

Energy-Efficient Redevelopment of Urban Areas in Lithuania (Project No. 54254)

## Integrated urban and energy-efficient development in Germany

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Federal Ministry for the  
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The logo for the Umwelt Bundesamt (Federal Environment Agency) is a green square containing the text 'Umwelt Bundesamt' in white, with a small green leaf icon to the right of the word 'Umwelt'.

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## Abbreviations

AAP	Advisory Assistance Programme for environmental protection in the countries of Central and Eastern Europe, the Caucasus and Central Asia and other countries neighbouring the European Union
BBSR	Bundesinstitut für Bau-, Stadt- und Raumforschung im Bundesamt für Bauwesen und Raumordnung (BBR) (Federal Institute for Research on Building, Urban Affairs and Spatial Development within the Federal Office for Building and Regional Planning of Germany, BBR)
BETA	Būsto energijos taupymo agentūra (Housing and Energy Efficiency Agency of Lithuania)
BMUB	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety of Germany)
CBD	Central business district
CHP	Combined heat and power generation (in German: KWK – Kraft-Wärme-Kopplung)
EFSI	European Fund for Strategic Investments (an instrument of European Investment Bank)
EIB	European Investment Bank
ELENA	European Local Energy Assistance (joint initiative by the EIB and the European Commission under the Horizon 2020 programme)
EnEV	Energieeinsparverordnung (Energy Saving Ordinance of Germany)
ERDF	European Regional Development Fund
ESF	European Social Fund
EU	European Union
EUR	Euros (currency)
ISUS	Integrated Sustainable Urban Strategy
IUDC	Integrated Urban Development Concept
IWO	Initiative Wohnungswirtschaft Osteuropa (IWO) e.V. (Housing Initiative for Eastern Europe)
KfW	KfW Bankengruppe (Promotional Bank of the Federal Republic of Germany)

## 1. Germany's "Urban Development Assistance Programmes"

In Germany, measures for integrated urban development can be funded by the "Urban Development Assistance Programmes" (*Städtebauförderung*). Since being introduced in 1971 named as the programme "Urban Modernisation and Development Measures" (*Sanierungs- und Entwicklungsmaßnahmen*), the public funding of urban development has been subject to continuous development and resulted in specific programmes. This reflects the changing current challenges and tasks for urban policy and thus comprises five main programmes:

- The "Urban Preservation of Historical Monuments" (*Denkmalschutz*) programme funds the preservation of historic urban centres and neighbourhoods<sup>1</sup> since 1991;
- The "Social City" (*Soziale Stadt*) programme is addressing the stabilisation and upgrading of deprived urban areas since 1999;
- The "Urban Restructuring" (*Stadtumbau*) programme supports the necessary physical adaptation and rearrangement of neighbourhoods to demographic and structural changes in the eastern states (since 2002) and in the western states (since 2004);
- The "Active City and District Centres" (*Aktive Stadt- und Ortsteilzentren*) programme supports fostering the sustainability, vitality and attractiveness of city, town and neighbourhood centres since 2008;
- The "Smaller Towns and Municipalities" (*Kleinere Städte und Gemeinden*) programme is securing public services and infrastructures of smaller urban centres and municipalities in areas with low population density by means of inter-municipal cooperation since 2010.

The total funding per year from the federal budget amounted to 700 Million EUR in 2014. Normally, the federal budget contributes to one third of the overall public funding dedicated to urban development assistance measures.<sup>2</sup> Germany's states (*Bundesländer*) cover the same amount from their budget. And the rest is funded by the municipalities. Including also private follow-up investments, the "Urban Development Assistance Programmes" led to investments in urban development of about 10 billion EUR in the year 2014.

