Baseline study on local investment structures in energy savings in Germany

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June 2018

ALLIES
Activating and Learning from Local Investments in Energy Savings

European Climate Initiati
EUKI

Supported by:
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

based on a decision of the German Bundestag

Contents

Financing options for energy efficiency

The following explanations are based primarily on the study entitled “Übersicht über Finanzierungsoptionen für Energieeffizienzmaßnahmen” (“Overview of Financing Options for Energy Efficiency”) (Bach; von Schilling (2014), p.2-25), which was commissioned by the Energieagentur NRW and carried out by svs Capital Partners GmbH. This information was supplemented by the study entitled “Energiesparen in Bürgerhand“ (“Citizens conserving energy”) by the ifeu-Institut (see also Blömer; Pehnt; Rechsteiner (2015), p.11-13). Other sources are identified, where necessary, in the appropriate places. **This study is not suitable for publication before undergoing thorough and specific editing because it contains numerous foreign text passages. It should therefore only be used internally by international project partners as a guide for their subject area!**

Equity capital

Capital that is specifically generated by a person or a company is referred to as equity capital. It increases when there is profit and decreases when there are losses. It is therefore fully risk-bearing and can, in the worst-case scenario, result in total losses (see also Bach; von Schilling (2014), p.2).

Equity capital can be used as an investment contribution for the following financing options (see also Bach; von Schilling (2014), p.4-14):

- Participation
- Citizen
- Special fund
- Foundations
- Cooperatives
- Private equity and venture capital
- Municipal utilities
- Public equity/IPO

The key options for the ALLIES project are described below in detail.

Participation

(Bach; von Schilling (2014), p.4-14)

Definition. The participation relates to the purchase of shares in a company, project or fund, and involves the investing partner providing risk-bearing equity capital. The investing partner can be any legal person. They will typically be citizens, special funds, foundations, companies, private equity companies, venture capital companies or municipal utilities. As a consequence of Basel II

and Basel III, banks and savings banks will only invest in a participation in very exceptional circumstances. Leasing companies and contractors are often not eligible for a participation.

Form. Participation can be done through the purchase of a limited liability company shareholdings (GmbH), limited partnership shareholdings (KG), limited company shares (AG) or fund units. An early form of participation is an agreement for a call option on stocks or shares.

Function. A participation regularly strengthens the equity base. The owner of a company, or the initiator of an EEF project, provides an increase in equity either to actually start an EEF project or to carry out a larger EEF project/ multiple EEF projects. With an injection of equity capital, the company's or project's credit rating will generally improve and thus also their capacity to borrow funds (bank loans). The risk decreases as well. Liquidity improves and larger investments are possible.

Volumes. Amounts available as participations in companies start at a few hundred thousand and can go up to several billion euros. The upper euro amount for EEF projects is lower reaching the high double-digit million region; exceptions are possible.

Providers. Providers can be citizens, special funds, foundations, companies, private equity companies, venture capital companies, municipal utilities and the capital market.

Strengths. Participation increases the entrepreneurial scope. Companies or projects whose equity capital is increased as a result of a participation are considered less risky by lenders, ceteris paribus. This brings down the borrowing costs. At the same time, the probability of obtaining finance increases.

Weaknesses. The investing partner will want to give his approval for key transactions on a regular basis, i.e. the entrepreneurial freedom to make decisions is significantly limited. The contracts are generally complex. The entrepreneur is bound by extensive monitoring and transparency agreements. Securing an equity participation generally lasts between six and 18 months. It is usually time-consuming and expensive.

Typical areas of application. Investing partners are always able to find an investee if they are unable to finance the project concerned themselves. Depending on the company, these can include: a desire to improve the balance sheet structure, expand financial independence, build up capacity, introduce new products, expand abroad, develop new growth areas, prepare for the purchase of another company, spin-off a company division, a generation change, equity participation of employees and to increase the reputation of the company and/or brand.

Current market situation. The offers in a relatively non-transparent market are varied. It often takes a closer look before you can notice the subtle differences between individual providers. There is sufficient capital available for good projects. Average projects are seldom financed.

Relevance for financing EEF projects. Participations are always relevant for EEF companies or EEF projects if the entrepreneurs or project sponsors do not have enough of their own funds to finance the company or implement those projects. What form an equity participation can take is, however, a complex issue.

Financing examples. In Germany, there are several thousand cases of equity participations. On the German Private Equity and Venture Capital Association website there is a list of members. And you will often find details of individual equity participations on their respective websites. The below link will take you directly to a search screen where you can search in detail for different investors: http://www.bvkap.de/privateequity.php/cat/78/title/Suche_nach_Beteiligungskapital

Citizens

(Bach; von Schilling (2014), p.4-14)

Definition. For the purposes of this overview, the term citizens refers to all private persons willing to make an investment - including business angels (private persons who regularly invest in companies).

Form. Financing by citizens can take a great many different forms. Firstly, all types of financing (equity, mezzanine capital, debt capital) are possible; secondly, there are numerous different ways to implement them (from direct investment to a savings bond).

Function. For the citizen, investing in energy efficient projects is more than a pure financial investment. Aspects such as securing the livelihood of future generations are a big part of it. For business angels, entrepreneurial activity is frequently an important goal.

Volumes. Depending on the asset situation, the investable capital can range from a few hundred thousand euros to several hundred thousand euros, in some cases even more.

Providers. Many citizens finance the purchase of shares in solar and wind turbine limited partnership funds. These limited partnership funds are sold through savings banks, credit unions and other financial intermediaries, who act as a vehicle for raising capital.

Strengths. Strong interest in (local, small-scale) investment for the benefit of energy transition. Attractive opportunity/risk profile of alternative transition investments. Also suitable for relatively conservative investors.

Weaknesses. Larger projects that are financed by citizens require a great deal of coordination over the long-term as well as a caretaker.

Typical areas of application. Financing of solar parks, wind parks, biogas plants and energy villages. Other energy-transition investments (e.g. geothermal energy) are not as important.

Current market situation. The demand for participations in energy-transition investments continues unabated. In some instances, there are not any suitable vehicles to aggregate the existing demand in an appropriate form. It remains to be seen what the consequences of the Prokon insolvency will be. A fundamental change to investor preferences is unlikely.

Relevance for financing EEF projects. Financing EEF projects through citizens is very much at the start of its development.

Financing examples. The “Bodystreet” project on the crowdfunding platform bettervest (www.bettervest.de).

Special funds

(Bach; von Schilling (2014), p.4-14)

Definition. EEF special funds are funds that provide equity or equity-like financing for EEF projects.

Form. The structure of these funds varies hugely. It ranges from complex Luxembourg (umbrella) fund structures to market "GmbH & Co. KG" structures.

Function. Provision of equity or equity-like financing.

Volumes. From a few thousand to the upper double-digit million euro range.

Providers. svs Capital Partners are one of several institutional providers in Europe who actively seek EEF projects. Examples are:
http://www.eeef.eu; http://salixfinance.co.uk; http://www.equitix.co.uk/index.html

After a quick search, we were able to identify the following funds or fund-like projects in Germany. (1) www.baum-zukunftsfonds.de (2) www.proklima-hannover.de. Furthermore, several energy agencies have funds to finance EEF projects (e.g. www.eksh.org and www.energiekonsens.de/de/startseite/index.html). In this context, it was also shown on the KfW's EEF programme.

Strengths. Mostly risk-bearing equity capital or subsidies. Pronounced leverage effect as it is the ideal complement to the existing funding programme. Effect of professionalising the management of EEF projects. Learning effects.

Weaknesses. Mostly a relatively complex process for raising capital with a relatively low probability of success. Stringent requirements for the professionalism of the applicant. Considerable costs for lawyers, auditors and transaction consultants.

Typical areas of application. Special funds for EEF projects are required for many EEF projects. Their sponsors will typically not have sufficient equity, an adequate credit rating or enough liquidity. Very well suited for speeding up the energy transition.

Current market situation. Special funds focused on EEF projects are still a very recent financing option. Due to the fact that EEF projects are structurally low risk, svs Capital Partners expects the number of comparable initiatives to increase over the coming years. A key challenge is getting access to attractive projects.

Relevance for financing EEF projects. Funds specialising in EEF that provide real, risk-bearing equity are perhaps the most important financial instrument for the energy transition. It is this equity capital that makes it possible to fully exploit all the potential of the numerous products available (e.g. subsidiaries, development loans, etc.). For example, when evaluating the European energy efficiency fund managed by Deutsche Bank (www.eeef.eu), we found the cost-to-investment ratio to be 1:1081.

[1] COMMISSION STAFF WORKING DOCUMENT: Mid-term evaluation of the European Energy Efficiency Fund

Financing examples. Financing examples of the EEEF as the lead institution can be found on their website in the quarterly report2.

Cooperatives

(Bach; von Schilling (2014), p.4-14)

Definition. The cooperative is a commercial enterprise and can be founded by at least three natural or legal persons. It is characterised by the principles of self-help, self-administration and self-responsibility. Self-help means that individual legal and/or natural persons with similar economic, social or cultural interests join forces by means of a cooperative. Their purpose is to pool their strengths. Tasks that individuals would not be able to fulfil by themselves can be performed collectively.

Form. The registered cooperative is a legal person who has attained their own legal personality by registering in the register of cooperatives. Three people are sufficient to found a registered cooperative. In principle, it has three bodies: Executive Board, Supervisory Board and General Meeting. Members of the Executive Board and Supervisory Board must be members of the registered cooperative. Small cooperatives of up to 20 members can operate without a Supervisory Board. In Germany, the registered cooperative is by far the safest legal form in terms of insolvency due to internal monitoring by its members and independent auditing carried out by the Federation of Cooperatives.

Function. The cooperative is the model of cooperation in the economy and society. The legal form of the registered cooperative counters the challenges of competition, monopolistic structures and dependence with a model of cooperation, independence and regional competence. Cooperatives connect civil responsibility, participation and economic activity. They are: democratic (each member has one vote); flexible (members can easily join and leave); secure/safe (liability is limited to shares); responsible (as an ethical investment); expandable (to include many different projects); economical (by the distribution of dividends on the profit); forward-looking (e.g. for a sustainable energy sector in the hands of citizens); and cost-effective.

Volumes. Financing options are calculated based on the cooperative's financial resources at courtesy of its members. Funds made available therefore range from the low ten thousands to a high double-digit million euro amount.

Providers. As a special form of cooperative, cooperative banks have unlimited financing options for EEF projects as a group and with its leading institutes of the DZ Bank and WGZ Bank. Cooperative associations also provide advice on setting up cooperatives.

Strengths. Act together, achieve more. Remain independent. Participate. Take on responsibility. Reimbursement from a cooperative offers an attractive option for tax optimisation.

[2] http://www.eeef.eu/quarterly-reports.html

Weaknesses. Relatively time-consuming process to found because it involves first organising a capable group of cooperative members. Democratic decision-making can limit the ability to act in critical situations. There is a risk of mass resignation.

Areas of application. Cooperative banks, agricultural cooperatives, energy cooperatives, medical cooperatives.

