

MunEM:
Sustainable energy management on municipal level

WP 2: Energy policy and economical framework

Report 3:

**Existing financing instruments for energy
efficiency in Kaliningrad Oblast and proposals
for further development**

Coordination by
Deutsche Gesellschaft für
Technische Zusammenarbeit (GTZ) GmbH
Potsdamer Platz 10
D-10785 Berlin

Contents

1	Background and objectives	3
2	Existing financing instruments and structures in KO	4
2.1	Financing energy efficiency investments in multi-family buildings.....	4
2.2	Financing energy efficiency investments in public buildings and properties.....	10
2.3	Financing district heating rehabilitation and supply side investments (including renewable energy sources)	17
3	Selected proposals for further development of financing instruments.....	24
3.1	Creation of a regional energy efficiency fund	24
3.2	Financing energy efficiency investments in residential multi-family buildings	24
3.3	Financing energy efficiency investments in public buildings	26
3.4	Financing district heating rehabilitation and energy supply side investments including renewable energy sources.....	29
4	Selected references.....	33
5	Acronyms	33

1 Background and objectives

The EU co-financed Interreg IVB project MunEM aims at promoting sustainable municipal energy management in Kaliningrad Oblast. The objectives of MunEM Work Package 2 are

- to assess existing regulatory and legal framework conditions in key areas of municipal energy efficiency,
- to develop policy recommendations for optimization of the legal and regulatory framework in these key areas,
- to assess existing financing instruments for energy efficiency investments and to provide recommendations for possible financing instruments and structures.

The following report includes an assessment of existing financing instruments for energy efficiency in selected sub-sectors relevant for municipal energy management and formulates proposals for further development of financing instruments. The following sub-sectors are covered:

- Residential multi family buildings
- Public buildings and properties
- Energy conversion and supply.

The report also contains references to good practices from EU 27 and CIS countries and other regions in the Russian Federation (RF). It draws cross-references to the two predecessor INTERREG projects BEEN (*Baltic Energy Efficiency Network*) and REGENERGY (*Network of pioneering communities and regions working on innovative heat energy solutions*).

The report has been elaborated under the leadership of *Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH* corresponding author being

Michael Krug
GTZ Twinning Office Berlin
Potsdamer Platz 10
D-10785 Berlin
phone: +49-(4559)-188670
fax: +49-(30) 2014-5763
e-mail: michael.krug@gtz.de

The following project partners contributed to the report:

Housing Initiative for Eastern Europe (IWO e.V.) (subchapters 2.1 and 3.2)
Investment Bank Schleswig-Holstein, Energy Agency (subchapter 3.4.3).

2 Existing financing instruments and structures in KO

2.1 Financing energy efficiency investments in multi-family buildings

2.1.1 Existing financing practices and support schemes

The main sources of financing housing refurbishment in Kaliningrad Oblast (KO) today are own funds of homeowners, including energy cost savings, special-purpose grants or soft loans provided by the state, as well as bank loans.

Own funds of homeowners

The proper funds of the residents living in the multi-storey buildings are used, as a rule, to finance small investment projects, realized by tenants of living apartments.

The amount, homeowners are able to pay for refurbishment, consists of the following:

- Private savings,
- Cost savings after refurbishment. Taking into account increase of energy prices, the amount of costs saved after energy refurbishment will just continue to grow,
- Payments for refurbishment measures, capital repairs and partly for maintenance. An average family income with two persons employed amounts to 735.59 €/month in Kaliningrad, which simultaneously with payment of all housing costs in full amount allows to generate a financial reserve for refurbishment deductions.

The homeowners all being members of homeowners' associations (HOAs), have the possibility to create a special purpose fund to cover expenses of running maintenance, repair and/or modernization for their residential building. Each owner has to pay regular membership fees to this fund every month.

At present, the majority of homeowners in apartment houses in KO do not pay any contributions for capital repairs. In accordance with the provisions of the RF Housing Code, the size of monthly allowances for capital repairs is set by the decision of the General Meeting of the homeowners in the apartment house. The decision of the General Meeting on allowances for capital repairs of the apartment house is made taking into account the proposals of the managing organization on commencement term of the capital repairs, necessary work volume, cost of materials, procedure for repairs financing and other proposals related to the conditions of carrying out capital repairs.

Special-purpose grants from the state

In the RF, state and/or municipal support for providing refurbishment activities is realized by way of adaptation and realization of specific programmes supporting the ownership in solution of objectives concerning the repair of the building stock. The key form of financial support is the provision of non-repayable grants.

The *Programme for Reforming and Modernization of Housing and Municipal Utility sector 2002-2010* stipulates provision of financial assistance from the regional and local budgets, budgets of municipal unitary enterprises, assistance in obtaining loans

and grants for modernization of municipal infrastructure, investment allocations, implementation of energy saving technologies etc.

The Target Programme „*Zhilishe*“ for the period 2006-2010 approved by Decree of the Regional (Oblast) Government from September 26, 2006 No. 700 envisages development of financial instruments for the modernization of housing and utility sector, development of mortgage lending mechanisms, instruments for attracting private investments, provision of payment guarantees and subsidies as additional credit coverage. The programme measures should be financed from federal, regional, municipal budgets and other non-budget funds.

Since 2007, refurbishment measures of condominium ownership may be supported by the *Promotional Fund for Reforming the Housing and Utility Sector* (hereinafter the Fund)¹. The scope of the Fund's financing programmes for reforming of the housing and communal services and providing implementation of the capital repair for the multi-storey residential buildings makes up RUR 144 billion or € 3.99 billion². The Fund grants financing for refurbishment programmes with 20-50 per cent share of regional budget contribution that totals 95% refurbishment costs. Contribution of homeowners must not be less than 5% of refurbishment costs.

Eligible beneficiaries are HOAs and housing cooperatives or other specialized consumer cooperatives and managing organizations, elected by homeowners in the apartment houses. The subject of the targeted refurbishment is a multi-family building, where homeowners decide to take part in the programme of capital repairs. The necessary preconditions are as follows:

- Implementation of the structural transformations in municipal housing and communal services pretending to financial support;
- Decision made by homeowners to finance refurbishment at the expense of homeowners with 5% share of works costs.

The examples of refurbishment projects implemented in the period 2006-2007 in Kaliningrad³ show that most renovation measures were financed by the municipality. The measures include heat insulation, repair of facades and general non-energy saving works (replacement of roofing; refurbishment of balconies/loggias, replacement, refurbishment of entrances, refurbishment of staircases). Windows were replaced in the flats at the expense of tenants or homeowners.

Refurbishment in all projects was financed simultaneously from two sources: from the municipal budget and homeowners' funds. We may state that 100% refurbishment of common property was financed from Kaliningrad's budget and homeowners covered 100% refurbishment costs of private ownership.

Bank loans

¹The Federal Law No185-FL «*On the Fund for Promotion of Housing and Communal Service Reforms*» was adopted on 21.07.2007 by the State Duma of the Federal Assembly of the RF.

²1 EUR = 36.0895 RUR (at the exchange rate of the RF Central Bank as per 23.11.2007).

³Chernyahovskogo street, 74-746; Chernyahovskogo street, 30-40; Gorkogo street, 38-44; Chernyahovskogo street, 76-766; Gorkogo street, 16-22; Nevskogo street, 133.

Russia has a well developed system of bank lending. However, loan offers remain largely unacceptable for homeowners if financing of large investments into energy efficient refurbishment of buildings is required.

On the capital market there exist offerings for mortgage loans for legal bodies and individual persons. In the following, lending practices and conditions shall be illustrated by describing two large banks active in KO:

The *Alpha Bank*, a universal bank and one of the major banks in the RF as to size of assets and equity capital accommodates «Universal loans» for legal entities, which can be used by HOAs and housing cooperatives for repairs or reconstruction of premises in condominium ownership. The size of the loan issued amounts up to 100% of the costs of refurbishment works. The scope of loan amounts to 78 million RUR (or equivalent in other currency). Security of credit repayment: collateral on real estate. The interest rate depends on the currency, period and category of the loan. The life of the loan is up to five years.

Another bank «*Uralsib*» - among the Top Five of domestic banks - accommodates «Loan on property of natural persons». It is a loan offer to natural persons – homeowners for the purchase of goods and services, including renovation of flat. Proves of purpose use of credit is not required. The credit offer is valid since 2005. The size of the loan amounts up to 100% cost of the refurbishment works. The scope of the loan varies from 300,000 to 3 million roubles. Interest rates vary between 16% (loan in RUR) and 12.5% (loan in foreign currency). The life of the loan is up to 5 years.

Since 2007, the RF is a priority region for the loan programmes «Clean Production» and «Energy saving» administered by the *Nordic Environmental Finance Corporation* (NEFCO). NEFCO is a financing institution established by the governments of the five Scandinavian countries Denmark, Island, Norway, Finland and Sweden and provides financing for ecologically sound projects in the Baltic Sea Region, Russia, Belarus, and Ukraine. NEFCO administers different funds for a variety of purposes.