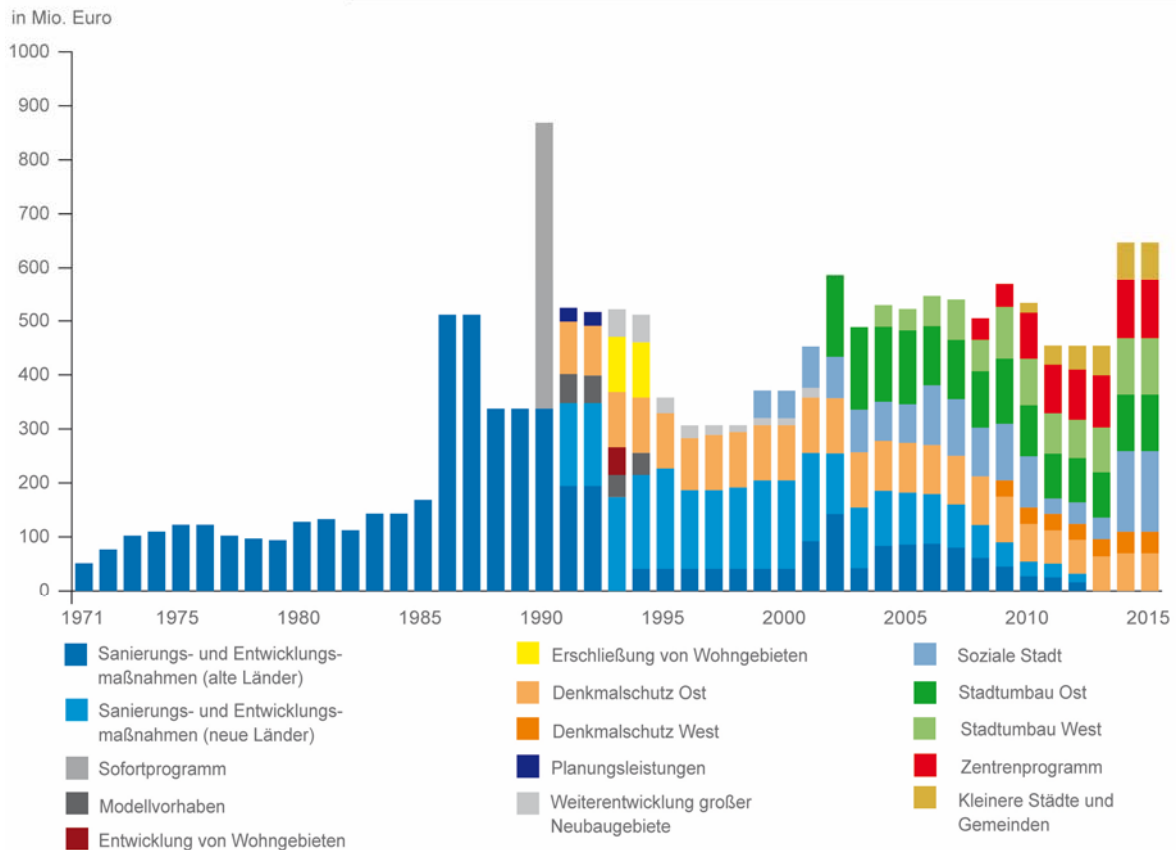
The programmes of Germany's urban development assistance take into account the complex challenges of city development where local authorities struggle with complex urban, functional and social deficits. Therefore, the funding aims to remove urban deficits and losses of functions. Preservation and refurbishment of buildings, the redevelopment of the living environment and the revitalisation of city and district centres are main funding goals.

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<sup>1</sup> In this report, "neighbourhood" and "urban area" are used as synonyms.

<sup>2</sup> The share of the federal budget is 40 per cent for the programme "Protection of the Urban Architectural Heritage" and 50 per cent for demolition measures in the "Urban Restructuring" programmes.

**Verpflichtungsrahmen des Bundes zu den Finanzhilfen der Städtebauförderung 1971 bis 2015**



Quelle: Städtebauförderungsdatenbank des BBSR

© BBSR Bonn 2015

Figure 1: Budgets of urban development funds 1971–2014, Source: BBSR<sup>3</sup>

The programmes build up on five thematic goals on which different measures are supported:

- Upgrading of the built environment: support to investments in buildings, apartments, living environment and the infrastructure at district level, demolition of vacant buildings and reuse of brownfield sites;
- Strengthening social cohesion: support for education and employment, integration, health and the local economy;
- Preserving and revaluating built cultural heritage: support for securing, refurbishment and re-using buildings with historic significance;
- Local actions for climate protection: support for applying energy standards for buildings;
- Fostering cooperation: support for encouraging local citizens, businesses and public authorities to work together.

<sup>3</sup> Source: [http://www.bbsr.bund.de/BBSR/DE/Stadtentwicklung/Staedtebauforderung/Informationen/GrundlagenZieleFinanzierung/StBF\\_Zeitreihe\\_Finanzrahmen\\_Prog.jpg;jsessionid=COD9CEA82CDBCAB6E6710B839CDB2275.live11293?\\_blob=poster&v=4](http://www.bbsr.bund.de/BBSR/DE/Stadtentwicklung/Staedtebauforderung/Informationen/GrundlagenZieleFinanzierung/StBF_Zeitreihe_Finanzrahmen_Prog.jpg;jsessionid=COD9CEA82CDBCAB6E6710B839CDB2275.live11293?_blob=poster&v=4)

The financial support mainly focuses on investment measures in the built environment and urban areas, which upgrade or rearrange the built environment to identified needs. Nonetheless, specific non-investment measures are subject of funding, too, as these support management activities and finally stimulate further investments by owners or stakeholders.

The following examples of typical investment measures supported by the “Urban Development Assistance Programmes” show, which action is supported on district or neighbourhood level:

- Improvement of paths, roads, places,
- Urban reorganisation (e.g. real estate regulations; preparation for new uses),
- Adjustment of urban infrastructure, including basic services,
- Creation and maintenance of green and open spaces and/or
- Upgrading (barrier free) accessibility of buildings and areas.

At building level, typical supported measures are:

- Improvement or conversion of the existing building stock,
- Preservation of buildings with city-wide significance,
- Refurbishment and needs-based conversion of vacant buildings,
- Adaptation and refurbishment of public, social and cultural institutions,
- Deconstruction of vacant, permanently empty buildings and associated infrastructure,
- Measures supporting the re-usage of areas/buildings with vacant or rare usage.

