide field of subsidies are not subject of this manual.

Methodologically the findings of this manual are derived from long-term practical experiences of energy efficiency and Energy-Contracting experts as well as financing professionals. Their backgrounds are from Energy Agencies, ESCo and financial institutions. Additionally interviews with stake holders such as real estate owners have been conducted.

As a result of this manual:

1. **EE actors** will have a better understanding of the functioning and importance of financing issues for the implementation of Energy Efficiency measures and Energy-Contracting.

⁵ This kind of analyses is also applied to evaluate ESCo-proposals to functional specifications/ tenders

2. **Financing institutions** and **real estate owners** will have more knowledgeable partners with regard to financing issues and in return gain an insight into the nature of Energy Efficiency projects. And maybe develop better suited finance tools for energy-contracting projects like "pure forfaiting".
3. The development of the **building refurbishment market** with a potential 5 to 10 billion €/a⁶ will be supported.

This manual has received **support** from a number of institutions and individuals: We thank for financial assistance from the Intelligent Energy - Europe Programme⁷ and the Austrian "Lebensministerium"⁸. The work has been continued within Task XVI „Competitive Energy Services“ run by the IEA (International Energy Agency) Demand Side Management Implementing Agreement (<http://dsm.iea.org/>).

Daniel Schinnerl, Graz Energy Agency⁹ and Alexandra Waldmann, Berlin Energy Agency¹⁰ have written a chapter of this manual. The EUROCONTRACT partners¹¹ have given helpful comments. Special thanks to Mark Suer, Raiffeisen Leasing for his valuable inputs and to Alexander Linke, Kommunalkredit Public Consulting.

If you have **questions or remarks to this manual**, your feed back is highly welcome. You can reach the authors at Grazer Energy Agency Ltd, attention to Jan W. Bleyl (bleyl@grazer-ea.at).

2.2 Structure of the Manual

We give a short introduction to both basic models of Energy Contracting (EC) – Energy Supply (ESC) and Energy Performance Contracting (EPC) – and financing issues. The introduction is supplemented with some basic remarks and definitions on EC, ESC and EPC. It also contains commented links to finance glossaries.

In chapter 3 we describe financing requirements from the borrowers perspective (demand side), which is in our case either real estate owners or ESCo's. This will result in a financing demand profile - a structured list and description of the most important financing aspects and effects (business, securities, tax and balance sheet). The profile will be used throughout the manual to compare financing demand to different financing alternatives.

Chapters 4, 5 and 6 describe the "financial supply side": Credit, operate and finance lease as well as cession and forfaiting alternatives. Standard properties of these financing alternatives with regard to the customer demand profile are described and summarized in a matrix. For further illustration, good practice examples from Task XVI participating countries and others are provided.

⁶ Berlin Energy Agency 2006

⁷ http://ec.europa.eu/energy/intelligent/index_en.html

⁸ <http://umwelt.lebensministerium.at/>

⁹ www.grazer-ea.at.at

¹⁰ www.berliner-e-agentur.de

¹¹ www.eurocontract.net

The options of customer self financing and public ESCO financing are described by two additional good practice examples in chapter 7.

In chapter 8 we introduce a calculation scheme, which aims at a rough estimation and a graphical visualization of monetary energy saving potentials as well as the opportunity costs, which occurs if no energy saving measures are taken.

Chapter 9 delivers a comparison between major aspects of the customer demand profile and the different financing alternatives. We conclude with general and concrete recommendations for the preparation of an EPC project financing.

2.3 Energy-Contracting Basics

Here we focus on some key concepts and definitions only, assuming that the reader has a basic knowledge on Energy-Contracting (EC). More references on the implementation of EC projects can be obtained from the author or from the following links: www.grazer-ea.at, www.bundescontracting.at, „Leitfaden Energiespar-Contracting“ published by dena¹² or from the brochure „Die Energiesparpartnerschaft. Ein Berliner Erfolgsmodell“¹³.

The energy service approach shifts the focus away from the sale of secondary or final energy carriers like electricity or fuel towards the desired benefits and services derived from the use of the energy, e.g. the lowest cost of keeping a room warm or air-conditioned. The knowledge and experience of an energy service provider (ESCO) is used to provide the energy service requirement at least cost to the end user.

The before mentioned EC directive on “Energy End-use Efficiency and Energy Services” defines Energy-Contracting as “**the physical benefit, utility or good derived from a combination of energy with energy efficient technology and/or with action**, which may include the **operations, maintenance and control** necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances **has proven to lead to verifiable and measurable or estimable energy efficiency improvement** and/or primary energy savings”.

Furthermore the directive also defines “**Energy service company (ESCO)** as a company that delivers energy services, energy efficiency programmes and other energy efficiency measures in a user’s facility, and accepts some degree of technical and sometimes financial risk in so doing. The payment for the services delivered is based (either wholly or in part) on meeting quality performance standards and/or energy efficiency improvements.

The next chart follows an energy added value chain gives an overview of classical energy supply and the two basic energy service models (energy supply contracting (ESC) and energy performance contracting (EPC)) and indicates typical measures:

¹² Deutsche Energie Agentur, 4. Auflage, Dezember 2004

¹³ Seantsverwaltung für Stadtentwicklung des Landes Berlin, April 2002

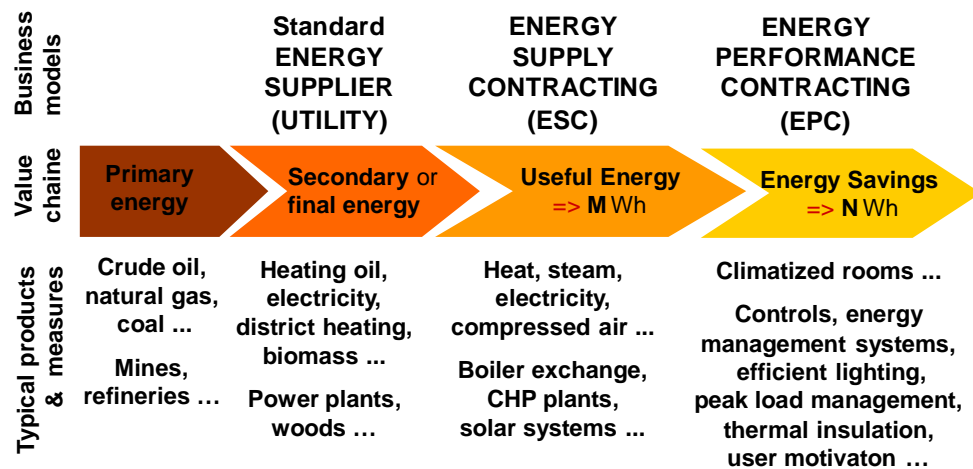
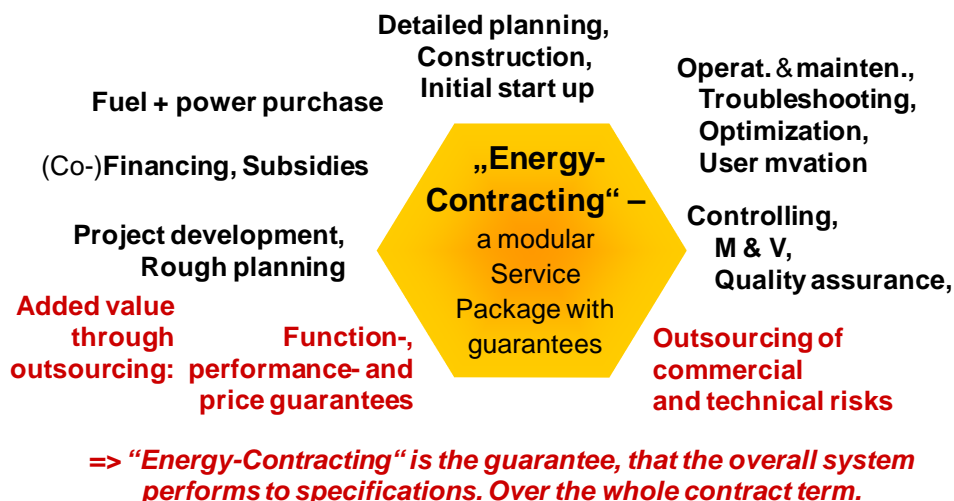


Figure 1: Energy service value chain, two basic Energy-Contracting models and typical (efficiency) measures

At supply contracting, efficient energy supply, including purchasing of final energy is contracted (comparable to district heating). As for energy performance contracting, is on demand side measures in the building itself.

Energy-Contracting is a service package that can be arranged specifically to the needs of the building owner and thus quasi is a modular system. This means the client defines what components he wants to outsource and what components he carries out himself. For example, financing can be provided either by the ESCo or the building owner. What is decisive is who can provide better financing conditions. This means the contracting package in no way automatically includes external financing¹⁴. Other partial tasks, such as ordinary operation management or fault clearance, can be taken over by the building owner himself just as well.

The central elements of an EC-package are summarized in the following chart:



¹⁴ This topic has been elaborated in more detail: Bleyl, Jan W.; Suer, Mark: Comparison of Different Finance Options for Energy Services. In: light+building. International Trade Fair for Architecture and Technology. Frankfurt 2006.

Figure 2: ELC: Energy-Contracting: A modular package with success guaranties

As for energy services, transfer of technical and economic implementation and operating risk as well as takeover of function, performance and price warranties by the ESCo play a crucial role. These elements create added value compared to in house solutions and are guaranteed in the EC-contract. In other words: Contracting is more than putting together individual components. The contracting concept incorporates incentives and guarantees, that - throughout the contract term - the entire system performs according to specifications.

Energy Supply Contracting is a well proven instrument to realise energy efficiency measures in energy supply plants and innovative, environmental protective technologies such as combined heat and power, biomass or solar thermal plants. The EC-approach will lead the focus from a pure primary energy supply to the use of the consumed energy. In the case of ESC the focus is for example at the optimized hot water supply, the provision of compressed air at a certain level or the decentralised production of electricity.

In most cases the ESCO designs, constructs, operates and finances the energy supply facilities and is responsible for purchasing the necessary materials such as primary energy like gas or biomass. The ESCO delivers the useful energy at guaranteed prices (energy consumption and basic price) and has therefore the interest to operate the facilities efficiently.

At ESC, the Client and the ESCo enter into a contractual relationship, which is shorter than at Performance Contracting. It is possible to integrate demand side energy efficiency measures and to design the contractual relationship flexible so that the Client has the chance of a buy-out before end of contract.

The ESC business model is shown in the following chart:

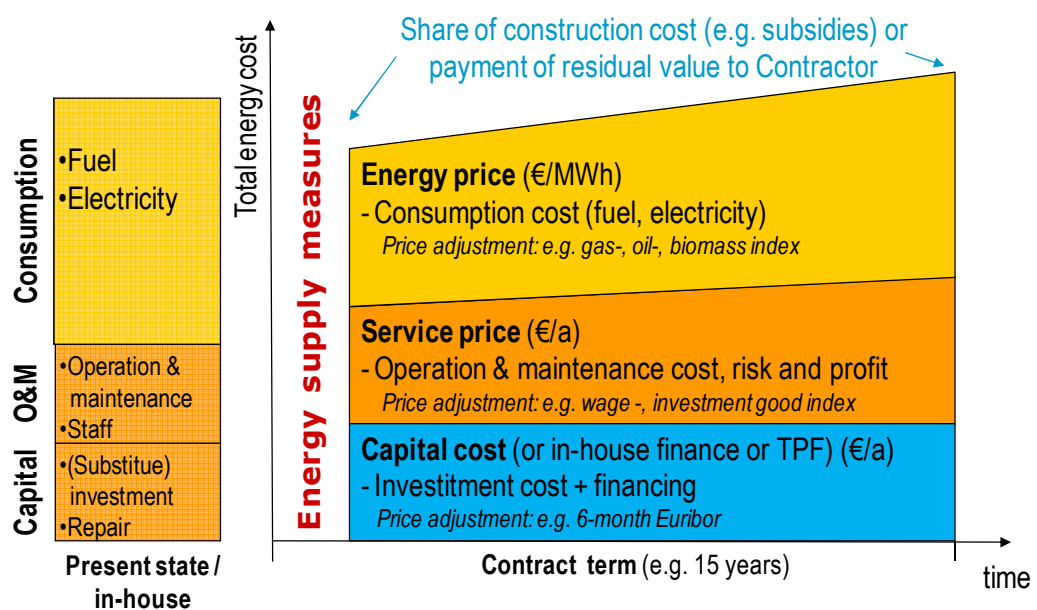


Figure 3: Energy Supply Contracting (ESC) business model in comparison to present state / in-house implementation

At **Energy Performance Contracting**, the building owner and energy service provider enter into a **long-term contractual relationship**. Short-term focusing on profit will not lead to success for either of the parties involved. The term "Energy Saving Partnership", which has been given to the EPC campaign of the Berlin Senate mentioned above, expresses this well.

Building technology measures can mostly be **refinanced** from the future energy cost savings within a project period of 10 years. This is not true for building construction measures, such as building envelope insulation, with today's energy prices. Therefore, the building owner has to participate in financing the building measures e.g. by means of a building cost allowance, (which may, e.g., also be taken from maintenance reserve funds or subsidies), and/or paying a residual value at the end of the contract (see figure "business model ..."). EPC models can also be implemented with a leasing finance partner.

The EPC business model is shown in the following chart:

Performance Contracting - Business Model

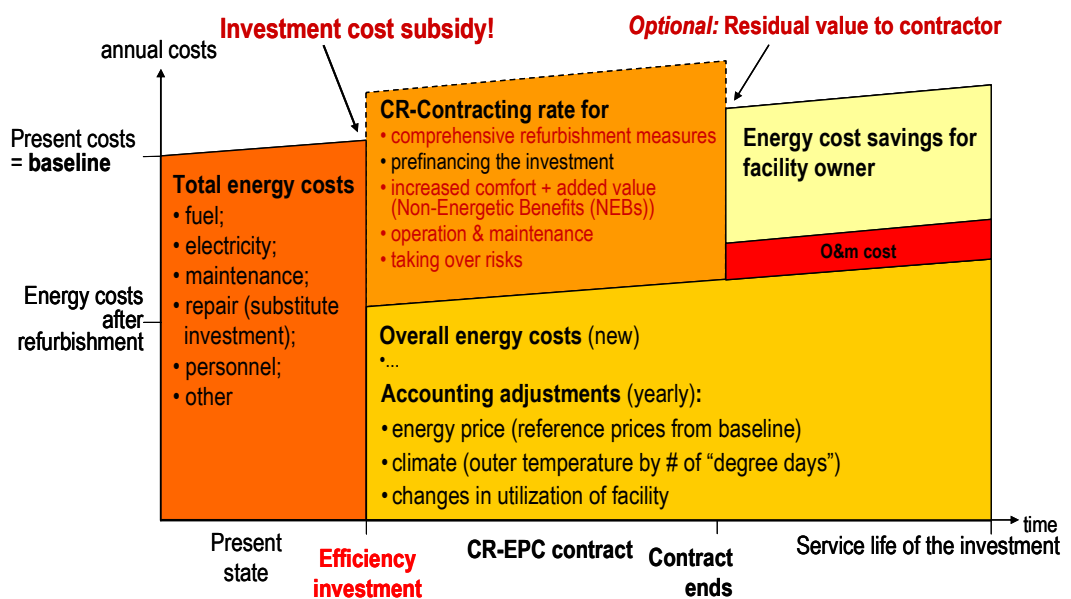


Figure 4: Business model of Energy Performance Contracting

The key features of EPC are:

- An Energy Service Company (ESCO) plans and realizes energy efficiency measures and is responsible for their operation and maintenance throughout the contract term.
- The ESCo has to guarantee energy cost savings compared to a present state energy cost baseline.
- The efficiency investments are (partly) paid back out of the future energy cost savings.

- The client continues to pay the same energy costs as before (sometimes even a smaller amount). After termination of the contract, the entire savings will benefit the client.
- The ESCo's remuneration is the contracting rate and depends on the savings achieved. In case of underperformance the ESCo has to cover the short fall. Additional savings are shared between building owner and ESCo.

Based on the previous remarks, we define Energy Performance Contracting as

A comprehensive energy service package aiming at the guaranteed improvement of energy and cost efficiency of buildings or production processes. An external Energy Service Company (ESCo) carries out an individually selectable cluster of services (planning, building, operation & maintenance, (pre-) financing, user motivation ...) and takes over technical and economical performance risks and guarantees.¹⁵

¹⁵ Following Seefeldt, Leutgöb (2003) "Energy Performance Contracting – Success in Austria and Germany, Dead End for Europe?" eceee paper id #5158.

3 Customer Needs for Financing Energy-Contracting Projects

3.1 A Systematic Approach

The aim of this chapter is to describe financing requirements from the perspective of professionals, who wish to borrow money in order to implement energy efficiency projects. Relevant actors will in most cases be real estate owners, enterprises or ESCos; every of those can provide the necessary project financing. Energy Agencies (EA) typically have the role of project developers and mediators in the process.

The goal of any finance planning is to minimize overall capital cost, secure liquidity and to reduce transaction cost. But also legal aspects, tax implications and balance sheet issues have to be considered.

Of course, financing needs depend on the individual circumstances of the borrower. And they depend on the specific project. Nevertheless we aim at developing a **customizable methodology** for describing generic characteristics of financing needs for EE projects, which can be adapted to the specific situation. Here we are talking about properties such as financing cost and terms, legal implications, tax and balance sheet effects as well as management expenditure. **Only a comprehensive look at the sum of the financing implications will allow deciding for the best financing option.**

These financing characteristics will be put into a **demand profile**, which can be used to get a structured overview of the different implications of EE project financing issues. This profile can be applied to different financing options offered on the market in order to find the best suited fit, taking all aspects into account.

In order to structure financing implications, the **relevant categories** are:

1. Direct financing cost (financing conditions, interest rates, fees ...)
2. Legal aspects (Rights and duties, ownership, contract cancellation, end of term regulations ...)
3. Required collateral (**securities**) by financing institution
4. Taxation implications (VAT and purchase tax, corporate income tax, acquisition of land tax ...)
5. Balance sheet & accounting implications (who activates the investment (=> on or off balance?), balance sheet effects like credit lines, performance indicators Maastricht criteria ...)
6. Management expenditure (transaction cost, comprehensive consultancy ...)

These six categories will be used throughout the manual to structure the different implications of financing issues. The result is a profile of requirements for financing products from the perspective of the borrower, which is either ESCo's or their customers (company or building owners, public institutions).

3.2 Customer Demand Profile

The customer demand profile lists standard properties which may vary with specific projects and players. In order to facilitate the overview, the different criteria are grouped and presented in a table:

Criteria	Customer expectations
Direct financing cost	Costs as low as possible:
	✓ Low interest rates, fees and other cost
	✓ Extent of financing: as high as possible (100 % external finance)
	✓ Subsidies: Compatibility, eligibility
Legal aspects	Legal implications:
	✓ Financing term: affordable, adjustable terms during contract period
	✓ What can be financed? Financing of complete energy service investments including soft cost
	✓ Cancellation of contract: flexibility and conditions
	✓ Legal and economic property aspects
	✓ Transfer of ownership at end of term
Collateral/ Securities	Reduce collateral requested and own risks:
	✓ Preferably project based finance: => repayment from future project incomes/savings
	✓ Financial securities (equity capital, bonds, insurances, guarantees ...) as low as possible
	✓ Tangible securities / collateral (entry in land register, mortgage, ...)
	✓ Personal (e.g. personal liability)
Taxation	Reduce taxable income and use tax exemptions:
	✓ Increase of tax deductible expenses
	✓ Optimization of timing of deductible expenses (e.g. depreciation, interest, ...)
	✓ Value Added Tax (VAT)
	✓ Benefits from tax exemptions
Balance sheet & accounting aspects	Optimize balance sheet performance indicators:
	✓ Legal and economic property aspects => who capitalizes investment?
	✓ Balance sheet performance indicators (e.g. debt-equity ratio, credit lines, Maastricht criteria, ...)
general expenditure / Trans	As small as possible:
	✓ One face to the customer/one stop shop

Criteria	Customer expectations
	✓ Knowledgeable financing partner with regard to Energy-Contracting and subsidies
	✓ Consultancy comprehending tax, accounting, legal optimisation and subsidies => custom tailored financing solutions
	✓ Reduce paperwork (investment documentation, ...)
	✓ Reduce time to receive financing promise + reliable time frame for provision of money
	✓ Customer approval process: complexity and reduction of approval necessities

Table 1: Customer demand profile

The classification of some criteria is not always unambiguous and depends on the reader's individual experiences and preferences. To the authors it was more important to have all relevant aspects considered and to facilitate an overview by grouping the different aspects in categories. Amendments are welcomed (Bleyl@grazer-ea.at).

Of course all descriptions are of a general nature and may vary with the specific project and the actors involved. Nevertheless the customer demand profile presented, can **serve as a checklist** and **as a template** to be adapted to the specific situation of the borrower and the project.

4 Credit Financing for Energy-Contracting

4.1 Introduction to Credit Financing

Credit (or loan) financing means that a **lender** (FI) provides a **borrower** (customer) with capital for a defined purpose over a fixed period of time. Borrowers in our case can be real estate owners, enterprises or ESCos. A credit is settled over a fixed period of time, with a number of fixed instalments (debt service). These instalments have to cover the amount borrowed, plus interest rates, as well as other transaction costs such as administrative fees. Loans are disbursed against a proof of purchase in order to secure the earmarked use of the funds.

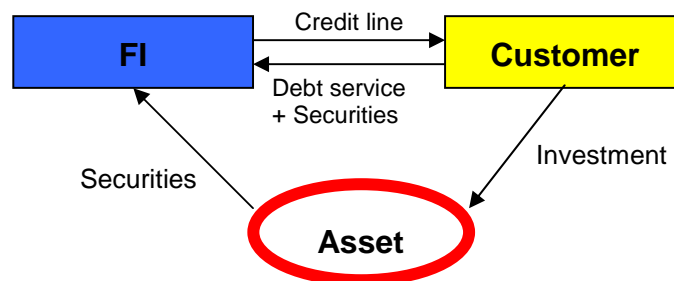


Figure 5: Credit financing - general scheme

A credit serves in fact as an extension of the total amount of capital that an enterprise can use to do its business, i.e. deliver services or produce goods. Credits are also referred to as **committed assets** or **loan capital**.