The loan programme «Clean Production» offers private and municipal enterprises of the RF, Belarus and the Ukraine loans for cleaner production investments aiming at conserving raw materials and energy, eliminating toxic raw materials and reducing the quantity and toxicity of all emissions and wastes before they leave the process. Loans are provided within two programmes: General programme – up to 350,000 EUR and *Energy Saving Programme* up to 400,000 EUR (in RUR – 9% annual interest rates, which is, namely, lower than the interest rate of the *Central Bank of Russia*, and constitutes 10.25%). The maximum loan period is 5 years, the payback period of the project no more than 4 years. The grace period is up to 1 year (i.e. no repayments required for the first year). Own investments should not be not less than 10% of the loan amount.

Eligible borrowers under the programme «Energy saving» are mainly municipal enterprises and small commercial enterprises.

Larger loans – up to 5 mln. EUR – can be obtained within the more complicated financing scheme. Thereby, the Scandinavian partner countries shall have a long-term interest, and own investments of loan beneficiaries shall exceed 50%. Loans up to 5 mln. Euro are offered in EUR for long-term periods. The interest rate is agreed individually according to the risks and refinancing rate of European banks and EUROborrow. Own financing amounts to 50% of the total amount of the loan.

Nowadays, there is a lack of soft loans to finance building refurbishments. Heretofore, the loans are characterized by 5-10 years credit period (as compared with Germany – 20-25 years), that leads to high annual payments of both interests and capital repayments. Credit packages of Russian banks that are most popular among natural persons cannot be used by homeowners for refurbishment of flats, due to short credit period from 1 to 5 years and high interest rates. As a way of credit security, the Russian banks accept guarantees from natural persons, and their quality and amount of revenue are directly depending on the sum of requested credit. At the same time some Russian banks do not lay down indispensable condition to provide credit security covering their risks at the expense of interest rate increased accordingly. Interest rate for such credits is in the range of 15-17% p.a. This results in high monthly payments, which does not allow keeping in line with real financing potential of energy efficient measures by citizens.

When a credit is secured on real estate in the RF the period of loan increases from 10 to 20 years and the interest rate is 12-13%. But credit offers of banks for natural persons, requiring security of credit cannot be used to finance refurbishment due to refusal of homeowners to use their flats as collateral for refurbishment of common property.

The reason why bank loans are not being used as single source of finance, but only for co-financing investments is that banks appreciate their risks at high value under complete project financing, and it means very high interest rates.

2.1.2 Comparison with EU practices and findings of BEEN

In EU-15 as well as new EU member States support programmes have been set up promoting energy saving measures in the housing sector. In Germany the Federal Government has been allocating funds for soft loans to stimulate energy savings in the built environment. Most of the refurbishment measures in the prefabricated housing stock were financed through loans provided by the *KfW Promotional Bank*. As a publicly owned bank, *KfW* has the best possible banking rating and can therefore procure the funds from the capital market for support loans at the most favorable interest terms possible. This enables *KfW* to offer refurbishment loans at interest levels around 0.5% below those of commercial banks. *KfW* can obtain specific subsidies from the public budget to reduce interest on loans for certain purposes (e.g. refurbishment of pre-fabricated housing in 1990s or for certain packages of energy saving measures at present) enabling it to offer credits for specially-favored purposes at significantly lower interest (e.g. final borrower interest of 2% for loans for certain energy-saving measures).

In Poland, Lithuania and Estonia support is being provided with grant levels ranging between 10% and 30%. The *Polish Thermo-refurbishment Programme* has had the greatest success (with regards to scope of energy-saving measures, number of flats refurbished, ratio of subsidies used to heating costs savings attained). The low level of construction costs so far is particularly astonishing (currently approx. € 2,000 to € 2,800 per flat) with which savings on heating costs of 40% have so far been achieved.

The most important findings of the *BEEN - Baltic Energy Efficiency Network* for the Building Stock - project are the following⁴:

- Support programmes should target the implementation of the “classic” package of energy saving measures, namely: thermal insulation of the building envelope; new windows with thermal insulation glazing; modernization of the central heating system.
- If the entire package of classical energy saving measures is implemented, general refurbishment measures should also be included into support. Incremental measures or random combinations of general refurbishment measures should not be eligible for support.
- Support should concentrate on particularly sensible packages of measures, which achieve effects that are clearly in the public interest and would clearly not be achievable without support.
- Not only financially stronger but principally all HOA/condominiums that arose after privatization should be able to afford refurbishment measures.
- Low-income households require the following supplementary support measures: income-dependent interest subsidies, or income-dependent allowances towards refurbishment apportionments.
- Support loans should be handed out from a revolving refurbishment fund which is managed by a state organization (subsidy funds or subsidy bank).
- Support loans should be provided with interest and redemption terms that enable each HOA/condominium to afford implementation of the classic package of energy saving measures (at investment costs of around € 5,000 per flat) and with a monthly burden of no more than € 25 per flat (for an average-sized flat). This means:
 - The loan covers up to 100% of investment costs.
 - Credit payment term: 20 years.
 - Maximum interest of 4% to 5% (at minimum 0.5% below average commercial credit rates).
 - Fixed interest period of 10 years.
 - Credit extended in the form of annuity loans (i.e. with constant repayment rates).

2.1.3 Strengths and weaknesses of the current situation

Strengths:

- Russia has developed a common approach to refurbishment, including classification into energy efficient and general construction works.
- All ways of refurbishment financing applied in the EU countries were declared in the programmes, namely subsidies, credits, loans of regional and municipal authorities, provision of state guarantees.
- The *Housing Code* of the RF authorizes municipalities to offer financial support for the renovation of multi-family buildings from the municipal budget.

⁴ Peter Wollschläger, BEEN Project Results, Including Detailed Findings and Recommendations. Practical Manual addressing the issue of how to activate large-scale energy-saving refurbishment measures for prefabricated housing. – November 2007. – 103 p.

- The Federal Law No. 185-FZ “*On the Promotional Fund for Reforming the Housing and Utility Sector*” (21 July 2007) establishes a fund providing financial support for refurbishment of common property in privatised multi-family buildings and resettlement of residents from demolished buildings. Altogether over 9 bln. EUR should be invested into refurbishments. The fund introduced certain corrections into the available financing practices KO.
- Average family income in KO is such that simultaneously with payment of all housing costs in full allows forming of a financial reserve for refurbishment deductions, that does not cover non-recurring refurbishment financing but allows applying of financing models with loans.
- Homeowners are obliged to bear the costs for maintenance of the common property according to their respective ownership share in the common property by regular payment for maintenance and repair.
- There are loan offers in Russia that could become a basis for new credit package for HOAs for implementation of energy efficient measures of common property refurbishment.
- The *Programme for Reforming and Modernization of Housing and Municipal Utility Sector 2002-2010* stipulates provision of the financial assistance from the regional and local budgets, budgets of municipal unitary enterprises, assistance in obtaining credit and grants for the purposes of modernization of communal infrastructure, investment allocations, implementation of energy saving technologies etc.
- The Target Programme „*Zhilishe*“ for the period 2006-2010 approved by Decree of the Regional Government from September 26, 2006 No. 700 envisages development of financial instruments for the modernization of housing and utility sector, development of mortgage lending mechanisms, instruments for attracting private investments, provision of payment guarantees and subsidies as additional credit coverage. The Programme measures should be financed from federal, regional, municipal budgets and other non-budget funds.

Weaknesses

- The goals declared in the national programmes have not been fully achieved in most cases due to lack of financial means and organizational confusions.
- Most of the programmes allow carrying out only partial refurbishment on separate finishing works covering a great number of apartment houses.
- Limited budget allocations for repair do not stimulate housing stock modernization and measures on efficient use of resources.
- In practice, there are no financial and institutional mechanisms for allocating grants to HOAs and cooperatives from local budgets and financial institutions (banks); there is no functioning mortgage loaning system either.
- There is a set of problems with regard to the practical use of funding from the Promotional Fund connected with high planning and transaction costs of applications for grants (preparation of works specification, construction license construction plan, if applicable, tender documents).

- The preparation of the funding application is very complex and requires much efforts and expenses. The HOAs do not dispose of additional financial reserves for these purposes. Since the application can be rejected there is a high risk for HOAs not to compensate the invested costs.
- For homeowners it is a problem to finance 5% of the investment costs which are not financed through the Promotional Fund.
- Solely the non-repayable subsidies for refurbishments successfully function in practice that in view of limited budget financing does not lead to mass expansion of refurbishment measures.
- In accordance with the current laws of the RF (Housing Code) subsidizing and providing of discounts for contributions into capital repairs are not envisaged.
- The mechanism of the construction of the saving-banks activities is insufficiently developed.
- At present, soft loans for refurbishment against state guarantees as an instrument of financing in target programmes is not used in the RF.
- The local government bodies do not provide guarantees under the credits for realization of energy efficient projects.
- Refurbishment financing relying on the available credit packages is not possible as these states are characterized by 5-10 years period of crediting, which leads to high annual payments of both interests and capital repayments.
- Credit offers of banks for natural persons, requiring security of credit cannot be used to finance refurbishment due to refusal of homeowners to use their flats as collateral for refurbishment of common property. Collateral of land lot under residential building is not a marketable security of the credit for repair of common property.