Current market situation. The cooperative is experiencing a renaissance, triggered by the founding of numerous energy cooperatives and by the scepticism in recent years towards financial market institutions due to the financial crisis. Feed-in remuneration was key to the model's success. If this is abolished as part of the new energy market design, which is expected after Easter, or it is continued but with radical changes, the boom of energy cooperatives being founded should significantly diminish.

Relevance for financing EEF projects. In future, cooperatives may be highly relevant in financing EEF projects. Part of the statute and purpose of the cooperative for many different energy cooperatives, whose key area of activity had previously been to finance renewable energy projects, is the increase in EEF.

Financing examples. The B.A.U.M. future fund serves as a successful example of a cooperative that is purely focused on EEF projects.

Municipal utilities

(Bach; von Schilling (2014), p.4-14)

Definition. Municipal utilities are municipal companies mostly (proportionately) owned by municipalities. They provide technical services and utility services for the public. These include energy supply and waste disposal (electricity, gas, water, rubbish, landfill sites, street cleaning), infrastructure (streets, waters, public buildings and facilities) and public transport.

Form. In Germany, municipal facilities are generally privately run companies under the legal form of a limited liability company (GmbH) or a stock corporation (AG). They are (part) owned by municipalities, energy suppliers and, in rare circumstances, also by other private investors.

Function. Municipal utilities provide basic supply services and public services for the general public. They can play an important and active role in financing EEF operations.

Possible financing volumes. Many municipal utilities have significant financial resources - even in times of high uncertainty for energy policies. The funds available for the municipal utilities to finance EEF projects can range between a few hundred thousand euros and millions of euros in the double digit range. Financing EEF operations, however, often runs contrary to the business interests of the respective municipal utility (increased consumption always means additional turnover, a fall in consumption often means a loss in turnover).

Providers. In principle, all municipal utilities are eligible as providers of EEF services and the financing of them. The actual suitability, however, depends very much on the specific regional circumstances, the respective financial situation and the local political will. The big advantage of

the municipal utilities is their credit rating and institutional longevity. Provided the political will is there, they are a natural partner to coordinate numerous, notably small-volume EEF projects effectively and for a longer duration of time. An interesting example for a model that managed to involve numerous stakeholders was (co-)developed by the municipal utilities in Aachen3.

Strengths. Good knowledge of the local market. In part very good credit rating. Access to local banks. Extensive technical expertise available in the organisation. Own distribution channel that can be leveraged in combination with local banks. Existing brands, high degree of customer confidence.

Weaknesses. Numerous political obstacles. Inclusion of many different interest groups. Hard to build consensus. Current and presumed permanently low gas price puts into question the long-term profitability for many municipal utilities. They are therefore less willing to invest.

Typical areas of application. In principle, all municipal EEF project areas (e.g. schools, clinics, etc.). Many municipal utilities play an active role in the area of contracting.

Current market situation. The once stable market for municipal utilities is in a significant process of upheaval and is characterised by major uncertainty. Existing business models face the challenge of ever-changing legal framework conditions, highly volatile commodity prices and an increase in the consumers' readiness to switch. An industry that has been stable for many years is being exposed to increasing risks. These include regulatory risks, procurement risks and technology risks. Many municipal utilities are now having to consider a new or ever-changing strategic position. EEF projects may be understood in this environment as both a threat and an opportunity.

Relevance for financing EEF projects. Municipal utilities can become - if you want them to - a significant player for organising EEF projects. Particularly as a neutral coordinator between local stakeholders, they have the opportunity to create structures that will enable the rapid implementation of the energy transition. This is in part the case in the area of contracting, for example.

Financing examples. The opportunities and challenges faced by the municipal utilities when financing EEF projects is presented in the extensive article “Umsetzung von Energieeffizienzmaßnahmen durch Stadtwerke” (Implementation of energy efficiency measures by the municipal utilities)4.

Debt capital

Debt capital is capital based on debt that a company uses, if required, to realise its economic activities. This is repaid to the relevant creditor - usually banks - by means of interest and redemption.

Typical forms of arrangement are explained in detail below:

- Loans

[3] http://www.energieeffizienz-aachen.de/home/index.html
[4] www.et-energie-online.de

- Bonds
- Promissory note loans.

Loan

(Bach; von Schilling (2014), p.14-18)

Definition. A loan is a money transfer for use over time, mostly against interest and the provision of collateral (e.g. mortgage, transfer of property rights). The borrower is obliged to pay back the loan. Interest must be paid for the transfer of funds. In Germany, most loans are granted by banks and this is regulated in the German Banking Act (KWG). The private granting of loans is heavily restricted by law.

Form. Typical examples of loans include loan agreements, purchases on account, deferments and bills of exchange.

Function. With an appropriate credit rating and sufficient collateral, the entrepreneur or project sponsor/project developer can increase the funds available to him by a factor of two to four based on the equity available (leverage effect).

Volumes. You can apply for a loan from a few thousand euros. In principle, there is no upper limit for financing EEF measures. However, it can result in financing constraints at a local level (e.g. if a small savings bank or credit union had to finance a large wind park project). Risk management is also placing further restriction on volumes available as a result of the financial crisis and the implementation of Basel II and Basel III. An inadequate credit rating, a lack of collateral and history, and numerous other factors can impede the procurement of a loan.

Providers. There are numerous providers for loans. These include commercial banks, savings banks and credit unions and a relatively low number of specialist banks. They often have teams available that specialise in the area of renewable energies or cleantech. These specialists are good contacts for EEF projects.

Strengths. A loan is a standardised financial product. It is suitable for EEF projects because repayments are made through savings and so there is no need for new or additional budgets to be approved. Projects are often easy to calculate.

Weaknesses. Difficulties can arise with the provision of collateral. Many EEF projects cannot be implemented in publicly accessible areas (e.g. lighting in a factory building or insulation in a production line). Companies or institutions cannot implement such projects independently from their own credit rating. Financing EEF projects is harder if the credit rating is low.

Typical areas of application. EEF can be funded by loans in numerous different contexts. For example, the EEF of residential buildings, production facilities and transport can be financed through loans. The financing of software and sensor use (e.g. to reduce the use of resources in manufacturing processes), however, can also be of an EEF nature.

Current market situation. There are numerous private banks, cooperative banks and savings banks available for EEF investment. However, the restrictions mentioned (lack of credit history, not

enough company history, low margins, limited equity) apply. With large projects in particular, it is worth including development loans, surety bonds, guarantees or insurances.

Relevance for financing EEF projects. Without loans, it may be almost impossible to finance EEF projects. The current low-interest phase makes financing EEF projects particularly attractive. In addition to this, there are numerous development loans available from KfW5.

Financing examples. The number of examples where EEF investment is available to the public is relatively low. Good examples can be found, for instance, at dena6.

Promissory note loan

(Bach; von Schilling (2014), p.14-18)

Definition. In addition to bank loans and bonds, the promissory note loan is another form of debt financing for public authorities and most companies with a high credit rating. It refers to a long-term loan issued by banks, savings banks and insurance companies in relatively large tranches via a promissory note to debtors with a predominantly good credit rating.

Form. Banks, savings banks, cooperative banks and insurance companies issue a promissory note loan to a company with a good credit rating in the form of a private placement. Early termination is not possible in most cases. There is an informal secondary market. Promissory notes are not traded on the stock exchange.

Function. Promissory note loans are mostly unsecured loans. Institutional investors with large portfolios of fixed-income securities use them to diversify their risk and stabilise their portfolio.

Volumes. The lower limit of the placement volume is approx. 10 million euros; the upper limit is several hundred million euros. The savings bank group, for example, can issue small-volume promissory notes for SMEs from half a million euros.

Providers. Medium-sized companies and corporations with a good credit rating, recently also healthy, fast-growing SMEs with a good credit rating.

Customers. Promissory note loans are signed by many banks, savings banks, credit unions, insurance companies and other financial intermediaries. Insurance companies, in particular, like promissory note loans as they can be accounted for as amortised costs even if the company's credit rating (if available) or situation worsens and no write-downs are necessary.

Strengths. Cost-effective; significantly reduced outlay in comparison to a syndicated loan or a bond issue. Low level of legal complexity. Quick to implement. The market for promissory note loans was also "open" in the financial crisis. The promissory note loan gives smaller companies - with the appropriate credit rating - access to the institutional capital market. There is no obligation to publish, unlike bonds. It gives the creditor a slightly higher interest rate than a bond with a comparable level of risk.

[5] https://www.kfw.de/kfw.de.html
[6] http://www.dena.de/presse-medien/pressemitteilungen/von-pinakothek-bis-grundschule-viermal-gute-leistungen-in-energieeffizienz.html

***Strengths*.** Minimum volume. A rating is a prerequisite for a straightforward placement. No marketing effect. Secondary market is not institutionalised.

Typical areas of application. Alternative sources of financing for established medium-sized companies and corporations, recently also for towns and cities (e.g. Dortmund).

Current market situation. The market for promissory notes is an attractive growth market7.

Relevance for financing EEF projects. In principle, promissory note loans are well suited for financing municipal EEF projects.

Financing examples. Dortmund issued a promissory note in 2013 with an issue volume of 100 million euros (general budget fund, not focused on EEF). The issue volume was increased to 120 million during issuance due to considerable demand. Three tranches of five, seven and ten years were placed. Demand was distributed equally across all maturities. Thüga AG (www.thuega.de) used several promissory note loans to broaden its financial base in 2010 and over subsequent years. These funds are also indirectly financing EEF programmes (via the balance sheet). In the past, JUWI has been able to place a promissory note with a subscription volume of 74 million euros8.

Bonds

(Bach; von Schilling (2014), p.14-18)

Definition. A bond is an interest-bearing security listed on the exchange. Bonds are mainly issued for a certain maturity period. Most bonds must be paid back at the end of the maturity period.

Form. Bonds are issued in many different forms. They vary in terms of volume, maturity, interest rate, collateral security and repayment terms, amongst other things.

Function. The bond is an alternative form of debt financing. In addition to banks, it opens up another financing option for a company. Generally, bonds are purchased by institutional investors (e.g. insurance companies, pension funds, etc.) via the stock exchange.

Volumes. It is not really worth issuing bonds under 10 million euros for cost reasons; a minimum volume of 25 million euros is recommended. As when issuing shares, the costs are considerable. Very often, they will be significantly more than 100,000 euros. For large issues, costs can amount to several million euros.

Providers. Bond providers are the relevant companies. In order to be able to offer a bond on the capital market, it is necessary to determine the company's "readiness for the capital market". This is usually given if a company has an investment grade rating of at least BB. According to S&P, the long-standing, weighted default risk for this rating class is less than 1%9.

Strengths. No practical limits regarding the take-up volume of capital. Possible to repeat to raise more capital. Creates partial independence from banks. Raises awareness of the company.

[7] http://www.faz.net/aktuell/finanzen/schuldscheine-wachstum-unter-ausschluss-der-oeffentlichkeit-11713451.html
[8] http://www.finance-magazin.de/fileadmin/PDF/Events/SF/SF9-2013/Session-V/SF2013_Kredit_Schuldschein_Bond_Bank_oder_Kapitalmarkt_Roeber.pdf
[9] S&P Default, Transition, and Recovery: 2012 Annual Global Corporate Default Study And Rating Transitions

Continuous professionalisation. High levels of flexibility and individual tailoring possible. Opens up the national and, where applicable, international capital market as a supplement to bank financing.