Support for the following typical non-investment measures is granted by the assistance programme:

- The development and updating of local Integrated Urban Development Concepts (IUDCs) or Inter-municipal development concepts (demographic change, securing public services),
- Neighbourhood-management to conduct and support realisation of measures,
- Measures for activation of inhabitants, their participation and involvement,
- Measures to support local economy (e.g. commercial street management, involvement of shop owners),
- Networks of cooperation (e.g. between local authorities).

Since 2011, the improvement of the energy efficiency and climate resilience of urban areas, buildings and infrastructures is also one additional issue for urban renewal and redevelopment measures funded by the national “Urban Development Assistance Programmes”. Therefore, a ‘climate protection clause’ was introduced by an amendment to the Federal Building Code (*Baugesetzbuch – BauGB*) as legal basis for the programme. It is a contribution to implementing a climate-friendly urban development in terms of climate protection and adaptation to climate change. Due to the Building Code amendment, a lack of energy efficiency or climate protection deficits are reasonable facts to justify a local urban redevelopment area in order to use funding of the “Urban Development Assistance Programmes”. In this context,

energy efficiency investments funded by urban development grants can also help to generate broader impulses, especially for public infrastructure and – depending on the specific programme and funding priorities of the state – also for private properties.

In the State of Brandenburg, for example, the “Urban Development Assistance Programmes” offers funding for energy-efficient refurbishment as specific issue of urban development and if a contribution to the reduction of CO<sub>2</sub> emissions and to the increase of energy efficiency is done. This includes financial support for the needed investments in an urban area to address the goals of saving energy, improving energy efficiency and enhancing the use of renewable energy. Also enclosed is the involvement and activation of users, building owners and energy providing companies in urban strategies. Specific measures might be the improving of energy efficiency of buildings or conversion of heating systems to renewable energy sources or combined heat and power generation (CHP). Since 2014, a local energy strategy is prerequisite for funding which shows potentials and possible actions for increasing energy efficiency.

## **1.1. Programmes of Germany’s urban development assistance**

### **1.1.1. “Social City” – Investments at neighbourhood level**

In towns, growth and decline are often observed side by side. In a large number of large and small municipalities, urban areas exist where building-related, economic and social deficits come together. In order to address the threat of a downward spiral in these kinds of disadvantaged urban areas, in 1999, the Federal Government and the states launched the urban development programme “Social City”. In 2012, this developed into “Social City – neighbourhood-level investments”.

The focus is on an integrative approach: thus, the programme finances investments in buildings and apartments, living environments and the social infrastructure, which are complemented by measures in other policy areas, e.g. education and employment, integration, health care and promotion of the local economy. Accordingly, the “Social City” programme specifically targets cooperation between different departments and the pooling of resources in specific social environments.

Thus, in areas covered by the “Social City” programme, there is the possibility to also use national resources from the European Social Fund ([ESF](#)) for specific activities aiming at the social integration, qualification and education of residents as well as the local economic development. Therefore, the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) is running a specific national ESF programme called “BIWAQ - Education, Business, Labour in the Neighbourhood” (*‘BIWAQ – Bildung, Wirtschaft, Arbeit im Quartier’*). Municipalities can apply for funding for a wide range of different measures to improve education and the level of training, to boost employment and to strengthen the local economy in areas of the “Social City” programme.

In pooling different resources and using the diversity of the neighbourhoods, the “Social City” programme has the joint objective to stabilize and upgrade all aspects of these urban areas and thus to improve residents’ quality of life, to enhance the intergenerational equity and to allow the integration of all population groups. An additional aim is to extend cooperation with third parties in the neighbourhood, for example, by getting companies and foundations more involved, but also by promoting voluntary work.



The joint basis on which responsible stakeholder become involved in such activities is the integrated development concept for the relevant urban area. Moreover, residents are included and involved in planning and implementing measures at an early stage. A neighbourhood management team coordinates and assists with the various processes locally, supported by the “Social City” programme.

**The funding of the “Social City” programme can be used for the following measures:**

- Improvement of housing conditions, of living environment and of public space in order to improve the quality of living and of housing for residents, to improve the educational opportunities and economic power in the neighbourhood and to increase safety and sustainable environment;
- Improvement of social infrastructures for children, families and older people in order to increase the variety of uses in the area and to strengthen cohesion;
- Improvement of the integration of disadvantaged groups and of people with an migrant background;
- Creation of green and open spaces as well as of measures for increasing accessibility or reducing barriers;
- Coordination of the preparation, planning and implementation of activities in target areas, fostering citizens’ participation and involvement and mobilisation of voluntary work; development and updating of integrated urban development concepts.

### **1.1.2. *Urban restructuring programmes in the eastern and western states***

In various regions of eastern and western Germany, the changes in economic and demographic structures are becoming ever more obvious. Among other things, decreasing populations result in new urban planning issues for municipalities. Municipalities have to find solutions to deal with high quantities of vacant buildings and brownfield and to ensure that inner cities will continue to function.