Credits require a creditworthy borrower. This means that a credit has to be backed by the ability of the borrower to perform the debt service. It is assumed that this ability is linked to a certain level of equity capital, typically 20-30 % of the loan. The creditworthiness of a borrower (together with the project chances and risks), will be reflected in the amount of securities needed to cover the lender's risks associated with handing out a credit. Where public entities are debtors or in cases where credits are backed by public entities, credit ratings are generally high.

The borrower is both economic and legal owner of the investment made with a loan. Therefore the investment is capitalized on his balance sheet which, in return, downgrades his equity-to-assets ratio. A reduced share in equity means less capital to do business with and also results in a reduced ability to get further credits (credit line).

Another factor that influences the borrower's possibilities to receive a credit is connected to "**BASEL II**". It means that, clients are evaluated by international uniform criteria and divided in classes, which declare the creditworthiness. It is

expected, that credits will be more difficult to obtain and that they will cost more. Especially for small and medium enterprises.

The following graphs visualise the basic cash flow relationships for a typical credit finance. The cash flows depend on whether the ESCo or the building owner is the lender for the credit. Figure 6: shows the former case, Figure 7: the latter.



Figure 6: Credit financing – cash flow in EC projects with ESCo financing

Comments to Figure 6:

- The ESCo is responsible for the energy efficiency measures and refinances the investments from a credit line.
- The customer pays a contracting rate which includes a finance share to the ESCo (subject to the performance of the ESCo’s savings guarantee)
- The ESCo uses the financing part of the contracting rate to perform the debt service
- The ESCo can cede (the finance share of) the contracting rate to the FI, so the customer directly repays the ESCo’s debt (for more details on cession see chapter 6.2)

The previous is the “traditional” ESCo-Third-Party-Financing model, which is not always the optimal financing solution.

The next figure displays the customer as lender of the credit:

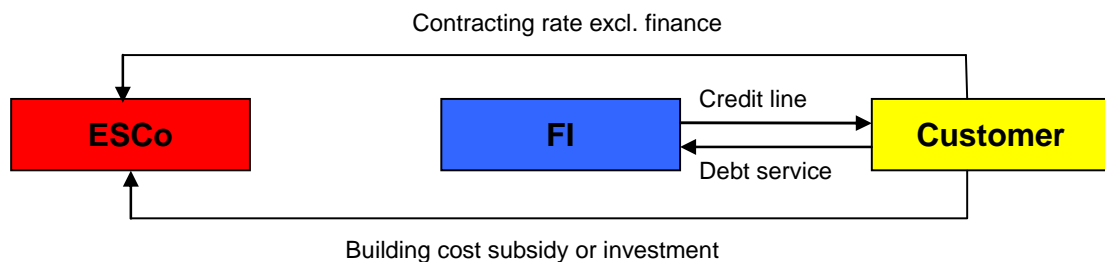


Figure 7: Credit financing – cash flow in EC project with customer finance

Comments to the figure:

- The ESCo is responsible for the implementation of the energy efficiency measures and receives financing from the customer
- The EE-investment is paid out of the customers credit line and respectively (in part) from subsidies or from maintenance reserve funds
- The customer payments for the investment can be either a building cost subsidy or the remuneration of an equipment supply contract (in the latter case, VAT is due on the complete investment at once)

- This model can also be interpreted as an operation-management-EPC
- The customer finance model is advisable, if the customer has better finance conditions than the ESCo

In praxis, a synthesis between ESCo and customer finance is advisable. In many cases the customer contributes to the finance with subsidies, from maintenance reserve funds or with an equity capital share.

These and other implications of credit finance will be reasoned in the next subchapter. In order to facilitate the overview, the properties with respect to the customer demand profile are compiled in tables, with some details explained further.

4.2 Credit Financing Features and Customer Demand

4.2.1 Direct Financing Costs

Direct financing cost	Costs as low as possible:	
	✓ Interest rates, fees, ...	✓ Repayment + interest ✓ Single payments ¹⁶ : - Up-front fee (0,1- 0,5% of loan amount) - Commitment Fee - Administrative Fee (negotiable) - Notary fee
	✓ Extent of financing	✓ Part financing only (typically 70 - 80%)
	✓ Subsidies: Compatibility, eligibility	✓ Yes, reduces loan amount or interest rate ¹⁷ ✓ Application by debtor (owner of investment). Typically no support from bank

Table 2: Credit financing – direct financing costs

Further comments: The direct financing cost for a credit is comprised of two categories:

1. Single payments (fees, charges)
 - Up-front fee (~0,1 – 0,5% of the credit volume)
 - Administrative fees (negotiable)
 - Disagio (a one off discount of the nominal credit value (e.g. 4 %), which some FI's charge, when issuing credits)
 - Notary fee
2. Regular payments or debt service payments

¹⁶ Values applicable in Austria

¹⁷ Some subsidy programmes support interest rates rather than direct investment subsidies

- Repayment of credit
- interest rate

The **total credit costs** depend on the risks that the lender attributes to the credit, i.e. the risk of not being paid back (non-performing credit). Also the quality of the securities offered, the contract duration the credit volume and the transaction expenditure are reflected in the credit costs.

Some of the payments are negotiable to a certain extent, such as interest rates, the administrative fees that apply, and also the repayment period, others are not such as notary fees. These are predefined in the honorary list for notary services. The structure of the repayment instalments for a credit is often negotiable, but will influence the interest rates, and the repayment period needed.

Extent of financing: A credit can cover up to 90% of the amount of capital needed asking as a minimum 10 % of equity capital and/or other financial sources from the borrower. Typically, a credit covers 70-80% of the needed capital. However, the borrower will want to keep his own capital as flexible to use as possible, and will therefore want to keep the amount of his contribution low. The amount of a borrower's equity capital needed will increase with a decreasing creditworthiness.

Subsidies are usually compatible with credits:

- A subsidy will reduce the needed credit volume and can be seen as risk sharing instrument, which should reduce the interest rates.
- Some government-owned banks (e.g. the Austrian Kommunalkredit¹⁸ or the German KfW Banking Group¹⁹) offer so called soft-loan programs (subsidized interest rates) for environmental investments with a FI as implementation partner.

Usually, banks are not willing to take care of the subsidy acquisition, leaving this task with the borrower. A trend is however visible with the larger banks to have more expertise in various fields outside their core business, including energy.

¹⁸ www.kommunalkredit.at

¹⁹ www.kfw.de

4.2.2 Legal Aspects

Legal aspects	Legal implications	
	✓ Financing term	✓ Flexible: according to customer demand. Usually below useful life time of the investment
	✓ What can be financed?	✓ Complete energy service hardware
	✓ Cancellation of contract	✓ Depends on contract type, usually fixed terms.
	✓ Legal and economic property aspects	✓ Short rate penalties apply for premature cancellation
	✓ Transfer of ownership at end of term	✓ Debtor is legal and economic owner (bank may put retention of title or lien)
	✓ Responsibility for operation and maintenance	✓ Debtor remains owner ✓ EPC contract may include transfer of ownership ✓ Debtor is responsible for o & m at his own risk

Table 3: Credit financing – legal aspects

The repayment period for a credit can, as has been explained above, be adapted to customer needs. Typically it will however be shorter than the normal useful life time of the investment, for which the credit is used.

Further comments:

Financing term: The possibility of a premature cancellation of the contract or changing the terms of redemption is available, but implies extra charges for the lost income of the bank and for transaction costs.

When looking at credits for energy service contracts, another typical feature is that a **credit covers** only the **hardware costs** of a project.

The debtor of the credit is the legal and economic owner of the investment. Typically this is the ESCo, but also the building owner can of course provide the financing. Depending on who is the borrower of the credit in an EPC project, the effects on taxation and accounting vary (see subchapters 4.2.4 and 4.2.5).

The lender generally does not require mandatory operation & maintenance or insurance packages for the assets. These obligations are part of the energy service agreement, not of the financing part.

4.2.3 Collateral (Securities)

Securities	Reduce securities requested and own risks:	Bank wishes to secure loan. Generally securities are based on the credibility of the debtor, not of the project. Securities required: ~ 100 %
	✓ Finance based on project cash flow	✓ No project finance but client finance. Securities based on company cash flow and economic key figures, not project cash flow
	✓ Financial securities	✓ Typically equity capital required (> 20 %) ✓ Additional securities like guarantees from parent companies or banks (Hermes, ÖKB, ...) depend on individual project
	✓ Tangible securities	✓ Desired/required, ✓ Entry in land register, lien on movable objects, reservation of property rights
	✓ Personal securities	✓ Applicable for small projects only

Table 4: Credit financing - securities

For every loan, a lender asks a security in return. A security has the function to provide the lender the possibility to retrieve the loan. Securities give a lender certain rights that serve to secure his claim against the borrower to pay back the debt.

The lender and receiver of securities is one and the same institution. The securities from the borrower however can have two sources. They can come from the borrower or another party. The rights of the creditor then extend either to the borrower himself or against further parties, so called "principals".

Possible securities include:

- Lien on moveable objects and land property
- Guarantees and additional debtors (principals)
- Retention of titles
- Cession of securities
- Cession of receivables e.g. contracting rates

Moveable objects as well as formal obligations are not considered by banks to be a very valuable security. Securities most valuable to financial institutions are (land) property, and personal securities (Personal liability). On average 55% of the credit sum has to be covered by securities, but variations range from 30% to 80%.

At this point, a short **differentiation** has to be made between **cash-flow-related lending** and **balance-sheet-related lending**:

1. **Cash-flow-related lending** is also called project finance. Securities needed in this type of financing are dependent on the expected cash flow of

a project. The main risk for a lender in this type of project is the construction and operation risks. If a project is not constructed, it cannot be operated, and therefore it cannot produce cash flow. Where the creditworthiness and hence also securities demanded by the lender are depending on the cash flow of a project, the capital or assets of the company implementing a project are not decisive to receive a loan.

- 2. Balance-sheet-related lending** on the other hand will refer back to the company's assets (valuables) for safeguarding of a credit. Energy-Contracting projects are – when financed by a credit – Balance-sheet-related lending (also called asset-based related lending).

From the perspective of the FI, the simplest way of securing a credit for an EPC project is that the ESCo's assets serve as the security.

Cession: The ESCo has the opportunity to sell its claims against the client (the contracting rate) to a financial institution. An agreement on the amounts to be paid by the client directly to the FI needs to be concluded. The building owner needs to take into account that usually the claims are to be assigned excluding the right of defence, i.e. the bank secures for itself fixed instalments to be paid irrespective of the success of the performance-contracting project. This is called cession of claims and is described more in chapter 6.2.

BASEL II: In the last few years, BASEL II has been an issue hovering above companies and still is connected to large uncertainties. BASEL II is a set of regulations aiming at an increased stability of international financial markets. Its central topic is the evaluation of borrowers by international uniform criteria and following the classification. A high share of equity capital is an important element of influence for borrowers to reach an advantageous evaluation and creditworthiness. Basel II requires FI's to be more sensitive towards risks associated with a specific credit. It is expected, that credits will be more difficult to obtain, especially for small and medium enterprises and that they will cost more. In Germany, the new rules are applying from January 2007.

For **companies**, and especially smaller companies, it is expected that the costs for capital will substantially increase, especially for smaller companies with a lower credit rating (due to e.g. a lower level of equity).

For **the public sector** credit takers, i.e. municipalities, Basel II will, in a first step not have an effect. This is due to the fact that public authorities as tiers of government are considered to be principally as creditworthy as national government, in many cases even AAA, the highest rating possible. For Energy Service projects, this could result in more clients financing the projects themselves due to overall better financing conditions.

In a second step, the generally high rating for the public sector will become more differentiated. Among the reasons is the fact that many municipalities own companies (e.g. utilities) that are organized and operated as private companies and as such these companies are fully under the rules of BASEL II. Since the municipalities, as shareholders, influence the rating for these types of companies, a new evaluation and rating of municipalities will become more important. And there is of course a different financial strength in different municipalities. In the future this will be reflected in differentiated credit ratings.

Excuse: Since the terms 'securities' and 'risk mitigation' are often used in the context of EPC projects, it should be explained here that in addition to those securities needed in order to obtain a loan, in an EPC project, the ESCo also has to provide a security to the client as a safeguarding of the savings guarantee given. The security can be in the form of a security note by a bank or a credit insurance company.

4.2.4 Taxation

Taxation	Reduce taxable income:	
	✓ Tax deductible expenses	✓ Interest and depreciation (linear AfA-tables) are tax deductible. Redemption payments are not tax deductible
	✓ Point in time of deductible expenses	✓ Depreciation is typically linear ✓ Interest payments decline over time
	✓ Value Added Tax (VAT)	✓ VAT due on total investment at the beginning of project ✓ Public entities can not deduct input tax (additional initial cost)
	✓ Benefits from tax exemptions	✓ Not known

Table 5: Credit financing – taxation

Credit payments and taxes

Credit payments are relevant to taxes paid in an enterprise. Whereas not all parts of credit payments can be tax deductible, interest rates usually are.

The interest rates are in many cases developing linear, and are decreasing over time. Therefore also the amount that is tax deductible will decrease. Differences may apply according to bank practice or country specifics.

In the case of a credit, the borrower is, as has been stated before, the legal and economic owner who therefore has the investment in his books and must depreciate it. This depreciation is also tax relevant and can reduce the borrower's taxable income. The client's payment of the contracting rate are operation expenses and therefore also tax deductible.

Value Added Tax

VAT is due on the total of the investment at the beginning of a project. Private companies can retrieve VAT. For public entities that cannot deduct input tax this may result in additional initial costs for a project.

4.2.5 Balance Sheet and Accounting Issues

Balance sheet & accounting aspects	Optimize balance sheet ratios:	
	✓ Capitalization of investment	✓ Debtor is legal and economic owner => Debtor has to capitalize investment
	✓ Balance performance ratios	✓ Loan and assets have to be capitalized in the balance sheet account => negative effects on balance sheet performance figures ✓ Public sector: credit treated as additional debt => Borrowing limits of Maastricht criteria apply

Table 6: Credit financing – balance sheet and accounting aspects

These are relevant in the three main issues of

- Assets and Liabilities /Ownership
- Balance sheet performance ratios, such as capital structure, equity –debt ratio, ...
- Profit and Loss Statement

Who can take or who has to take the debt of a credit into his books, who the assets? In the case of a credit, the borrower has the debt on his books. A debt will always influence a company’s ratio of equity capital. As explained earlier, this will influence credit lines and decrease possibilities to raise capital for further investments.

The capitalization of the assets depends on the economic ownership of the equipment installed:

- Where the equipment is owned by the ESCo, it is part of his assets in his books and the investment depreciation is subsequently also found in the ESCo’s books. The contracting client books the contracting rate as part of his operation expenses.
- Where the equipment is in the ownership of the contracting client, the assets are also on his balance sheet. The ESCo has the contracting rates as an accrued item (income at later stage, but attributable to time period in which it is in the books) in the books. This procedure is the same for public or private sector clients.

In cases where cession of claims is used, the effects are explained in chapter 6.3.5.

4.2.6 Management Expenditure and Transaction Costs

Management effort / Transaction cost	Cost as small as possible:	Both FI and Customer want to reduce transaction cost, (standardized products, increase finance volume => larger
	✓ One face to the customer	✓ Generally not the case
	✓ Knowledgeable financing partner	✓ Depends on bank; requires special know how: Energy-Contracting is not a typical core competence of banks
	✓ Consultancy for tax, accounting, legal optimisation and subsidies	✓ Service is limited to financing. Additional tax, legal service typically not included ✓ => higher effort for coordination on customer side
	✓ Reduce paperwork	✓ Accounting of investment is done by debtor ✓ Company documentation: last three annual accounts ... ✓ Some project documentation required: project description, investment plan, earnings & cash flow report ...
	✓ Time to receive financing promise	✓ Typically 1 month after documentation is complete
	✓ Customer approval process	✓ Approval is easier if funds are drawn from operative (not investment) budgets ✓ Public entities: credit finance is subject to debt ceilings and may require approval legislative or supervising authority => possibly time consuming ✓ Some local authorities have adopted general approval for savings-cash-flow financed EPC-projects (third party financing)

Table 7: Credit financing – management efforts and transaction cost

The credit financing model is not a one-stop-shop, especially if the building owner is the one who takes on the credit. There is a considerable amount of paper work to be prepared, and not all is supported by the financial institutions today. In an ideal situation, all efforts and needed documentation could be handled via the lender. A few banks are increasing their know-how and staff capacity regarding environmental projects, including energy. For smaller local banks this may not be feasible.

The amount of paperwork could be reduced and streamlined; currently the coordination efforts are still quite intense on the customer side. The amount of time needed from requesting to receiving a credit varies but is usually in the frame of one month, provided that the paperwork is complete.

Part of the problem, it is assumed here, lies with the EPC projects' complexity and understanding the business model behind it, especially on the side of the banks. The guaranteed savings, essentially a saved cash-flow on the side of the building owner is the key element. But as a risk mitigation instrument, it is not valued enough by banks.

Possible solutions may be to create energy service finance packages, for projects that follow standardised project development procedures. This could applicable e.g.

where loans from Development Banks are concerned or global loans are passed onto local banks for emission. Project development standards as propagated in this manual can be a basis for a more streamlined credit procedure. Banks are welcome to discuss the issue with the authors.

4.3 Examples of Credit Financing

Herein three good practice examples of Energy Contracting with Credit-Financing are outlined. The first example describes a biomass Energy Supply Contracting financed by an interest-subsidized credit in Spain. The second and third examples are both Energy Performance Contracting projects: A public lighting facility project in Spain with again an interest-subsidized credit and a water supply and lighting efficiency project in India financed by a shared savings model with ESCO credit.

4.3.1 Biomass Energy Supply Contracting with Interest-Subsidized Credit through ESCo, Spain

Reported by:
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Red Eléctrica de España, Spain
and KaWarna



Facility:

- Several facilities: residential buildings, factories, leisure facilities to provide heating
- Private initiative funded both by private and public funds
- Experience of more than 200 project implementations on a national basis
- Scope of the project: generate green and efficient energy using all kind of biomass materials

Initial situation: There are no specific problems identified but high efforts in communication and awareness about the green energy technology and also about guaranteed savings are expected. The first steps of these projects are a public sponsored preparation by initial and comprehensive energy audit.

Goals:

1. Reduction in energy costs by changing energy sources
2. Reduce energy consumption through more efficient equipment
3. Renew equipment at zero cost to the final client
4. Control and minimize green house gases

Measures:

1. Energy management and controlling system

2. High efficient biomass thermal generation
3. New logistics and procurement activities
4. Turnkey implementation, including design, asset management, storage, measurement and invoicing

Business Model:

Energy Supply Contract:

- ✓ KaWarna as the ESCo audits the initial situation, designs and implements the engineering project and subcontracts local implementation companies.
- ✓ The operation and maintenance is controlled and managed by the ESCo.
- ✓ Measures of the energy produced are centrally managed by remote devices for all implemented projects.

Financial Management:

- ✓ Finance almost in every project comes from IDAE (100%).
- ✓ KaWarna has implemented projects for a maximum of 350.000€, and also projects for 12.000€.
- ✓ Contract period 10 years - the client gets the property rights of the installation after that period.

Savings:

- ✓ KaWarna guarantees at least a 10% reduction indexed to initial energy source. This requirement is mandatory to access the finance.

Contractual Relationships:

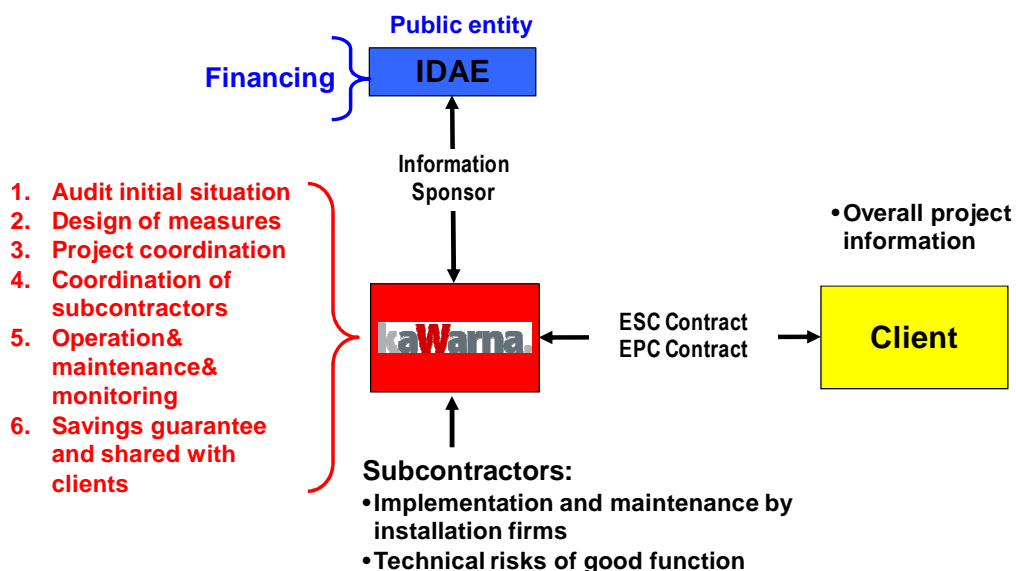


Figure 8: Biomass ESC with public finance through ESCO – contractual relationships

Cash Flows:

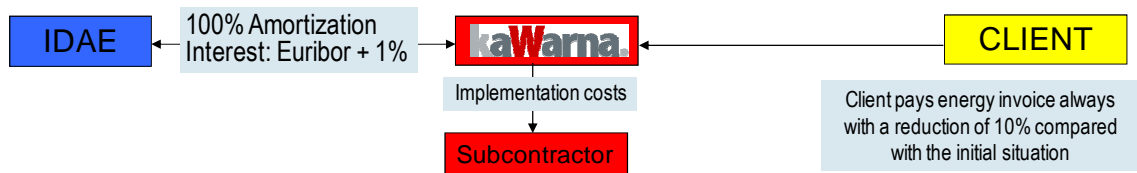


Figure 9: Biomass ESC with public finance through ESCO – cash flows

Lessons Learned, Innovations and Client’s Advantages:

- ✓ KaWarna takes total care: implementation, fuel, maintenance, measurement, invoicing, paying
- ✓ Customer makes no investment and receives the installation after 10 years
- ✓ Reduce energy costs by 10 %
- ✓ Scope: national projects
- ✓ Sponsored by the local authority
- ✓ The installation is guaranteed for the contract period of 10 years and the total lifetime is expected at 25 years.