Weaknesses. A bond listing requires significant preliminary costs. Successful management requires high levels of professionalism. There are considerable costs involved in remaining on the stock exchange. Considerable communication effort. Rating required. Transparency requirements from investors and the capital market. Tightened liability regime for the management and supervisory board.

Typical areas of application. A desire to improve the balance sheet structure, broaden the financial independence, build up capacity, introduce new products, expand abroad, open up new growth areas, prepare for the purchase of other companies, spin off a company division, a generation change, introduce the sale of shares of a venture capital provider or a private equity company, equity participation of employees or to increase the company's or brand's prominence.

Current market situation. There is a demand in Germany for corporate bonds. In 2013, a total of almost 1.5 billion euros were placed. Due to several insolvencies in the area of renewable energies, further developments remain to be seen.

Relevance for financing EEF projects. Financing specific EEF projects is not yet known. For a certain period of time, demand for special bonds in renewable energies in particular was high among investors.

Financing examples. In May 2013, for example, a bond of over 25 million euros was issued by SANHA (www.sanha.com). The manufacturer of piping systems and fittings in the sanitary, heating and air conditioning systems segment plans to profit from sustainable market trends, including EEF, environment, building safety and health.

Mezzanine capital

Depending on how it is structured, mezzanine capital is economic equity with a repayment obligation or unsecured debt capital ("unsecured loan", "interest-bearing equity"). The structure is the result of negotiations held between the contracting parties and, in practice, depends on the individual case. The investor does not acquire any shares in the financed company. As is the case with actual debt capital (loan), mezzanine capital has to be paid back, mostly after five to eight years. Mezzanine capital often has a mix of fixed and variable interest rates, whose calculated level is based on profit (distribution, dividends, many different individual forms). The mezzanine lender has more or less limited participation rights to take important company decisions. Collateral is usually not provided for mezzanine capital. A higher risk incurs a higher rate of interest. Currently, interest rates range between 8% and 18% total interest10. Mezzanine capital is used, for example, if the equity is not sufficient but the company does not want to sell shares and its profit margin is sufficient to make high interest payments.

[10] Mezzanine Panel 2012

Leasing

(Bach; von Schilling (2014), p.18-20)

Definition. Leasing is the purchase and transfer of an asset to a third party for economic use. The third party funds the purchase and transfer by means of a leasing fee. This transfer can be made with or without transferring property rights under civil law.

Form. There are numerous forms of leasing. They differentiate mostly by transfer type, property rights and tax considerations. Since 2008, finance leasing in Germany has been a financial service subject to approval within the meaning of the KWG (German Banking Act). Thus, risk is assessed analogously to the assessment by the bank. Basel II and III also apply.

Function. The essential characteristic of leasing is the use of a leasing company's financial capacity to finance your own investment. The leasing company acquires the machine, for example, required by the entrepreneur. The entrepreneur receives full usage rights and pays the leasing company their cost through the leasing rate. Leasing makes it easier for the entrepreneur to "afford" the machine. It requires neither capital nor bank finance. The relationship between equity and debt capital does not change, the credit rating stays the same and liquidity is preserved. It may be possible to realise tax advantages.

Volumes. The leasing volume available in Germany is vast with leasing contracts signed worth approx. 50 billion euros annually.

Providers. According to the Federal Association of German Leasing Companies (BDL), there are around 180 leasing companies in Germany. In addition to this, there are numerous group-owned leasing companies, some of which specialise in financing EEF projects (e.g. DAL - Deutsche Anlagen-Leasing from the savings bank group). Specialisation in the area of EEF is not known.

Strengths. Leasing is a flexible form of finance. When drawing it up, the individual needs and circumstances of the company can be taken into proper account. A comprehensive range of products has developed over recent decades - also as a result of certain tax advantages. In addition to the aforementioned financial advantages for the entrepreneur, some of the specialised leasing companies have considerable market expertise.

Weaknesses. As a result of the financial crisis and the more recent financial market regulation, the leasing business has in many cases assumed the character of bank finance. In the past, the former securitisation of leasing receivables and their placement on the capital market had enabled companies to take on significantly higher levels of risk through the leasing company. Leasing did in part take on a substitute equity function. Today, the refinancing of leasing companies is predominantly done through the banks. The banks' comparably high requirements for the borrower's equity base, margins, age and credit rating are passed on accordingly.

Typical areas of application. The core area of leasing is investment financing. Over time, there has been a large increase in assets being financed. Today, the financing of software, computers and, for example, solar panels - provided the lessee has an adequate credit rating - is standard

business. Leasing finance is often implemented in the area of EEF (e.g. through the acquisition of an energy-saving machine) without the issue of EEF being the focus.

Current market situation. Over the past few years, the leasing industry has not developed as market participants may have liked. The main reason for this is the sharply increased demand for the lessee to have a good credit rating. Due to the risk management systems as prescribed by law in the leasing companies, a lessee's credit rating must be taken into account when setting up leasing finance. Subsequently, numerous, economically viable projects have not been able to get financing (e.g. because the finance volume was far too big in comparison to the company's balance sheet total). The Association of German Leasing Companies (BDL) is tackling this challenge. Together with the EIF (European Investment Fund, a subsidiary of the European Investment Bank), a 150 million euro funding line for leasing sureties was developed. This surety has been available since the start of 2014 via the surety banks in the respective federal states11.

Relevance for financing EEF projects. In principle, leasing is suitable for financing EEF projects. This is particularly applicable if there is a need to finance investments that simultaneously allow for EEF profits. Here, leasing is in competition with contracting. Issues of collateralisation, especially for EEF measures on buildings, are sometimes a challenge.

Financing examples. Companies like Mainzer Mittelständler Werner & Mertz, (manufacturer of brand hygiene products including Erdal and Frosch) opened a new administrative building in 2010. The new building, which cost 15 million euros, uses several small wind turbines, a photovoltaic system and a geothermal energy system, all of which provide the entire energy required for heating and cooling. Werner & Mertz has leased the building together with the geothermal system. Unlike investment loans, no additional sureties are required because the systems remain the property of the lessor. The main advantages are liquidity protection and balance sheet neutrality. Both have a positive effect on the bank rating and increase the scope for further financing. Since it eliminates the initial investment and the instalments come in part from savings achieved, actual costs are considerably reduced12.

Contracting

(Bach; von Schilling (2014), p.20 et seq.)

***Definition*.** Is (1) the arrangement of a service contract for the provision or supply of consumables and the operation of corresponding facilities. Contracting is (2) the contract to fulfil an (energy) savings guarantee given by the contractor. Contracting represents a form of energy service (see also Blömer; Pehnt; Rechsteiner (2015), p.11-13).

***Form*.** Typically, the contractor takes on the necessary investment costs in connection with the technical and, in some cases, also the commercial support of the project. The contractor's

[11] http://bdl.leasingverband.de/presse/pressemitteilungen/neues-buergschafts-programm-unterstuetzt-leasing-investitionen-fuer-kleine-und-mittlere-unternehmen

[12] http://www.marktundmittelstand.de/nachrichten/finanzierung/mit-leasing-zu-mehr-energieeffizienz

investment costs as well as project and operational costs are generated from cost savings. These cost savings usually result from the use of new technology that is significantly more energy efficient. Smaller projects, in particular, are often only economically viable by optimising several trades. In addition to energy saving contracting, there is also energy supply contracting, which ensures the provision of a certain amount of energy (see also Blömer; Pehnt; Rechsteiner (2015), p.11-13).

Function. The contractor's technical skill and credit rating is used, for example, to significantly improve the existing EEF of a building or to significantly increase the effectiveness and environmental balance of a hospital.

Volumes. Up to a higher double-digit million euro amount13.

Providers. Specialised contracting companies. It can involve independent SMEs (e.g. www.enversum.de) as well as subsidiaries of municipal utilities or group companies (e.g. www.cofely.de).

***Strengths*.** Preserves liquidity and the balance sheet of the contractee. Enables the contractee to profit from technical progress in the area of energy management and the expertise of the contractor. Enables cost savings without having to provide the necessary investment funds. On average, 20-25% of energy costs are achieved by means of energy saving (see also Blömer; Pehnt; Rechsteiner (2015), p.11-13).

Weaknesses. Due to the long-standing contractual obligation between the contractee and the contractor, there is considerable counterparty risk. Possible concerns regarding the loss of jobs and/or outsourcing, etc. can lead to resistance within the organisation. Contracting projects are difficult to scale. Default risks on both sides, liability and insurance issues in the case of insolvency or damages (see also Blömer; Pehnt; Rechsteiner (2015), p.11-13). Due to relatively high transaction costs, contracting requires considerable minimum size/high level of initial investment in order to be economically viable. This financing option is therefore not applicable to a large section of private residential housing.

Typical areas of application. Is mostly used in public buildings, hospitals (e.g. cogeneration units) and other complex real estate. Suitable for larger individual buildings or building complexes with energy costs over 150,000 euros per year (see also Blömer; Pehnt; Rechsteiner (2015), p.11-13).

Current market situation. The contracting market in Germany is an established market with a healthy market growth of approx. 5%, after a double-digit growth rate was achieved for several years running (Prognos). Due to increased financing requirements under Basel II and III, the contractor's credit rating has become more and more important. Smaller contractors sometimes face significant financing obstacles. For SMEs, energy contracting has so far played a minor role. Energy supplier contracting is only used by 6% of the companies surveyed. Other contracting models like savings contracting, financing contracting or management contracting are not really

[13] Prognos et. al, market analysis and market valuation as well as the development of a concept to monitor the market for selected services in the energy efficiency field

used at all. However, around 3% of companies plan to implement one of the contracting models surveyed. A good quarter, at least, of all companies who have not yet used any energy contracting are interested in energy contracting (Thamling, Seefeldt, Glöckner (2010), p.40).

Relevance for financing EEF projects. The essence of energy savings contracting is to achieve higher EEF. In the past, numerous contracting projects were implemented for EEF measures, some in the structure of PPP as well (see 3.3.4). A more detailed account of energy savings contracting with other source references can be found in the brochure by the Wuppertal Institute entitled "Einsparcontracting für Fortgeschrittene" (Energy saving contracting for advanced users)14.

Financing examples. The Foreign Office in Berlin was able to determine and tap into considerable savings potential in an extensive contracting project15.

Project finance

(Bach; von Schilling (2014), p.21 et seq.)

Definition. Project finance mostly concerns specific (e.g. building and operation of a large-scale photovoltaic plant), temporary financing based on the cash flow generated by the project. The initiator's credit rating is not negatively impacted by project financing. For risk management reasons, it is helpful if the finance structure can be continued by a third party in the event that the initiator defaults on payment. In the SME segment, the term is usually between seven and 15 years.

Form. Project finance is typically awarded to a legally independent special-purpose vehicle. This special-purpose vehicle is provided with equity from the project sponsor. Any recourse the financing banks have to the sponsor or the initiator is generally limited to the equity that has been paid into the special-purpose vehicle. Additional sureties can be demanded.

Function. Project finance is used for projects whose initial capital requirement is high, but whose risk is relatively low ("essential goods") and which at the same time generate highly predictable cash flows that are stable over the long term.