This is the starting point for the urban restructuring programmes: two programmes have been launched, one for the eastern states in 2002 and another one for the western states in 2004. Based on holistic urban concepts, a twofold strategy is put in place comprising measures for demolition of vacant buildings and upgrading the building sites, living environment and public space.

- In municipalities of the eastern states, the quantity of vacant housing stock is reduced in order to stabilize urban structures and to consolidate the housing market; the urban infrastructure is adapted accordingly. At the same time, inner cities, neighbourhoods worth preserving and valuable old buildings are upgraded.
- In municipalities of the western states, the focus of activities is on the inner cities, on residential areas with building from different eras and on industrial, social and military wastelands. The priorities for the financial aid are to strengthen inner cities and town centres, to revitalise industrial locations/urban derelict land or brownfields and to further develop schemes for residential areas.

- What they have in common is the fact that successful urban restructuring requires an integrated strategic approach. Accordingly, integrated urban development concepts need to be devised and/or updated for cities and neighbourhoods participating in the programme.

The urban restructuring programmes contribute to an enhanced culture of cooperation between local authorities and the real estate sector. At the current stage of urban restructuring, it is of outstanding importance to offer support to inner-city neighbourhoods and to preserve their old buildings. Recent years have shown consistently higher quality urban design, a visible enhancement of neighbourhoods and the preservation of old buildings.

#### **Eligible measures of the “Urban Restructuring in the Eastern States” (*Stadtumbau Ost*):**

- Deconstruction of permanently empty buildings and flats usually built after 1918 not listed as historical building. This includes support services for relocating tenants of almost empty buildings and improving former building areas for re-use.
- Retreating social infrastructure (e.g. kindergartens, schools) and technical infrastructure (e.g. waste water or long-distance heating networks). This includes projects that are necessary to ensure operability of urban areas (conversion of social infrastructure).
- Covering and redeveloping buildings that were built before 1949 and the acquisition of buildings built before 1949 by cities and municipalities for covering and redevelopment.

#### **Specific issues only covered by the programme “Urban Restructuring in the Western States” (*Stadtumbau West*):**

- Deconstruction of vacant, permanently empty buildings or parts of buildings and associated infrastructure,
- Urban reorganisation, temporary use and re-use of wasteland from former transport, industrial and military use.

#### **Eligible measures of both programmes:**

- Improvement of public space and the living environment,
- Temporary use and re-use of exposed areas and brownfield sites,
- Adjustment of urban infrastructure and basic services, including social infrastructure and technical infrastructure,
- Improvement or conversion of the existing building stock (including preservation of buildings of city-wide significance),
- Creation of green and open spaces as well as of measures for upgrading accessibility or reducing barriers,
- Other measures for construction and disciplinary measures required for urban restructuring,
- Coordination of the preparation, planning and implementation of activities in target areas, fostering citizens’ participation and involvement and mobilisation of voluntary work; development and updating of integrated urban development concepts.

### **1.1.3. “Active City and District Centre” programme**

Attractive central business districts and high standards of living in downtown areas in both urban districts and smaller communities are of outstanding importance for the future of cities and smaller communities. With its integrated approach, the programme supports the diversity of these centres, strengthens them as places to work and live, as business and cultural centres, the locations of shopping and leisure facilities – and, not least, places that people can identify with in their daily lives.

The programme encourages efforts to guarantee and expand the diversity of the facilities in downtown areas and the centres of small communities as well as to promote public places, initiatives for dealing with vacant real estate and measures for social stabilization.

One main aim of the programme is to get civic bodies and the local business communities involved. The objective is to achieve long-lasting effects by encouraging local citizens, businesses and public authorities to work together.

To achieve this goal, a new tool, the contingency fund (*Verfügungsfond*), has been established. It provides further access to private financial resources, among other things, in order to strengthen city centres. Up to 50 per cent of the fund comes from urban development funding provided by the Federal Government, the states and the municipalities and at least 50 per cent is financed by private individuals or by additional local/municipal funds.

**Eligible measures of the “Active City and District Centre” programme are:**

- Improvement of public space (streets, roads, squares),
- Renovation and modernisation of cityscape buildings (including energy-efficient renovation),
- Construction and regulatory measures for temporary use or re-usage of spare areas or under-used areas,
- Commercial street management with involvement of store owners or property communities,
- Creation of green and open spaces as well as of measures for upgrading accessibility or reducing barriers,
- Development and updating of integrated urban development concepts, coordination of the preparation, planning and implementation of planned activities, fostering citizens’ participation and involvement and mobilisation of voluntary work.

## **1.2. Integrated Urban Development Concepts (IUDCs)**

In urban development, the focus was widened from looking at single measures to an integrated city-wide view which is also part of the programme lines of the “Urban Development Assistance Programmes”. Integrated Urban Development Concepts (IUDCs) are one of the core instruments to implement the integrated urban development approach. In many German municipalities, integrated urban development is already common practice. IUDCs create concrete, long-term effective and locally adaptable solutions for a variety of challenges like functional or socio-spatial deficits and adaptation needs. They concentrate on topics like buildings, mobility, infrastructure, social indicators and environment, but also on cross-sectoral topics like climate and energy in the field of urban development.