2.2 Financing energy efficiency investments in public buildings and properties

2.2.1 Existing financing practices and support schemes

As a rule, energy efficiency investments in public buildings and properties are financed from public (federal, regional and municipal) budgets and partly through loans. There have been different federal and regional energy saving programmes (cf. MunEM WP1 Report “*Assessment of existing structures in energy policy of Kaliningrad Oblast*”) and other programmes which financed respective measures. Grants and soft loans by international donors provide some additional funding.

The Regional Government plans to set up a new energy saving programme 2009-2013 and an extra-budgetary energy efficiency fund which shall also provide funding for energy efficiency measures in the public sector.

2.2.2 Comparison with EU practices

The most common financing instruments in EU countries include budget funding, budget loans from the State Treasury, local authority loans (*Kommunalkredite*), loans from public development banks, and EU Structural Funds. In addition to those

financing instruments, Public Private Partnerships like *energy performance contracting* (EPC) via *energy service companies* (ESCOs) become increasingly common financing models for energy efficiency investments in the public sector of EU countries.

Energy performance contracting

Energy performance contracting (EPC) can be particularly effective in addressing key barriers to energy efficiency in public organizations, like scarce public budgets.

Info box 1: Energy performance contracting via energy service companies (ESCOs)

Energy performance contracting (EPC) means the implementation of energy saving measures on a long term contractual basis (energy performance contract). Energy performance contracts are typically concluded between a customer organization (e.g. a public organization like school, hospital, etc.) and an external energy service company (ESCO). The revenues of the ESCO are directly related to the amount of achieved energy savings.

The ESCO provides a package of services including energy audit, identification, design, and realization of energy saving measures, installation, O&M of energy saving equipment for the duration of the contract. Typically the ESCO arranges or provides the bulk of the financing needed to implement the efficiency measures, either by borrowing from a financial institution (i.e. *Third Party Financing*) or investing its own money. The ESCO refinances the investment costs from energy savings.

Different types of energy performance contracting can be distinguished: *shared savings* or *guaranteed savings* contracts. In the *shared savings* approach, an ESCO makes an investment and shares the energy savings with the customer. Reduced energy payments generate cash flow for paying off the investment, providing a profit to the ESCO, and yet saving the customer's money. After a few years, all the savings belong to the customer. Alternatively, the ESCO can guarantee savings of a given amount, and if the expected savings are not achieved, the ESCO must pay the difference.

The customer benefits from modernised energy systems and facilities without the need to invest money or manage them and from the energy savings during and after the contract period.

The ESCO model is useful where special know-how is needed, where public authorities prefer outsourcing project risks, have only limited staff and constrained budgets. The following activities are typically carried out by ESCOs:

- Upgrades of supply equipment (e.g. boilers, heating systems, HVAC)
- Installation and maintenance and of energy metering equipment
- Improving energy automation and control
- Replacement of lighting installations
- Reducing heat losses in buildings.

Energy performance contracting has to be distinguished from *energy supply/delivery contracting* where an external ESCO designs, installs, finances, procures and provides O&M of a new power, heat/cold generation or distribution facility at the customer's (e.g. public organization's) site (cf. subchapter 2.3.2).

EPC is rather common in EU countries like Germany, France, Austria, the UK, Hungary, the Czech Republic, and other EU Member States. Particularly, in EU-15

countries, ESCOs have comparatively good access to capital markets; they meet proper legal frameworks enabling contracting schemes and economic stability.

In Germany, often municipally owned multi-utility companies (*Stadtwerke*) and specialized ESCOs offer energy performance contracting to public and commercial customers. The *Berlin Energy Saving Partnership* can be regarded a particularly successful ESCO type model:

Info box 2: The Berlin Energy Saving Partnership

The *Berlin Energy Agency* (BEA) functions as an international energy service company, equal shareholders being the *Federal State of Berlin*, *Vattenfall Europe Berlin*, *GASAG Berliner Gaswerke*, and the state owned Promotional Bank *Kreditanstalt für Wiederaufbau (KfW)*. Through BEA, *Energy Saving Partnerships* (ESP) were successfully developed since 1995 to manage and optimize energy supply and use of pools of public buildings (e.g. schools, swim halls, prisons etc). The *ESPs* are based on private third party financing provided through ESCOs in order to modernize the energy systems and services for the public buildings with the aim to reduce costs. The ESCOs take on all initial investment costs for modernising systems and services; in exchange they take 70-90 % of accrued savings realised over a contract period of 10-15 years. Guaranteed savings vary between 15 and 33%. In 2007, ESCOs manage 20 building pools comprising a total of 1,300 (out of 4,000) public buildings. So far, investments of roughly 50 mln. € have been made by ESCOs. Annual cost savings amount to 11 mln. €, annual budget savings to 2.9 mln. € and annual CO₂ savings 60,000 tons.

In Finland, special subsidies are provided to ESCO businesses. Accreditation of ESCOs like in Austria has been one of the most effective tools to support trust in ESCOs (*Thermoprofit* label). Mandatory energy audits for public buildings turned out to be an effective tool to promote the development of ESCO markets.

In the new EU Member States, ESCOs entered local markets as subsidiaries of their Western counterparts and have been active since the mid 1990s. Bilateral and multilateral lenders and aid agencies did also support ESCO development through the provision of loan guarantees, risk insurance, and equity investments. In Latvia, renovation of street lighting through an ESCO has been successfully initiated in the municipality of *Tukum*s through the ELI project sponsored by GEF.

In the Ukraine *ESCO Rivne* designs, realises and finances investments in municipal buildings, the DH network or other energy consuming local facilities through energy performance contracts (EPC) or other applicable contracts (www.esco-rivne.com). The company has been established in the framework of the UNDP/GEF project "*Climate Change Mitigation in Ukraine through Energy Efficiency in Municipal District Heating*" The shareholders of *ESCO-Rivne* are the DH company „KomunEnergia" (<http://www.komunenergija.com.ua>) and the municipal enterprise CE "Misksvitlo". These municipal enterprises formed the statutory fund of the company. The company, however, was unable to attract sufficient equity to finance projects in other municipalities as well.

In the Russian Federation (RF), the ESCO market is still in its infancy. In Moscow the installation and maintenance of metering devices turned out to be a good business for energy service companies. Generally, severe constraints related to energy pricing, public procurement and budgeting rules, and access to capital markets are

still prevailing in the RF which so far inhibited a broader diffusion of ESCO type financing schemes.

Public Internal Performance Contracting (“Intracting”)

An alternative to *energy performance contracting* is *Public Internal Performance Contracting (Intracting)*. Municipalities in Germany like, for instance, *Stuttgart, Munich, Freiburg* or *Kiel* and other countries gained experience with this specific financing scheme. *Intracting* can be described a special in-house arrangement within the public/municipal administration. The idea is not to contract an external ESCO, which finances and implements the energy efficiency investment, but to set up an “internal ESCO” within the public administration itself.

In this model, the *Municipal Energy Department* or *Technical Department* normally assumes the role of the contractor („internal ESCO“); it delivers financing and energy services to another unit of the same administration (i.e. customer department). The respective investments are financed from a special budget item, to which the energy cost savings are later returned (*internal revolving fund*). This financing system works exclusively with budgetary funds of the municipality. However, it requires seed funding to kick-start the process.