Volumes. Project finance volumes typically start at 30 million euros. Finance in the single-digit billion euro region is not uncommon. For renewable energy projects, project finance - sometimes under a different name - is most frequently provided by credit unions and savings banks. At the same time, the implicit state turnover guarantee of the feed-in tariff is used. Depending on the institute, finance volumes start at several hundred thousand euros. This project finance is often covered by comprehensive sureties from the initiator, however, and is therefore non-recourse or recourse-limited project finance.

Providers. On the equity side, there are numerous infrastructure funds available for large projects. On the debt capital side, financing is made through banks that specialise in project finance. In the

[14] http://wupperinst.org/uploads/tx_wupperinst/einspar-contracting.pdf
[15] http://www.dena.de/presse-medien/pressemitteilungen/mit-contracting-spart-auswaertiges-amt-dauerhaft-energiekosten.html

SME segment, equity is generally provided by sponsors. Up until the implementation of the German Capital Investment Code (KAGB) in the summer of 2013, numerous projects were financed via so-called closed funds16, which were distributed by savings banks and credit unions as well as financial market participants.

Strengths. Genuine project finance is based on cash flow rather than the initiator's credit rating. It is well suited for the EE sector. If it is of sufficient size, it is also suitable for EEF projects.

Weaknesses. Relatively high complexity, considerable start-up and consultancy costs, long lead time. There is no transparent market in Germany for smaller project finance.

Typical areas of application. In the last few years, renewable energy projects (e.g. solar, wind, etc.) have focused on smaller project finance. With a fall in the provision of equity as a result of the KAGB coming into force half way through 2013, there has been a sharp decrease in associated finance from private investors.

Current market situation. The current market situation is relatively favourable. With sufficient equity available and established technology, loans can be obtained at attractive terms. Some banks have limited the loans granted for EE projects because, from a risk management perspective, they represent a considerable cluster risk in the banks' balance sheets. This can lead to local financing constraints.

Relevance for financing EEF projects. Smaller project finance can be (and is) implemented for financing EEF projects.

Financing examples. In the past, numerous, smaller photovoltaic and wind energy projects were implemented by the issuing bank as project finance. Another example was the project finance of a cogeneration unit for a medium-sized industry company in the amount of 800,000 euros.

Public Private Partnership (PPP)

(Bach; von Schilling (2014), p.22-24)

Definition. PPP is project finance that is implemented through cooperation between the public authorities and one or more private companies. With PPPs, private companies are contractually obliged to undertake public tasks on their behalf (e.g. building, maintenance and operation of a bridge).

Form. PPP can be backed by subsidies, state guarantees and sureties, and long-term purchase agreements. As with project finance, careful analysis and fair distribution of risks is crucial for success.

Function. Due to the relatively high burden of debt, many public authorities are not able to finance capital-intensive projects themselves. If this is the case, private finance is a possible solution. As part of such private finance, the public authority is obliged to accept a fixed number of infrastructure measures or services. The public authority's good credit rating makes it possible to

[16] http://de.wikipedia.org/wiki/Geschlossener_Fonds

get urgently required capital-intensive investment and, at the same time, use private-sector expertise.

Volumes. The volume of PPPs varies from a few million to well above a billion euros. The market in Germany is relatively fragmented. In terms of volume, most projects are in the single-digit to mid-double digit million euros region17.

Providers. In the vast majority of cases, providers of PPP projects are municipalities with a local financing need (e.g. ring road).

Strengths. Enables public authorities to realise capital-intensive projects even when public budgets are tight. Involves specific sector expertise.

Weaknesses. Public authorities are faced with limited resources and often a lack of experience and uncertain tax revenues. Due in part to negative experiences with PPP projects, treasurers are often highly sceptical. Complex contracts, a fear of losing control, but also the capacity to be able to provide certain services themselves at a sufficient level of quality, often prevents the rapid implementation of PPP projects18.

Typical areas of application. Typical areas of application are, for example, university and school buildings, office complexes, motorways, streets and ring roads as well as military institutions.

Current market situation. On the one hand, there is a great need in Germany for the financing of municipal functions. On the other hand, the public authorities are exercising noticeable restraint in terms of implementing PPP projects. In 2013, PPP projects accounted for only around 3% of the total volume invested by the public authorities19. By international standards, particularly in England, the volume of the German PPP market is low.

Relevance for financing EEF projects. Generally, PPP structures are suitable for financing medium-sized and larger EEF projects. There are numerous successful examples, particularly in the EEF segment. “Energy costs for over 30 federal contracting projects already carried out by dena fell on average by 37%. At the same time, over 30 million euros were invested by private companies in real estate. The financial cost to the contractor is refinanced from the energy costs saved. This eases the federal Government’s budget, however, by more than one million euros each year20.

Financing examples. The so-called “Hagener Model” 21 and towns such as Dormagen, Mechernich and Neunkirchen-Seelscheidt can be used as financing examples22.

Crowdfunding

(Bach; von Schilling (2014), p.24 et seq.)

[17] www.ppp-projektdatenbank.de
[18] Dr Hans-Georg Napp, The financing of public-private partnerships (PPP) – principles and current developments
[19] www.partnerschaften-deutschland.de/oepp-markt
[20] http://www.partnerschaften-deutschland.de/oepp-markt/oepp-im-fokus/oepp-und-energieeffizienz
[21] http://www.stadtbeleuchtung-hagen.de/public-private-partnership
[22] http://www.energieagentur.nrw.de/contracting/themen/projektbeispiele-.beleuchtungs-contracting-15842.asp

Definition. Crowdfunding is a relatively new form of project-specific, campaign-like financing through a collective. Initiators and investors make direct contact via an internet-based communication platform. There is no anonymisation via a financial intermediary (e.g. a bank). Contributions provided by individual funders are relatively small and often amount to less than 500 euros.

Form. In principle, all existing types of finance can be represented via the crowdfunding mechanism (e.g. equity, mezzanine, debt capital, leasing, etc.).

Function. The function of crowdfunding results, on the one hand, from the brokered type of financing (equity, mezzanine, debt capital, leasing, etc.), the intention of the investors (donation or "for profit") and, on the other hand, from aspects unique to crowdfunding.

Crowdfunding is based on the concept of a campaign. The initiator drums up enthusiasm and support for their concept from a crowd of people. In essence, crowdfunding is emotionally rich financing, which goes well beyond the pure consideration of "is it useful?". In addition to the financial investment itself, a number of aspects play a key role, including personal interest (cool idea), personal benefit (production of a product that the investor has always wanted to buy), belief in the product (believer or fan), concept of support and sponsorship, and the aspect of entertainment. Interaction between the project initiators and the investors is becoming more and more important.

Depending on the operator, target group and financing type of the respective platform, there are other added benefits, including the considerable publicity, the market test with end customers associated with raising capital, expanding business networks, uncomplicated processing, social aspects associated with crowdfunding as well as entertainment and learning (e.g. being able to act as a banker or venture capitalist). It also opens up new, previously unknown markets. Private customers can make venture capital investments (e.g. www.seedmatch.de); entrepreneurs from poorer countries can obtain finance (e.g. www.kiva.org). Essentially, crowdfunding is a new allocation mechanism in between private capital and private capital demand. Internet technology thus coordinates financing and investment needs in a new way.

Volumes. Previous volumes have been relatively low and typically range between 50,000 and 500,000 euros. In 2013, svs Capital Partners supported the second largest German crowdfunding to date23. As part of this transaction, 1.2 million euros were obtained within just over three days.

Providers. The number of providers is (still) limited. In Germany, between ten and 15 serious providers may be active on the market. Meanwhile, there are now providers specialised in the energy transition sector and projects in this sector24.

Strengths. Financing is possible for good concepts with an inadequate credit rating. The emotional aspect creates a direct, increasingly personal relationship between the funders and the entrepreneurs. Uses the intelligence of a crowd. Enables people to "vote with their wallet". Private

[23] http://www.wsj.de/article/SB10001424052702303562904579224102922785702.html, www.e-volo.de
[24] Wirtschaftswoche from 24 February 2014 on page 78 et seq.

people gain access to projects that could not previously be financed. Platform operators know their investors really well. Therefore, present high transaction security. For the leading platforms, this is over 90%. Can be used to prepare for future venture capital financing.

Weaknesses. Young form of financing. No reliable statutory regulation. Complex crowdfunding management. Management costs for the entrepreneur in terms of maintaining investor relations. The investors' current appetite for risk can lead to increased defaults in a few years' time.

Typical areas of application. Financing of innovative projects that the investor has an emotional affinity for.

Current market situation. The young market is characterised by a high growth rate that is often over 30%. The German crowdinvesting market leader seedmatch provided just over 10 million euros up until the end of 2013.

Relevance for financing EEF projects. Financing EEF projects via crowdfunding has already been implemented in a small number of cases. In principle, there is no reason for it not to substantially expand.

Financing examples. Initial financing examples for EEF projects can be found on www.econeers.de or www.bettervest.de

Legal form comparison

	Eingetragene Genossenschaft (eG) [registered cooperative]	**Eingetragener Verein (eV) [registered association]**	**Gesellschaft bürgerlichen Rechts (GbR) [civil law partnership]**	**Gesellschaft mit beschränkter Haftung (GmbH) [limited liability company LLC]**	**GmbH & Co. KG [limited partnership]**	**Partnerschaftsgesellschaft [professional partnership]**
Purpose	boosting the earning capacity or economy of the members or their social or cultural interests through joint business activities	all, but strictly no commercial business activities	the pursuance of random common interests	public limited company for the achievement of any legally permissible purpose	commercial trading by equal partners who are generally all employed by the company	association of freelancers, no commercial trading
Formation	at least 3 members who are required to stipulate bylaws in writing, no notarial certification formation audit established upon entry in the Register of Cooperatives	at least 7 members who are required to stipulate bylaws in writing, no notarial certification established upon entry in the Register of Associations	at least 2 shareholders who may also conclude an informal or written contract not entered in the Commercial Register	notarial certification of a Memorandum of Association that does not necessarily require several shareholders established upon entry in the Commercial Register	at least 2 shareholders who may also draw up informal or written Articles of Association GmbH as general partner (see GmbH), additionally one limited partner established upon the commencement of business, at the latest upon entry in the Commercial Register	at least 2 partners, written Partnership Agreement established upon entry in the Partnership Register
Legal responsibility	legally responsible as a legal entity	legally responsible as a legal entity	not a legal entity, but with partial legal responsibility	legally responsible as a legal entity	not a legal entity, but rights can be acquired and liabilities assumed under its business name, can be entered in the cadastral register and is capable of acting before a court of law	not a legal entity, but rights can be acquired and liabilities assumed under its business name, can be entered in the cadastral register and is capable of acting before a court of law
List of shareholders	maintained by the eG itself	maintained by the eV itself	in practice, as with the eG	all changes to be reported immediately to the Commercial Register	entry of the shareholders in the Commercial Register (in addition to requirement for GmbH)	entry of the partners in the Partnership Register