At city level, there are two levels of integrated planning. One level can be understood as the city-wide integrated planning, taking into account long-term strategies, strategic aims of local politics as well as general local conditions of all areas of a city. At the second level are local IUDCs derived from city-wide concepts/strategies with a detailed view on one specific urban area. They describe local conditions and problems as well as solutions and possible actions and develop a local action plan. In terms of the “Urban Development Assistance Programmes”, the financial support is linked to IUDCs at local level, which take into account regional and city-wide framework conditions.

However, an IUDC is an area-based planning and management tool for locally adapted solutions, which does not offer universally applicable remedy. Cities and municipalities are rather able to take an active and controlling role. The reference to a defined area provides a good basis for the problem-oriented development of solutions and promotes communication and cooperation between the actors involved.

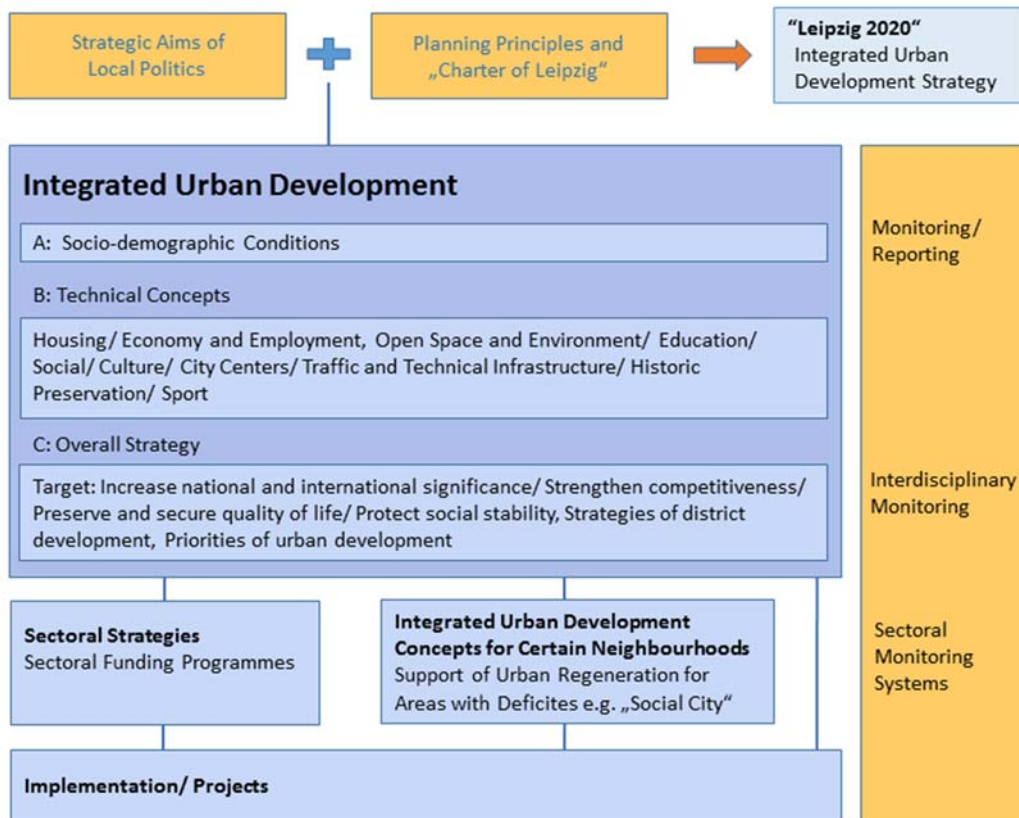


Figure 2: Integrated Urban Development Concept of the City of Leipzig, Source: City of Leipzig

Within the “Urban Development Assistance Programmes”, the establishment of an IUDC is a key element of urban development and is set as precondition/basic requirement for all programmes of urban development funding. By this means, the financial support is also linked to an (official) defined area. The area has to be designated e.g. by local statutes. In Germany, this justifies the eligibility of the area for the “Urban Development Assistance Programmes”, but also gives certain rights to the municipality that are necessary in a process of urban redevelopment to control the design and urban development of the locality in the desired direction and to prevent aberrations.

The formal steps to set up an IUDC are:

- Analysis of the current situation,
- Securing of integrated, cross-sectoral and management structures,
- Organisation of a participative process,
- Development of a target- and implementation-oriented action plan and
- Securing political and financial support.