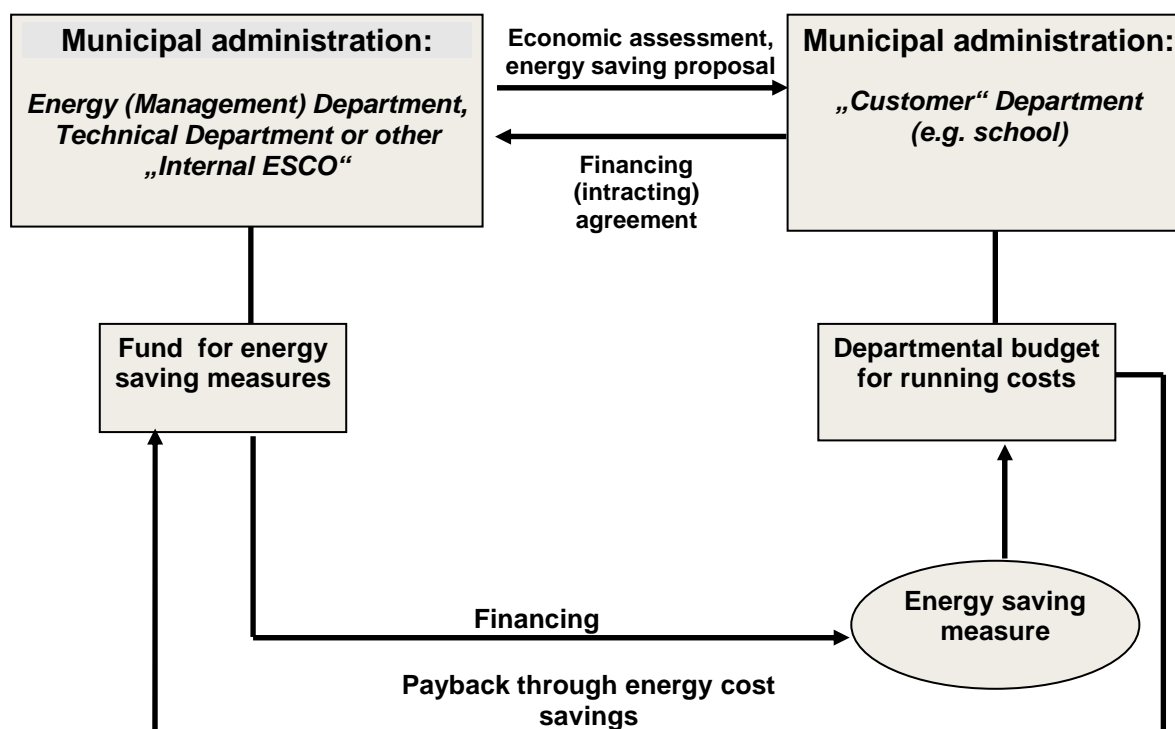
Info box 3: Internal Energy Performance Contracting (“Intracting”) in Stuttgart

The South German city of *Stuttgart*, Department of Environmental Protection has established a special fund for the energy efficiency retrofit of their public buildings. The money is used for the investment in energy efficient retrofit measures and is paid back with the saved energy costs. With the paybacks the investment for new projects is secured. The City Treasury makes financial resources available to the Energy Department within the Office for Environmental Protection in order to provide seed financing. The host department where the measures are implemented commissions the city’s Construction Department to carry them out in the usual way. After the measure has been implemented, the energy costs saved are returned to the Environment Department until the initial investment has been recovered. Afterwards, the entity can keep the savings.

The money which is earned on the first projects is reinvested in energy efficiency retrofit measures in the following projects, and then again the savings from these projects are reinvested in new projects (internal revolving fund).

In contrast to contracting schemes involving external energy service companies, no mark-up for business risk and profit or interest on capital deployed by external companies is incurred. However, a key pre-requisite is to have proper seed finance. Often this scheme is used that the users of individual buildings (schools, kindergartens) can keep a certain fraction of the savings, to keep their motivation for obtaining potential savings.

Figure 1: The model of public internal performance contracting (intracting)



Source: Municipality of Stuttgart

Intracting is considered particularly feasible for larger public entities having established energy management facilities. Municipalities and public organizations sometimes use a combination of intracting to finance smaller projects and energy performance contracting through external ESCOs to finance larger projects.

Extra-budgetary special purpose funds

In several EU-15 countries (e.g. Denmark), in most new EU Member States (e.g. Latvia, Poland, Bulgaria, Romania) special purpose environmental or energy efficiency funds have been established which provide soft loans or combinations of loans and grants to co-finance energy efficiency measures in different sectors of the economy, including the public (buildings) sector. These funds are accrued from environmental pollution charges, surcharges on energy tariffs, funds from international donors, or development banks etc. Several regions of the RF have established regional energy saving funds as well, however, with different success.

2.2.3 Strengths and weaknesses of the current situation

Strengths:

- The planned heat and electricity tariff increases and full cost coverage of heat tariffs for households create increasing incentives for energy efficiency investments both by internal sources and by external ESCOs.
- The Federal Government is preparing a new Federal Target Programme "Improving efficiency of energy use in the RF" which also targets the public sector. During 2001-2005 the Regional Government of KO has implemented a

Regional Energy Saving Programme. A special sub-programme allocated funds for boiler reconstruction and modernization as well as installation of metering and control devices in budget financed entities. The *Regional Energy Strategy up to 2031* envisages the development of new regional target programme “energy efficiency” 2009-2013.

- Few municipalities in KO have adopted energy efficiency programmes. In this sense, the municipality of *Mamonovo* can be regarded as a pioneer and model for other actors.
- The draft regional energy saving law and the *Regional Energy Strategy 2007-2031* envisage the creation of an extra-budgetary regional energy efficiency fund to finance energy efficiency investments in public and private organizations.
- The Regional Government of KO has started a process of administrative and budgetary reform introducing new budgeting methods (e.g. performance based budgeting, public procurement procedures etc.). These reforms offer a strategic “window of opportunity“ and might be effectively combined with complementary measures aiming at decentralized resource responsibility and enabling budget financed entities to control energy costs and savings.
- Some promising approaches can be found on municipal level: the municipal government of *Svetlyj* ruled that budget funds which have not been used up as a consequence of energy savings have to be used for additional energy saving measures.
- The Federal Government is increasingly committed to address the barriers discouraging Public-Private Partnerships including energy performance contracting through ESCOs. Respective legislative initiatives are under way.

Weaknesses:

- Public funds for public building retrofits are constrained and compete for other public targets (healthcare, education, etc). Annual budgets of public authorities dedicated to public building retrofits are both limited and inelastic so that it is often impossible to find additional resources, even involving moderate amounts. Supplementary funding is usually not available, irrespective of how advantageous the cost-benefit ratio and payback times might be.
- In many public authorities and budget financed entities (e.g. schools), financial management follows the “traditional” model: Funds for paying the running costs (e.g. annual energy costs) are strictly separated from the budget for investments. This leads to a typical lock-in situation: on the one hand, public administrations have to pay enormous energy bills due to the poor conditions of public buildings; on the other hand the departments are not able to re-finance the urgently needed saving measures by paying back the saved energy costs to the investment budget.
- Usually, authorities and departments have no or weak incentives to save on their running costs, since as a consequence their running cost budget would just be reduced in the following years. Neither do they have the possibility to shift expenses from energy to the purchase of a more energy efficient, and somewhat more expensive equipment, or to special energy measures that have a high upfront cost but save energy costs later.

- In addition to the classical split between expenditures for running costs and capital/investment expenditures, used budget funds generally lose the status of “spare” cash and cannot be transferred to the following budget period. This means that energy savings get normally automatically expropriated: if a budget financed entity reduces its running costs due to improved energy management, it may lose these financial savings as the central authorities are tempted to reduce the subsequent annual budget allocations.
- There is a lack of incentives for rational energy use both at micro level (budget financed entity, public organization) and the macro level (municipality).
- Municipalities face restrictive borrowing conditions set by the Budget Code. The budget deficit must not exceed 10% of total budget revenues. Commercial loans are rather unattractive due to the high interest rates (≥ 12 per cent) and short loan periods. Long term municipal borrowing for financing investment projects is underdeveloped.
- Innovative financing instruments for energy efficiency improvements in public organizations like *energy performance contracting* are uncommon so far in KO. The general frame conditions have been discouraging for financing models. A key barrier for ESCOs are the low energy prices which do not yet reflect long term marginal costs of service provision and jeopardize the profitability of investing in energy efficiency equipment.
- The Budget Code of the RF does not allow public organizations to enter into financing agreements with third parties, to conclude multi-year contracts, or contracts that pay for the investment through future savings. Limited knowledge of the ESCO concept among local policy makers result in mistrust and scepticism on the potential clients’ side. There is also an aversion to outsource energy management tasks.
- In KO, the ESCO market is in an embryonic state. Availability of attractive financing is scarce due to high perceived risks (the creditworthiness of the borrower is more important than the projects cash flow itself).

2.3 Financing district heating rehabilitation and supply side investments (including renewable energy sources)

2.3.1 Existing financing practices and support schemes

So far, DH rehabilitation projects in KO were mainly financed from regional and municipal budgets, own funds of the utility companies and grants or loans provided by international donors. In September 2007, the EBRD approved a loan of up to EUR 12 mln. on to the RF to be on-lent to the municipal DH company of the City of Kaliningrad. The operation shall enable the company to modernise the DH service in selected parts of the city.

The framework conditions for Public Private Partnerships (e.g. concessions, cf. below)) are gradually improving. On 30 June 2008 the President signed the Federal Law No. 108-FZ which substantially amends the Federal Law No.115 FZ "*On Concession Agreements*" from 21 July 2005. In particular, it amends the list of material and optional terms of a concession agreement, as well as the procedure for conducting tenders for the right to enter into such agreements. The amendments entered into force on 2 July, 2008. The Municipality of Kaliningrad plans to transfer the municipal DH network to a private operator under a concession agreement. This is one of the first projects of this type in the RF.

There are presently no specific public support schemes in place promoting the use of renewable energy sources (RES) for electricity generation or for (district) heating. However, the Federal Government is presently drafting respective legislation and support schemes (cf. MunEM WP 2 Report "*Legal situation and regulatory framework*").