Capital	no fixed capital each member shall subscribe for a share in the business for which deposits must be paid no minimum amount for the share	no fixed capital membership fees according to the bylaws	no fixed capital no minimum deposits stipulated	fixed share capital of at least € 25,000 minimum deposit of 25% on each initial contribution, however at least € 12,500 in total minimum share € 1	no fixed capital (but share capital held by the general partner GmbH) no minimum deposits stipulated (with regard to the GmbH, see requirements for GmbH)	no fixed capital no minimum deposits stipulated
Business name	name derived from the object of the enterprise or personal name "eingetragene Genossenschaft [registered cooperative]" or "eG" affix required	name derived from the object of the enterprise and personal name "eingetragener Verein [registered association]" or "eV" affix required	company has no own business name	name derived from the object of the enterprise or personal name "with limited liability" addendum required	business name of the GmbH (see requirements for GmbH)	personal name, which must include the name of a partner, the affix "and partner" or "... partnership", and the names of all professions represented in the partnership
Company assets	own assets of the company as a legal entity	own assets of the company as a legal entity	special jointly-held assets	own assets of the company as a legal entity	jointly-held total assets of the shareholders	jointly-held total assets of the partners
Change of shareholders	unrestricted number of members, members free to join or leave admission with the approval of the eG termination of membership to the end of a fiscal year in compliance with the cancellation period stipulated in the bylaws cancellation of membership by transferring the business assets, partial transfer possible exclusion from the cooperative possible to the end of a fiscal year	admission with the approval of the eV termination of membership in compliance with the cancellation period stipulated in the bylaws	only with the consent of all shareholders, Articles of Association may include differing provisions	no termination possible shares may be sold (notarial certification) and are inheritable	only with the consent of all shareholders, Articles of Association may include differing provisions entry in the Commercial Register	as with GmbH & Co. KG, inheritability by third parties, who may be partners within the meaning of the respective definition of the freelance professions of the professional partnership, may be stipulated by contract entry in the Partnership Register

Disputes	entitlement of the resigning member to reimbursement of the deposit (business assets)	no claims against eV	entitlement according to the Articles of Association, upon repayment of the deposit, 5-year risk of extended liability	entitlement according to the Articles of Association, maintenance of capital	entitlement according to the Articles of Association, upon repayment of the deposit, 5-year risk of extended liability	entitlement according to the Partnership Agreement, upon repayment of the deposit, 5- year risk of extended liability
Liability	cooperative assets liable to the creditors in case of insolvency, an obligation on the part of the members to make an additional contribution can be regulated in the bylaws	assets of the association only	joint, i.e. direct and unlimited, liability by all shareholders, liability may be limited to the company assets by agreement with each individual creditor	company assets liable to the creditors obligation by the shareholders to make an additional contribution can be regulated in the Articles of Association	joint liability by all shareholders (in the case of the GmbH, limited to its assets; for the limited partner, limited to the amount of the deposit)	generally joint, i.e. direct and unlimited, liability by all partners, liability due to deficient professional practice limited to the partner providing the professional service
						limitation, e.g. to maximum amount, possible; personal liability can be excluded. limited to the company assets. preconditions are professional indemnity insurance and name affix, e.g. “with limited professional liability”
Legally stipulated organs	board of directors (at least 2 people), supervisory board (at least 3 people) and general meeting, for cooperatives with less than 20 members: board of directors (1 person), supervisory board optional	board of directors, members’ meeting	none	managing directors and shareholders’ meeting, supervisory board optional	none (with regard to the GmbH, see requirements for GmbH)	no particular organs
Management	power of joint management by the board of directors, differing regulations may apply	power of joint management by the board of directors, differing regulations may apply	power of joint management by the board of directors, differing regulations may apply	power of joint management by the board of directors, differing regulations may apply	power of sole management by the general partner (see requirements for GmbH), differing regulations may apply	power of sole management by each partner, differing regulations may apply

Representation	power of joint representation by the board of directors, differing regulations may apply	power of joint representation by the board of directors, differing regulations may apply	power of joint representation by all shareholders, differing regulations may apply	power of joint representation by the managing directors, differing regulations may apply	power of sole representation by the GmbH	power of sole representation by each partner, differing regulations may apply
Monitoring and information rights of the shareholders	monitoring rights only through the appointed supervisory board, right of all members to information only in the general meeting 10% of the members can request that a general meeting be convened (protection of minorities)	only in the members' meeting, details in the Articles of Association where applicable	further monitoring rights through personal notification about the business of the company and inspection of the books, agreements to the contrary shall not apply	personal right of all shareholders to information that can be exercised at any time, agreements to the contrary shall not apply shareholders, whose shares are equivalent to 10% of the share capital, may request that a general meeting be convened (protection of minorities), monitoring rights through a supervisory board, where available	monitoring rights generally according to the Articles of Association	further monitoring rights through personal notification about the business of the company and inspection of the books, agreements to the contrary shall not apply
Shareholders' resolution	each member has one vote, resolutions passed in the general meeting, in the case of business cooperatives 1 member can be granted up to 10% of all designated votes, a simple majority of the votes is basically sufficient	each member has one vote, a simple majority of the votes is basically sufficient, differing regulations may apply	each shareholder has one vote, decisions must be unanimous, differing regulations may apply	voting right exercised according to shares, resolutions passed strictly in the shareholders' meeting, majority decisions are common	voting right generally according to the Articles of Association (usually depending on the capital)	each shareholder has one vote, decisions must be unanimous, differing regulations may apply

Annual statement	drawn up by the board of directors within 5 months of the end of the fiscal year, determined by the general meeting within 6 months, consisting of balance sheet, profit and loss statement with appendix	no statutory requirements	no statutory requirements	drawn up by the board of directors within 3 months of the end of the fiscal year, determined by the company within 8 months (for small GmbHs, 6 or 11 months), consisting of balance sheet, profit and loss statement with appendix	drawn up by the board of directors within 3 months of the end of the fiscal year, determined by the company within 8 months (for small GmbHs, 6 or 11 months), consisting of balance sheet, profit and loss statement with appendix	no statutory requirements
Reserves	statutory reserve required to cover balance sheet losses, other revenue reserves possible, bylaws regulate minimum funding	possible	possible	reserve required for own shares, on the other hand no statutory reserve, other profit reserves possible, Articles of Association regulate minimum funding	possible, with regard to the GmbH, see requirements for GmbH	possible
Profit and loss distribution	profit distribution decision by the general meeting, distribution to the members according to allocation to reserves in relation to the deposits paid by them on their shares	strictly not provided for	distribution to the shareholders in equal parts, differing regulations may apply	profit distribution decision by the shareholders' meeting, distribution according to allocation to reserves in relation to the deposits paid by them on their shares, differing regulations may apply	generally according to the Articles of Association	distribution to the shareholders in equal parts, differing regulations may apply
Tax particularity	reimbursement as business expense					
Audit	statutory audit by cooperative association in the interest of the members, no audit of the annual statement, inclusion of the books and the management report for small eGs	no audit requirement	no audit requirement	no audit requirement for small GmbHs, audit requirement for medium-sized and large GmbHs, audit by auditor or chartered accountant	no audit requirement for small GmbHs, audit requirement for medium-sized and large GmbHs, audit by auditor or chartered accountant	no audit requirement

Advice and support	from cooperative association, particularly with regard to economic, legal and tax- related issues	not provided for	not provided for	not provided for	not provided for	not provided for
Publication and publicity of annual statements and management report	submission of annual statements, management report and report of the supervisory board to the Register of Cooperatives, duty to publish for large cooperatives only, submission to electronic Federal Gazette, publication in the electronic Federal Gazette for all to read.	no publication or publicity	no publication or publicity	submission of annual statements, management report and proposal and decision on the appropriation of the profit to the Commercial Register, notice in Federal Gazette of submission to the Commercial Register, publication in the Federal Gazette for large GmbHs	submission of annual statements, management report and proposal and decision on the appropriation of the profit to the Commercial Register, notice in Federal Gazette of submission to the Commercial Register, publication in the Federal Gazette for large GmbHs	no publication or publicity
Dissolution and termination	Dissolution for example by a resolution passed by the general meeting, lapse of time, liquidation usually by the board of directors on grounds of statutory regulations after liquidation is completed, registration for deletion of the business distribution of net equity among the members after a twelve-month restrictive period	essentially as with the eG	company closes down, for example, due to notice of termination, achievement of or inability to achieve the business objective, lapse of time, opening of insolvency proceedings on the assets of a shareholder or the death of a shareholder liquidation is determined by the shareholders	company closes down, for example, due to lapse of time, shareholders' resolution, court judgement, opening of insolvency proceedings liquidation by the managing directors on grounds of statutory regulations after liquidation is completed, registration for deletion of the business	dissolution due to lapse of time, shareholders' resolution, notice of termination, court decision liquidation usually by the GmbH, additional liquidation of the GmbH after liquidation is completed, registration for deletion of the business distribution of net equity, possible 5-year risk of extended liability	essentially as with the GbR after liquidation is completed, registration for deletion of the business

This overview is consistent with the legal situation as of October 2013. Amendments made at a later date have not been taken into account.

Legal form comparison 2

	European Cooperative Society (SCE)	Private Limited Company (Ltd.)	Unternehmergesellschaft (haftungsbeschränkt) [entrepreneurial company with limited liability], UG
Purpose	supporting the needs of its members and/or their commercial and/or social activities	public limited company under English law for the achievement of any legally permissible purpose	as with the GmbH
Formation	at least 5 natural persons or 2 legal entities whose permanent abode or company heaquarter is located in 2 member states or fondation in the process of change established upon entry in the Register of Cooperatives	in England under English law in the English language Application for entry in the English Commercial register with necessary documents (articles of association, comprising two parts, founding declaration) or shell company acqusition as long as centre of administration is in Germany and a branch office is existing, obligation to register in the German Commercial Register established upon entry in the English Commercial Register	Notarial certification of an article of partnership, which does not necessarily require several sharholders established upon entry in the Commercial Register
Legal responsibility	legally responsible as a legal entity	legally responsible as a legal entity under English law	legally responsible as a legal entity
List of shareholders	maintained by the SCE itself	maintained by the English Commercial Register, annual obligation to update	as with the GmbH
Kapital	no fixed capital each member shall subscribe for a share in the business for which deposits must be paid minimum of 30.000 EUR	In general 100 GBP, but 1 GBP sufficient to found	Basically fixed share capital of 1-24,999 EUR, up to the amount of 25.000 EUR obligation to establish reserves
Business name	name derived from the object of the enterprise or personal name “SCE” affix required	name derived from the object of the enterprise or personal name “Ltd.” affix required	name derived from the object of the enterprise or personal name “UG (limited liability)” affix required
Company assets	own assets of the company as a legal entity	own assets of the company as a legal entity	as with the GmbH
Change of shareholders	unrestricted number of members, members free to join or leave admission with the approval of the SCE termination of membership to the end of a fiscal year in compliance with the cancellation period stipulated in the bylaws cancellation of membership by transferring the business assets, partial transfer possible	restricted number of members entry only with the consent of all shareholders and/or directors shares are freely transferable	as with the GmbH