### **1.3. General process for applying and approving funding**

In Germany, the urban development assistance is generally financed by the Federal Government, the states and the municipalities. The Federal Government and the states jointly define eligible measures, local administrations select the local action areas and buildings and propose the specific measures and the states approve the designated areas and the specific package of measures. For this purpose, grants of the Federal Government are supplemented by funds from the respective states and the municipality. The federal financial assistance is provided to the states on the basis of a periodically arranged administrative agreement. Eligible actions/measures are specified in more detail in accordance with the funding guidelines of every state. Eligible applicants for funding from “Urban Development Assistance Programmes” are only cities and municipalities. They play the key role for implementing urban development funding. In Germany, two ways of implementation are usually applied:

- The municipal administration plays the key role. It steers the overall process of urban development and of implementing goals and aims of an IUDC. It is also responsible for the implementation process of every single measure. To assure best possible effects of single measures, assistance may be hired in form of urban planning and development offices or further consultants and experts.
- The municipal administration steers the overall process and mandates consultancies for assistance in the urban development. Different stages of involvement are developed all over Germany depending on the regulations for the “Urban Development Assistance Programmes” of the states. Usually municipal administrations take the role of assuring the fulfilment of developed aims and goals of an IUDC. Hired or mandated consultancies care for the implementation of all measures providing specific knowledge of urban development and developing suitable approaches for solutions.

The funding amount from the federal budget generally covers one third of eligible costs, another third is provided by the states. Thus, the remaining co-funding (own contribution) by the municipalities is one

third. For some programme lines and planned measures, those shares can differ, e.g. the demolition of buildings as part of the programme “Urban Restructuring in the Eastern States” is funded by the federal budget to 100 per cent.

As described before, the precondition and basic instrument for funding are IUDCs with a defined local area of action. Thereby it is granted that funding is used according to the needs of residents and households. The assistance shall also trigger private investment in urban environment. This effect is strengthened by increased tax depreciation for building owners especially in development and redevelopment areas. The tax depreciation is especially used for activating owners for conservation and refurbishment measures of historical buildings.

One crucial aim of urban development funding is to concentrate the allocation of resources in specific urban action areas that have a high need of redevelopment. In this regard, urban development funding offers focussed combinations of funding sources like EU structural funds (e.g. European Regional Development Fund, ERDF), other governmental programmes or specific programmes of the states like funding for social housing and financing by federal development banks. In Germany, the Promotional Bank of the Federal Republic of Germany (KfW) also offers applicable programmes for supporting energy-efficient renovation of buildings, investments in the municipal and social infrastructure, investments in housing and modernisation or investments in age-based conversion.

## 2. Germany’s KfW Programme “Energy-Efficient Urban Redevelopment”

The building sector is responsible for about 35 per cent of Germany’s energy consumption or about one-third of Germany’s CO<sub>2</sub> emissions. With reference to Germany’s Climate Action Plan, a nearly climate neutral building stock shall be reached by 2050. This means that the primary energy consumption of the building stock has to be reduced by 80 to 95 per cent, which can be reached by increasing energy efficiency – i.e. lowering energy demand – and meeting the remaining energy demand mostly by renewable energy. Already by 2020, a reduction of heat demand by 20 per cent should be achieved. For achieving these goals, the German government has introduced policies as the “Action Programme for Climate Protection 2020” (*‘Aktionsprogramm Klimaschutz 2020’*) and the “National Action Plan for Energy Efficiency” (*NAPE – ‘Nationaler Aktionsplan für Energieeffizienz’*). They propose instruments for all sectors (mobility, industry, agriculture etc.) and especially for the building sector.

For achieving the energy and climate protection goals, approaches for urban areas or neighbourhoods can make an important contribution. They can provide an interesting leverage effect to communicate the possibilities and instruments for more energy efficiency and renewable energy supply to building owners and other relevant actors. Furthermore, it allows the application of an innovative and decentralised energy production and distribution strategy by targeting a group of buildings at once. The existing funding opportunities of the “CO<sub>2</sub> Building Modernisation Programme” (*‘CO<sub>2</sub>-Gebäudesanierungsprogramm’*, see Chapter 2.4.1) of the KfW do not have any spatial reference and are targeting single buildings by providing low-interest loans and grants. A new trigger for stimulating more energy efficiency in existing buildings is provided by the KfW programme 432 “Energy-Efficient Urban Redevelopment” (*‘Energetische Stadtsanierung’*). It is a programme organised at federal level and addressing the improvement of energy efficiency in municipalities. BMUB and KfW introduced this programme in 2011. With support of the states, the applicant municipalities are in charge of implementing the programme. The budget is available from the designated “Energy and Climate Fund” (*‘Energie- und Klimafonds’*) which is financed by the revenues from the CO<sub>2</sub> emission trading scheme.