2.3.2 Comparison with EU practices and findings of REGENERGY

In EU-15 countries, usually equity and (long-term) loans are used to finance investment projects in the DH sector. As an example for the new EU Member states, we refer to the experience of Latvia, where the following financing mechanisms are used for DH projects:

- Commercial loans (usually secured by municipal guarantees)
- Involvement of private investors through different forms of PPPs (e.g. leasing models, BOO contracts (cf. below) combined with take-or pay contracts, etc.)
- State support schemes (state investment programme)
- European Structural Funds
- Other donor financing and bundling of small projects (e.g. UNDP, Latvian Environmental Investment Fund LEIF).

In EU countries, Public Private Partnerships (PPPs) are a powerful tool for non-budgetary financing of infrastructure and municipal development. PPPs are common in the new EU Member States like the Baltic countries where fruitful experience with concessions, leasings and other types of PPP has been gained in recent years.

PPPs take a wide range of contractual forms depending on different criteria (O&M, mode of entry, ownership, risk allocations etc. Generally, they can be categorized into four main types:

- Greenfield projects (i.e. construction of a new facility)
- Divesture (i.e full or partial privatization of assets)
- Concession
- Management and outsourcing (including lease)

Table 1: Characteristics of main types of PPP

Types	Acronym	Mode of entry	O&M	Investment	Ultimate ownership	Market risk	Duration (years)
Build, own, transfer	BOT	Greenfield	Private	Private	Semi-private	Private	20-30
Build, own, operate and transfer	BOOT	Greenfield	Private	Private	Semi-private	Private	30+
Build, own, and operate	BOO	Greenfield	Private	Private	Private	Private	30+
Build, lease, own	BLO	Greenfield	Private	Private	Private	Private	30+
Partial privatization		Divesture	Private	Private	Private	Private	30+
Full privatization		Divesture	Private	Private	Private	Private	Indefinite
Rehabilitate, operate, transfer	ROT	Concession	Private	Private	Public	Semi-private	20-30
Rehabilitate, lease/rent, transfer	RLRT	Concession	Private	Private	Public	More private	20-30
Build, rehabilitate, operate, and transfer	BROT	Concession	Private	Private	Public	Private	20-30
Management contract		Contract	Private	Public	Public	Public	3-5
Leasing		Contract	Private	Public	Public	Semi-private	8-15

Source: GET 2007

The different models are described in detail in GET 2007 or in a special District Heating Ownership Guide (<http://projects.bre.co.uk/DHCAN/guides.html>) which also provides numerous examples from EU-27 countries.

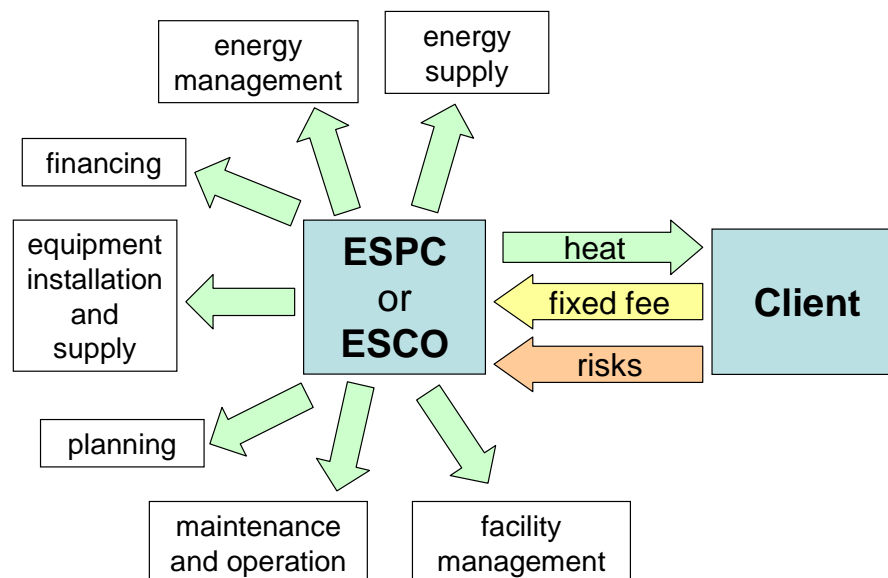
Energy performance contracting (cf. chapter 2.2) and *energy supply (or delivery) contracting* are further types of PPP which are increasingly used in the EU countries to finance DH projects. The overall objective of ESCO projects is to alleviate the financial burden on municipal governments associated with the supply of DH to the local population by

- Improving the operating efficiency of DH systems through energy saving investments and reduction of heat losses
- Promoting sound cost recovery policies and commercial practices
- Supporting government efforts to improve the cost effectiveness of subsidy programmes through better targeting and delivery of subsidies to low income groups.

Info box 4: Heat supply contracting

In contrast to *energy performance contracting* (see subchapter 4.3) where an external energy service company mainly optimizes energy use of a building, *energy supply/delivery contracting* involves an external energy service company (ESCO) investing in facilities used for energy conversion at the client's side. For instance, the ESCO implements a turnkey project, including the delivery, installation and operation of a CHP plant or other energy conversion facility. The ESCO owns the installation during the time frame of the project, and sells the service (electricity, heat), preferably at a lower price than the local supplier. When the project ends, the facility is handed on to the client (cf. BOOT model, cf. above).

A very frequently used type of ESC in Europe is the *chauffage contract*, where an ESCO takes over complete responsibility for the provision to the client of an agreed set of energy services (e.g. space heat, lighting, motive power, etc.). This arrangement is a type of supply contracting and in effect it is an extreme form of energy management outsourcing. Where the energy supply market is competitive, the ESCO in a *chauffage* arrangement also can take over full responsibility for fuel/electricity purchasing. The fee paid by the client under a *chauffage* arrangement is calculated on the basis of full costs. Often it is based on the client's existing energy bill minus a percentage saving (often in the range of 5-10 per cent), or a fee may be charged per square meter of conditioned space. Hence, the client is guaranteed an immediate saving relative to its current bill. The ESCO takes on the responsibility for providing the improved level of energy service for a reduced bill. The more efficiently and cheaply it can do this, the greater its earnings: *Chauffage* contracts give the strongest incentive to ESCOs to provide services in a more efficient way (Bertoldi 2007).



A study conducted in the framework of the FRESKO project analyzed the feasibility of potential projects in Northwest Russia, and found boiler automation upgrade, installation of new pre-furnace for utilization of bio-fuels, automation upgrade to be likely good projects for ESCOs (Bertoldi et al. 2007).

In the Baltic countries and other transition countries special purpose environmental or energy efficiency funds provide grants or soft loans for sustainable DH rehabilitation (cf. subchapter 2.2.2). In Latvia, the *Latvian Environmental Investment Fund* (LEIF) pools local and foreign financial resources and provides funding to municipal and private environmental projects including DH rehabilitation and environmentally sound conversion (e.g. biomass fuel switch projects). The financing possibilities include loans and special financing schemes for small size projects. LEIF is providing more favourable loan conditions than the State Treasury, the commercial banks and the national energy efficiency fund. LEIF also provides support to project identification and development as well as assistance to project implementation. In Bulgaria, a national *Energy Efficiency Fund* was established recently:

Info box 5: Bulgarian Energy Efficiency Fund (BgEEF)

The *Bulgarian Energy Efficiency Fund* (BgEEF) is a revolving mechanism for development and financing commercially viable projects and capacity building. It has been founded in 2006 by the Government and the *World Bank* and designed as a Public Private Partnership. Its initial capitalization has been secured entirely with grant funds, the major donors being the GEF through IBRD, the Governments of Bulgaria and Austria, and several domestic private companies (e.g. *DZI Bank*, "*Lukoil*" AD.) Seed finance has been provided in the amount of 14 mln. USD. BgEEF functions as a lending and credit guarantee facility and offers consulting services. It is structured as an independent commercial entity. It provides loans and credit guarantees and supports energy efficiency measures in municipalities, the industrial and residential sector. It also facilitates the creation of ESCOs and energy performance contracting schemes.

(<http://www.bgeef.com>).

Most governments in the EU support the use of RES for electricity by fixed price systems (feed-in tariff systems); the latter usually establish a purchase obligation combined with legally fixed minimum remuneration rates for renewable electricity fed into the public grids and guaranteed for a certain period of time. Several countries, e.g. Sweden established quota based support systems combined with tradable ("green") certificates.

The EU Member states apply different promotional policy instruments to support renewable heating. In Germany, for instance, these comprise soft loans, grants and since 2009 a renewable heat obligation for new private and public buildings.