4.3.2 Light Motril – EPC of Public Lighting Facilities with Interest-Subsidized Credit, Spain

Reported by:
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 Red Eléctrica de España, Spain

Perspective:

The objective of the project was to execute the energy optimization proposals developed between Motril’s city hall, la Sociedad Andaluza de la Energia S.A. and the Public Lighting Director Plan.

The proposals can be summarized in following three perspectives:

1. Energy Consumption Optimization.
2. Reduction of the Environmental Impact.
3. Efficient computer aided management.

Measures:

1. Invoice optimization
2. Efficient lighting
3. Installation of flow reduction units
4. Management and control systems

Goals:

1. Energy consumption reduction
2. Reduction of invoices
3. Emissions reduction
4. Well being of citizens due to optimization of luminosity
5. Easy surveillance of the complete system

Contractual Relationships:

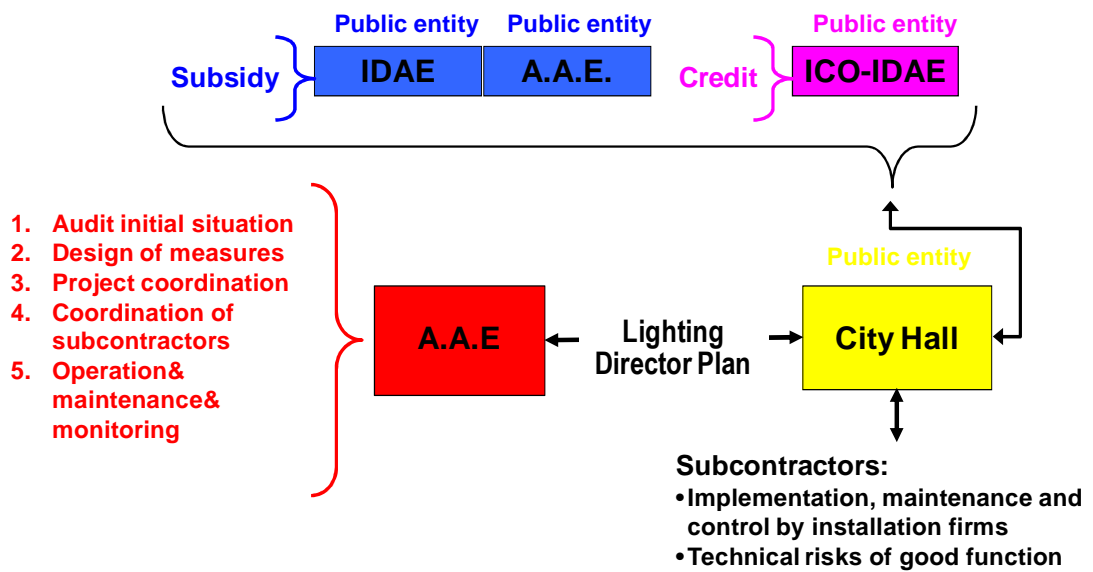


Figure 10: EPC lighting facilities with public financing – contractual relationships

Cash Flows:

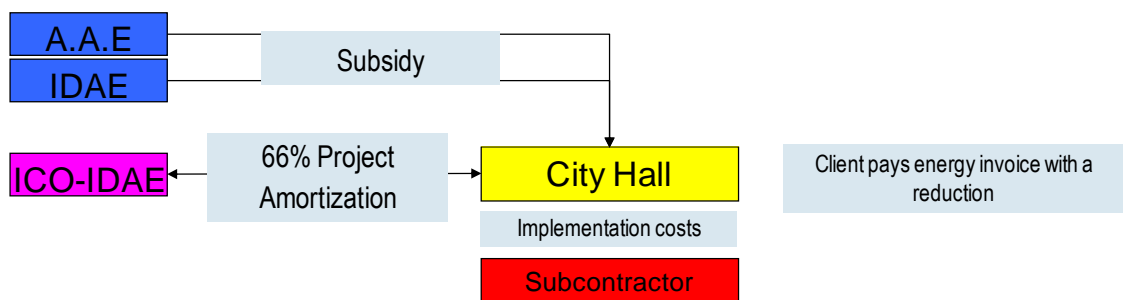


Figure 11: EPC lighting facilities with public financing – cash flows

Lessons learned:

- ✓ The role of Motril’s City Hall in the project:
 - ⇒ Financing partner
 - ⇒ Hiring A.A.E. as a general planner and subcontract other tasks
- ✓ Andalusia’s Energy Agency (A.A.E.) plays a double role

- ⇒ Financing partner
- ⇒ Technical partner: Planning and design, coordination as well as quality control and supervision
- ✓ Total investment amounts up to 3,081,819.28 €. The return of investment will be obtained in less than six years.
- ✓ Not all savings come from a direct reduction in the energy consumption, they also occur of
 - ⇒ Reduction of the emission and
 - ⇒ Reduction in the maintenance expenses.
- ✓ Achievements:

Energy Savings	2.786.104 kWh
Economic Savings	599.041€
CO ₂ Emissions Reduction	493 Ton/year

4.3.3 Water Supply and Lighting Efficiency with EPC Shared Saving with Municipal Corporation – ESCO Credit Financing with Trust and Retention Account, India

Reported by:

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Bureau of Energy Efficiency, India

Initial Situation:

- Municipalities and water utilities in India are constantly challenged by escalating population growth, power shortages, rising energy costs, water scarcity and outdated infrastructure. Inefficiencies in lighting and water supply systems incur huge losses for the municipal government.
- Optimizing energy usage by implementing energy efficient measures can achieve energy savings of at least 25 percent in water systems alone. However, many municipalities lack the funds, technical capacity, and expertise to carry out such projects.
- Securing financing for energy efficiency projects is a major barrier to efficiency in the local government context, where municipalities and utilities are generally not well versed in project development and finance; energy service companies (ESCOs) are often not familiar with how to adapt their trade from the industrial to the municipal sector; and financial institutions view as high risk all processes and projects that are not part of their usual portfolio.

Objectives and Goals:

- Create confidence amongst stakeholders in order to overcome issues regarding financing to ESCO and removing barriers in ESCOs undertake

public sector projects by ensuring success of Tamil Nadu Energy Municipal Efficiency Programme.

Annual Electricity Bill of 45 Municipalities	462 million INR
Municipal pumps	260 million INR
Municipal lighting	202 million INR
Annual energy saving potential in pumping	35 million INR
Annual energy saving potential in lighting	55 million INR

Development of the project:

- The Alliance to Save Energy provided assisted the Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL) in structuring the project including
 - Designing of Expression of interest EOI, Request for proposal RFP templates
 - Evaluation criteria for energy performance contracts
 - Preparation of a manual for EPC – publication by BEE
- Issues
 - Availability of Finance to ESCOs;
 - Payment Guarantee Mechanism to ESCOs;
 - ESCO projects in India often falter, if not fail, due to disputes over quantifying energy savings resulting from the project.
- Solutions
 - Adopting Trust & Retention Account (TRA) with electricity bill payment escrowed;
 - Using International Performance Measurement and Verification Protocol (IPMVP);
 - Overseeing Project progress and providing technical support to develop local capacity.

Measures:

Technical intervention include adoption of

1. Efficient pump sets
2. Impeller modification
3. Variable speed drives and
4. Automation systems – electrical panels including capacitors.

Business Model:

1. The ESCO and the lenders to the ESCO will jointly appoint a mutually acceptable Indian bank to act as the trustee and paying agent on behalf of the Lenders. (The Trustee Bank).
2. The Trustee Bank shall establish a Trust and Retention Account into which the Municipal Corporation will pay the energy saving payments as required under the Energy Services Contract after the energy savings are verified as per the agreed M & V protocol.
3. The Trustee Bank shall allocate all payments in accordance with a Payment Trust and Retention Agreement (the Agreement) and shall be bound by the terms of the Agreement. The Agreement shall be executed between the Trustee, ESCO, the lenders and the Municipal Corporation.

Contractual Relationships and Cash Flows:

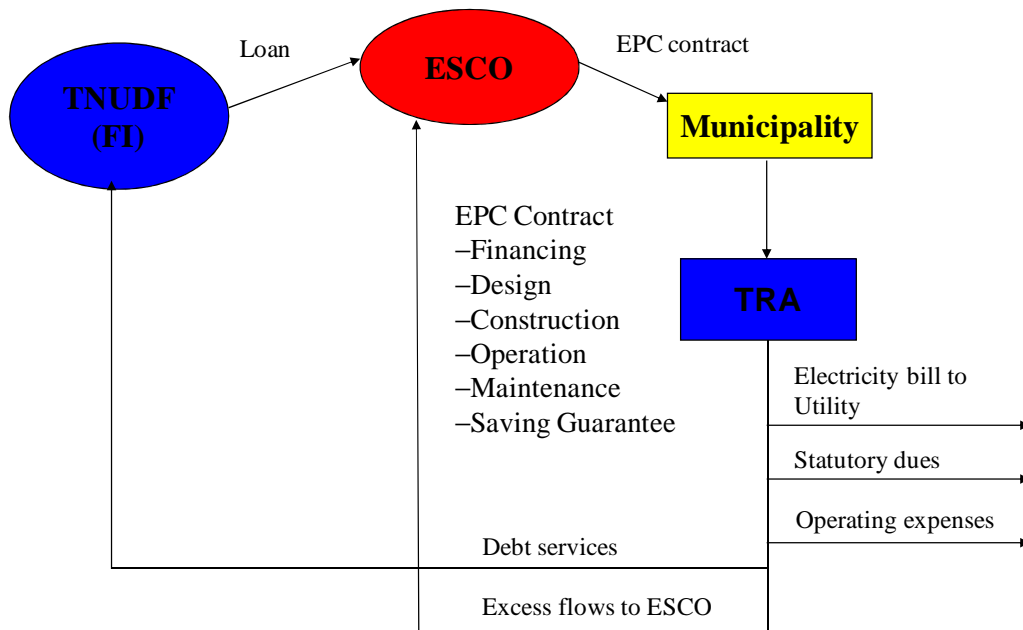


Figure 12: Water supply and lighting facility efficiency with shared savings – contractual relationships and cash flows

Current Status:

- 29 towns divided into 3 geographical groups based on physical proximity;
- Bid Evaluation Process:
 - Expression of interest (EOI) – 13 Responses;
 - Request for proposal (RFP) issued to 8; responses to RFP – 6;
 - Letter of Intent (LOI) issued to 2 ESCOs;
 - Investment grade audit draft report discussion in progress.

5 Leasing Financing for Energy-Contracting

5.1 Introduction to Leasing Financing

Leasing is a way of obtaining the **right to use an asset – not the possession of this asset**. Assets in our case mean investments into energy conservation measures or into energy supply plants. When leasing an investment, you do not buy it. You only pay for the exclusive right to use it.

Leasing is a contract between the owner of the asset (**lessor**) and the user (**lessee**), wherein the former grants exclusive rights to use the assets for a certain period (basic lease term), in return for payment of a lease. The lease is typically paid in annuities to the leasing finance institute (**LFI**). The lessee can be either an ESCo or the client (building owner) as displayed in Figure 13: and Figure 14:

Basically, there are two types of leases, which are relevant for Energy-Contracting: **operate** and **finance leasing**. Specific characteristics of both are described in chapters 5.3 and 5.4. Overall leasing characteristics are mentioned in this introductory chapter.

The basics contract relationships of a leasing agreement are displayed in the following figure. On the left side the ESCo is lessee, on the right side the client is it:

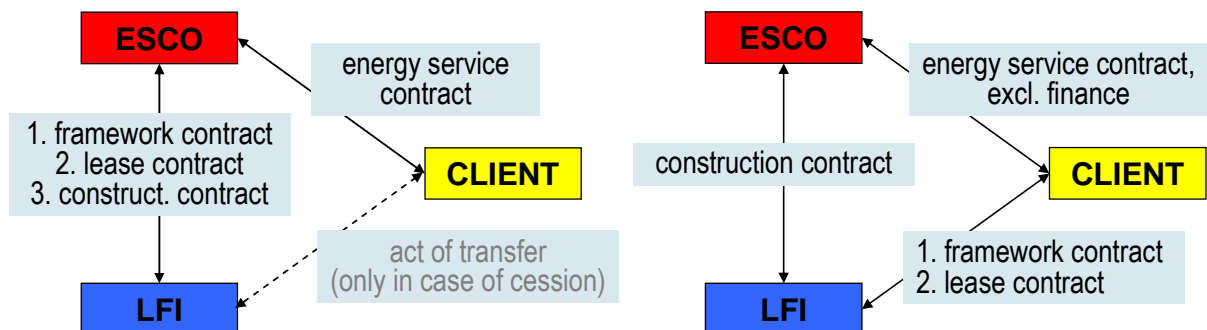


Figure 13: Contract relationships of a leasing agreement with ESCo (left) or Client (right)

Comments to the figures:

- The ESCo implements the EE-measures and takes over technical, economical and organisational services and risks of the EC-contract and (in many cases) arranges for the financing.
- The LFI takes over financial and administrative services and risks and concludes a framework and lease contract either with the ESCo (sometimes including a cession agreement for part of the contracting rate) or with the client.
- The LFI signs a construction contract for the energy efficiency investments with the ESCo.

Furthermore leasing models distinguish between **full-** and **part-amortisation (with residual value)** contracts as well as contracts including advance payments or not, all of which are applicable to EC financing.

Sale-and-lease-back contracts are mainly used to finance overall building refurbishment projects, not just EPC-measures. In many cases the purpose is to cash "hidden reserves" e.g. in public buildings. If a Sale-and-lease-back financing is used for a building project, it is strongly recommended to write minimum performance standards for thermal refurbishment and require guarantees like maximum energy consumption in the terms of reference.

The typical cash flow relationships of a leasing agreement are displayed in the following figure. Again, on the left the ESCo is lessee, on the right it is the client:

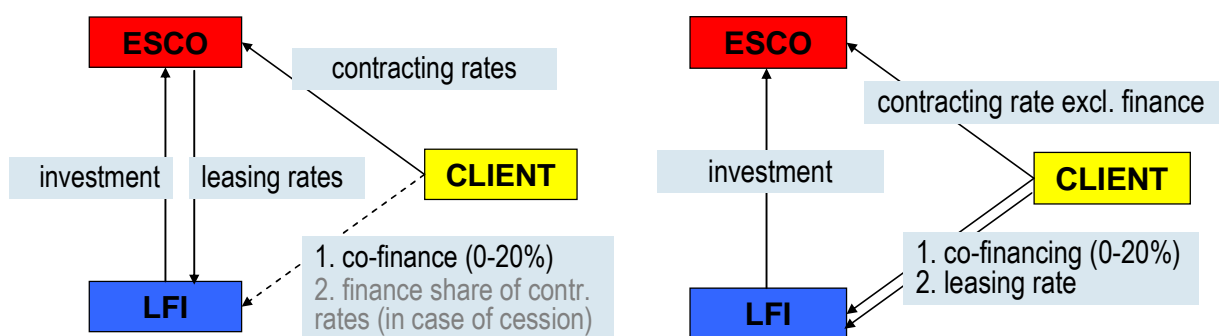


Figure 14: Cash flow relationships of a leasing agreement with ESCo (left) and Client (right)

Comments to the figures:

- In both cases the LFI pays for and the ESCo builds the energy efficiency investments and arranges for the financing agreements
- The LFI should handle Co-financing (e.g. subsidies)
- In case of ESCo finance, the finance part of the ESCo's claims to the client can be ceded to the FI to directly repay the ESCo's debt (for more details on cession see chapter 6.2).
- In case of customer finance, the (financing share) of the contracting rate is paid directly to the LFI as leasing rate. The rest of the contracting rate (operation & maintenance, assets ...) share should go directly to the ESCo.

5.2 Operate and Finance Leasing Common Features and Customer Demand

For both operate and finance leasing the following important properties is characteristic:

- **Direct financing cost** for leasing often exceed the costs of taking a loan, because the lessor usually has a broader range of consulting and services

included, assumes higher risks and requires fewer securities compared to credit finance.

- **Direct financing cost:** LFI's often will include **subsidy acquisition** and handling in their port folio, thus providing a more comprehensive service to the client.
- **Direct financing cost:** The lessee is responsible for the **operation and maintenance** of the asset at his own expense. Typically the lessor will require the lessee complies with mandatory operation and maintenance regulations. The lessee also bears the economic risk if the asset becomes unusable or sinks. Typically the lessor will obligate the lessee to conclude an **insurance package** for his equipment. These features distinguish leasing from traditional renting.
- **Legally**, not all energy supply and conservation investments can be **leasing** financed though. The technical term is called **fungibility** or **interchangeability** required (by tax laws) of an asset to qualify for operate leasing: After the basic lease term the asset has to be re-utilizable without suffering substantial damage when being removed from its place of installation.
In praxis many EPC-measures do not qualify, whereas Supply-Contracting measures do. Still there is room for interpretation and some LFI are more creative than others.
- **Legal aspects:** In the case of leasing it is important to differentiate between legal and economic ownership of the asset. **Legal ownership** secures the control over the asset and serves as a security for the lessor, which is stronger compared to a lien or a reservation of property rights as applied e.g. in a credit finance.
- **Legal aspects: Economic ownership** determines on whose books the asset is accounted for. In the case of finance lease it's the lessee, in the case of operate lease it's the lessor. This has important implications on balance sheet ratios and taxations issues.
- **Legal aspects:** Leasing financing legally requires that **no automatic transfer of ownership** at the end of the contract term (without reimbursement) is settled in the Energy-Contracting contract. Otherwise it will be considered as a variety of a sales contract. In other words: if a performance contract includes a definite transfer of ownership to the client at the end of the contract term, a leasing financing is not possible. Existing EPC model contracts often include a fixed transfer of ownership free of charge after contract termination. These have to be revised if you want to allow for a leasing finance option.
- **Collateral/Securities:** Some Leasing Finance Institutes (and hopefully other FI's as well) have **specialized and knowledgeable staff**, who have a good understanding of the nature of Energy-Contracting projects. Based on their analyses of the project, these LFI's are able to base the refinancing mainly on the project cash flow rather than on the borrower. These LFI may also perceive fewer risks and require less company collateral or accept

project based securities like a cession of project revenues (e.g. feed in tariffs from renewable electricity production).

- **Management Expenditure:** LFI's generally offer a **comprehensive consultancy** comprehending taxation, balance sheet matters and legal aspects of the energy service project, which suits well with the proposed comprehensive look at all financing implications and should result in an overall cost optimisation. Leasing typically includes consultancy on contract design and management, insurances, commissioning of contractors, accounting, controlling and payout of invoices, VAT-clearing, to list the most important services. This should result in reduced overall transaction cost.

Differentiations between operate and finance lease are described in the next two chapters.

5.3 Operate Leasing Features and Customer Demand

Traditionally operate leasing is used for cars and mobile goods such as moveable machineries, but not limited to these kinds of assets. Operate lease is increasingly used to finance Energy Service investments with, however mostly investments to facilitate supply service contracts.

Applying the operate lease model to Energy-Contracting may offer a number advantages to the lessee like capitalization with lessor resulting in off balance financing, extension of credit lines or reduced transaction cost.

Possible disadvantages may be:

- Only leasable goods qualify (see chapter 5.3.2)
- Premature cancellation of contract at disproportionately high cost
- Even if leasing obligations do not appear on the balance sheet, they have to be disclosed to potential creditors as pending transactions.

These and other implications will be reasoned in the next chapters. In order to facilitate the overview, the comments are compiled in tables, with some details explained further.

With respect to the criteria from the customer profile, the standard operate finance instruments offer the following properties (General leasing properties which apply to both operate and finance lease are described in the previous chapter 5.2).

5.3.1 Direct Financing Cost

Direct financing cost	Costs as low as possible:	
	✓ Interest rates, fees, ...	✓ Lease payments (annuity) ✓ Single payments: - Contract fee (1% of total lease payments) - Handling charge (negotiable)
	✓ Extent of financing	✓ Financing of total investment incl. soft cost (90 - 100% financing)
	✓ Subsidies: Compatibility, eligibility	✓ Yes, reduces lease rate ✓ Application by lessor (owner of investment) ✓ special know how required – typically leasing banks have subsidy specialists

Table 8: Operate Leasing – direct financing costs

5.3.2 Legal Aspects

Legal aspects	Legal implications	
	✓ Financing term	✓ Object oriented: Basic lease term: 40 – 90% (mobile), < 90% (immobile) of useful life
	✓ What can be financed?	✓ Only leasable energy service investment incl. soft cost (e.g. project development)
	✓ Cancellation of contract	✓ Generally no cancellation during basic lease term possible
	✓ Legal and economic property aspects	✓ Lessor is legal and economic owner
	✓ Transfer of ownership at end of term	✓ Lessor remains owner ✓ EC contract must not include automatic transfer of ownership to client
	✓ Responsibility for operation and maintenance	✓ Lessee has to perform o & m according to lessor's requirements and must insure the investment

Table 9: Operate Leasing – legal aspects

Further Comments:

- **Financing term:** In order to qualify as leasing, the lease term must not exceed a certain percentage of the asset's estimated useful life-time (90% according to Austrian and German law, 75% of the economic life according to US GAAP).
- **What can be financed:** Not all energy supply and conservation investments can be **operate lease** financed though. The technical term is called **fungibility** or **interchangeability** required (by tax laws) of an asset to qualify for operate leasing: After the basic lease term the asset has to be re-

utilizable without suffering substantial damage when being removed from its place of installation. As an example a container-combined heat and power plant counts as interchangeable, however a building insulation does not. A minimum of about 80 % of the total investment has to be fungible.

In praxis many EPC-measures do not qualify, whereas Supply-Contracting measures do. Still there is room for interpretation and some LFI are more creative than others.

- **Ownership:** The lessor pays for and owns the asset legally as well as economically. The lessee exclusively uses the asset in exchange for a pre-determined leasing fee.