Disputes	entitlement of the resigning member to reimbursement of the deposit (business assets)	entitlement according to the Articles of Association	as with the GmbH
Liability	assets of the cooperative itself	company itself to the amount oft the equity	as with the GmbH
Legally stipulated organs	general meeting and supervisory body and management body (dualistic system) or administration body (monistic system)	shareholders (shareholder, managing director and company secretary)	as with the GmbH
Management	joint management due to executive or administrative body	power of joint management by the director differing regulations	as with the GmbH
Representation	power of joint representation by the executive or administrative body differing regulations may apply	director, legal entity possible as well in case of several directors, in general, joint representation deviation due to article of association may apply	as with the GmbH
Monitoring and information rights of the shareholders	report to advisory board at least every three months. in addition, the supervisory body must be informed of all events that have a noticeable effect on the situation of the SCE		as with the GmbH
Shareholders' resolution	each member has one vote, resolutions passed in the general meeting	voting right generally according to the Articles of Association (usually depending on the capital)	as with the GmbH
Annual statement	as with the eG	determined by English law due to centre of administration in England At the latest, 22 months after establishment/annual submission of the annual statement to the Companies Registration Office, business report, profit and loss statement, notes, auditor's report, relief for small/medium-sized companies	as with the GmbH
Reserves	reserve required for own shares, otherwise as with the eG	no statutory reserve, but others reserves possible	mandatory reserve for capital increase, compensation for net loss or loss brought forward
Profit and loss distribution	as with the eG	see annual statement	as with the GmbH, but with mandatory reserve
Tax particularities	as with the eG		
Advice and support	as with the eG	not provided for	not provided for
Publication and publicity of annual statements and management report	as with the eG	comparable with the GmbH	as with the GmbH
Dissolution and termination	as with the eG	comparable with the GmbH	as with the GmbH

Features of energy efficient investments

(Blömer; Pehnt; Rechsteiner (2015), p.10)

Investments in energy efficient measures differ in several respects from “normal investments” made in small and medium-sized companies (SMEs), municipalities or private households. A key difference is the fact that they are mostly non-business related; in other words, they are outside of the normal investment process of companies, public institutions or private households. Consequently, in addition to the asset or building owner not having the staffing capacity or expertise, there is often no capital available to carry out energy efficiency measures as equity and credit lines for ongoing business expenses have been used up. It can be assumed then that energy efficient investments are easier to realise if they are carried out as part of investments already needed to replace or optimise systems or buildings. Investments in energy efficient measures are often very fragmented and decentralised and are thus more complex to implement. So for small measures that can have a large overall impact on savings, it is often too costly to carry them out in-house as there aren’t enough staff, expertise and sufficient economic incentives. In turn, large energy efficiency projects are often not carried out either, as the risk of such investments outside of the business area is seen as too high and it is not possible to acquire additional capital outside of the usual credit lines. One of the reasons for this is that energy efficiency investments tend to have a longer amortisation period and can rarely be liquidated ahead of schedule, which ties capital up for a long time (IFEU et al. 2015, IFEU and LBD 2014). At what point the investment sum will have paid for itself depends, among other things, on the type of energy efficiency measures. So, for example, by exchanging old lighting products with energy-saving LEDs or fluorescent lamps, you can save up to 75 percent of your energy consumption or energy costs per year, which for a comparatively low investment to carry out the measure can lead to a short amortisation period of between two and five years. The risk of a long-term capital commitment due to the challenging liquidation (lighting cannot simply be removed before the end of the contract term) is also limited in this case due to a short term. Most other energy efficiency measures, meanwhile, require significantly higher initial investment, have relatively lower savings and are therefore linked to longer amortisation and capital tie-up periods. So, for example, the acquisition, installation and maintenance of a cogeneration unit (CHP) requires significantly more investment and a significantly longer amortisation period of between ten and twenty years for relatively lower efficiency gains. An increased risk for the investor can arise, especially for energy efficiency measures with high investment volumes and long terms. The money is set for a long period of time and can rarely be retrieved beforehand. So, it is important to safeguard firstly the investment risk in the event of loss - for example in the case of insolvency or site relocation of the efficiency investment provider - and secondly the energy savings risk, i.e. the actual attainment of

savings calculated. To what extent these risks and possible returns are split between the stakeholders involved sometimes depends on which financing mechanism has been chosen.

Political and legal framework conditions

The energy transition is based on two pillars - the development of renewable energies and the increase in energy efficiency. Since the ALLIES project is primarily concerned about energy efficiency, we will briefly discuss the current energy efficiency policy with its targets and measures. The legal framework conditions, which are important in this context, are also listed and explained here. Since improving energy efficiency is a cross-cutting issue affecting all sectors, the energy efficiency policy is very complex. This is, in turn, reflected in a range of Directives and regulations at both European and national level.

Political objectives at EU level

As part of the energy and climate change objectives at EU level, it was resolved to reduce greenhouse gas emissions by 20% by 2020 compared with 1990, by 40% by 2030 and by 80-95% by 2050. At the World Climate Summit in Paris in 2015, the international community also agreed to limit global warming with an increase in the average temperature of less than 2 degrees Celsius, or better still, 1.5 degrees Celsius (see also BMUB 2016). The most important Directives issued at EU level in relation to energy efficiency are the EU Energy Efficiency Directive, the EU Building Directive, the EU Ecodesign Directive and the Framework Directive concerning Europe-wide, uniform energy labelling (see also BAFA 2017). These must be transposed into national law by member states.

Political objectives at federal level in Germany

The energy concept was adopted at federal level in 2010 with objectives up until 2050. This was followed in 2011 by an extensive legislative package and the announcement that there would be a withdrawal from the nuclear energy programme by 2022 following the reactor catastrophe in Fukushima. In 2016, the Climate Action Plan 2050 was agreed. A review was to be carried out on a regular basis to check its progress and ensure objectives were being met (see also BMUB 2016a). For the last 18th legislative period, the efficiency strategy, the German National Action Plan on Energy Efficiency (NAPE), was submitted specifically for exploiting potential energy savings (see also BMWi 2014, p.6). For energy savings and the increase in energy efficiency, the design of the planned measures is based on the triad policy of “promote, demand, inform” (ibid.,

p.21). The NAPE results from the EU Energy Efficiency Directive, which is a concept promoted by member states to achieve the EU efficiency objectives.

A core element of the efficiency strategy is the area of energy saving as a model for generating returns and as a business model (see also BMWi 2014, p.29). In the NAPE, there was provision for emergency measures and other measures. In addition to the further development of the KfW energy efficiency programme, a competitive tendering model for energy efficiency was introduced to help identify the most favourable and at the same time most cost-efficient provider (ibid., p.30). This could also be cooperatives as well as other providers. In order to minimise the risks and transaction costs of contracting and thus make it more attractive, surety banks developed the surety bond scheme, providing both letters of indemnity and advice (ibid.). Another field of action for an emergency measure is waste heat utilisation. Two thirds of energy used in industrial processes is consumed for process heat. Waste heat utilisation concepts should help provide some relief and be supported as part of the “energy consulting for medium-sized businesses” and through financial subsidies (ibid., p.31).
In addition to the emergency measures, further work processes that should continue to be pursued are described in the NAPE. Initially, this is the general **improvement of framework conditions for energy efficiency services**, as they are often not implemented due to various different barriers, despite promising profitability (see section XY) (see also BMWi 2014, p.32). The barriers and positive experiences of the federal states should be combined and recommendations for action derived from them. Public properties in particular should be tested for their compatibility for contracting. Furthermore, **new financing concepts** should be developed and tested to counteract the many barriers and risks - both on the part of the companies and also from the banks’ and investors’ perspective (ibid.). One example is the transfer of future profits in liquidity for current efficiency investments, since profits in companies are often already tied elsewhere and energy efficiency is not deemed a priority. **Extensive and networked research** is mentioned as a basic addition to the measures taken (ibid.). The ALLIES project is a key contributor - particularly for the last two points mentioned - in increasing energy efficiency and therefore in achieving the efficiency target set out in the policy.

After taking a look at the overriding targets and measures in relation to energy efficiency at European and national (German) level, we will now go into more detail about the legal framework. Specific support mechanisms that can be extracted from the political and legal frameworks are presented in the next section.

Legal frameworks

European legislation forms the basis for respective implementation at national level. The most important acts of law for climate protection and energy regulation at European level, as well as the equivalent at federal level, are listed in the following table (see also UBA 2018).

EU level	Federal level
▪ EU Greenhouse Gas Emissions Directive	▪ Greenhouse Gas Emissions Trading Act ▪ Emissions Trading Regulation 2020
▪ EU Renewable Energy Directive	▪ Renewable Energy Law ▪ Renewable Energy Heat Act ▪ Biomass Ordinance ▪ amongst others
▪ EU Energy Efficiency and Energy Services Directive (EED)	▪ Energy Services Law ▪ National Action Plan for Energy Efficiency
▪ EU Directive on the Energy Performance of Buildings	▪ Energy Saving Act ▪ Energy Saving Directive
▪ EU Framework for Energy Labelling	▪ Energy Labelling Directive
▪ EU Electricity Market Directive	▪ Energy Act ▪ Supplementary Directives (e.g. Network Charges Ordinance)
▪ EU Energy Tax Directive ▪ EU Guidelines on State Environmental Protection and Energy Subsidies 2014-2020	▪ Electricity Tax Law ▪ Energy Tax Act

Table captions!

Directives that are directly or strongly linked to specific energy efficiency issues are explained in more detail below.

EU Renewable Energy Directive

(Bonn; Reichert (2017), p. 1)

The Renewable Energy Directive 2009/28/EC is a key instrument at European Union level for the promotion of renewable energies and forms the legal framework for the overall European strategy in this policy area. The current Renewable Energy Directive (2009/28/EC; see also Bonn et al. (2014), p. 89 et seqq.) sets out for 2020 (old Art. 3 (1) and (4))

- the EU-wide target to increase the share of renewable energy (RE) in the total energy used in the EU (RE share) to at least 20%,
- for member states, binding national RE expansion targets in accordance with their respective RE potential,
- for member states, a binding RE expansion target in the transport sector of at least 10% each.

The current RE Directive leaves it predominantly up to the member states to decide

- how they split their national RE expansion targets between the electricity sector, the heating and cooling sector, and the transport sector,
- which RE technologies they promote and how they promote them.

The European Council decided in 2014 (see also Bonn et al. (2014), p. 112 et seq.) that by 2030

- the EU-wide share of renewable energy (RE) must be increased to at least 27%,
- no national RE expansion targets will be set.

The recommended new version of the RE Directive should regulate how RE is to be funded from 2021 in order to meet the binding EU-wide target of 27% by 2030.

Achieving the EU-wide RE expansion target of 27% by 2030 - amendment of the RE Directive

From 2021, member states must

- "cooperate to ensure" the EU-wide RE expansion target of 27% is met by 2030 (new Art. 3 (1),
- continue to meet their national RE expansion targets for 2020 (new Art. 3 (3)).

By the start of 2019, member states must have set "integrated national energy and climate plans" for the period from 2021 to 2030 [Recommendation Governance Regulation COM(2016) 759, Art. 3]. These plans must be presented to the Commission and specify [COM(2016) 759, Art. 4 (a) (2) combined with Appendix I Section 2.1.2.],

- what national RE expansion contribution the member states will make in order to reach the 27% target and
- how the member states plan to split their national RE expansion contribution up into the electricity, heating and cooling, and transport sectors.