2.3.3 Strengths and weaknesses of the current situation

Strengths:

- Existing DH tariffs allow for complete operational cost recovery. Heat suppliers are principally eligible to include investment surcharges to partly finance investment programs coordinated with municipalities and the regional government.
- The environment for private sector participation in urban heating is gradually improving. Household tariffs are expected to rise to cost recovery levels and tariff subsidies are going to be phased out.
- The legal framework for Public Private Partnerships (PPPs), particularly for concessions has been considerably improved thanks to recent amendments to the Federal Law No. 115-FZ "*On concession agreements.*" PPPs, which are

rather common in the DH sector of the Baltic countries and other FSU countries, are just starting to develop in KO.

- In May 2007, the publicly owned Russian Bank of Development (*Vnesheconombank*) was established promoting investments in Russian infrastructure, including via financing or otherwise supporting PPP projects.
- The use of the Flexible Mechanisms under the Kyoto Protocol, particularly Joint Implementation (JI) provides new incentives for investing in energy efficiency projects by providing co-financing from selling emission reduction units (ERU) created by the projects. In 2007, the Federal Government launched respective legislation which enables implementing the JI mechanism in the RF. Hence, emission reduction purchase agreements provide a complementary revenue source for energy efficiency projects including DH rehabilitation. There is a growing interest in realizing JI projects from EU companies participating in the EU Emissions Trading System which imposes binding emission caps for energy intensive facilities. Reportedly, a Swedish-Russian initiative comprising the Swedish municipality of *Kalmar, Vattenfall*, the municipal utility companies *Kaliningradteploset* and *Tschistota* aims at utilizing landfill gas for electricity and heat generation in *Kosmodemjansky* by using carbon financing (http://www.energieforum.ru/de/nachrichtenarchiv/kaliningrad_emissionsquote_n_im_tausch_gegen_bio_kraftwerk_447.html).

Weaknesses:

- Municipal DH enterprises are not able to raise sufficient funds to finance proper maintenance, rehabilitation and development. Profit margins are generally too low to even properly maintain infrastructure, let alone invest in modernization or service improvements. Tariffs do not account properly for depreciation. The opportunity to finance energy efficiency measures through tariffs and investment surcharges is actually restricted as the heat tariffs have to consider upper tariff ceilings set by federal government and federal tariff service.
- Energy tariffs do not yet reflect long term marginal cost of service provision (including investment). This jeopardizes the profitability of energy efficiency investments. Up to now, heat tariffs for households were mostly lower than the cost of service provision.
- Municipal DH enterprises partly face outstanding debts due to non-payment of heat bills by public and private consumers.
- Municipal and regional budgets have insufficient funds to fully finance rehabilitation of infrastructure. Municipal borrowing capacities are restricted by the Budget Code.
- As a rule, the municipal DH utility providers have the legal status of municipal unitary enterprises (MUE). They perform operational control of DH systems, but have no or limited property rights. MUEs have little autonomy in determining how the retained earnings are used or cash flows are managed, and generally rely on municipal funding to accomplish any type of project requiring investment capital. The probability of administrative interference is relatively high. These factors constrain attraction of external financing and private investment.

- Private financing is in an embryonic stage. The heating sector is relatively unattractive to private capital due to high investment risks, low profit potential, a weak regulatory framework, and political interference.
- Third party financing based on energy supply contracting and involvement of energy service companies are still underdeveloped. There is only a limited knowledge of the ESCO concept among local policy makers resulting in mistrust on the potential clients' side. There is a general reluctance to outsource energy services.
- There is a lack of economic incentives and support schemes for the construction of distributed cogeneration facilities and conversion of heat-only boilers to cogeneration units. Likewise there is a lack of effective economic incentives stimulating the use of RES.

Table 2: Overview of existing financing instruments in KO

	Thermal refurbishment/modernisation of multi-family residential buildings	EE measures for municipal buildings and properties (e.g. educational buildings)	DH Rehabilitation	Use of distributed CHP and RES
Equity				
Municipality (budget)	+++	+++	+++	+
Oblast (budget)	+++	+++	+++	+
State (budget)	-	-	-	
Municipal enterprises	++	++	++	
Flat owners, tenants	+	n.a.	n.a.	n.a.
Debt				
Local authority loans (e.g. by State treasury)	0			
IFI (EBRD, WB)	0			
National donors	-			
Multilateral donors (e.g. GEF, UN)	-			
International development banks (e.g. NEFCO, KfW)	0	+		
National development banks	0	0		
Regional development banks	-	-		
Public or semi-public energy efficiency fund	0	0	0	0
Special purpose national/regional funds	-	-		
Commercial banks	+	+		
Municipal bonds	-	-	-	-
Loan guarantees				
State loan guarantees	0	+		
Municipal loan guarantees	0	+		
Grants				
IFI (EBRD, WB)	-	-		
Multilateral donors	-	-		
Bilateral donors	-	-		
International development banks (e.g. NEFCO, KfW)	-	-		
National development banks	0	0		
Regional development banks	-	-		
Public or semi-public energy efficiency fund	0	0	0	0
Special purpose national/regional funds	+ (National Housing Fund)			
Others (to be specified)				
PPP				
Concession agreements	0	0	0	0
Leasing agreements	0	0		
Energy delivery contracting/ESCO	-			
Energy performance contracting/ESCO	-			
Public (state owned or municipal owned) ESCO	-	-	-	-
Other forms of PPP (to be specified)	-			
Carbon financing (e.g. Joint implementation)	-			0

+++ frequently used, no major barriers
 ++ some examples, some barriers
 + few examples, but still severe barriers
 0 in some cases planned, under preparation
 - absent, no experience, significant obstacles
 n.a. not applicable

3 Selected proposals for further development of financing instruments

3.1 Creation of a regional energy efficiency fund

The MunEM partners highly appreciate the plans of the Regional Government to set up an extra-budgetary *Regional Energy Saving Fund* (RESF) providing financial support to energy efficiency projects in KO.

A critical issue for KO is to procure seed funding for the RESF. Similar funds established in EU Member States like the *Latvian Environmental Investment Fund* and the *Bulgarian Energy Efficiency Fund* successfully attracted funding from international donors and IFIs (*World Bank, EBRD, UNDP, GEF, NEFCO* etc.; cf. chapter 2.3.2). Therefore, co-operation with respective organizations should be intensified. Besides allocations from regional and municipal budgets, the fund might be fed from fund provided by energy supply companies, surcharges on the energy tariffs like it is the case, for instance, in Belarus.

It might be considered to integrate energy efficiency with adjacent sectors towards creation of an environmental investment fund in order to develop synergies, for instance, between waste, water, energy).

3.2 Financing energy efficiency investments in residential multi-family buildings

Key mechanisms facilitating investments into housing refurbishment in KO are the following:

- Clarification of financing sources in connection with planning and applying for state funds;
- Issuance by executive central authorities and local administrations of guarantees and loan securities by attracting loans aiming at realization of energy efficient projects;
- Removal of legal barriers or gaps limiting borrowing by condominium associations;
- Strengthening the mortgage lending system and develop special loan security schemes;
- Develop further financial instruments to ease an access of HOA to financial resources;
- Regulating the right to common use of one-time non-repayable subsidies for reconstruction or tax credits in Russia;
- Subsidizing of the interest rate depending on the income rate or subsidizing of refurbishment deductions depending on the income rate (individual support). So families with low-income level could also afford refurbishment desired by the majority of homeowners. The most attractive solution of this problem is issue of lends for low-income families by local authorities, in the amount necessary for payment instalment plan for the share of capital repairs

financing determined for homeowners, and agreeing on postponement of loan repayment till the moment of flat selling or improving of circumstances of the family and cancelling of low-income family status.

The practice of modernizing the housing stock through financing from the Promotional Fund should be further improved. While the Promotional Fund is the main instrument for achieving goals of energy efficiency in the housing stock in the RF, the financing conditions are not sufficient for carrying out large-scale modernization. The scope of supporting measures should be extended according to the large-scale approach of energy efficient refurbishment. Furthermore, the homeowners associations planning the complex energy efficient modernization (incl. replacement of windows which allows achieving maximum effects of energy efficiency and resources saving) need to obtain the support in the first place.

The scope of funding and functioning period of the Fund is restricted. Using the Promotional Fund will allow only to kick-start the process of modernization and not to achieve a wide spread large-scale refurbishment of the housing stock. In this context, it is necessary to establish the special fund by sample of KfW, which had been established by the state with a goal of providing long-term preferential loans for energy efficient refurbishment of the buildings.

Along with a number of applying tools in foreseeable future loans have to become a basis form of financial assistance providing for implementation of energy efficiency activities. However, there are credit packages existing in the RF that in the framework of state programmes of interest rates subsidizing might be transformed after the example of Germany towards emergence of special-purpose soft loans for extensive implementation of the effective package of energy saving measures of refurbishment in the apartment houses. At the same time it should be compensated a part of the credit expenses sufficient for energy consumers to cover the rest of outlay from their funds which is give a possibility attract considerable investment into energy efficiency activities in many times exceeding financing from special created funds.

The mechanism of state subsidizing of the interest rate of mortgage loans successfully functions in the RF. It is necessary to stipulate by legislation applying of state subsidies of the interest rate on credits for implementation of energy efficient refurbishment measures.