5.3.3 Collateral (Securities)

Collateral	Reduce Collateral requested and own risks:	Lessor wishes to safeguard lease object. Generally securities are based on project with possibly some additional debtor liabilities
	✓ Finance based on project cash flow	✓ Project cash flow accepted as main security, (requires detailed project check and know how) ✓ Cession of revenues e.g. from feed in tariffs and insurances.
	✓ Financial Collateral	✓ Equity capital required (0-20 %) (at least some client commitment required) ✓ Lessor's often accept leased assets as main collateral ✓ Insurances for project equipment, (elementary-, break down- and interruption of service insurance) ✓ Additional Collateral like bonds (Hermes, ÖKB) and guarantees from parent companies depend on specific project ✓ Public entities: non-appropriation-risk for lessor ²⁰
	✓ Tangible Collateral	✓ No, because lessor holds property and economic title ²¹
	✓ Personal securities	✓ Applicable for small projects only

Table 10: Operate Leasing – Collateral required

5.3.4 Taxation Implications

²⁰ In the US. leasing contracts with public lessees often include non-appropriation clauses. This means that municipalities or governments have to appropriate lease payments, e.g. each year anew. Since the possible non-appropriation of payments entails an increased risk for the lessor, contracts under such conditions usually have higher lease rates.

²¹ Risk of loss of property rights: Assets that are inseparably linked to an object become integral part of it (in Germany: BGB § 946). E.g. new windows or facades

Taxation	Reduce taxable income:	Lessor can support customer to save taxes in order to offer the cheapest overall finance solution
	✓ Tax deductible expenses	✓ Complete leasing rate is tax deductible.
	✓ Optimization of timing of deductible expenses	✓ Depreciation can be accelerated through “Leasing effect” (shorter depreciation periods for lessors) ✓ Constant rates (annuities) over contract period
	✓ Value Added Tax (VAT)	✓ VAT due per rate (pro rata temporis) => VAT is dispersed over project duration
	✓ Benefits from tax exemptions	✓ No examples known in Europe ²²

Table 11: Operate Leasing – taxation implications

Further Comments:

- **Tax deductible expenses:** Operate Leasing allows to transfer tax benefits from those who use the asset to those (the LFI as owner of the asset) who can make best use of the benefits.
- **Tax deductible expenses:** The LFI economically owns the asset and records all the tax deductions for depreciation and interest in his books.
- **Tax deductible expenses:** Depreciation: Lessors may apply different depreciation tables with shorter depreciable life
- **VAT:** Public entities, who can not deduct input tax (no pre-tax allowance) profit from paying VAT per rate and not for the total investment all at once. This requires, that legal ownership can be maintained with the lessor.
- **VAT:** Interest payments are tax excluded.
- **VAT:** For public entities there are tax savings from input tax correction after 10 years.

5.3.5 Balance Sheet and Accounting Implications

Balance sheet & accounting aspects	Optimize balance sheet indicators:	LFI supports customer with overall optimization
	✓ Capitalization of investment	✓ Lessor is legal and economic owner => has to capitalize investment on his balance sheet => shortening of balance sheet (off balance) for lessee
	✓ Balance sheet performance indicators	✓ Assets and lease payment obligations are not capitalized in the balance sheet account => distortion of indicators, e.g. improvement of debt-equity ratio ²³ ✓ Public sector: Maastricht neutral

Table 12: Operate Leasing – balance sheet & accounting aspects

²² US example for a tax exempt lease financing: <http://www.energystar.gov/ia/business/easyaccess.pdf>

²³ for further explanation, please refer to chapter 9.2

Further Comments:

- **Capitalization:** The asset does not appear on the lessee's balance sheet.
- **Capitalization:** Future liabilities from operate leasing agreements are not entered in the balance sheet of the client. Nevertheless these liabilities have to be accounted for in the amendment of the annual statement as pending transactions.
- **Indicators:** Leasing enables the lessee to expand the credit range, because future leasing liabilities are not considered as debt.

5.3.6 Management Expenditure and Transaction Cost

Management expenditure / Transaction cost	As small as possible:	FI wants to reduce transaction cost, (standardized products, increase finance volume => larger projects)
	✓ One face to the customer	✓ In principle yes (depends on LFI)
	✓ Knowledgeable financing partner	✓ Depends on LFI and requires special know how: some LFI have specialized project finance departments for EC
	✓ Consultancy for tax, accounting, legal optimisation and subsidies	✓ Service typically comprehends tax and legal advice => less effort for coordination on customer side ✓ Accounting of investment is done by lessor
	✓ Reduce paperwork	✓ Detailed project documentation (investment plan, project cash flow, profit and loss account) ✓ Credit report
	✓ Time to receive financing promise	✓ Typically 1 month after documentation is complete
	✓ Customer approval process	✓ Public entities: operate lease is legally not considered indebtedness which may make approval process easier. Approval is easier if funds are drawn from operative (not investment) budgets ✓ Some public authorities have adopted general approval for savings-cash-flow financed EPC-projects

Table 13: Operate Leasing – Management expenditures and Transaction cost

5.4 Finance Leasing Features and Customer Demand

Finance lease can be seen as a mixture between a conventional credit and an operate lease. Many properties are closer to the credit, except the more project oriented approach for refinancing and securities required.

With respect to the criteria from the customer profile, the standard finance leasing instruments offer the following properties. In order to facilitate the overview, the comments are compiled in tables, with some comments in footnotes:

Criteria	Customer expectations	Finance Leasing
Direct financing cost	Costs as low as possible:	
	✓ Interest rates, fees, ...	✓ Lease payments (annuity) ✓ Single payments: - Handling charge (negotiable)
	✓ Extent of financing	✓ Financing of total investment incl. soft cost (90 - 100% financing)
	✓ Subsidies: Compatibility, eligibility	✓ Yes, reduces lease rate ✓ Application by lessee (economic owner of investment) or lessor on behalf of lessee. ✓ Special know how required – typically leasing banks have subsidy specialists
Legal aspects	Legal implications	
	✓ Financing term	✓ Flexible: according to customer demand (no legal regulation). Below useful life time of asset
	✓ What can be financed?	✓ Complete energy service investment incl. soft cost (e.g. project development)
	✓ Cancellation of contract	✓ Depends on contract type, usually fixed terms ✓ Short rate penalties apply for premature cancellation
	✓ Legal and economic property aspects	✓ Lessor is legal owner ✓ Lessee is economic owner (lessor may hold retention of title)
	✓ Transfer of ownership at end of term	✓ Lessor remains owner ✓ EC contract must not include automatic transfer of ownership to client
	✓ Responsibility for operation and maintenance	✓ Lessee has to perform o & m and must insure the investment according to lessors requirements
Securities	Reduce securities requested and own risks:	Lessor wishes to safeguard lease object. Generally securities are based on project with possibly some additional debtor liabilities
	✓ Finance based on project cash flow	✓ Project cash flow accepted as main security (requires detailed project check and know how) ✓ Cession of revenues e.g. from feed in tariffs and insurances.
	✓ Financial securities	✓ Equity capital required (0-30 %) (some client commitment required) ✓ Insurances for project equipment (elementary-, break down- and interruption of service insurance) ✓ Additional securities like bonds (Hermes, ÖKB) and guarantees from parent companies depend on specific project ✓ Public entities: non-appropriation-risk for lessor

Criteria	Customer expectations	Finance Leasing
	<ul style="list-style-type: none"> ✓ Tangible securities ✓ Personal securities 	<ul style="list-style-type: none"> ✓ No, because lessor holds property title until payment of last rate!²⁴ ✓ Applicable for small projects only
Taxation	Reduce taxable income:	Lessor can support customer to save taxes in order to offer the cheapest overall finance solution
	<ul style="list-style-type: none"> ✓ Tax deductible expenses ✓ Point in time of deductible expenses ✓ Value Added Tax (VAT) 	<ul style="list-style-type: none"> ✓ Interest and depreciation (linear, AfA-tables) are tax deductible. Redemption payments are not tax deductible ✓ Depreciation is linear (sometimes declining) ✓ Interest payments decline over time ✓ VAT due on sum of rates at the beginning of project => VAT also on bank margin²⁵ ✓ Public entities can not deduct input tax (additional initial cost) ✓ "Similar-to-business-activities" can be made input VAT deductible, (e.g. renting out of advertisement boards on street lighting poles)
	<ul style="list-style-type: none"> ✓ Benefits from tax exemptions 	<ul style="list-style-type: none"> ✓ No examples known in Europe²⁶
Balance sheet & accounting aspects	Optimize balance sheet ratios:	LFI supports customer with overall optimization
	<ul style="list-style-type: none"> ✓ Capitalization of investment ✓ Balance performance ratios 	<ul style="list-style-type: none"> ✓ Lessor is legal owner ✓ Lessee is economic owner => has to capitalize investment²⁷ ✓ Lease and assets have to be capitalized in the balance sheet account => negative effects on balance sheet performance figures ✓ Public sector: Sometimes special regulations apply to avoid capitalization and Maastricht criteria
Management expenditure / Transaction cost	As small as possible:	FI wants to reduce transaction cost, (standardized products, increase finance volume => larger projects)
	<ul style="list-style-type: none"> ✓ One face to the customer ✓ Knowledgeable financing partner ✓ Consultancy for tax, accounting, legal optimisation and subsidies 	<ul style="list-style-type: none"> ✓ Generally yes (depends on LFI) ✓ Depends on bank and requires special know how: some LFI have specialized project finance departments for ES ✓ Service typically comprehends tax and legal advice => less effort for coordination on customer side ✓ Accounting of investment has to be done by lessee

²⁴ Risk of loss of property rights: Assets that are inseparably linked to an object become integral part of it (in Germany: BGB § 946). E.g. new windows or facades

²⁵ Austria: no VAT on interest (UStG § 6 (2) 1994

²⁶ US example for a tax exempt lease financing: <http://www.energystar.gov/ia/business/easyaccess.pdf>

²⁷ Lessee is economic proprietary and has to account for the investment in his balance sheet. Thus finance leasing is not Maastricht neutral.

Criteria	Customer expectations	Finance Leasing
	✓ Reduce paperwork	✓ Documentation depends on project finance (=>operate lease) or company finance (=> credit) ✓ Credit report
	✓ Time to receive financing promise	✓ Typically 1 month after documentation is complete
	✓ Customer approval process	✓ Approval is easier if funds are drawn from operative (not investment) budgets ✓ Some local authorities have adopted general approval for savings-cash-flow financed EPC-projects

Table 14: Matrix Finance Leasing

5.5 Examples of Leasing Financing

This point pictures three EPC-project examples with operate-leasing-financing and two with finance-leasing-financing. The features of operate-leasing are described by the example of a HVAC-system optimisation at a pharmaceutical plant in Austria, by the example of a reduction of electricity and operation costs at a dairy facility in India and by the example of a HVAC-system refurbishment at an education building as well as a concert hall in Finland. The finance-leasing model is outlined by the example of HVAC, lighting optimisation and energy management at a city hall in the Netherlands and by the example of a street lighting refurbishment in Austria.

5.5.1 Pharmaceutical Plant uses Operate Leasing for EPC in HVAC-System, Austria

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Object Data, Initial Situation and Objectives

The customer facility is a production site of an international pharmaceutical enterprise with a usable floor space of 48,000 m², erected in 1981/82. Cost for heat and electricity amounted to 1.5 Million € per year. Heating and process steam were provided by natural gas fired thermo-oil Boilers.

The decision to have a third party involved in the energetic rehabilitation measures was mainly driven by the fact, that companies investment funds were reserved for research and production investments. The ESCOs know how and savings guarantee were an additional incentive to the customer.

Project goals were to maintain and improve energy supply and distribution facilities, to ensure a reliable operation and to raise availability, to increase maintenance

intervals and the useful life of the equipment. And off course to tap cost saving potentials. Short pay back time of investments was mandatory to have a short contract term.



Figure 15: Pharmaceutical plant – picture of production site

Implemented Measures

The feasibility study – prepared jointly by client and contractor - explored all possible measures in the fields of heating, cooling, ventilation, air conditioning (HVAC) and electrical engineering. Demand side building measures (e.g. refurbishment of building envelope) were not considered.

Implemented measures include:

1. Recirculation units for the ventilation system (reduction of outside air flow intake)
2. Installation of three new ventilation units with a total air flow of 120,000 m³/h
3. Exhaust gas heat recovery system for natural gas fired thermo-oil boilers
4. Rehabilitation of hot water system
5. Adaption of complete building control system
6. Implementation of a continuous energy control system, monitored by both contract parties
7. Electricity savings from improved ventilation and cooling systems (not accounted for => extra benefit to customer)

The total investment sums up to 1,150,000 € (excl. VAT). All measures were implemented during continuous operation of the production process.

The ESCo guarantees energy savings in an amount of 229,560 Euro/year based on the implemented saving measures. A reduction of 1,300 tons CO₂/year can be achieved.

Contract Relations and Financing Model

In this financing model, the ESCO formally takes over responsibility for the complete energy service project including a savings guarantee over the contract term of 6 years. ESCO and CLIENT have entered into an **energy service contract**

including financing. This contract also contains a **cession agreement** of ESCOs claims to FIN. Other than that, FIN has no direct contract relationship with the CLIENT.

At the same time ESCO and FIN have concluded an **operate lease agreement**. This avoids entering the investment on the ESCOs balance sheet. FIN also accepts the risk of an economic downfall of the CLIENT, which is recorded in a **project framework contract** between FIN and ESCO. To assure completion and technical and economical performance of the measures, ESCO has to provide a **bank guarantee** to FIN to secure the amount of the total savings.

The contracts concluded are displayed in the following diagram:



Figure 16: Pharmaceutical plant – contractual relationship of operate-leasing ESC-project

All operation & maintenance (o&m) tasks remain within the responsibility of CLIENT as before the modernization. This results in additional savings for the CLIENT due to extended o&m intervals.

Financing Model

The CLIENT provides no equity capital or building cost subsidy, so the investment is paid with 100% external capital, provided by FIN. ESCO invoices the total investment of 1,150,000 € (excl. VAT) to FIN and is being paid according to a payment plan.

The CLIENT pays the ceded contracting rates directly to FIN. The Client’s payments are being covered by the guaranteed energy and maintenance savings.

The cash flows are displayed in the following diagram:

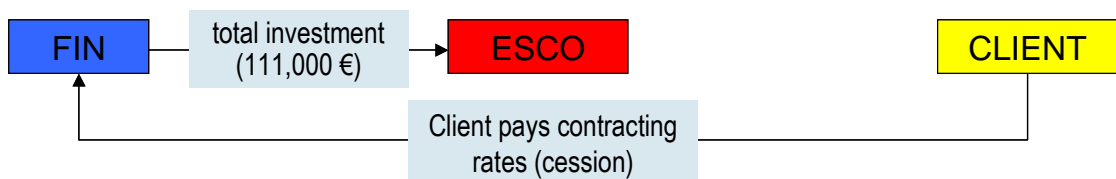


Figure 17: Pharmaceutical plant – cash-flows of the operate-leasing ESC-project

Electricity savings are additional benefits to the CLIENT which are not accounted for. Any savings above the guaranteed level goes to the CLIENT as well.

Innovative aspects of the model include:

- ✓ The CLIENT has only one contact for all energy matters. Financing is in the back ground.
- ✓ Assets were activated by FIN and do not appear in the books of ESCO nor the CLIENTs.
- ✓ FIN (rather than the ESCO) accepts the economic risks of the (industrial) CLIENT.

5.5.2 Dairy Facility reduces Electricity and Operation Costs by EPC with Operate Leasing, India

Reported by:

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Bureau of Energy Efficiency, India

Facility

- Industry complex: Cooperative Dairy Facility
- Location Kaira Gujarat 2002
- Main equipments: Refrigeration, Lighting
- Size of factory: co-operative with 500,000 members (milkmen), output of 740,000 litres milk products per day

Initial Situation

- Initial Electricity Consumption: 31 million kWh per month
- Energy audits carried out for refrigeration system (pumps and compressors) and lighting transformer in 2000: Mutually agreed energy savings potential - Rs. 9 million/annum ~ 1900 MWh/annum

Goals:

1. Reduction of electricity costs
2. Pre-emptive organisational measure to reduce energy and operating costs

Measures taken:

1. Energy Efficiency improvements:
 - Replacement of lighting transformers
 - Replacement of higher efficiency pump sets
2. Direct Load Control:
 - Charging of Ammonia in the refrigeration system for improving the specific norm of chillers
 - VFDs: variable frequency drives at process pump as per the duty point conditions

Business Model:

Procurement:

- ✓ Single party invitation to one ESCO in 2000

Energy Performance Contracting-Contract:

- ✓ ESCO act as a general contractor

- ✓ Contract period 2000 - 2002
- ✓ Financing:
 - Equipment costs were borne by the client.
 - Implementation including installation, operation and demonstration of the savings were financed interim by 100 % of the ESCO.
 - The facility owner paid the rest after successful demonstration of the savings as a security of the savings guarantee.
- ✓ Contract costs were not shared by the ESCO with the BEE.

Savings:

- ✓ Guaranteed savings:
 - Rs 9 million (electricity cost ~ Rs 4.82/kWh) over 24 months
- ✓ Extra savings are agreed to be shared.

Contractual Relationships:

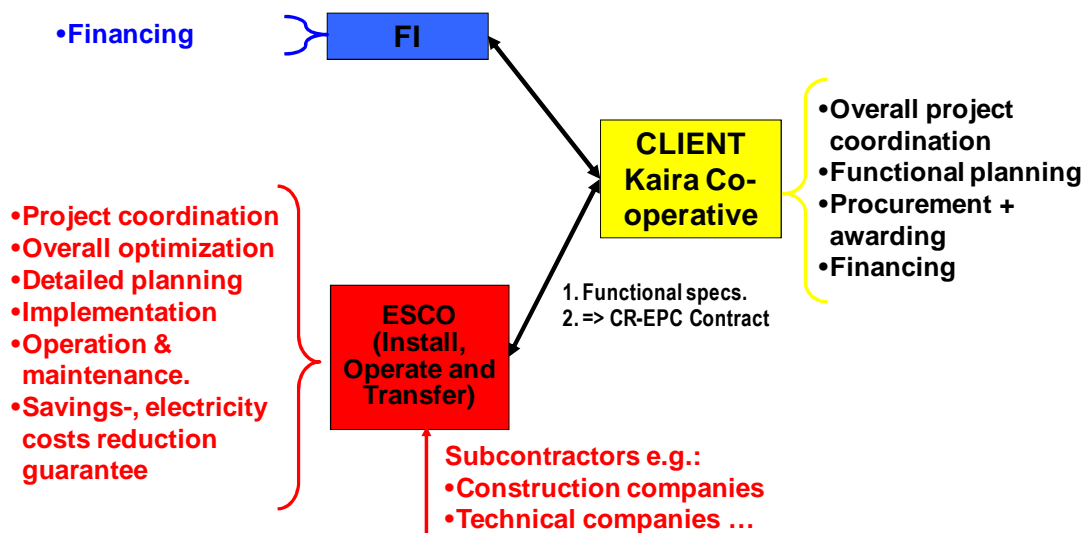


Figure 18: Dairy facility uses operate leasing – contractual relationships

Cash flows:

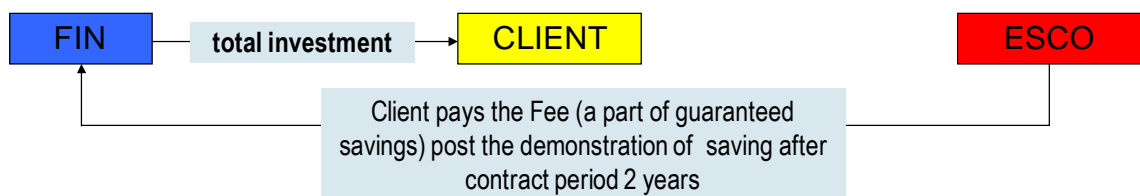


Figure 19: Dairy facility uses operate leasing – cash flows

Lessons Learned, Innovations and Client’s Advantages:

- ✓ Project reasonably beneficial

- ✓ Almost no financing by the client needed
- ✓ Electricity savings 2000-2002:
95 MWh/month ~ 2,280 MWh
means cost reduction of ~ Rs. 11 million
 - ⇒ Slightly over committed savings calculations

5.5.3 Education Building and a Concert Hall, City of Turku: HVAC-System Refurbishment through EPC with Operate Leasing, Finland

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Building complex:

Education building (EB):

- Construction year 1953; volume: 72,023 m³; floor area 19,500 m²
- District heating: 4202 MWh/a (54 kWh/m³a, 215 kWh/m²a);
electricity 940 MWh/a (13 kWh/m³a)

Concert hall (CH):

- Construction year 1952; volume 38,865 m³; floor area 7878 m²
- District heating: 538 MWh/a (13 kWh/m³a, 68 kWh/m²a);
electricity: 292 MWh/a (7,5 kWh/m³a)

Initial Situation:

- Both buildings partly renovated in the 90's
- Energy audits carried out in both buildings in 1999
- Great savings potential with modernization of the HVAC units and the control system

Goals:

1. Improvement of energy efficiency - energy saving goals:
 - heat: 980 MWh/a
 - electricity: 48 MWh/a
2. Modernization of some HVAC units

Measures taken:

1. Efficiency improvements:
 - EB: complementary heat recovery installations, CO₂-control
 - CH: heating and ventilation automation improvements, CO₂-control

2. Modernization:

- EB: two modernized ventilation units
- CH: modernization of the main HVAC units and the building automation systems

Business Model:

Procurement:

- ✓ Call for tenders to four ESCO's; one responded

Energy Performance Contract:

- ✓ Contract period 12/2006 – 12/2013
- ✓ ESCO as general contractor
- ✓ Contract costs: € 553,000
 - ⇒ government subsidy € 54,260
- ✓ Financing: 100 % operate leasing (except one HVAC unit with own financing)

Savings:

- ✓ Guaranteed savings: Heat 980 MWh/a; electricity: 48 MWh/a
- ✓ Sharing of extra savings: 50 % ESCO and 50 % client

Contractual Relationships and Cash Flows:

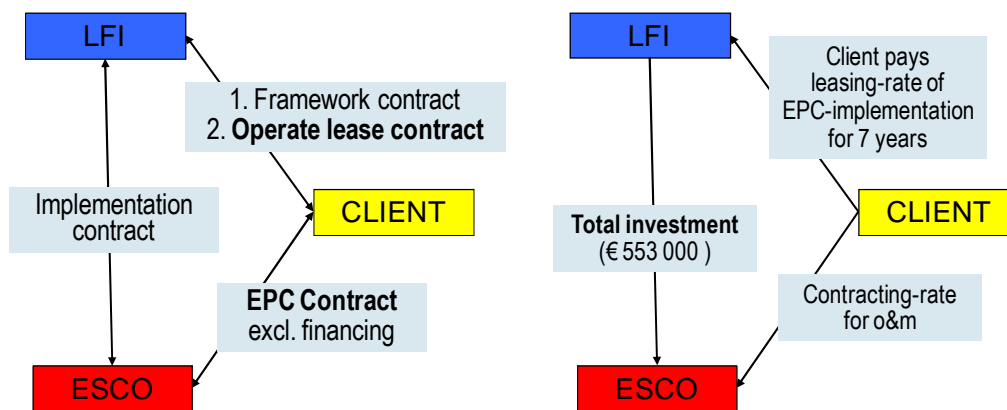


Figure 20: Educational building and concert hall refurbishes HVAC-system with operate leasing – contractual relationships and cash flows

Lessons Learned, Innovations and Client's Advantages:

- ✓ Improvements to the tendering documents
- ✓ Project unexpectedly beneficial concerning the energy savings – almost no own funding needed:
 - ⇒ E.g. in 2008: heat savings 1799 MWh vs. guaranteed 980 MWh and electricity savings 104 MWh vs. guaranteed 48 MWh

⇒ Too conservative savings calculations

5.5.4 City Hall in Sittard uses EPC with Finance Leasing for HVAC, Lighting and Energy Management, Netherlands

Reported by:

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Essent Local Energy Solutions



The municipality Sittard Geleen in the south of the Netherlands is one of the first communities to recognize the benefit from Energy Performance Contracting. One of the first projects was realized in the city hall.