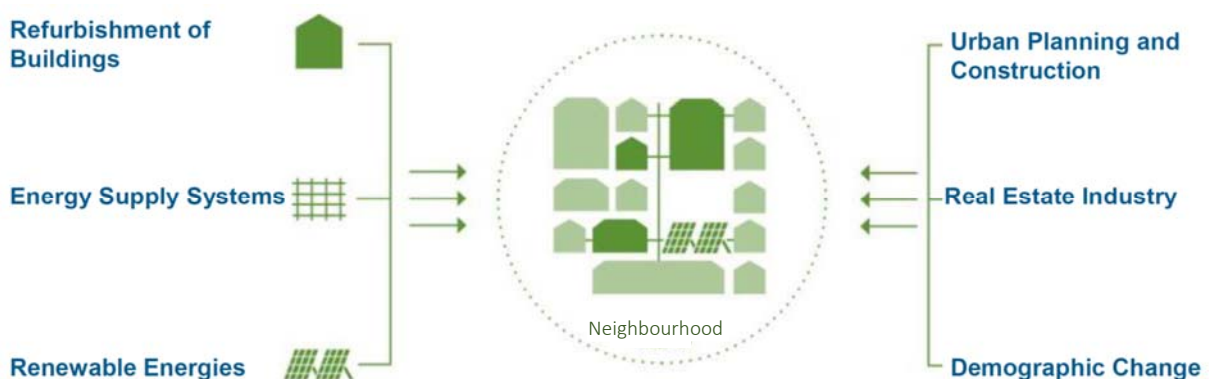


Figure 3: Neighbourhood as the base for energy-efficient action, Source: KfW

The aim of the programme is to initiate comprehensive and locally adapted investments in energy efficiency and renewable energy and thereby to leverage a variety of synergies. Cities are encouraged to

mitigate possible consequences of climate change in a preventive way by its own local contribution to climate protection. In this sense, municipalities are enabled to strengthen their commitment to the energy-efficient building refurbishment and can contribute to increase the share of renewable energy.

For the Federal Government the total annual funding budget of the programme amounts to 50 million EUR. This comprises grants for the development of local energy strategies (part A of KfW programme 432 “Energy-efficient Urban Redevelopment”<sup>4</sup>) and an implementation management (part B) as well as low-interest loans in combination with repayment bonuses for the modernisation and adaptation to local energy provision infrastructures (KfW programme numbers 201/202<sup>5</sup>). For further investments in energy efficiency, e.g. in housing, mobility or public buildings, other financial assistance or investment sources need to be identified and used. The KfW programme 432 “Energy-efficient Urban Redevelopment” has encouraged many local authorities to develop an integrated strategy and to start an implementation management.

## **2.1. Preconditions and general process for applying and approving funding**

The approach of the programme widens the view from a single building perspective to a district view with interrelated buildings. In this way the programme implies a shift from being narrowly focused on building refurbishment. Interdependencies of different energy measures, e.g. between the degree of the building refurbishment and the resulting adjustments in the supply of heating and electricity, can be considered.

The objective is also to activate groups of owners and private tenants for the energy-efficient refurbishment process by promoting integrated and strategic approaches to strengthen energy efficiency. Therefore, direct target groups are the municipalities and indirect target groups (through municipal utilities) are housing companies, associations and private homeowners or neighbourhood homeowner associations.

The grants can be received for the development of integrated energy strategies as well as they can reimburse the costs for an implementation management that supports and coordinates the implementation of such strategies. These grants cover personnel and material expenses. The time and financial scale of the grants are the following (state: 2016):

- One-year grant for preparing integrated refurbishment and neighbourhood strategies is supported by 65 per cent of the costs;
- Three years or up to five years to subsidise the costs for an implementation manager is supported by 65 per cent of the costs limited to 150.000 EUR for three years of management or 250.000 EUR for five years of management

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<sup>4</sup> <https://www.kfw.de/432>

<sup>5</sup> <https://www.kfw.de/201> resp. <https://www.kfw.de/202>



The grants are given to municipalities or municipal owned companies but can also be forwarded to municipal energy suppliers or housing companies or to private housing companies, housing cooperatives or homeowners communities. The amount of 35 per cent of eligible costs must be provided by the municipality, but 20 per cent can be financed by the states, by EU funds or by involved stakeholders. So, in total a minimum of 15 per cent of the eligible costs have to be the own contribution of the municipality. For municipalities with financial constraints the co-financing rate can be reduced to 5 per cent of eligible costs.

Being a “learning programme”, the programme was constantly adapted. First experiences have shown the relevance of jointly developed energy strategies using and involving all relevant stakeholders. Furthermore, the need for long-term support to energy-efficient measures in the districts became obvious, as renewal of building or infrastructure needs long term planning, is usually bound to larger investments and needs the active involvement and investment of owners. An active implementation management can play a significant role, contributing with its competences to communication processes, actively networking with relevant stakeholders in the neighbourhood and providing support regarding financial instruments for selected single measures (e.g. lighthouse functions). Thereby the implementation management is stimulating relevant stakeholders. Because all this needs longer time periods and more efforts, the time periods as well as the maximum funding for the development of neighbourhood energy strategies and for the implementation management have been extended.