Grandfathering

Existing funding already promised to RE providers beyond 2020 may not be retrospectively changed or withdrawn (Art. 6).

Renewable Energy Heat Act (EEWärmeG)

(BMWi 2018)

In the interests of protecting the climate, conserving fossil resources and reducing dependence on energy imports, the purpose of the EEWärmeG is to facilitate the development of heating and cooling supply systems and to promote the further development of technologies that use renewable energies. The act should also help to increase the share of renewable energies used by end consumers for heating and cooling to 14 percent by 2020.

To this end, Section 3 of the EEWärmeG requires that a proportion of the heating needs for newly constructed buildings are met by renewable energies. This requirement applies if the usable floor

area is more than 50 square metres (to calculate the usable floor area, see Energy Saving Ordinance - EnEV). The addressees of this requirement are all owners of newly constructed buildings, whether or not it involves public or private developers. It is up to the owner to decide what form of renewable energy should be used. There are a few minimum requirements to bear in mind. A certain minimum proportion of the total heating and/or cooling requirement must be generated from renewable energy. The share depends on which renewable energy is being used. Currently, a solar thermal system must cover at least 15 percent of the heating and cooling energy requirement of a building when using solar thermal energy; when using solid or liquid biomass it is 50 percent and when using geothermal energy it is also 50 percent. The reason behind the various rates is the different investment and fuel costs.

Anyone not wishing to use renewable energies can choose from a number of alternative measures. The usage obligation is deemed fulfilled if at least 50 percent of the requirement for heating and cooling energy is covered by waste heat or cogeneration units (CHP plant). Alternative measures can also be achieved by conventionally generated district heating or district cooling and by improved energy saving in buildings (Section 7 (2) and (3) EEWärmeG).

When drawing up the act, it was decided to make it possible for each building owner to come up with their own individual, customised and cost-effective solutions. Thus, different combinations of renewable energy and other energy sources are permitted. More detailed specifications are set out in Section 8 of the EEWärmeG.

Public authorities are also obliged to use a proportionate share of renewable energies if they completely renovate an existing building (Section 3 (2) EEWärmeG). This obligation underlines the function of the public sector as a role model and goes back to the Renewable Energy Directive from 2009 (2009/28/EC), which was transposed into German law in 2011 by the European Law Adaptation Act for Renewable Energy (EAG EE) dated 12 April 2011.

The EEWärmeG allows federal states to define usage obligations for renewable energy, even for private building stock, in accordance with Section 3 (4), among others. The EEWärmeG also makes it easier for municipalities and municipal associations to set up a compulsory connection and use of the public district heating supply network (Section 16 EEWärmeG).

In order to react appropriately to the increasing number of refugees and asylum seekers and be able to meet the need for accommodation, Section 9a - “Buildings to house asylum seekers and refugees” - was added to the EEWärmeG (current version: 20/10/2015) (PDF: 119 KB).

In the autumn of 2015, the German government submitted the second field report on the Renewable Energy Heat Act (PDF: 3.3 MB). In particular, it presents the status for the market launch of systems for generating heating and cooling from renewable energy in regard to achieving the purpose and goals set out in Section 1 of the EEWärmeG. Other topics include the technical development, cost development and the efficiency of these systems as well as the enforcement of the EEWärmeG.

Section 13 of the EEWärmeG specifies that the federal government promotes the use of renewable energy to generate heating and cooling. This is done as part of the **market incentive programme** for the promotion of renewable energies in the heat market (MIP). It promotes systems that use renewable energies to generate heat or cooling, in particular solar thermal systems, biomass systems and heating pumps as well as deep geothermal systems, heating networks and heat accumulators. The goal of the MIP is to support market penetration of renewable heating and cooling technologies through investment incentives. The MIP primarily promotes the installation of systems to use renewable energies in existing buildings. Particularly innovative and highly efficient technologies are also eligible if they are used in new buildings.
The improved and revised MIP, which came into force in April 2015, expanded existing subsidies, made promotion more attractive and incorporated new, innovative technologies into the funding.

Energy Efficiency Directive (EED)

As explained at the start of this section, the EU Energy Efficiency Directive (EED) forms the starting position for the implementation of efficiency targets decided at EU level in each of the member states. The member states agreed in 2007 to reduce primary energy consumption by 20% by 2020 as part of the energy and climate change objectives. The result of these efforts was, among other things, the EU Energy Efficiency Directive, which came into force on 4 December 2012 and provided the legal basis for implementation in the member states. The implementation deadline was set for June 2014.
The most important elements of the EED are listed below (BMWi (undated)):

- Defining national energy efficiency targets for 2020 (Article 3)
- Renovation rate for central government buildings of 3 percent per year (Article 5)
- **Obligatory energy savings by member states of 1.5 percent on average per year from 2014 to 2020 (Article 7)**
- Obligation to carry out regular energy audits in large companies (Article 8)
- Cogeneration: Mandatory to carry out a cost-benefit analysis with new buildings or when modernising power stations and industrial plants (Article 14).

The NAPE represents the partial realisation of the Energy Efficiency Directive, given that such a concept and the regular monitoring of progress are explicitly required from member states.

Monitoring is again summarised in the National Energy Efficiency Action Plan (NEEAP) and published on an annual basis.

Member states are also encouraged to provide information about energy service contracts, financial instruments, funding and grants, as well as best practice examples and public points of contact (Article 18 EED). Appropriate measures should be taken to remove regulatory and non-regulatory barriers - such as the split of incentives between the owner and the tenant of a building in which an energy efficient investment is planned. Such measures to remove barriers may include providing incentives, repealing or amending legal or regulatory provisions, adopting guidelines and interpretative communications, or simplifying administrative procedures (Article 19 EED). Article 20 of the EED then goes into the financing of energy efficiency measures. Afterwards, financing facilities must be set up by the member states to support the implementation of such measures. An appropriate instrument may, for example, be an Energy Efficiency National Fund, which can be set up by member states and is specifically designed to support national energy efficiency initiatives. Obligations under Article 5 (1) and Article 7 (1) can therefore be fulfilled by means of annual contributions of an amount equal to the investments required to achieve those obligations (Article 20 (5) & (6)).

Law on Energy Services and other energy efficiency measures (EDL-G)

For companies, Article 7 (Energy efficiency obligation schemes) and Article 8 (Energy audits and energy management systems) of the EED are particularly important. The requirement of the EED to set up energy efficiency obligation schemes is implemented in Germany via the Energy Service Act (EDL-G). All companies in Germany apart from SMEs are obligated to put in place an energy audit in accordance with EN 16247-1, an energy management system in accordance with ISO 50001 or an environmental management system in accordance with EMAS (see also TÜV Süd (undated)). The obligation is monitored by the Federal Office of Economic Affairs and Export Control.

Energy Performance of Buildings Directive (EPBD)

Buildings account for 40% of total energy consumption in the European Union (EU). The sector is expanding, which is bound to increase its energy consumption. By limiting the demand for energy, the EU reduces its energy dependency and greenhouse gas emissions and makes progress in meeting its target of reducing total energy consumption by 20% by 2020. This Directive, which was originally adopted on 19 May 2010, should improve the overall energy performance of buildings in the EU, whilst also taking into account climatic and local conditions. It specifies minimum requirements and standardised methods. It covers energy consumption for heating, hot water, cooling, air conditioning and lighting.

On 17 April 2018, the EU parliament finally approved new rules for the EPBD. Listed below are the key new rules:

- Creates a clear path towards a low and zero-emission building stock in the EU by 2050 underpinned by national roadmaps to decarbonise buildings;
- Encourages the use of information and communication technology (ICT) and smart technologies to ensure buildings operate efficiently, for example by introducing automation and control systems;
- Supports the rollout of the infrastructure for e-mobility in all buildings (although to a lesser extent than in the Commission's proposal);
- Introduces a "smart readiness indicator" which will measure the buildings' capacity to use new technologies and electronic systems to adapt to the needs of the consumer, optimise its operation and interact with the grid;
- Integrates and substantially strengthens long-term building renovation strategies;
- Mobilises public and private financing and investment;
- Helps to combat energy poverty and reduce the household energy bill by renovating older buildings (see also EnEV-online 2018).

Energy Savings Act (EnEG)

(see Kesselheld (undated))
In Germany, energy efficiency and the heating of buildings are regulated by the Energy Savings Act (EnEG) and the Energy Saving Ordinance (EnEV). The law functions as a detailed description of the building measures, while the ordinance is supplemented by specific regulations.

The eleven main paragraphs of the Energy Savings Act (EnEG) define the construction requirements for old and new buildings, the specifications for plant engineering, the organisation of the operational cost allocation bases, the issue and control of energy performance certificates and the levying of fines in the event of violations against the Energy Savings Act. The dates for a staggered entry into force are also specified.

Plants for producing heating and cooling

The focus and purpose of the Energy Savings Act is the absence of energy loss with any type of heating and cooling. The requirements of plant engineering are divided into eight sub-items.

1. Each device generating cooling and heating must have the appropriate dimensions and achieve the highest possible efficiency rate.
2. Insulated and effective installation and piping system
3. Hot water with maximum temperature

4. Efficient control technology
5. Recovery system for heat
6. Permanent control and measuring of energy consumption
7. Building lights
8. Advanced features that are adapted to technological progress

The regulations in the Energy Savings Act apply in full to new buildings and also partially to existing old buildings, depending on the scope of the changes. The Energy Savings Act also includes the requirement to state the energy efficiency class when selling or renting a property. These are listed in the figure below:

Energieeffizienzklassen in Energieausweisen für Wohngebäude ab Mai 2014

Energie-effizienzklasse	Endenergiebedarf oder Endenergieverbrauch*	Ungefähre jährliche Energiekosten pro Quadratmeter Wohnfläche**
A+	unter 30 kWh/(m²a)	weniger als 2 Euro
A	30 bis unter 50 kWh/(m²a)	3 Euro
B	50 bis unter 75 kWh/(m²a)	5 Euro
C	75 bis unter 100 kWh/(m²a)	7 Euro
D	100 bis unter 130 kWh/(m²a)	9 Euro
E	130 bis unter 160 kWh/(m²a)	12 Euro
F	160 bis unter 200 kWh/(m²a)	15 Euro
G	200 bis unter 250 kWh/(m²a)	18 Euro
H	über 250 kWh/(m²a)	20 Euro und mehr

Anmerkungen: * Ist bei einem vor dem 1. Mai 2014 ausgestellten Energieausweis der Warmwasserverbrauch nicht enthalten, muss der auf dem Ausweis genannte Energieverbrauchskennwert um eine Pauschale von 20,0 kWh/(m²a) erhöht werden. ** Die berechneten Energiekosten sind Durchschnittswerte, die je nach Lage der Wohnung und individuellem Verbrauch stark abweichen können. Angenommene Kosten: 8 ct je Kilowattstunde Brennstoff, das entspricht circa 80 ct je Liter Heizöl.
Quelle: Verbraucherzentrale NRW

Kesselheld

Figure captions

Deviations from the standard and energy performance certificates

The special regulations in the Energy Savings Act also list house and building types and their non-standard heating systems. A typical example is when the usual heating period is exceeded or

fallen short of. Partial heating, lower heating requirements, exceptionally large glazing, generation of heat from other sources, building with temporary use and special air change requirements involve modified regulations for implementation and use.
The list of requirements for issuing and monitoring (which is compulsory) the energy performance certificates is also set out in special regulations. This includes the values to be declared, the regulatory notification and terms for issuance or publication, and the allocation of competences for issuers of the documents. Paragraph seven (dash b) details the level of monitoring and the documentation required for inspections.