Figure 21: City Hall Sittard EPC with finance leasing – picture

Features of the building

- ✓ Office building
- ✓ Useable floor area 5.600 m²
- ✓ Volume 16.750 m³
- ✓ Costs of heat and electricity 0.2 million €/a

Initial situation

- ✓ High annual energy costs
- ✓ Obsolete lighting
- ✓ Poor light quality
- ✓ Malfunctioning cooling

The objectives of the project were

- ✓ Sample low-energy building
- ✓ Reduce annual energy costs

- ✓ Improving indoor climate
- ✓ Replace out of date equipment

Measures:

- ✓ Energy management and controlling system
- ✓ Replace old central heating boilers by cascade of 10 HE (high efficient) boilers
- ✓ New refrigerating installation with 70% of free cooling
- ✓ High efficient lighting system with daylight and motion detection (winner Green Light Award 2003)



GreenLight

Business Model

Energy Performance Contract:

- ✓ Advice of building owner (city of Sittard), design and project management by Essent Energy Services (works as ESCO)
- ✓ Intermittent financing 100 % through ESCO, Financial lease by ING bank
- ✓ Contract costs: € 260,000, Government subsidy € 13,000
- ✓ ESCO as a general contractor
- ✓ Contract period 15 years

Savings:

- ✓ Guaranteed savings:
- ✓ Heat: 293 MWh/a; electricity: 150 MWh/a
- ✓ Sharing of extra savings: 50 % / 50 % to ESCO/Client

Task Sharing and Interfaces:

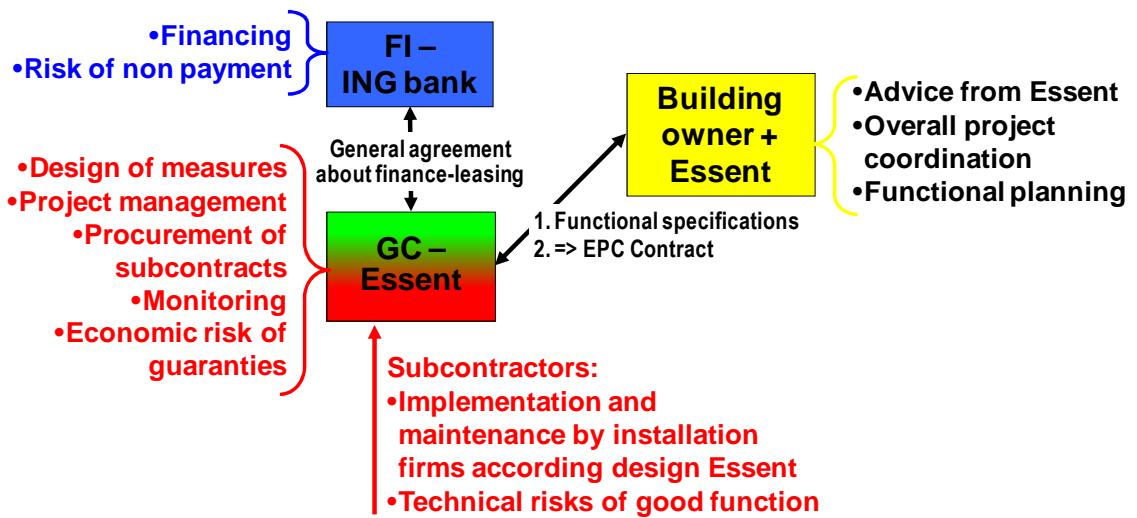
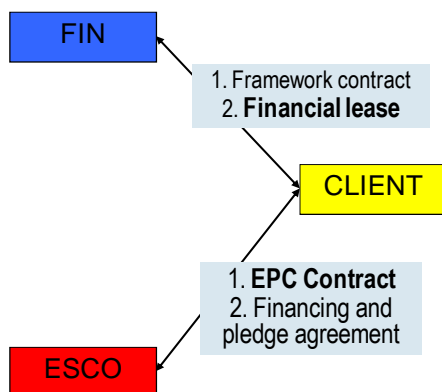


Figure 22: City hall Sittard EPC with finance leasing – task sharing and interfaces

Contractual relationships:



Cash flows:

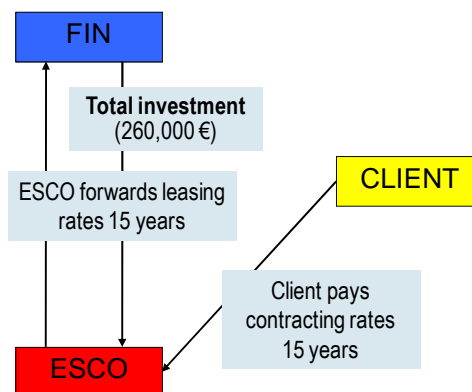


Figure 23: City hall Sittard EPC with finance leasing – contractual relationships and cash flows

Lessons Learned, Innovations and Client’s Advantages

- ✓ ESCo takes total care – important for customer
- ✓ Single point of contract – important for customer
- ✓ No investment required by customer
- ✓ Improvement of the inside climate
- ✓ Reducing total operating costs with 4 %
- ✓ Emission reduction 17 %
- ✓ Covering agreement between ING bank and Essent:
 - Target groups A+B defined for further EC-projects
 - Certain interest-conditions for target groups defined

5.5.5 Refurbishment of Street Lighting in the City of Laa with Finance-Leasing, Austria

Reported by:

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Object data, initial situation and objectives

The city of "Laa an der Thaya" is located in Lower Austria and has approximately 5.000 inhabitants. As in many cities, public street lighting installations were up to 40 years of age. Wiring, lamp poles, lighting heads and lamp technology did not comply with current norms and safety regulations. Not to talk about state of the art in lighting technology and energy efficiency.

When refurbishing public street lighting, you take a decision for the next three to four decades. Special attention has to be put on safety and reliability issues, lighting standards (e.g. pedestrian crossings) as well as long term operation and maintenance cost (life cycle cost). But also creative and artistic aspects come into play: lighting provides quality of life, security and brightens up the public space and highlights places of interest in the community.

Important requirements for the project implementation included a close cooperation with the cities building department, meeting a very tight time frame and finding an innovative finance solution to credit the municipal budget.



Figure 24: Modernized street lighting with advertising boards

The refurbishment measures included

1. Some 163 light points in the main streets of Laa including masts, civil engineering below ground level, wiring and switching units,

2. Auxiliary services like removing of old installations, assembling of new street lights, protective earthing,
3. Some 57 lamp posts are equipped with illuminated advertisement boards (size A0) to generate an income to the city.

The total investment sums up to 450,000 € (excl. VAT).

Innovative Financing Model and Contract Relations

Financer (FIN) and customer (CLIENT) have concluded a **financing lease agreement**. An operate leasing model would not have been feasible, because the majority of the investment (e.g. underground engineering, wiring ...) does not qualify for operate leasing according to Austrian leasing regulations (VAT-law).

The main contract relationships are displayed in the following diagram:

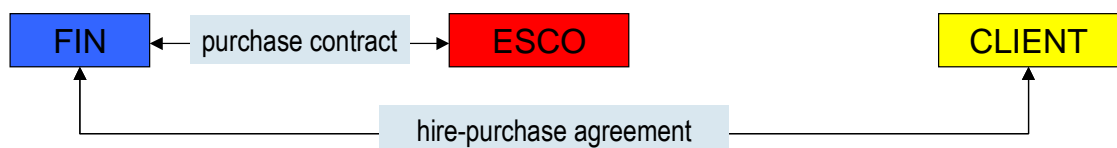


Figure 25: Modernisation of street lighting with finance-leasing ESC-project – contractual relationship

The new street lighting is planned and built by an ESCO by order of FIN with a purchase contract. There is no direct contract relationship between ESCO and CLIENT. All operation & maintenance (o&m) tasks remain within the responsibility of the community (as before the modernization). This results in additional savings for the community due to longer o&m intervals.

To keep the model simple, there is no energy savings guarantee included, because the achieved savings are partly compensated by an increase in illumination levels at flash points (e.g. pedestrian crossings, crossovers ...) and the additional illumination of the advertisement boards. The remaining savings were considered too small to bother with a measurement and verification procedure.

Guarantees were given by the ESCO for the total investment cap and the time frame (Christmas lighting had to be in place on time).

The main cash flows are displayed in the following diagram:

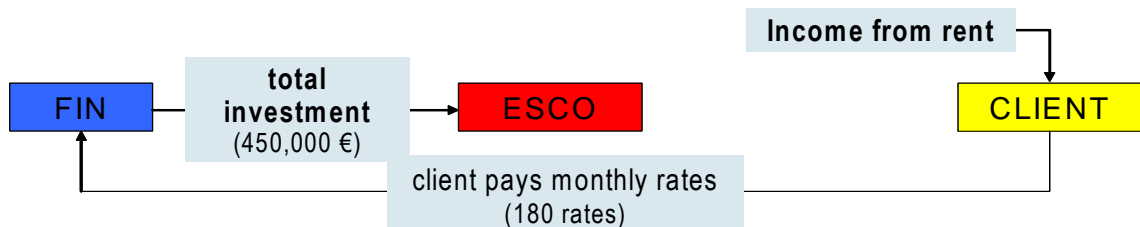


Figure 26: Modernisation of street lighting with finance-leasing ESC-project – cash-flows

The total investment was capped to 450,000 € (excl. VAT). The city provides no equity capital or building cost subsidy. The investment is paid with 100% external capital by FIN. The debt is being repaid by the CLIENT in 180 monthly rates over a contract period of 15 years.

By renting out the advertising boards on the lamp posts, the city generates an additional income of approximately 30.000 €/a. A part of the total investment costs is made input VAT deductible by a contractual differentiation between sovereign community tasks (lighting) and income from rent and lease. For the latter the community is entitled to deduct input tax, resulting in a 20 % cost saving.

Evenly, all investments apart from the sovereign community tasks (advertisement boards) qualify for input tax deduction, resulting in a 20 % investment saving of approximately 20.000 € for the community.

For all investments concerning the street lighting itself (sovereign community tasks), the city has to pay VAT. The 20%-VAT payments are included in the finance lease payments.

6 Cession and Forfeiting of Contracting Rates

6.1 Introduction

Cession is a transfer of future receivables (here Contracting rates) from one party (the **cedent** or **cessionary** – in our case an ESCo) to another (the **buyer** - in our case a FI). The original creditor (the ESCo) cedes his claims and the new creditor (the FI) gains the right to claim future contracting rates from the debtor (the client).

Two basically varieties of cession are used:

1. **Cession:** A **cession** can be used **in addition to a credit or lease financing agreement**. The ceded contracting rates serve as (additional) security for the FI and the clients pays the rates (or parts of them) directly to the FI. (For more details see chapter 6.2). Sometimes this variety is being labelled as forfeiting. For clarification we propose to distinguish between "Cession" and "Forfeiting" as stated here.
2. **"Pure" forfeiting:** If a cession is applied without an underlying financing agreement (credit or leasing), it is called (pure) **forfeiting**. The FI buys the future contracting rates and pays a discounted present value directly to the ESCo (see chapter 6.3).

Forfeiting is common for export financing. Generally, the ceded receivables must be from investment-, goods- or service-deliveries with a mid-term duration of 6 months to 5 years or longer, which is applicable to contracting rates. A precondition is that the receivables are legal rightful and undisputed. This means the ESCo have performed successfully the implementation of the Energy-Contracting measures and the amount of the ceded Contracting rates is fixed.

The financing of EC-projects with (pure) forfeiting is little known to us, but - from the clients perspective - would be interesting to be developed further, especially if the project cash flow could serve as main collateral. Today, forfeiting is economical advantageous, if the client's creditworthiness is better than the ESCo's.

A similar form of cession is called **Factoring**²⁸, which is used for short term receivables and/or the cession of single invoices. Factoring mainly transfers the collection of payments and in the case of non recourse also of financial risks to a specialized FI. Factoring is not applicable for EC because of the shorter duration of its receivables.

²⁸ Factoring: cession of a bundle of receivables of goods- and service-deliveries with a short-term payment target (6 months)

6.2 Cession of Contracting Rates as Security for Credit- or Lease-Finance

A cession of contracting rates in this sense is **not a stand alone financing option** but can serve as (additional) collateral for the FI. And it may simplify cash flows.

The ESCo's claims to the client are legally transferred to the FI (cession). The client pays the (finance share of the) contracting rates directly to the FI, which are used to amortize the ESCo's debt. This kind of cession is also known as a **garnishee agreement**²⁹.

The following graph illustrates the cash flows:

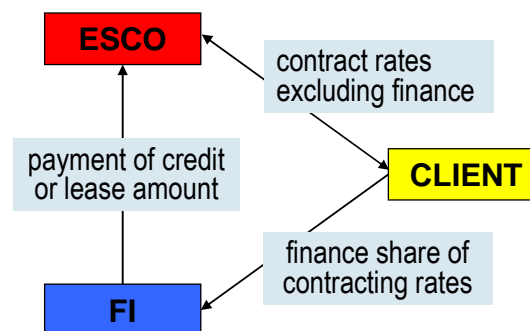


Figure 27: Cash flows in case of cession as security for credit- or leasing finance

The garnishee agreement is an (additional) security to the FI, especially if the ceded contracting rates must be settled by the client independently of the fulfilment of the Energy-Contracting contract (non recourse or waiver of objection).

Clients do not need to cede the complete contracting rate. A sensible limit could be the investment plus capital cost share of the contracting rate. The remaining share (for operation&maintenance, risk ...) is paid to the ESCo.

From the ESCo's perspective it is desirable, that the FI assumes certain risks with the garnishee agreement, such as the **financial performance risk** of the client. In this context "non-recourse" means, that FI waives the right to resort back to the ESCo, provided that the ESCo has fulfilled the contractual obligations including the savings guarantees of the EPC (**technical performance risks**).

The contract relationships of the three partners are displayed in the following graph:

²⁹ in Austria called "Drittschuldnererklärung"

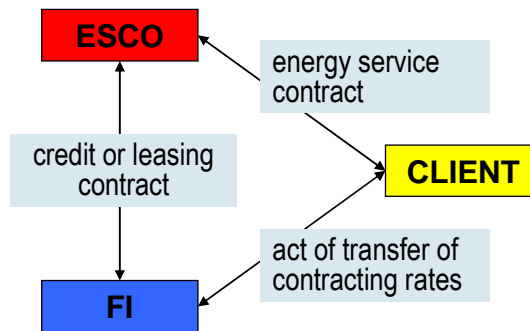


Figure 28: Contractual relationships in case of cession as security for credit- or leasing finance

Different types of cessions are the open, half open and hidden cession of the receivables, differentiating between a known and agreed cession of the client’s liabilities and a quiet agreement between ESCo and FI without the client’s accordance or knowledge.

6.3 Forfeiting – An Innovative Financing Option

A (pure) forfeiting contracting means, that - without an additional financing agreement - the ESCo sells the future contracting rates to a financial institution in return for a discounted one time payment. The contractual relationships of forfeiting are described by the following graphic:

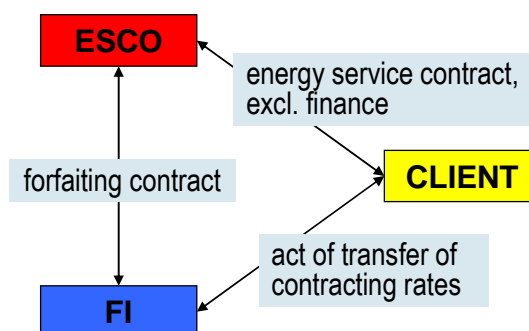


Figure 29: Forfeiting – contractual relationships

Client, ESCo and Financial Institution usually sign a **“Notice and Acknowledgment of Assignment”**. The client acknowledges herein the continued payment obligations to the financial institution regardless of any disputes between Client and ESCo. A hidden cession without an assignment between all partners is also possible within this model, but is not common.

The most important precondition is that the receivables are legally rightful and undisputed. On the basis of successfully implemented Energy-Contracting measures - like building insulation, boiler installation or energy monitoring systems- the Client has to confirm the performance by different quality securing instruments so that the ceded share of the Contracting-rate is legally rightful. Additionally the ceded receivables must be undisputed, meaning that the payment of the ceded Contracting-rates must be settled independently from the further performance of

the ESCo regarding operation & maintenance or EC-guarantees. These preconditions can be met for the different EC business models as follows:

- Energy Supply Contracting with ceding of the Basic Service price of the rate,
- Energy Performance Contracting with ceding of the fixed/accepted part of the rate or
- Energy Performance Contracting with ceding of the total Contracting-rate in combination with a penalty or a bank guarantee in the case of an insufficient performance of the ESCO.

The integration of a bonus malus system as incentive for the performance of the ESCo is possible within all three models.

As mentioned before, the amount forfeited should be limited to the financing share of the contracting rate. A sensible limit could be the investment plus capital cost share of the contracting rate. The remaining share (for operation&maintenance, end energy supply, risk ...) is paid to the ESCo over the contract term.

With respect to the criteria from the customer profile, the forfeiting offers the following properties. In order to facilitate the overview, the comments are compiled in tables, with some details explained further.

6.3.1 Financial Aspects

Criteria	Customer expectations	Forfeiting
Direct financing cost	Costs as low as possible:	
	✓ Interest rates, fees, ...	✓ A fixed part of the contracting rate will be ceded to a FI ✓ FI pays the sum of the receivables reduced by a discount to the ESCo ✓ Discount consists of: <ul style="list-style-type: none"> - Re-financing costs for whole duration (interest, risks) - Provision and administration fee - Profit margin ✓ Repayment from client according to an instalment plan
	✓ Extent of financing	✓ Flexible: financing of total investment or parts of it (0 – 100%)
	✓ Subsidies: Compatibility, eligibility	✓ Yes, reduces finance volume and contracting rates

Table 15: Forfeiting – Financial Aspects

The ESCo can cede the whole or a part of the contracting rate to the financial institution. From the sum of the ceded contracting rates the FI charges a discount and pays the reduced amount to the ESCo, which has the effect of a liquidity transfer. The discount consists of:

- Re-financing costs for the whole duration including interest and risk compensation,
- Fees for provision of the capital and the administration, and

➤ Profit margin.

For repayment of the amount forfeited, the FI charges the client according to a fixed instalment plan. This means that the financial institution gets back the whole purchase amount including the re-financing costs and fees.

The cash flows between these three partners are shown in the following graphic:

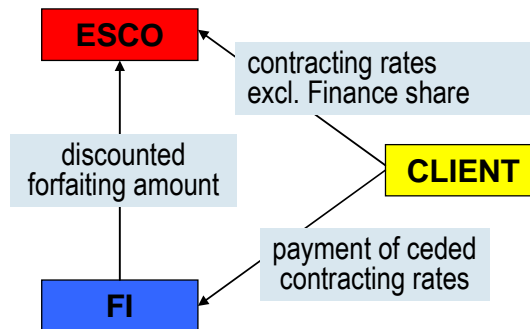


Figure 30: Forfeiting – cash flows

Forfeiting will be economical advantageous, if the client’s creditworthiness is better than the ESCo’s. Or if the project cash flow could serve as main collateral.

In the case of public clients the good creditworthiness is a given, but in all other cases the situation should be discussed with a bank whether forfeiting allows lower interest rates.

6.3.2 Legal Aspects

Criteria	Customer expectations	Forfeiting
Legal aspects	Legal implications	
	✓ Financing term	✓ Fixed period according to customer demand, minimum 6 months to 5 years or longer. ✓ Usually below useful life time.
	✓ What can be financed?	✓ Complete energy service investment incl. soft costs
	✓ Cancellation of contract	✓ Generally no cancellation during contract term possible
	✓ Legal and economic property aspects	✓ ESCo realizes the investments at his own name and risk and remains the owner during the contracting time.
	✓ Transfer of ownership at end of term	✓ EC contract should not include transfer of ownership.
	✓ Responsibility for operation and maintenance	✓ O&M will usually be included in the energy service contract and done by the ESCo. It will be financed by the contracting rate.

Table 16: Forfeiting – legal aspects

The ESCo remains to be reliable for the contractual accomplishment of the energy service agreement (technical performance risks, savings guarantees ...). The client’s legal obligation for the contracting rates begins after the installation of the efficiency measures, with the start of savings guarantee phase.

After the fulfilment of the efficiency measures and the signing of the "Takeover Certificate" the **ESCo remains the legal and economic owner** of the investment and supplies the service of (e.g.) energy consumption reduction to the client. It can also use the assets as securities for the forfeiting financing.

There is also the option that the **client becomes the legal and economic owner** of the investment after the completion of the installation. This relatively similar option to credit financing is not described in more details herein, but an example of **LIG Steiermark** outlines this option in chapter **Fehler! Verweisquelle konnte nicht gefunden werden..**

The ceded contracting rate can be documented with a bill of exchange or with book claims. Through the cession of the contracting rates the rights in connection with the receivables pass over to the FI, which takes over the credit risks (e.g. currency moving, delcredere or political risks).

The FI has **no right of recourse** on the ESCo as long as the ESCO delivers the savings guarantees. At the same time, the client waives his right of objection against the FI's claims. In case of an insufficient performance of the ESCo, the client must claim compensation payments from the ESCo, because the **technical performance risks** (e.g. the savings guarantee or warranty) remains with the ESCo.