With political support and state guarantees within the framework of state programmes of interest rates subsidizing the available market of credit services in Russia might transform after the example of Germany towards emergence of special-purpose tax credits for extensive implementation of the effective package of energy saving measures of refurbishment in the apartment house of both common property and flats privately owned.

Nevertheless, credit funds formation is the most perspective way for financing energy efficient refurbishment activities in the multi-storey residential buildings. In these conditions it has to be posed a problem to reduce a financial burden on ownerships during the period of credit repayment up to level which is acceptable for ownerships of average incomes. This aim should be reached by realization of complex of activities, in particular, in combination with provision of subsidies and municipal (state) guarantees on the credit resources attracted.

Moreover, HOAs, required the special schemes for loan insurance, what, from the one hand, should permit to receive an entire total credit for implementation refurbishment for the property of common using, and, from the other hand, to provide with additional resource to cover losses, in the case of denial of individual ownerships of living apartments to participate in these activities.

Also, it is necessary to effect a transition from direct financing for capital repair of the residential multi-storey buildings to financing the measures of the budget support for the ownerships of the living apartments when they implement capital repair, reconstruction and resource-saving modernization of the residential multi-storey buildings.

These measures must ensure a creation of permanently functioning system of capital repair implementation with phasing down participation of state and budget funds in the solution of this problem.

3.3 Financing energy efficiency investments in public buildings

The findings under subchapter 2.2 lead us to the following recommendations addressing the regional (Oblast) decision-makers and partly the municipal decision-makers:

Policy recommendations for Oblast level

- Allow budgetary organizations and municipalities to create special energy efficiency budget lines. A certain percentage (e.g. 20 per cent) of the normal building and maintenance budget might be allocated for energy audits, implementation and monitoring for small-scale energy efficiency measures in buildings. Still, these budgets may not be sufficient. Third party financing and energy performance contracting on the one side and internal revolving funds on the other side might provide complementary funding to finance energy efficiency projects, particularly heating system upgrades or major refurbishments.
- Provide municipalities and public organizations in general with a minimum of fiscal and budgetary autonomy. Support innovative concepts like global budgeting and decentralized budget responsibility. Promote further fiscal decentralization/ of budgetary powers and resources from state/Oblast to municipalities and from municipalities to municipal organizations and entities.
- Promote the transition from traditional budgeting with separate investment and operation budgets to global budgeting without any earmarking of funds for any particular expenditure. “Block” allocations for running costs and investments enable public organizations (e.g. schools) to shift resources from the energy consumption account (if savings have been achieved) to the maintenance account⁵.

⁵ Although such types of block allocations are legally possible in the RF, they are rarely used. Some forms of “block allocations” (the Russian term is “normative per capita financing”) are being introduced in a number of pilot regions. However, to a large extent this approach applies only to core expenditures (e.g. school textbooks, teachers’ salaries), with communal expenses remaining uncovered.

- Promote the establishment of municipal internal revolving funds in selected pilot municipalities. Such revolving funds allow accumulating energy cost savings accrued by energy efficiency projects which are reinvested in new energy efficiency projects. The cash flow generated from realised savings will be allocated to further improvements and will not be expropriated as it is mostly the case so far. There are good practice examples from pilot schemes supported by the *Nordic Environmental Finance Corporation (NEFCO)* in municipalities of North West Russia. A key pre-requisite to effectively set up internal revolving funds RF is the provision of seed finance which could be allocated from the Regional Government, the proposed regional energy efficiency fund and/or IFI. Furthermore, municipalities should be enabled to accrue energy cost savings for future reinvestment. Seed finance might be allocated on a grant or soft loan basis. Internal revolving funds need complementary guidance and dissemination of good practices.

Info box 6: Municipal internal revolving funds in Northwest Russia

In 2000 the *Nordic Environmental Financial Corporation (NEFCO)* opened its Energy Saving Programme providing conditional grants for implementation of energy saving projects in municipalities of Northwest Russia (NWR). The conditions were 50% co-financing from the municipalities and repayment of the investment to a municipal revolving fund. Through this programme NEFCO disbursed 2.6 mln. EUR to finance 30 projects. 5 projects were partially or completely financed by revolving funds. Particularly successful projects have been realized in *Kirovsk* and *Petrozavodsk*. The most common measures did include renovation of heat substations in social sphere buildings, in combination with insulation of windows and doors. In *Petrozavodsk*, the City Council issued special permission to use the savings accrued in the revolving fund for implementing new energy efficiency projects as long as the investment is completed in the same budget year that it is accrued.

Experience showed that it is often very difficult for municipalities to find 50% equity even if the remaining 50% is provided by international donors. This is why a new Energy Saving Credit Facility offered by NEFCO since 2005 has created a lot of interest among municipalities in NWR (cf. below).

Sources: *Paulig-Tonnes 2006, ASE 2007.*

- Reform legislation regulating municipal budgets to allow for increased debt to be incurred by municipalities.
- ESCOs can help stimulate energy efficiency investments, but have proven difficult to establish without proper government support and regulation. Therefore it is recommended to improve the frame conditions to facilitate ESCO type financing schemes (cf. below).
- Phasing out of energy subsidies, cost reflective tariffs including investment components and a reliable system of energy tariff setting are an important driving force for EE investments by ESCOs.
- Remove regulatory barriers to ESCO contracts (e.g. change procurement legislation to allow for multi year contracts, enable accumulation of energy cost savings).
- Remove informational barriers among public authorities by promoting awareness raising, targeted training and dissemination of good practice examples.

- Make regional government a first mover in realizing pilot projects for public buildings.
- Require mandatory energy audits for public buildings. Provide cost sharing for audits and feasibility studies in municipalities.
- Approach bilateral and multilateral lenders, IFI and foreign ESCO companies to support the development of ESCO projects through the provision of loan guarantees, risk insurance, and equity investments.
- Educate the local commercial banking sector of the benefits of financing municipal energy efficiency projects.
- Provide investment subsidies, tax relieves or other forms of assistance to ESCO projects.
- Assess the feasibility to set up a publicly owned (i.e. fully or partly owned by the Oblast Government and municipal governments; cf. examples of *Krakow/Poland, Rivne/Ukraine*).

Policy recommendations for municipalities

- Establish municipal energy managers responsible for energy-related performance of all energy consuming entities under municipal management.
- Allocate increased shares of municipal budgets to energy efficiency measures.
- Set up energy efficiency targets and programmes for municipal buildings and properties.
- Require and support systematic energy audits of public buildings and properties.
- Enable budget financed entities to benefit from energy savings. Setting quantitative target indicators like consumption limits requires complementary action like enabling public organizations to accrue at least part of the energy cost savings achieved through energy efficiency projects.
- Incentivize energy savings in public organizations and create motivational mechanisms, e.g. bonus payments to energy managers and building users.
- Approach international financial institutions (IFI) in order to finance energy saving investments. For instance, since 2005 NEFCO through its *Energy Savings Credits Facility* offers small-scale financing (soft loans) for energy saving measures in social objects in Russian municipalities (including schools, kindergartens, hospitals), and for modernization of street lighting (http://www.nefco.org/ru/financing/NMF/energy_saving)⁶

⁶ Repayment of the loan is directly tied to the savings of the investment. The loans are provided in local currency through Russian banks. Annual savings of at least 25% of the investment cost and significant environmental effects shall be achieved. Repayment is directly tied to the savings of the investment. Eligible borrowers are municipalities or municipal enterprises.

3.4 Financing district heating rehabilitation and energy supply side investments including renewable energy sources

3.4.1 Improving the financial viability of municipal heat providers

The findings under subchapter 2.3 lead us to the following recommendations mainly addressing the regional (Oblast) decision-makers and partly the municipal decision-makers:

- In order to enable sustainable energy efficiency investments the financial viability of municipal heat providers needs to be considerably improved. Consequently continue the transition to fully cost reflecting energy tariffs being a key pre-requisite to improve energy efficiency. Cost reflecting energy tariffs increase the revenues of energy supply companies which can be reinvested in efficiency improvements.
- Tariff level and design should reflect as closely as possible the costs as incurred by the supply utilities. This means phasing out of tariff subsidies and cross-subsidization, and enabling cost-reflective tariffs. Tariff setting needs to allow for an appropriate inclusion of investment costs in overall cost assessments.
- With increasing levels of building heat metering switch gradually from single to two tier tariffs with a tariff component reflecting fixed utility costs (capacity charge) and a variable component corresponding to fuel and other variable costs (energy charge).
- The tariffs should be calculated in such a way that capital return is guaranteed within the technical life span of the rehabilitated energy supply infrastructure.
- Use price adjustment formulas if input prices for fuel exceed certain thresholds.
- Consider to gradually switch from “cost plus” pricing in the heating sector to more sophisticated tariff methodologies such as “rate of return” regulation in combination with incentive based regulation methodologies in order to stimulate energy efficiency measures in the heating sector (e.g. introduction of price caps, which allows heat suppliers to make extra profits through energy efficiency improvements). As a transitional arrangement the cap method could be used for operating and maintenance costs only and combined with return on assets for investment costs.
- Elimination of direct heat subsidies which is expected by 2009 should be accompanied by further development of an effective and well designed social safety net based on targeted, income based social assistance for low-income and vulnerable households. Consequently continue to phase out non-income based privileges and put the focus on social assistance for low income and vulnerable households; secure that non-income based privileges are consequently monetized and do not allow eroding the financial stability of utility providers.