Basis for funding and validity

The Energy Savings Act and even more so the Energy Saving Ordinance are used as decision-making criteria for state and municipal subsidies. Specific details of laws and Directives must be fulfilled when applications for subsidies or low-cost loans are inspected by the Kreditanstalt für Wiederaufbau (KfW) and the Federal Office of Economic Affairs and Export Control (BAFA).
Particular account needs to be taken of the relevant dates when individual legislative texts and Directives come into force. That can include the submission date of a building plan, the start date of a construction measure or any other key administrative date. The legislation is dynamically structured in sections, as is appropriate for the constant technical development. It is therefore necessary to individually check what change dates or dates of entry into force for individual regulations the respective initiative relates to.

Energy Saving Ordinance (EnEV)

The Energy Saving Ordinance (EnEV) contains specific formulated provisions as to how to implement the EnEG. The last amendment to the Energy Saving Ordinance (EnEV), which entered into force on 1 May 2014, included an increase in new building requirements that became effective as of 1 January 2016: The annual primary energy requirement permitted for new buildings has been reduced by an average of 25 percent and the value for the minimum heat insulation of the building envelope has been reduced by an average of 20 percent (BMU 2016). The standards for energy requirements in new buildings have hence been stricter since 1 January 2016 (ibid.).

Key contents of the amendment to the EnEV
(BMU 2016)

1. **Specifications for construction**

- Appropriate and economically justifiable increases in energy requirements for new buildings from 1 January 2016 by an average of 25 percent of the permitted annual

primary energy demand and by an average of 20 percent for heat insulation of the building envelope.

- From 2021, all new buildings must be constructed to the nearly zero-energy building standard according to European standards. This applies from 2019 for the new construction of certain public authority buildings. This is provided for in the Energy Savings Act by means of a basic obligation, which came into force in July 2013. Concrete specifications for the minimum energy quality of nearly zero-energy buildings have been established in due time - by the end of 2016 at the latest for public authority buildings and by the end of 2018 for all new buildings.
- There is no upgrading specified for the renovation of buildings. The requirements for modernising external construction are already challenging. Additional upgrading here would not increase the potential for saving energy by very much compared to the EnEV 2009.
- At the request of the German Federal Council (Bundesrat), the compulsory replacement of old heating boilers (installed before 1985 or over 30 years old) was extended. Previously, this regulation applied to boilers installed before 1 October 1978. Condensing boilers and low-temperature boilers, which have a particularly high efficiency level, are not affected. Only so-called constant-temperature boilers are therefore recorded. The scope of the requirement is therefore limited. In practice, boilers are replaced after 24 years, on average, anyway. Many owner-occupied single or two-family houses are also exempt from the requirement. Here, the regulation, which has been in existence since EnEV 2002, still applies, according to which owners of single and two-family houses who were themselves using at least one flat in the houses on 1 February 2002, are exempt from the requirement to replace their boiler. In the event of a change of ownership, the new owners are required to carry out the replacement within two years.

2. Specifications for energy performance certificates

- Introduction of the compulsory requirement to specify the key energy figures in property advertisements when selling and renting:
- At the request of the German Federal Council, part of this requirement is now to specify the energy efficiency class. This includes classes A+ to H. The regulation only affects new energy performance certificates issued for residential buildings after the new regulation came into force. This means: If there is a valid energy performance certificate under the old law - i.e. with no energy performance class stated - for the residential building being sold or rented out, there is no requirement to specify a class in the

property advertisement. In this way, energy efficiency classes can gradually establish themselves on the market.

- Clarification of the existing requirement to present the energy performance certificate to potential sellers and tenants: Previously, it was stipulated that you had to make the energy performance certificate “available”. It is now specified that this must happen at the time the property for sale or for rent is being viewed.
- Furthermore, the energy performance certificate must also now be handed over to the buyer or new tenant (copy or original).
- Introduction of the requirement to post energy performance certificates on notice boards in certain buildings frequented by the public, which are not based on official use, when an energy performance certificate already exists. Those affected include larger shops, hotels, department stores, restaurants or banks.
- Expansion of the existing requirement for public authorities to post energy performance certificates on a notice board in buildings used by the public authorities and frequented by the public to include smaller buildings (initially, larger than 500 sqm, from July 2015 more than 250 sqm useful floor area frequented by the public).

3. Strengthening of the enforcement of the EnEV

- Introduction of independent spot checks by federal states for energy performance certificates and reports on the inspection of air-conditioning systems.

De minimis rule for state-aid (2014-2020)

(EUR-lex 32013R1407 (2014); Gappa et al. (2015); p.3-5)
This is a regulation on small state aid amounts that are exempted from state aid control as they are deemed to have no impact on competition and trade in the EU’s internal market.

‘De minimis’ aid refers to small amounts of state aid to undertakings (essentially companies) that EU countries do not have to notify the European Commission about. The maximum amount is EUR 200 000 for each undertaking over a 3-year period. This has not changed in this revised regulation.

In 2006, the Commission adopted a de minimis regulation (Regulation (EC) No 1998/2006) which was valid for the period from 2007 to 2013. It doubled the ceiling for exempted aid amounts from EUR 100 000 for each company per 3-year period to EUR 200 000. This increase took account not only of the evolution of inflation and gross domestic product in the EU up to 2006, but also of the likely development of these factors from 2007 to 2013. Because of the financial crisis, real inflation

was considerably lower than anticipated in 2006. A further increase in the ceiling was therefore not warranted on these grounds.

In the current Regulation (EU) No 1407/201325, which revises and replaces Regulation (EC) No 1998/2006, the treatment of small aid measures is further simplified. In particular, companies experiencing financial difficulties are no longer excluded from the scope of the regulation and will therefore be allowed to receive de minimis aid.

In addition, the definition of what constitutes an 'undertaking' has been simplified and clarified. The details of this can be read in Article 2.2 of the regulation.

Furthermore, subsidised loans of up to EUR 1 million may also benefit from the de minimis regulation if certain conditions are met. More details can be read in Article 4 of the regulation.

Regulation (EU) No. 1407/2013 applies until 31.12.2020.

Some state aid law regulations impede the further development and expansion of contracting services in Germany. The major legal barriers for contracting resulting from the de minimis regulation (Regulation (EU) No. 1407/2013) are presented below.
In the past, contracting was explicitly excluded from many federal funding programmes. In the meantime, however, contracting models have become eligible for numerous federal funding programmes, particularly at the KfW, i.e. the contractors themselves can apply for funds from the public programme instead of the building owner. For example, since 2012, contractors have been eligible to access funding as part of the market incentive programme for the use of renewable energies (MIP) and the funding programme supporting the application of highly efficient cross-sectional technologies in medium-sized companies. Moreover, the updated Directive to promote increased use of CHP installations up to 20kWel allows contractors to apply if they are filing an application on behalf of someone else who is eligible to apply. In principle, contractors are also eligible to apply to other measures from the Climate Initiative, such as the promotion of measures for commercial cooling systems. In future, other programmes should be opened up for contracting.
If an energy service provider or contractor, however, actively files the application, they are deemed to be the recipient of the funds. This becomes problematic when the energy service provider - according to their business concept - works for more than one client.
The background to this is as follows: State subsidies that member countries grant to companies must in principle be notified to the European Commission for prior approval. So-called de minimis

[25] Commission Regulation (EU) No 1407/2013 of 18 December 2013 on the application of Articles 107 and 108 of the Treaty on the Functioning of the European Union to de minimis aid.

state aid, i.e. aid for a company that does not exceed a total of €200,000 in a period of three fiscal years (Article 3 (2) regulation (EU) No. 1407/2013), is excluded from this notification requirement (see also regulations (EC) No. 994/98 and (EU) No. 1407/2013). This exception is based on the consideration that the corresponding state aid does not affect trade between member states and/or does not distort or threaten to distort competition.

If the contractor now applies for a number of projects for a variety of clients, the amount of funds adds up. The total funding amount paid out to the contractor will very quickly reach the €200,000 limit within three fiscal years. Projects that the contractor will carry out later therefore no longer qualify for exemption, even if, in principle, the respective individual projects would have been exempt if the individual client had filed the application. The same applies for other project coordinators and developers of composite projects (so-called market agents), who provide extensive project development services and prepare projects until they are implemented and financing has been secured. If they exceed the threshold, they are compelled to issue an extensive notification.

A way of countering this problem could be for the respective client to file the application. However, there are a number of reasons for the contractor to file the application:

- Accounting reasons (on-balance/off-balance), ownership structure
- Administrative cost/knowledge advantage: A significant advantage of "contracting" as an alternative to implementing it on their own is that the client is able to draw on the contractor's expertise. This specialist knowledge makes it easier to make the best application. At the same time, it reduces the administrative cost for the client. If the client has to make the funding application themselves, they will miss out on at least some of these advantages.

Solutions

Beneficiary of the funding: The concept of state aid refers to the beneficiary of the aid, not the recipient of the service. A recipient and a beneficiary of state aid can thus be separate people26. It is therefore important to check to what extent, in the interpretation and notification of de minimis state aid, it focuses on who the actual beneficiary of the state aid is. On closer examination, this will very often be the contractor's client, as they are the ones to benefit from the funding. Should it be permissible under EU law, as part of the de minimis state aid notification rule, to focus on the client instead of the contractor as beneficiary, it would be particularly attractive and a simpler way of removing a key barrier for contracting services.

Release of aid under the GBER: In addition to de minimis state aid, state aid measures in accordance with the General Block Exemption Regulation (GBER) are exempt from the basic notification requirement, if certain conditions are met. Investment aid for energy efficiency measures, in accordance with Art. 38 GBER, for example, is worthy of exemption. Only the extra

[26] Kliemann in: von der Groeben/Schwarze/Hatje, Europäisches Unionsrecht, 7. 2015 Edition, Art. 107 AEUV, Rn. 36.

investment costs required to improve energy efficiency, however, are then eligible for aid (Art. 38 (3) GBER). Investment aid for energy efficiency projects relating to buildings can also be exempt from the notification requirement in accordance with Art. 39 GBER. The vast majority of the funding programme is already now eligible for aid. In comparison to funding under the de minimis regulation, however, funding conditions are strictly regulated by the GBER. These legal specifications to some extent complicate both the development of the funding programme that complies with the regulations for state aid and the application by the recipient of the funds.

Another possibility may be to develop the contracting model in the funding programmes to be free of state aid (as a so-called “no aid”). However, one of the prerequisites would be for any advantages for the contractor to be passed on in full to the final beneficiary (see also point 4.1.). Alternatively, there is always the possibility of notifying the EU-COM of the relevant funding programme with contracting models and getting them to approve it (Umweltschutz- und Energiebeihilfeleitlinien, Art. 107 (3) lit. c AEUV).

Funding possibilities

See attached Excel sheet.

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