6.3.3 Securities

Criteria	Customer expectations	Forfeiting
Collateral/Securities	Reduce securities requested and own risks:	FI wishes to safeguard contracting rates. Securities are based on debtor, only partly on project.
	✓ Finance based on project cash flow	✓ In reality client based finance and not project finance. Repayment based on client's creditworthiness. ✓ Theoretically (and desirable) project cash flow should serve as project financing.
	✓ Financial securities	✓ Guarantees or aval from client's bank or irrevocable confirmed letter of credit. ✓ Creditworthiness of client and country risks is the basis for calculation.
	✓ Tangible assets	✓ Pledge on assets ✓ Liens on equipment
	✓ Personal securities	✓ No

Table 17: Forfeiting - securities

Generally not every receivable will be bought by the financial institution. Before accomplishment of the forfeiting-contract the creditworthiness of the client and the country risk will be checked. Due on these variables the financial institution calculates the costs for re-financing. As long as the project cash flow can not serve as the main collateral, forfeiting must be categorised as a client based finance model.

As financial securities following types can be used:

- Bank guaranty of client’s bank (can be partial)
- Aval (bill surety) or guarantee of client’s bank (can be partial)
- Irrevocable confirmed letter of credit

Additional to these securities the FI may require a pledge of assets or a lien on the equipment, if there is a reselling market for these assets. Generally, financial securities are more interesting to FI's than tangible securities.

6.3.4 Taxation

Criteria	Customer expectations	Forfeiting
Taxation	Reduce taxable income:	
	✓ Tax deductible expenses	✓ Forfeiting financing costs and depreciation are tax deductible for the owner of the investment, the ESCo. ✓ For the client the contracting rates are tax deductible expenses. (pro rata temporis)
	✓ Point in time of deductible expenses	✓ Client: Spread over contract duration. ✓ ESCo: At time of settlement of the forfeiting-contract.
	✓ Value Added Tax (VAT)	✓ Client: VAT is charged with the contracting rates over the contracting duration (pro rata temporis). ✓ VAT, which occurs during the construction phase, is tax deductible for the ESCo. ✓ Public entities can not deduct tax
	✓ Benefits from tax exemptions	✓ Not known

Table 18: Forfeiting - taxation

The forfeiting costs (including interest) increase the project sum required for financing, but they are tax deductible for the ESCo as well as the depreciation is. The VAT, which occurs during the construction phase, is also tax deductible for the ESCo, but the ESCo has to charge the VAT in the contracting rates to the client during the operation phase. From the client’s perspective the contracting rates including the VAT are tax deductible expenses (pro rata temporis).

6.3.5 Balance Sheet & Accounting Aspects

Criteria	Customer expectations	Forfeiting
Balance Sheet & Accounting	Optimize balance sheet performance indicators:	

✓ Capitalization of investment	✓ The ESCo, as the legal and economic owner, has to capitalize the investment.
✓ Balance sheet indicators	✓ Positive balance effects for ESCo, because receivables and own liabilities are settled with the forfeiting payment at once. ✓ Positive balance effects for client, because he has to settle only the contracting rates and account them as expenses.

The ESCo is the legal and economic owner and has to capitalize the whole investment in his books: the liabilities from the installation of the measures, the forfeiting costs, the value added tax and the depreciation of the total investment. But he can settle his receivables and his liabilities emerged from the project realisation at once, which has positive effects for his balance sheet performance indicators and liquidity.

The client has to settle the contracting rates, charged by the FI, and has to account them as expenses.

6.3.6 Management Expenditure and Transaction cost

Criteria	Customer expectations	Forfeiting
Management expenditure / Transaction cost	As small as possible:	High transaction cost (no standardized product, securities accomplishment problematic)
	✓ One face to the customer	✓ Generally no (ESCo + FI)
	✓ Knowledgeable financing partner	✓ Depends on FI and requires special know how: Energy-Contracting is not a typical core competence of FI
	✓ Consultancy for tax, accounting, legal optimisation and subsidies	✓ Service is limited to financing. Additional tax and legal service are typically not included. ✓ Low efforts for coordination on client's side, but considerable efforts for coordination on ESCo's side.
	✓ Reduce paperwork	✓ Client's company documentation: last three annual accounts => creditworthiness ✓ ESCo: Project documentation (investment plan, project cash flow, profit and loss account, ...) ✓ Credit report
	✓ Time to receive financing promise	✓ Typically 1 month after documentation is complete (documentation required depends on security concept)
	✓ Customer approval process	✓ Approval would be easier if funds are drawn from operative (not investment) budget ✓ Some local authorities have adopted general approval for savings-cash-flow financed EPC-projects (third party financing)

Table 19: Forfeiting – management expenditure and transaction costs

(Pure) forfeiting has not yet been introduced to the market as a standard financing product for EC. Accordingly transaction cost to set up a forfeiting contract will be

high. Nevertheless advantages of the model may justify the effort. From the client and from the ESCo perspective it would be desirable to further develop pure forfeiting finance options, especially if future cash flow from saved energy cost can serve as main collateral.

6.4 Examples of Forfeiting Financing

6.4.1 Fictitious Example of Forfeiting Financing of an EPC-Project

Initial Situation and Project Aims

Three separate public buildings are supplied by a central oil boiler, which is situated in one of these. Two of the buildings were constructed in the mid 1990s and one in the late 1960s. The heated gross floor space accounts for some 4,400 m². The necessary refurbishment of the older building, the bad room comfort of one of the other buildings and troubles with the control of the heating system were the aspects for this EPC-project combined with ESC measures.

The aims are an energetic optimal building refurbishment of the older building as well as an optimization of the heating system.



Figure 31: Old public building with forfeiting-EPC – picture of the facade

The measures of the EPC-model are:

1. Insulation of 20 cm at the top ceiling of the older building.
2. Facade insulation of 8 cm and window exchange of the older building.
3. Refurbishment of the roof of the older building.
4. Optimization of the heating system control of all buildings.
5. Implementation of an emergency management with immediate alert notice to the ESCo.
6. Implementation and operation of an energy monitoring for a permanent control of the consumption of heat and electricity.
7. Measures for user motivation.

The entire project consists of energy savings measures, building refurbishment actions and continuous operation & maintenance. The total investment sum accounts for some 410,000 euros and the client contributes to this investment with some 10,000 euros. The Energy-Contracting-rate consists of a financing share of 47,200 euros/year over a period of 10 years and an operation&maintenance share of 3,000 euros/year over 15 years.

The results are:

- Guaranteed energy costs savings of 20 % and 5,000 euros/year.
- Optimized operation&maintenance, energy monitoring and user motivation measures over the contract time of 15 years.
- 50 % bonus of the additional energy cost savings as an incentive for the ESCo.

Contractual relationships and cash-flows

The Client contracts the ESCo with the entire EPC-project as a general contractor and the ESCo gives the savings guarantee over the total contract term of 15 years. The EPC-contract includes a notice of assignment for a forfeiting-Financing together with a partly cession of the Contracting-rate. For financing of the investment, the ESCo concludes a forfeiting-Financing-contract with a FI and cedes the financing share of the EC-rate to the FI.

To meet the precondition that the receivables must be legal rightful and undisputed, the EC-contract includes a formal approval of the energy savings by the Client on the basis of a baseline calculation. With this approval, the finance share of the Contracting-rate is fixed over the 10 years financing period. The ESCo provides the baseline calculation over the total EC-contract time to secure the quality of the measures. In the case of too low energy savings, the Client can reduce the o&m Contracting-rate accordingly and in the case of higher energy savings the ESCo gets 50% of the yearly savings surplus.

The ESCO remains the legal and economic owner of the investment. Even though the FI takes over the economic risk of a payment shortage of the Client and has no right of recourse to the ESCo. The technical performance risk for the fulfilment of the EC-contract remains by the ESCo. As collateral can act a bank guarantee for the public authority, which is normally well rated.

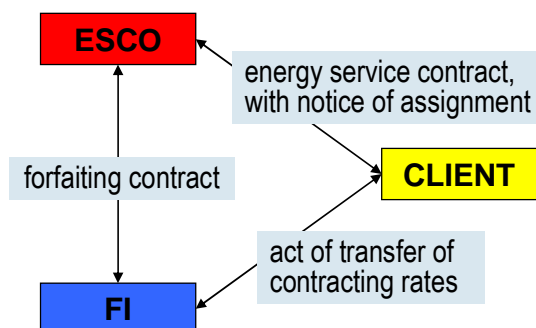


Figure 32: Old public building with forfeiting-EPC - contractual relationships

As the figure below shows, the Client pays the ceded Contracting-rates (finance share) directly to the FI and the rest of the Contracting-rate (o&m share) to the ESCo.

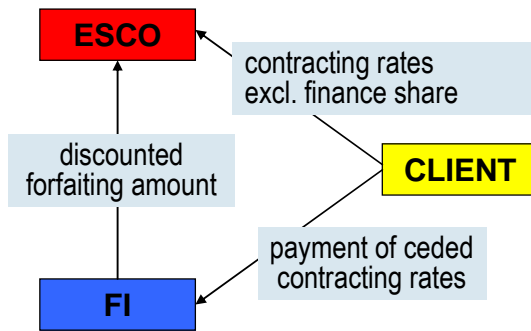


Figure 33: Old public building with forfeiting-EPC - cash-flows

7 Examples of Other Financing Options

This chapter pictures the options of customer self financing and public ESCO financing by outlining two good practice examples. The features of the self financing option are described by the example of a refurbishment of the air-condition and the boiler at large public hospital in Tokyo in Japan. The public ESCO financing is outlined by the example of an Energy Supply Contracting with solar thermal plants for 23 public hospitals in Castilla y Leon in Spain.

7.1 Large Public Hospital in Tokyo: EPC-Project with Self Financing including Subsidies, Japan

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Japan Facility Solutions, Inc.

Facility:

- 10 story building
- Constructed in 1980
- Approx. 500 beds & 800 outpatients/day
- 36,500 m² floor-space



Figure 34: Public hospital in Tokyo – picture

Initial situation:

1. Most of the cooling load was provided by the steam absorption-type refrigerating plant. The COP of cooling system was 0.75 – which is low.
2. The electricity load of the whole hospital was 2,150 kW.

Goals:

1. Comprehensive refurbishment to increase the efficiency of energy usage by introducing ESCo
3. Reduction of energy consumption and CO₂ emission
4. Reduction of the energy costs without sacrificing the level of the comfort

Measures:

1. Reduce air-conditioning load itself: optimizing the volume of outdoor air intake and cooling/re-heating process in air handling units (AHUs)
2. Increase heat efficiency: boiler renewal and free cooling

3. Heat transport efficiency: variable water volume (VWV) control and variable air volume (VAV) control
4. Other measures: intermittence drive of AHUs and ventilation fans controlled according to temperature.

Business Model:

1. Public competition for ESCo project
⇒ All measures tendered as one package (from planning to o&m)
2. Utilizing government subsidy
⇒ Maximizing the client's profit
3. ESCo works as a representative business entity of the project
4. The client paid the total refurbishment costs of € 2,480,000 more than 1/3 was covered by a government subsidy
5. Guaranteed savings
⇒ 528,000 €/a energy costs
⇒ 48,475 GJ/a primary energy equivalent (2,795 tCO2/a reduction was projected)
6. Contract term 6 years

Contractual Relationships:

Project coordination:

- Overall optimization
- Basic planning
- Government subsidy application
- Procurement
- Implementation
- Operation & maintenance
- Guaranteed savings
- User motivation

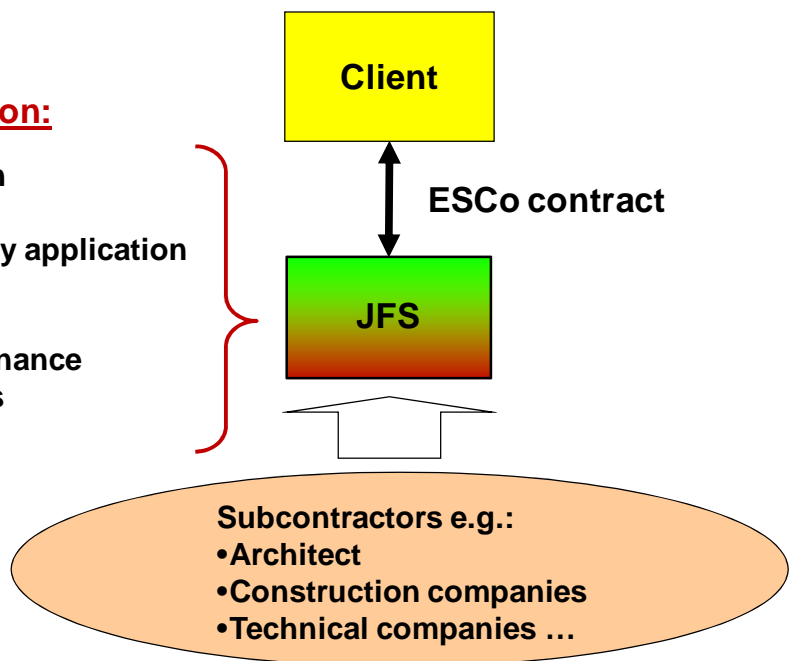


Figure 35: Public hospital EPC including subsidies – contractual relationships

Lessons Learned, Innovations and Client's Advantages:

- ✓ Greater reductions in energy consumption, energy costs, and CO2 emission were achieved than projected by applying various energy saving techniques to every stage of heating, ventilating and air conditioning.
- ✓ The positive relationship between the client and the ESCo has been successfully established. Monthly regular meetings are held between the parties to achieve the goals.
- ✓ This project is highly appreciated, and as a result, JFS is awarded The Golden Prize of Best ESCO project in Japan.

7.2 Public ESCo finances Hospisol – Energy Supply Contracting for 23 Public Hospitals in Castilla y Leon, Spain

Reported by:
Andrés L. Sainz, asainz@ree.es
Red Eléctrica de España, Spain



Figure 36: Public ESCo finances Hospisol - pictures

Initial Situation and Objectives:

The objective of the project is to produce hot water in 23 Public Hospital in Castilla y Leon with solar thermal energy and to finance the investment through the reduction in the Hospital's energy invoice through an Energy Service Contract.

In addition the Autonomous Region's governments wanted to promote the use of solar thermal energy and achieve an important reduction of greenhouse effect emissions.

EREL (Energy Regional Entity of Castilla y Leon) analyzes, elaborates the different projects, executes them and maintains the facilities.

Once the investment is recovered, facilities are given to the Hospital. From that moment on, it benefits from all the generated savings.

Business Model:

- ✓ EREL takes total care: design, implementation, maintenance, measurement, invoicing, paying
- ✓ All the investment and the invoices are paid with public money
- ✓ The investment will be financed with the energy service contract
- ✓ Once EREL recovers the original investment, the facility becomes of the property of the hospital

Contractual Relationships:

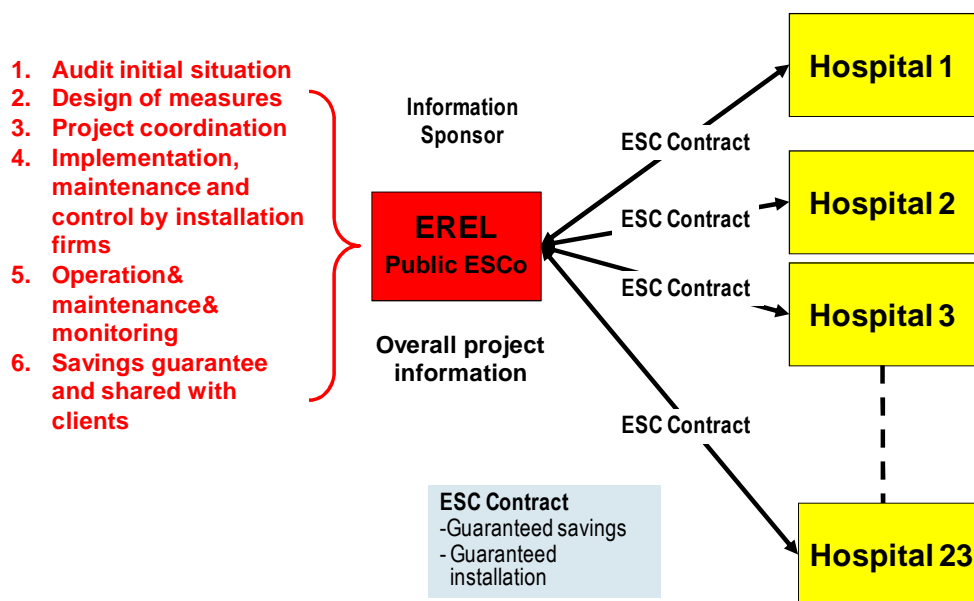


Figure 37: Public ESCo finances Hospisol – contractual relationships

Cash Flows:

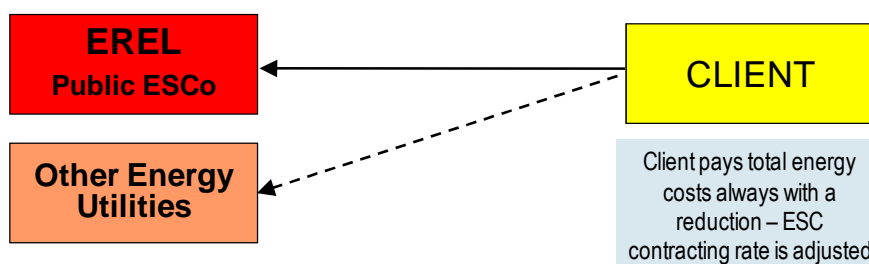


Figure 38: Public ESCo finances Hospisol – cash flows

Achievements:

Caption area	9.000m ²
Investment	4.550.000 €
Economic Savings*	355.500 €/year

* Economic savings due to the emission reduction have not been quantified

8 Calculation Tool for Estimation and Visualization of Monetary Saving Potentials

8.1 Generals and Objectives of the Calculation Tool

The calculation tool (OpCo-Tool) aims at a rough calculation and a graphical visualization of monetary energy saving potentials as well as the opportunity costs, which occurs if no energy saving measures are taken. The Graz Energy Agency has developed this calculation tool on the basis of Microsoft Excel and made the groundwork of the development within the project called "Innovative Energy-Contracting-models for trade and industry", which was financed by an Austrian research program.³⁰

The calculation tool is an appropriate instrument for energy consultants for the motivation of key actors (of trade and industry enterprises, public institutions, real estate owners ...) in the first consulting phase as well as for further consulting actions. **Necessary input data and saving potentials:**

There are only a few input data necessary for a first rough calculation on the basis of estimated or calculated saving potentials. The object input data are:

- Yearly energy costs of the different final energy sources (gas, oil, electricity ...) and the staff, operation and maintenance costs.
- The object's field of working.
- Some general data about the energy consuming plants like energy source, age and used technology.
- Share of the energy costs of the total operation costs of the object.
- Objectives and possible concrete measures of the enterprise, institution or real estate owner.
- Total amount of employees.

The energy consultant develops an overview of the total energy costs (without capital related costs) by a further data input – shown at the graphic below. The yellow cells with black letters are input cells, the cells with red letters are calculated automatically, notes can be inserted in the cells with blue letters and the green cells offer space for additional calculations.


³⁰ This tool was originally developed in the framework of a development project called "Innovative Energy-Contracting-models for trade and industry (EDLGewInd)", financed by the Austrian Research Ministry BMVIT.

Opportunity Cost Model to Estimate and Visualize Monetary Saving Potentials

Scenarios for Energy Cost, Saving Potentials, Opportunity Cost and Energy Services

Opportunity Cost: Evaluation of cost, resulting from unused saving potentials.
Future energy cost savings can be used for re-financing energy efficiency investments!

Company:
Address:
Date of consultancy:
Contact person:



Input data

consumption energy cost	unit	cost (typical, annual)	estimated price increase	estimated saving potential		remarks
				minimum	maximum	
electricity	€/a	15.000	4,0%	5%	20%	
natural gas	€/a	5.000	3,0%	15%	25%	
fuel oil	€/a	1.000	2,0%	20%	30%	
sum	€/a	21.000	3,7%	8,1%	21,7%	
operating & maintenance cost						
operation & maint.	€/a	500	0,0%			
personnel	€/a	1.000	0,0%	20%	40%	
sum	€/a	1.500	0,0%	13,3%	26,7%	
total energy cost (without capital cost)	€/a	22.500	3,4%	8,4%	22,0%	

project term	unit	actual	measures		remarks
			beginning	end	
dates	mm/yyyy	01/2007	07/2007	07/2015	considered project term of the measures: 8 years

Figure 39: Input data of the calculation tool

The energy consultant values roughly the single price increases according to his experiences.

8.2 Evaluation of the Saving Potentials and Ratios

In the first consulting phase the energy consultant doesn't consider the technical calculation of the different energy saving potentials. First the potentials will be calculated on the basis of the used energies, technologies and the experiences of the energy consultant. They will be given between minimum and maximum margins.

To get a more detailed view on the savings potentials, the energy consultant can compare the object's ratios with the ratios of its branch or he can do a technical calculation of the figures in the green cells at the right side of the input data sheet.

The key figures of the object can be easily calculated, by inserting the necessary data in the prepared Excel-sheet – shown below.

Input data for company ratios and comparison with sectoral benchmarks						
reference figure 1	cost [€]	reference figure [unit]	unit	company cost ratios		
				ratio _{c1}	benchmark _{c1}	p _{c1} *
electricity	15.000	1.000 m ²	€/m ²	15,00	12,00	80%
natural gas	5.000	500 m ²	€/m ²	10,00	7,50	75%
fuel oil	1.000	500 m ²	€/m ²	2,00	1,50	75%
operation & maint.	500	1.000 m ²	€/m ²	0,50	0,20	40%
personnel	1.000	1.000 m ²	€/m ²	1,00	0,80	80%

company energy ratios				
Ø price/kWh (mixed price)	unit	ratio _{ε1}	benchmark _{ε1}	p _{ε1} *
0,10	kWh/m ²	150	120	80%
0,12	kWh/m ²	83	60	72%
0,03	kWh/m ²	67	50	75%
0,05	kWh/m ²	10	5	50%
0,60	kWh/m ²	2	1	72%

Figure 40: Calculation of the object’s cost and energy ratios

For further consulting actions, the minimum and maximum margins of the energy saving potentials can be adapted according to the technical examinations and calculations so that the calculation become more accurate.