3.4.2 Fostering involvement of the private sector through Public Private Partnerships (PPPs)

Properly organized private sector participation via PPPs can be considered not only a powerful tool to financing public infrastructure, but also to achieve cost savings, and improving the quality and efficiency of public services. However, international experience (including the findings of REGENERGY) indicates that PPPs require sound contractual relationships between public and private partners.

Full privatization is not necessary to ensure successful restructuring – even partial privatization or contracting a private operator to operate and manage service provision through a properly designed management, concession, or lease contract, or other forms of PPP can provide long-term improvements in system performance.

Although no single standard solutions are available, models under which utility assets remain in municipal property while the private sector is involved in the operation of assets seem to be an appealing strategy for municipalities in KO.

The findings of REGENERGY suggest that private ownership should not be regarded a “silver bullet”. Many municipal DH systems are successfully operating under full municipal ownership in Germany, Sweden, Denmark and other countries. Rather, the market rules, regulatory framework, and financing possibilities than the form of ownership seem to determine system efficiency.

The findings under subchapter 2.3 lead us to the following recommendations:

Policy recommendations for Oblast level

- Continue to create favourable frame conditions attracting private investors. Consider to develop legislation complementing the Federal Law on Concessions and providing a transparent legal framework for other PPP forms (cf. the example of St. Petersburg PPP law).
- Accelerate the accrual of banking capital through the development of investment funds and loan guarantees, e.g. with support from international lending facilities.
- Where commercial banks' interest in energy efficiency is low and soft loans are scarce, national and regional support schemes can be crucial in offering guarantees in order to make commercial banks interested in providing attractive loans. Therefore, develop special risk mitigation instruments to secure commercial bank loans, e.g. through guarantee funds/facilities.
- Promote capacity building for municipalities and provide assistance through dissemination of good (and bad) practices gained from private sector participation in the RF and FSU countries; provide standard model contracts and agreements for PPPs between municipalities and private operators.

Policy recommendations for the municipal level

The findings of REGENERGY and international experience suggest the following recommendations for municipalities:

- Continue to further commercialize municipal DH enterprises and consider their corporatization (i.e. transformation into joint stock companies or limited liability companies).
- Initiate PPP only after a clear DH strategy is in place which outlines the market segments for various heating options giving investors confidence and calculability.
- Conduct PPP with sufficient public dialogue, competition and transparency and build political and public support for PPP and its expected benefits.
- Select the contractor through a competitive public tender.
- Enforce anti-corruption measures to avoid sub-optimal decisions.
- PPP contracts should contain provisions on risk management, financing investments and ownership of new and reconstructed assets, operation and maintenance, performance specifications, policy specifications on pricing, affordability thresholds, connections and disconnections, the role and rights of the municipalities, environmental, sustainability and planning strategies, and an exit strategy and emergency plan in case of under-performance of the operator, with the designated successor to take over after the contract termination.

3.4.3 Creating an energy efficiency service market

ESCOs and third party financing have proved efficient and sustainable financing instruments to rehabilitate and develop municipal DH systems with greater energy efficiency.

A key factor in promoting ESCO type projects is energy pricing policy and tariff setting. In low-tariff countries with subsidized energy prices, there is no incentive for ESCOs to start their business. Therefore, energy tariff reforms as proposed in chapter 3.4.1 are of utmost importance for creating energy efficiency service market.

The Federal Government is committed to address prevailing barriers discouraging Public-Private Partnerships including energy performance contracting and ESCO type financing schemes and is currently preparing respective legislation.

Likewise, the Regional Government is recommended to take actions to create favourable conditions for energy performance and energy supply contracting. The barriers for ESCOs and related business models should be addressed in a concerted way. Besides the recommendations already included in subchapters 3.3 and 3.4.2, the following actions are suggested:

- Remove legal and regulatory barriers inhibiting energy supply/performance contracting and third party financing.
- Stimulate ESCO related business models by providing grants, loans, preferential tax treatment and other fiscal incentives. Consider to subsidize the preparation phase of ESCO type models.
- Consider to support ESCO business development through IFI.

- Promote pilot projects to demonstrate the feasibility of ESCO type financing schemes.

3.4.4 Promoting the use of renewable energy sources

Reportedly, the Federal Government is currently developing support schemes promoting the use of RES, mainly for electricity supply (cf. MunEM WP 2 Report “*Legal situation and regulatory framework*”). However, complementary action might be required at the regional and municipal level to support the use of RES, particularly in the (district) heating sector. DH offers good opportunities to effectively use RES (particularly biomass). The Regional Government has a key role to play and the following measures are recommended:

- Provide a stable and reliable support framework for RES investments both in the electricity and the heat sector. Ensure that electricity/heat from RES facilities can be sold at appropriate prices.
- Remove legal and administrative obstacles inhibiting the use of RES (e.g. permitting, licensing rules, grid connection).
- Prepare demonstration projects for RES.

3.4.5 Developing carbon financing⁷

Rehabilitation and modernization of municipal DH systems and switching to less carbon intensive fuels like biomass, or capturing and utilizing of landfill or sewage gas at waste disposal and wastewater treatment sites can result in significant GHG emission reductions. Through *Joint Implementation* (JI) these reductions can generate additional revenue streams which might improve the profitability of respective projects.

- Both the Regional Government and the municipalities in KO have a key role in identification, promotion and development of potential JI projects. However, as the transaction cost of JI projects can be significant, experience shows that the size of project specific GHG reductions should be above 20,000-30,000 tons of CO₂ equivalent to be feasible. Carbon purchase funds (e.g. *NEFCO Carbon Fund*, *KfW Carbon Fund* provide carbon financing in the form of additional revenues to projects by monetizing the value of GHG emission reductions generated through Joint Implementation projects (<http://www.nefco.org>, <http://www.kfw.de>) Detailed practical information on implementation of JI projects in Russian can be found in the *Joint Implementation Handbook for Russian Companies* which has been recently (2008) published by the German Energy Agency *dena*. http://www.dena.de/fileadmin/user_upload/Download/Dokumente/Publikationen/internationales/JI_Handbuch_russische_Version.pdf

⁷ Carbon financing means the use of capital generated by the sale of greenhouse gas (GHG) emission reductions accrued from investments in energy efficiency or RES.

4 Selected references

- ASE (Alliance to Save Energy) (2007): Guidelines for financing municipal energy efficiency projects in the Commonwealth of Independent States. Submitted to the Renewable Energy & Energy Efficiency Partnership REEEP (http://www.reeep.org/file_upload/5272_tmpphpi9Y2c1.pdf).
- Bashmakov, Igor (2006): Urban Heating in Russia.
- Bertoldi, Paolo et al. (2007): Latest development of energy service companies across Europe – a European ESCO update (http://www.energy.eu/publications/LBNA22927ENC_002.pdf).
- Delegation of the European Commission/COWI Consortium (2007): Energy Efficiency at Regional Level in Arkhangelsk, Astrakhan and Kaliningrad Regions. Energy efficiency policy guidelines and action plan 2008-2012 for Kaliningrad region. Final report. December 2007. (<http://www.cowiprojects.com/RegionalEnergyEfficiencyRussia/ProjectOutputs.htm>).
- GET (German Economic Team in Belarus) (2007): Public private partnership.
- IFC/World Bank (2008): Energy efficiency in Russia: Untapped reserves. (<http://www.ifc.org/ifcext/rsefp.nsf/Content/Survey>).
- Paulig-Tonnes, Elisabet (2006): Financing energy savings projects in Northwest Russia. Presentation delivered to the Financing Municipal Energy Efficiency Forum, Moscow 2006 (<http://www.munee.org/node/99>).
- USAID et al. (2007): Regional Urban Heating Policy Assessment.

5 Acronyms

BEA	Berlin Energy Agency
CHP	Combined heat and power
CIS	Commonwealth of Independent States
DH	District heating
EPC	Energy performance contracting
ESCO	Energy Service Company
FSU	Former Soviet Union
HOA	Home Owners' Association
HOB	Heat only boiler
JSC	Joint Stock Company
KO	Kaliningrad Oblast
mln.	Million
MUE	Municipal Unitary Enterprise
MW	Megawatt
NMS	New Member States (EU)
O&M	Operations and maintenance
RES	Renewable energy sources
RF	Russian Federation
USAID	United States Agency for International Development
WP	Work Package