The definition of the entire project term is the last necessary input data. The term should be chosen according to the planning term of the object.

Some additional inputs can be done:

- Discount rate for calculation of the net present values
- Financing interest rate
- General price increase, for the total object costs

8.3 Results and Visualization

The results are graphical shown in some diagrams and additional summarized with some explanations at the input data sheet:

- The development of the energy costs is visualized at present state without the realization of saving measures (calculated with the average yearly cost increase factors):

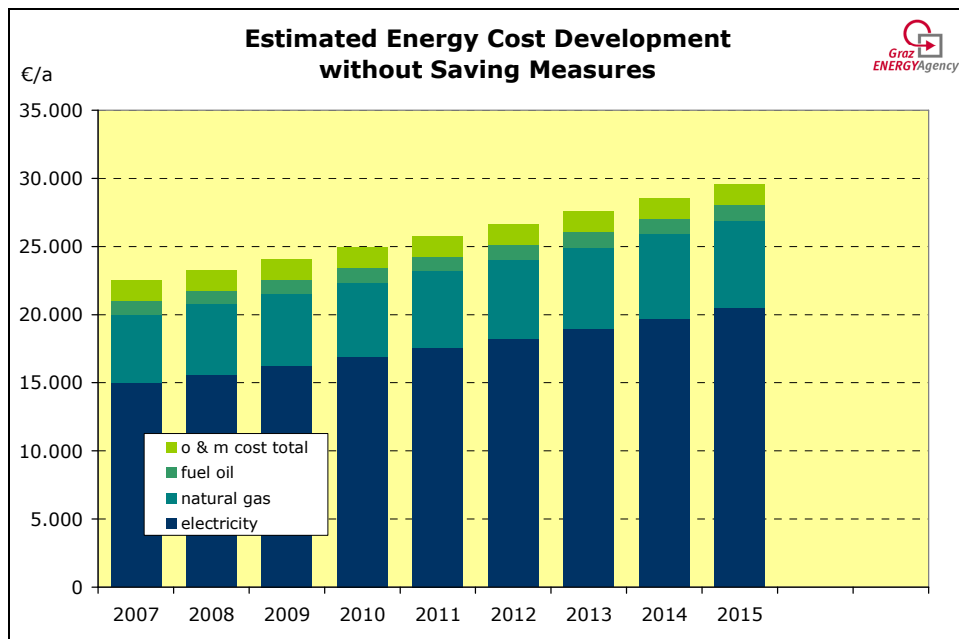


Figure 41: Energy cost development without saving measures

- The energy savings potentials of the cost categories fuel energy and operation & maintenance over the planning term – also called opportunity costs – are accumulated and shown in the second diagram between minimum and maximum margins as well as an average value:

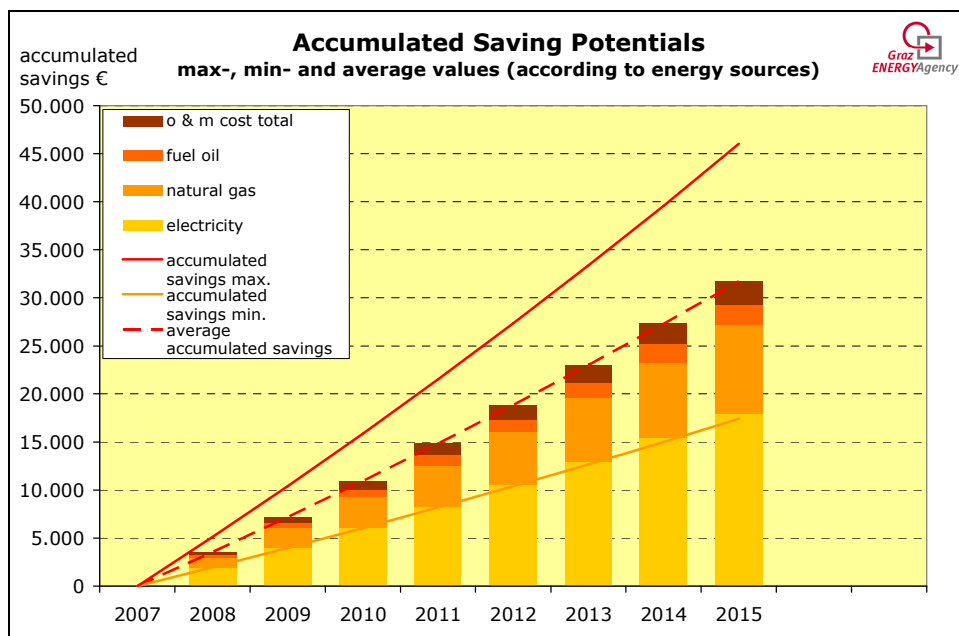


Figure 42: Accumulated saving potentials – opportunity costs

- The third diagram compares the energy cost development without saving measures and with the realization of minimum and maximum saving potentials. The net present values of the minimum and maximum potentials over the planning term are also shown in this diagram:

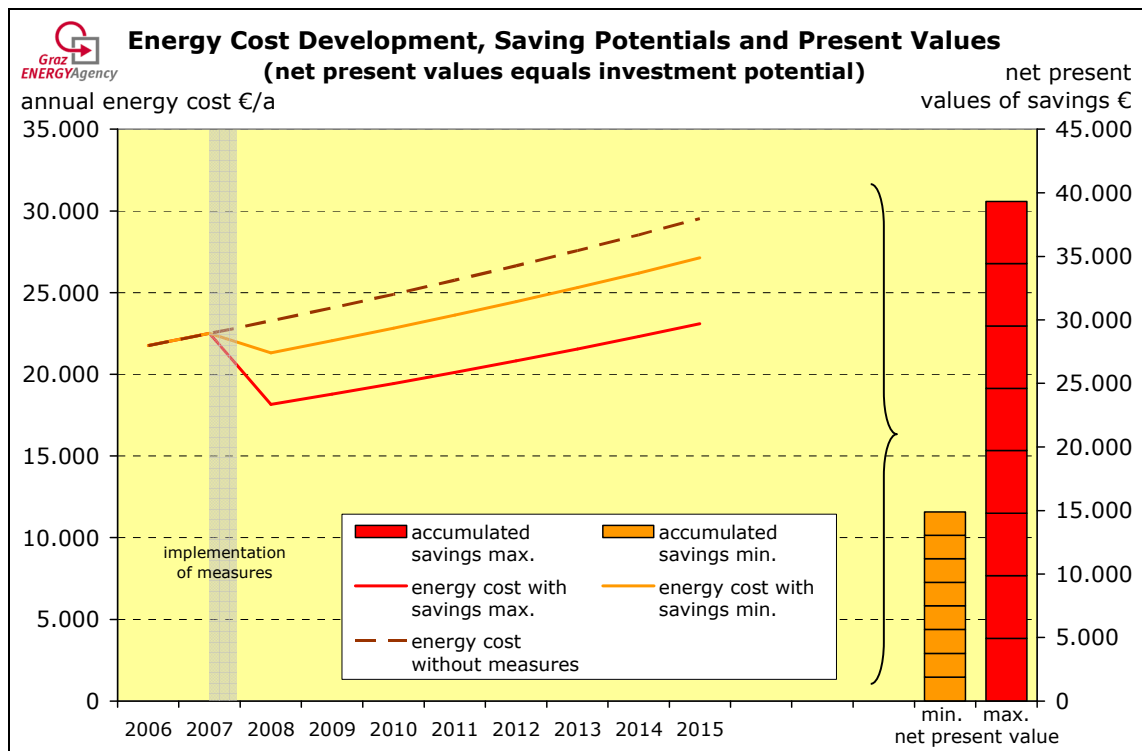


Figure 43: Energy cost development, saving potentials and present values

Additional results

The following results can be calculated on the basis of the additional inputs and are shown in the input sheet, which is shown below:

- Opportunity cost, which occur monthly;
- Opportunity cost, which occur until the planned realisation of the measures;
- Development of the energy cost share of the total operation costs of the object;
- Calculation of the amortisation term of an investment in saving measures and overview of the average yearly consumption, operation and capital costs – input of investment cost and depreciation term necessary.

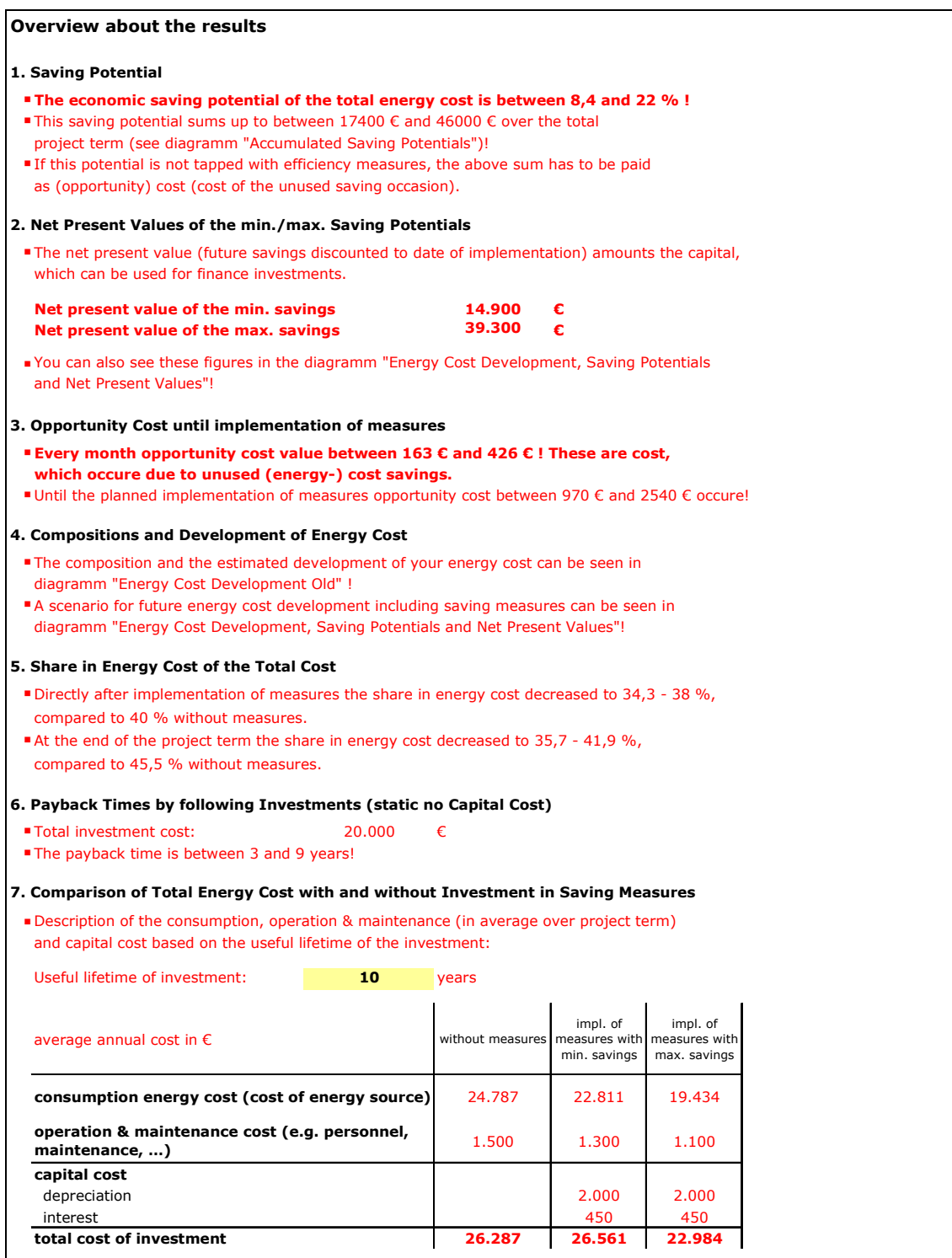


Figure 44: Overview of results of the saving potential calculation tool

8.4 Experiences in Practical Use

The calculation tool was used at various consulting action in the first and further consulting phase and can be described as a practical instrument to estimate monetary saving potentials and to motivate key actors.

9 Comparison and Conclusions

9.1 Comparison and Evaluation of Financing Offers with Customer Needs

Comparisons are drawn **between a typical customer demand profile and standard credit, operate, finance lease and forfaiting offers**. Of course all comparisons are of a general nature and may vary with specific projects, borrowers, financing institutions and their products.

Major properties and distinctions between these financing alternatives are listed here. For a more detailed description and explanation of the demand side and the different financing tools, please refer to the respective chapters. The comprehensive **matrix** in the Annex compiles typical properties with regard to financing costs and fees, integration of subsidies, legal aspects, securities required, tax implications, balance sheet effects, management and transaction costs suitable for comparison.

Since credit finance is more common, the conclusions will focus on the main differences compared to other financing options:

1. **Direct financing costs** have to be compared on an individual bases, taking all factors into account. Interest rates and fees tend to be higher for leasing than for credits. This is because of additional services offered by the LFI and the assumption of higher risks on the lessor's part. Also, LFI's extent of financing typically is higher for leasing allowing for up to 100 % external financing. This compares to a typical maximum of 70 - 90% for credits.

Direct financing costs can be compared by way of a **cost comparison calculation**: All financing expenses (including equity capital and opportunity cost) over the contract period of the different financing offers should be recorded and discounted to a net present value to find the lowest direct financing costs.

2. **Subsidies** can be integrated into all financing options. LFI's often will include subsidy acquisition and handling in their port folio, thus providing a more comprehensive service to the client.
3. Not all energy supply and conservation investments can be **operate lease** financed. The technical term is called **fungibility** or **interchangeability** required (by tax laws) of an asset to qualify for operate leasing: After the basic lease term the asset has to be re-utilizable without suffering substantial damage when being removed from its place of installation. In praxis this leaves room for interpretation and is still under discussion.

4. A Lessor will generally require a **comprehensive insurance package** as well as **operation and maintenance guarantees** for his equipment which may result in additional costs for the lessee.
5. Some Leasing Finance Institutes (and hopefully more other FI's than to date is the case as well) have **specialized and knowledgeable staff**, who have a good understanding of the nature of energy service projects. Depending on their analyses of the project, these LFI's are more likely to accept refinancing mainly on the project cash flow rather than on the borrower. These LFI may also accept project based securities like a cession of project revenues (e.g. feed in tariffs from renewable electricity production on site).
6. Main distinctions with regard to securities, taxation and accounting between credit and leasing financing derive from the differentiation between **legal and economic ownership** of the asset. **Economic ownership** implicates recording the asset in the owner's books. In other words: Off balance financing with all its implications (e.g. balance sheet performance ratios like credit lines, balance sheet contraction, ...) requires, that a third party is willing and able to account for the asset. This is possible with operate lease financing only³¹.

Maintaining **legal ownership** of the investments – apart from implying legal responsibilities – allows LFIs to require fewer securities from the lessee compared to credit financing. This is true for both finance and operate leases.

7. **Finance lease** can be seen as a mixture between a conventional credit and an operate lease. Many properties are closer to the credit, except the more project oriented approach for refinancing, securities required and the appropriate consulting of the LFI.
8. LFIs generally offer a **comprehensive consultancy** comprehending taxation, balance sheet matters and legal aspects of the energy service project, which suits well with the proposed comprehensive look at all financing implications. For FIs this is still the exception. Leasing typically includes consultancy on contract design and management, insurances, commissioning of contractors, accounting, controlling and payout of invoices, VAT-clearing, to list the most important services. This may result in reduced overall transaction cost. Of course consultancy for taxation, accounting and legal issues can also be sought for separately, as long as all implications are considered.
9. For suitable **project sizes**, no concrete figures can be given. To justify transaction cost of setting up an external financing a minimum financing volume is required. Concrete minimum figures vary between € 50.000 and € 500.000 depending on the individual FI.

The more a project can be standardized, the smaller the financing volume may be. A well prepared project prognoses and documentation (see below)

³¹

For the public sector special regulations apply to avoid capitalization of finance leases.

provided by the project developer also reduces transaction cost. Compared to credit based financing through FI's, LFI's tend to have a somewhat higher involvement resulting in larger financing volumes required.

10. In many cases what is being called **forfaiting** is in fact just a **Cession** of contracting rates from the ESCo to the FI. The ceded receivables serve as (additional) collateral for a credit or leasing finance contract. In return the creditor or lessor should take over financial performance risks of the client.
11. (Pure) **forfaiting** would be a cession of receivables without an underlying financing agreement (credit or leasing). The FI buys the financing share of the future contracting rates and pays a discounted present value directly to the ESCo. Forfaiting finance in this sense was attempted by some ESCOs in Austria, but it is only known a bit in praxis and often not possible to arrange because of contractual arrangements. Which are e.g. the precondition that the receivables are legal rightful and undisputed. This means the Client has to approve the implemented EC-measures and the amount of the ceded Contracting rates must be fixed.

9.2 Conclusions and Recommendations

We keep the customer perspective and describe the conclusions and recommendations primarily from the point of the party who seeks financing.

1. Generally, **all financing options described are suitable** for financing energy supply and conservation investments. It is not possible to recommend any particular financing option or product as best suited for energy service financing. Each option has its advantages and disadvantages as shown in the broad range of implications in the customer demand profile.
2. Finding the best available financing requires a **comprehensive look at all implications of any financing option** including securities required, transaction cost, taxation and balance sheet effects. The best financing option can not be recognized by a simple look at the lowest interest rate or annuities offered. It depends on the borrower's background as well as the specific project. This requires the integration of bookkeeping and tax consultancy into the financing decision.

The **customer demand profile** from chapter 3.2 can be used as a **checklist** to make sure that all important implications of the project financing have been considered.

For large projects, a comparison of the broad range of implications from the five categories could be accomplished by way of cost-benefit-analyses³², allowing integrating monetary and other criteria into one evaluation system.

3. The proposed **customer demand profile** offers this comprehensive perspective and may serve as a checklist to be adapted to the specific situation of the customer. Likewise, the attached evaluation matrix of the

³² This kind of analyses is also applied to evaluate ESCo-proposals to functional specifications/ tenders

different finance options allows to take a comprehensive look and can be adapted to compare concrete finance offers.

4. A prognosis of the **profit and loss accounts will best reveal the total effect of all quantifiable cost** for each financing option. In addition the indirect cost like management expenditure or a decline in balance sheet performance ratios need to be taken into consideration to find the best finance option.
5. From a customer perspective, it is desirable to **base debt service on the project cash flow** as opposed to basing it on the customer's creditworthiness alone. Debt should be repayable from future project income like energy cost savings (performance contracting) or delivered energy (delivery contracting)³³. This concept requires a better understanding of the nature of energy service projects respectively of the EScO's business models on the side of the financing institutions.
6. Generally speaking, the loan commitment for a **credit financing** is mostly based on the debtor's creditworthiness and not on the cash flow of the project invested in. Banks tend to view themselves as pure money lenders, not being concerned with the project, the funds were borrowed for. In contrary LFI's own the assets and make money by leasing it out. They are much closer to the actual usage of the investment and generally have a better knowledge and judgement of the market of the investment and the expected return on it.
7. Leasing financing legally requires that **no automatic transfer of ownership** (without reimbursement) is settled in the Energy-Contracting contract. Otherwise it is considered as a equipment supply contract. In other words: if a performance contract includes a definite transfer of ownership to the client at the end of the contract term, a leasing financing is not possible.

Existing EPC model contracts often include a fixed transfer of ownership free of charge after contract termination. These have to be revised if you want to allow for a leasing finance option.

8. Not accounted for leasing finance agreements can have a **substantial influence on the balance sheet performance ratios** and confine their explanatory power. The reader of the financial statement, who does not possess additional information, will receive a distorted image of the assets and financial situation of the enterprise, e.g.
 - Creditworthiness performance ratios like debt ratio or equity-to-fixed-assets ratio will be positively distorted.
 - Cash flow and derived ratios like debt-redemption-duration are misleading.
 - Profitability ratios like total-capital-profitability are not heavily influenced by not accounted for lease agreements.

³³ Progress of the "Energy Efficiency Financing Protocol"-initiative will hopefully help in supporting this case.

9. We recommend differentiating **between financing** on the one hand side **and technical+economic services** on the other. ESCo's are experts in technical, economic, and organisational matters of Energy-Contracting, which is what they should be commissioned for. Financing is not necessarily their core business. ESCo's can be considered as a vehicle and facilitator for financing. In many cases including a financing institution (FI) as a third party to take over financing matters and risks makes good sense.
10. Financing is a service which can be tendered for the best offer and conditions. Make it a **competition between different financing alternatives**.
11. It is possible to **combine operate und finance lease** in one project, to make use of the tax or balance sheet accounting advantages, for the leasable portion of the investment. Due to higher transaction costs for the LFI, this requires a higher project volume.
12. To allow FI's (and yourself) a solid basis for decision, it is important to **prepare a meaningful and comprehensive project description**, including a cash flow and profit and loss prognosis over the complete term of the project. This also requires a sensitivity analyses for the most critical parameters of the project. (More details and templates in chapter 9.3.3).
13. **Sale-and-lease-back** contracts are mainly used to finance overall building projects, not just EPC-measures. In many cases the purpose is to realize "hidden reserves" e.g. in public buildings. If a Sale-and-lease-back financing is used for a building project, it is strongly recommended to write minimum performance standards and guarantees e.g. for thermal refurbishment or maximum energy consumption into the terms of reference.
14. **Forfeiting:** From the clients (and especially from the ESCo's) perspective it would be desirable to further develop a "pure" forfeiting finance offer. This should primarily be based on the future project cash flow and take the financing burden off the ESCo. This kind of finance model would also help to overcome some of the balance sheet problems and share project risks according to the project partner's strength and capabilities.
To meet the precondition that the receivables must be legal rightful and undisputed, the standard EC-contracts must be adapted by the Client's approval of the EC-measures and by a fixation of the Contracting-rate (especially as finance share). Additionally the integration of a bonus malus system as an incentive for the performance of the ESCo is possible, e.g. in form of a payment obligation.

This list does not claim to be complete or indisputable. Remarks and questions are welcome. Please contact Bleyl@grazer-ea.at.

9.3 Recommendations for Preparation of Financing

9.3.1 How to Determine Your Specific Financing Demand Profile?

In order to help determining your specific financing demand profile, we recommend using the customer demand profile from chapter 3.2 as a template. Go through each of the six categories and subcategories and determine your individual financing needs and framework conditions. And what kind of securities you can provide in return. This may serve as good a preparation for the negotiations with the financing institutions.

9.3.2 Standardized Financing Project Flow

The following key steps will have to be accomplished to achieve a financing commitment for a successful EC project:

1. Approach and **inform Financing Institute** (FI) as early as possible about EC project planned.
2. Preparation of necessary **financing documentation** (for template see chapter 9.3.3)
3. **Preliminary assessment** of the potential borrower and the project through FI
4. At this point the FI either refuses to finance the project or issues an "**Indicative Term sheet**". Such an indicative Term sheet states – without any commitment of the FI – the main terms and conditions of a possible financing. This could also include some additional requirements to the project structure.
5. The Term-sheets of **different FI should be compared and ranked**. Based on this ranking it is advisable to enter into detailed negotiations with only 2-3 banks in parallel.
6. The **detailed negotiations** primarily deal with conditions of the proposed loan-contract. Each bank will insist on their individual draft of a loan-contract. Loan contracts are much more extensive than indicative Term-Sheets. It could be advisable to consult a lawyer regarding specific legal questions out of the loan contract.
7. The **final decision** which FI to choose should involve the whole range of financing implications as listed in chapter 3, encompassing financing cost and terms, legal implications, tax and balance sheet effects as well as management expenditure and of course the "chemistry" between the persons and institutions involved.

An early involvement of the financing institution is also advisable recommended in order to be able to consider particular regulations and requirements e.g. eliminate automatic transfer of ownership regulations at the end of a contract term from model contracts. Otherwise a particular finance option - like in the latter case leasing - is not feasible.

9.3.3 Description of Project Documentation to be provided by Customer

The following documentation has to be provided to a Financing Institute in order to receive a financing offer:

1. Project description of real estate (and EC-project) to be financed
2. Schedule of Investment costs of EC-measures with short technical description (specifications)
3. (EC-Project-)profit and loss forecast over project term (at least over financing term)
4. (EC-Project-)cash flow forecast over project term (at least over financing term) including
5. Sensitivity analysis of relevant project parameters
6. Risks and Opportunities analysis
7. Information about borrower, especially if a commercial entity:
 - Audited annual financial statements (last three years)
 - Current administrative documents like company registration, insurance policies, ...

The FI will use this documentation to assess creditworthiness and financing conditions.

KommunalKredit Public Consulting proposes to use the project description forms (a short and long version) provided in the Annex.

9.3.4 FI's Wish List for Securities

Securities typically asked for by FI's are (in order of preference):

1. Mortgages – considered as high security value
2. Other collateral securities like project assets (if reusable) – only percentage of investment cost considered
3. Loan guarantees especially from public bodies or parent companies – high security value (depending on credibility of guarantor)
4. Project cash flow, especially if FI can take over (or contract another ESCo) project – unfortunately considered as a risky security

You should try to demand a consideration of project cash flow as opposed to only base financing on client's credibility.

9.3.5 Major Banks and Leasing Institutions in Austria

Annex 1 provides a list and internet links to major Financing Institutions in Austria.

9.4 Definitions and Links to Finance Glossaries

For definitions and information on general financing issues we recommend following these links to **web based financing glossaries** (in alphabetical order):

- **Axone:** Glossary with over 5000 financial terms in English, German, French and Italian. Can be used free of charge for non-commercial use on a query-by-query basis: http://glossary.axone.ch/axone_index_test.cfm
- **Deutsche Leasing:** Leasing-Glossary, Basics, literature, Basel II and ratings, ... : <http://www.deutsche-leasing.de/glossar.html> (in German language)
- **IATE** (= "Inter-Active Terminology for Europe") is the EU inter-institutional terminology database. IATE has been used in the EU institutions and agencies since summer 2004 for the collection, dissemination and shared management of EU-specific terminology <http://europa.eu.int/eurodicautom/>
- **Förderland:** Leasing-Glossary, basics, ...: <http://www.foerderland.de/1072.0.html> (in German language)
- **Kommunalkredit:** Finanzierungslexikon <http://www.kommunalkredit.at/DE/finanzierungen/lexikon/lexikon.aspx> (in German only)
- **International Monetary Fund:** (This terminology database contains over 4,500 records of terms useful to translators working with IMF material. It provides versions of terms in a number of languages, **without definitions**. The database includes words, phrases, and institutional titles commonly encountered in IMF documents in areas such as money and banking, public finance, balance of payments, and economic growth. A number of entries include a usage field within square brackets, denoting the origin of the term - e.g., [OECD] -- or a context -- e.g., [trade]; others contain a cross reference to related records. Acronyms and currency units are also included: http://www.imf.org/external/np/term/index.asp?index=eng&index_langid=1
- **TU-Dresden:** German Listing of web-based glossaries: <http://www.iim.fh-koeln.de/dtp/termsamm/wirtschaft/finanzen.html#mehrspr>
- **Wikipedia:** Definitions, discussions: <http://de.wikipedia.org/wiki/Leasing> (German), <http://en.wikipedia.org/wiki/Leasing> (English)

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Annex 1: List of Major Banks and Financial Institutions in Austria

List of major banks and Financial Institutions in Austria

A list of all banks and financial institutions registered in Austria can be found on the homepage of the Austrian Financial Market Authority (FMA) and the Austrian National Bank (OeNB):

- www.fma.gv.at
- www.oenb.at

A List of Leasing Financing Institutions (LFI) can be found here:

www.leasingverband.at

Selected Banks and Internet-Links:

- **Bank Austria Creditanstalt:** www.ba-ca.com
- **Bawag P.S.K.:** www.bawagpask.com
- **Erste Bank:** www.erste-bank.at
- **Investkredit:** www.investkredit.at
- **Kommunalkredit Austria AG:** www.kommunalkredit.at
- **Landes-Hypothekenbanken:** www.hypoverband.at/verband.htm
- **Österreichische Volksbanken AG:** www.oevag.at
- **Raiffeisenbanken und Raiffeisenlandesbanken:** www.raiffeisen.at
- **Raiffeisen Zentralbank AG:** www.rzb.at

Selected Leasing Financing Institutes and Internet-Links:

- **Bank Austria Creditanstalt Leasing GmbH:** <http://www.ba-ca-leasing.com>
- **Bawag P.S.K. Leasing GmbH:** <http://www.leasing.at>
- **BKS Leasing GmbH:** <http://www.bksleasing.at>
- **EBV-Leasing Ges.m.b.H. & Co. KG:** <http://www.ebv-leasing.at>
- **Hypo SüdLeasing GmbH:** www.hyposuedleasing.at
- **IKB Leasing Austria GmbH:** <http://www.ikb-leasing.com>
- **IMMORENT Aktiengesellschaft:** <http://www.immorent.at>
- **Raiffeisen-Leasing GmbH:** <http://www.raiffeisen-leasing.at>
- **VB Leasing Finanzierungsgesellschaft m.b.H.:** <http://www.vbleasing.at>

Other selected Institutions and Internet-Links:

- **Austrian Energy Agency:** Database for Subsidies
<http://www.energyagency.at/esf/index.htm>
- **Austria Wirtschaftsservice:** Provision of financing facilities and state grants mainly for small and medium sized enterprises (SME's): www.awsg.at
- **Graz Energy Agency Ltd:** Independent Energy-Contracting Consultancy and main authors of this manual. www.grazer-ea.at
- **Kommunalkredit Public Consulting GmbH:** Management of state environmental grant schemes (relevant for energy efficiency measures) and Co-author of this manual: www.publicconsulting.at

For Information about grant schemes and financial assistance provided on the provincial level please consult the respective provincial governments.

Annex 2: Comparison and Evaluation Matrix: Customer Expectations and Properties of Financing Options

Criteria	Customer expectations	Credits/Loans	Finance-Leasing	Operate-Leasing	Forfeiting
Direct financing cost	Costs as low as possible: ✓ Interest rates, fees, ...	✓ Repayment + interest (declining) ✓ Single payments ³⁴ : - Credit fee (0,8% of volume) - Handling charge (negotiable) - Notary fee	✓ Lease payments (annuity) ✓ Single payments ² : - Handling charge (negotiable)	✓ Lease payments (annuity) ✓ Single payments ² : - Contract fee (1% of total lease payments) ³⁵ - Handling charge (negotiable)	✓ A fixed part of the contracting rate will be ceded to a FI ✓ FI pays the sum of the receivables reduced by a discount to the ESCo ✓ Discount consists of: - Re-financing costs for whole duration (interest, risks) - Provision and administration fee - Profit margin ✓ Repayment from client according to an instalment plan
	✓ Extent of financing	✓ Part financing only (typically 70 - 80%)	✓ Financing of total investment incl. soft cost (90 - 100% financing)	✓ Financing of total investment incl. soft cost (90 - 100% financing)	✓ Flexible: financing of total investment or parts of it (0 – 100%)
	✓ Subsidies: Compatibility, eligibility	✓ Yes, reduces loan or interest rate ³⁶ ✓ Application by debtor (owner of investment). Typically no support from bank	✓ Yes, reduces lease rate ✓ Application by lessee economic (owner of investment) or lessor on behalf of lessee. ✓ special know how required – typically leasing banks have subsidy specialists	✓ Yes, reduces lease rate ✓ Application by lessor (owner of investment) ✓ special know how required – typically leasing banks have subsidy specialists	✓ Yes, reduces finance volume and contracting rates

³⁴ Values applicable in Austria

³⁵ by unlimited useful life, cancellation possibility after 10 years (1% of gross 36 monthly payments)

³⁶ Some subsidy programmes support interest rates rather than direct investment subsidies

Criteria	Customer expectations	Credits/Loans	Finance-Leasing	Operate-Leasing	Forfeiting
Legal aspects	Legal implications				
	✓ Financing term	✓ Flexible: according to customer demand. Usually below useful life time	✓ Flexible: according to customer demand (no legal regulation). Below useful life time of asset	✓ Object oriented: Basic lease term: 40 – 90% (mobile), < 90% (immobile) of useful life	✓ Fixed period according to customer demand, minimum 6 months to 5 years or longer. ✓ Usually below useful life time.
	✓ What can be financed?	✓ Complete energy service hardware	✓ Complete energy service investment incl. soft cost (e.g. project development)	✓ Only leasable energy service investment incl. soft cost (e.g. project development)	✓ Complete energy service investment incl. soft costs
	✓ Cancellation of contract	✓ Depends on contract type, usually fixed terms. ✓ Short rate penalties apply for premature cancellation	✓ Depends on contract type, usually fixed terms. ✓ Short rate penalties apply for premature cancellation	✓ Generally no cancellation during basic lease term possible	✓ Generally no cancellation during contract term possible
	✓ Legal and economic property aspects	✓ Debtor is legal and economic owner (bank may put retention of title or lien)	✓ Lessor is legal owner ✓ Lessee is economic owner (lessor may hold retention of title)	✓ Lessor is legal and economic owner	✓ ESCo realizes the investments at his own name and risk and remains the owner during the contracting time.
	✓ Transfer of ownership at end of term	✓ Debtor remains owner ✓ EC contract may include transfer of ownership	✓	✓ Lessor remains owner ✓ EC contract must not include automatic transfer of ownership to client	✓ EC contract should not include transfer of ownership.
✓ Responsibility for operation and maintenance	✓ Debtor is responsible for o & m at his own risk	✓ Lessee has to perform o & m and to insure the investment according to lessors requirements	✓ Lessee has to perform o & m and to insure the investment according to lessors requirements	✓ O&M will usually be included in the energy service contract and done by the ESCo. It will be financed by the contracting rate.	
Collateral/ Securities	Reduce securities requested and own risks:	Bank wishes to safeguard loan. Generally securities are based on debtor, not on project. Securities ~ 100 %	Lessor wishes to safeguard lease object. Generally securities are based on project with some additional debtor liabilities	Lessor wishes to safeguard lease object. Generally securities are based on project with some additional debtor liabilities	FI wishes to safeguard contracting rates. Securities are based on debtor, only partly on project.

Criteria	Customer expectations	Credits/Loans	Finance-Leasing	Operate-Leasing	Forfeiting
	<ul style="list-style-type: none"> ✓ Finance based on project cash flow 	<ul style="list-style-type: none"> ✓ No project finance but client finance. Repayment based on company cash flow and economic key figures, not project cash flow 	<ul style="list-style-type: none"> ✓ Project cash flow accepted as main security (requires detailed project check and know how) ✓ Cession of revenues e.g. from feed in tariffs and insurances. 	<ul style="list-style-type: none"> ✓ Project cash flow accepted as main security, (requires detailed project check and know how) ✓ Cession of revenues e.g. from feed in tariffs and insurances. 	<ul style="list-style-type: none"> ✓ In reality client based finance and not project finance. Repayment based on client's creditworthiness. ✓ Theoretically (and desirable) project cash flow should serve as project financing.
	<ul style="list-style-type: none"> ✓ Financial securities 	<ul style="list-style-type: none"> ✓ Typically equity capital required (> 20 %) ✓ Additional securities like bonds (Hermes, ÖKB) and guarantees from parent companies depend on specific project 	<ul style="list-style-type: none"> ✓ Equity capital required (0-30 %) (some client commitment required) ✓ Insurances for project equipment (elementary-, break down- and interruption of service insurance) ✓ Additional securities like bonds (Hermes, ÖKB) and guarantees from parent companies depend on specific project ✓ Public entities: non-appropriation-risk for lessor 	<ul style="list-style-type: none"> ✓ Equity capital required (0-20 %) (some client commitment required) ✓ Insurances for project equipment, (elementary-, break down- and interruption of service insurance) ✓ Additional securities like bonds (Hermes, ÖKB) and guarantees from parent companies depend on specific project ✓ Public entities: non-appropriation-risk for lessor 	<ul style="list-style-type: none"> ✓ Guarantees or aval from client's bank or irrevocable confirmed letter of credit. ✓ Creditworthiness of client and country risks is the basis for calculation.
	<ul style="list-style-type: none"> ✓ Tangible securities 	<ul style="list-style-type: none"> ✓ Desired/required, ✓ Entry in land register, lien on movable objects, reservation of property rights 	<ul style="list-style-type: none"> ✓ No, because lessor holds property title until payment of last rate!³⁷ 	<ul style="list-style-type: none"> ✓ No, because lessor holds property and economic title 	<ul style="list-style-type: none"> ✓ Pledge on assets ✓ Liens on equipment
	<ul style="list-style-type: none"> ✓ Personal securities 	<ul style="list-style-type: none"> ✓ Applicable for small projects only 	<ul style="list-style-type: none"> ✓ Applicable for small projects only 	<ul style="list-style-type: none"> ✓ Applicable for small projects only 	<ul style="list-style-type: none"> ✓ No

³⁷ Assets connected to object become part of it (ABGB § YYY). This risk has to be mitigated

Criteria	Customer expectations	Credits/Loans	Finance-Leasing	Operate-Leasing	Forfeiting
Taxation	Reduce taxable income:		Lessor can support customer to save taxes in order to offer the cheapest overall finance solution	Lessor can support customer to save taxes in order to offer the cheapest overall finance solution	
	✓ Tax deductible expenses	✓ Interest and depreciation (linear AfA-tables) are tax deductible. Redemption payments are not tax deductible	✓ Interest and depreciation (linear, AfA-tables) are tax deductible. Redemption payments are not tax deductible	✓ Complete leasing rate is tax deductible.	✓ Forfeiting financing costs and depreciation are tax deductible for the owner of the investment, the ESCo. ✓ For the client the contracting rates are tax deductible expenses. (pro rata temporis)
	✓ Point in time of deductible expenses	✓ Depreciation is linear (sometimes declining) ✓ Interest payments decline over time, declining	✓ Depreciation is linear (sometimes declining) ✓ Interest payments decline over time	✓ Depreciation can be accelerated through "Leasing effect" (shorter depreciation periods for lessors) ³⁸ ✓ Constant rates (annuities) over contract period	✓ Client: Spread over contract duration. ✓ ESCo: At time of settlement of the forfeiting-contract.
	✓ Value Added Tax (VAT)	✓ VAT due on total investment at the beginning of project ✓ Public entities can not deduct input tax (additional initial cost)	✓ VAT due on sum of rates at the beginning of project => VAT also on bank margin ³⁹ ✓ Public entities can not deduct input tax (additional initial cost) ✓ "Similar-to-business-activities" can be made input VAT deductible, (e.g. renting out of advertisement boards)	✓ VAT due per rate (pro rata temporis) => VAT is dispersed over project duration	✓ Client: VAT is charged with the contracting rates over the contracting duration (pro rata temporis). ✓ VAT, which occurs during the construction phase, is tax deductible for the ESCo. ✓ Public entities can not deduct tax

³⁸ VAT law ...

³⁹ no VAT on interest (UStG § 6 (2) 1994)

Criteria	Customer expectations	Credits/Loans	Finance-Leasing	Operate-Leasing	Forfeiting
	✓ Benefits from tax exemptions	✓ Not known	✓ Not known	✓ Not known ⁴⁰	✓ Not known
Balance sheet & accounting aspects	Optimize balance sheet ratios:				
	✓ Capitalization of investment	✓ Debtor is legal and economic owner => Debtor has to capitalize investment	✓ Lessor is legal owner ✓ Lessee is economic owner => has to capitalize investment	✓ Lessor is legal and economic owner => has to capitalize investment => shortening of balance sheet for lessee	✓ The ESCo, as the legal and economic owner, has to capitalize the investment.
	✓ Balance performance ratios	✓ Loan and assets have to be capitalized in the balance sheet account => negative effects on balance sheet performance figures ✓ Public sector: Treated as additional debt => Maastricht criteria apply	✓ Lease and assets have to be capitalized in the balance sheet account => negative effects on balance sheet performance figures ✓ Public sector: special regulations apply to avoid capitalization of lease	✓ Assets and lease payment obligations are not capitalized in the balance sheet account => distortion of ratios, e.g. improvement of debt-equity ratio ⁴¹ ✓ Public sector: Maastricht neutral	✓ Positive balance effects for ESCo, because receivables and own liabilities are settled with the forfeiting payment at once. ✓ Positive balance effects for client, because he has to settle only the contracting rates and account them as expenses.
Management expenditure / Transaction cost	As small as possible:	FI wants to reduce transaction cost, (standardized products, increase finance volume => larger projects)	FI wants to reduce transaction cost, (standardized products, increase finance volume => larger projects)	FI wants to reduce transaction cost, (standardized products, increase finance volume => larger projects)	High transaction cost (no standardized product, securities accomplishment problematic)
	✓ One face to the customer	✓ Generally no (ESCo + FI)	✓ Yes, depends on LFI	✓ Yes, depends on LFI	✓ Generally no (ESCo + FI)
	✓ Knowledgeable financing partner	✓ Depends on bank and requires special know how: Energy-Contracting is not a typical core competence of banks	✓ Depends on bank and requires special know how: some LFI have specialized project finance departments for ES	✓ Depends on bank and requires special know how: some LFI have specialized project finance departments for ES	✓ Depends on FI and requires special know how: Energy-Contracting is not a typical core competence of FI

⁴⁰ tax exempt lease financing US-link energy star paper

⁴¹ for further explanation, please refer to chapter 9.2

Criteria	Customer expectations	Credits/Loans	Finance-Leasing	Operate-Leasing	Forfeiting
	<ul style="list-style-type: none"> ✓ Consultancy for tax, accounting, legal optimisation and subsidies 	<ul style="list-style-type: none"> ✓ Service is limited to financing. Additional tax, legal service typically not included ✓ => higher effort for coordination on customer side ✓ Accounting of investment is done by debtor 	<ul style="list-style-type: none"> ✓ Service typically comprehends tax and legal advice => less effort for coordination on customer side ✓ Accounting of investment is done by lessee 	<ul style="list-style-type: none"> ✓ Service typically comprehends tax and legal advice => less effort for coordination on customer side ✓ Accounting of investment is done by lessor 	<ul style="list-style-type: none"> ✓ Service is limited to financing. Additional tax and legal service are typically not included. ✓ Low efforts for coordination on client's side, but considerable efforts for coordination on ESCo's side.
	<ul style="list-style-type: none"> ✓ Reduce paperwork 	<ul style="list-style-type: none"> ✓ Company documentation: last three annual accounts ✓ Some project documentation required: investment plan ✓ Credit report 	<ul style="list-style-type: none"> ✓ Documentation depends on project finance (=>operate lease) or company finance (=> credit) ✓ Credit report 	<ul style="list-style-type: none"> ✓ Detailed project documentation (investment plan, project cash flow, profit and loss account) ✓ Credit report 	<ul style="list-style-type: none"> ✓ Client's company documentation: last three annual accounts => creditworthiness ✓ ESCo: Project documentation (investment plan, project cash flow, profit and loss account, ...) ✓ Credit report
	<ul style="list-style-type: none"> ✓ Time to receive financing promise 	<ul style="list-style-type: none"> ✓ Typically 1 month after documentation is complete (documentation required depends on security concept) 	<ul style="list-style-type: none"> ✓ Typically 1 month after documentation is complete (documentation required depends on security concept) 	<ul style="list-style-type: none"> ✓ Typically 1 month after documentation is complete (documentation required depends on security concept) 	<ul style="list-style-type: none"> ✓ Typically 1 month after documentation is complete (documentation required depends on security concept)

Criteria	Customer expectations	Credits/Loans	Finance-Leasing	Operate-Leasing	Forfaiting
	<ul style="list-style-type: none"> ✓ Customer approval process 	<ul style="list-style-type: none"> ✓ Approval is easier if funds are drawn from operative (not investment) budgets ✓ Public entities: credit finance is subject to debt ceilings and may require approval legislative or supervising authority => possibly time consuming ✓ Some local authorities have adopted general approval for savings-cash-flow financed EPC-projects (third party financing) 	<ul style="list-style-type: none"> ✓ Approval is easier if funds are drawn from operative (not investment) budgets ✓ Public entities: finance lease is legally not considered indebtedness which may make approval process easier. ✓ Some local authorities have adopted general approval for savings-cash-flow financed EPC-projects 	<ul style="list-style-type: none"> ✓ Public entities: operate lease is legally not considered indebtedness which may make approval process easier. Approval is easier if funds are drawn from operative (not investment) budgets ✓ Some local authorities have adopted general approval for savings-cash-flow financed EPC-projects 	<ul style="list-style-type: none"> ✓ Approval would be easier if funds are drawn from operative (not investment) budget ✓ Some local authorities have adopted general approval for savings-cash-flow financed EPC-projects (third party financing)

Table 20: Matrix Innovative Financing Schemes - overview

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