## **2.2. Integrated strategies for energy efficiency in urban areas**

The strategy for integrated energy-efficient redevelopment of urban areas<sup>6</sup> can be derived from existing Integrated Urban Development Concepts (IUDCs, see Chapter 1.2), also from housing concepts or local climate protection concepts. By definition of the KfW programme, the area of the strategy may consist of several geographically contiguous private and/or public buildings (two at least), including public infrastructure. Usually the area covered by the strategy is smaller than an administrative district of a city/town. The eligibility for funding of the identified area of the strategy needs to be approved by the municipality for example by formal decision of municipal leaders or the council. The delimitation and selection of the area sets important preconditions for the strategy development and for the later implementation of developed measures. The area of the strategy needs to offer sufficient links and scope for complex measures such as urban energy efficiency. Therefore, facts like size, involved building types, stakeholders or energy supply systems play a key role. The delimitation of the area has an important influence on the possible analytical depth of the strategy. Experiences in Germany show certain advantages of smaller districts or neighbourhoods. But at the same time, a sufficient number of energy or heat consumers is needed to implement new neighbourhood-wide energy supply systems or heat networks economically.

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<sup>6</sup> Taking into account the EU concept of Integrated Sustainable Urban Strategies (ISUS), the document works with integrated energy strategies for urban areas in the following. But it should be mentioned that integrated energy strategies are very close to urban development concepts as they also use a clear area-based focus and provide a detailed timetable and plan of measures to be implemented. Therefore, in Germany the expression of “concept” is used.

Further framework conditions for the strategy development need to be considered at an early stage. An important factor is the availability of (inventory) data or the willingness of key stakeholders to participate and contribute. Especially public or private development and refurbishment interests can play a key role in the local energy strategy, as inadequate energy levels or general climate targets are rarely an effective trigger. Also, other urban development projects, new construction or conversion projects or already proposed refurbishments of housing companies or industrial investment should be understood as option for combining them with further energy efficiency and alternative energy supply measures. Thus, a city-wide and strategic consideration needs to be done in order to select appropriate strategy areas. The spatial extent, technical and economic feasibility, stakeholder structures and urban structures are decisive for a suitable selection.

Integrated energy strategies show relevant technical and economic potential for energy savings in the district/neighbourhood in compliance with urban planning, historic preservation, building culture, housing and demographic and social aspects. They show how CO<sub>2</sub> emissions can be reduced by short-, medium- and long-term measures. The strategies provide a central basis for decisions and for investment planning orientated towards the overall energy efficiency in the neighbourhood. But also measures regarding age-appropriate renovation of the neighbourhood, for reduction of barriers in existing buildings and in municipal infrastructure may also be part of the strategies. Finally, the strategies may also integrate strategies and measures for climate change adaptation in order to make the neighbourhoods resilient for higher summer temperatures, extreme rainfalls and other effects of the climate change.

For the development of integrated energy strategies for urban areas, the main energy consumption sectors (e.g. municipal facilities, commercial, trade, services, industry, households) and their energy savings and efficiency potential should be considered. Moreover, interrelations with IUDCs, housing concepts or other approaches at community level as well as sectoral or development plans need to be considered. Also, objectives of the built-cultural environment (monuments, preservation and cityscape quality) need to be considered.

Finally, basic instruments of integrated neighbourhood strategies for energy efficiency are:

- Overall energy balance of the neighbourhood: Definition of the energy and CO<sub>2</sub> reduction goal for the energy efficient urban redevelopment process with reference to governmental climate and energy objectives at local level;
- Action plans and concepts also involving all relevant actors and including public participation;
- Plan for implementation of neighbourhood-wide measures of reorganisation for energy efficiency, including appropriate impact analysis and assessment measures;
- Analysis of barriers and solutions for the implementation (technically, economically, target group-specific reasons);
- Calculations/estimations of costs, feasibility and cost-effectiveness of the measures;
- Suggestions for performance review/evaluation;

- Recommendations for organisational measures to implement the plan of identified measures (timetable, priorities, mobilising actors and responsibilities) and for information, advice and public relations.

### **2.3. Implementation management**

The tasks of the implementation management (*Umsetzungsmanagement/Sanierungsmanagement*) are numerous and can vary widely depending on the area and objectives of the integrated neighbourhood strategy for energy efficiency. Important tasks are the communication to and activation of local stakeholders, of owners or tenants in order to address problems, to increase participation and to facilitate the realisation of refurbishments as well as to set up networks including coordination meetings, but also to detect and solve conflicts of interests. Based on the strategies, the implementation management has also to specify tasks to further develop and specify concrete actions and road maps for their implementation. The development of the neighbourhood is embedded in city-wide processes by continuous dialogues with all relevant departments of local government.

A central function of an implementation management is supporting and advising stakeholders and especially building owners in developing concrete investment measures and especially in accessing needed funding. The management needs to bring funding sources and local actors together in order to use possible ways of funding and thereby acts as focal point and guide for issues of funding and financing.

The tasks of an implementation management require energy-related technical expertise and process control skills. A minimum level of technical expertise in the fields of energy refurbishment and energy supply (especially heating and cooling) and building is necessary in order to achieve the necessary acceptance by all partners. Also, basic knowledge of processes of urban development, housing and land property are needed. Moreover, the implementation management must be able to identify local potentials and needs. As complex processes need to be coordinated and controlled and homeowners need to be contacted and informed, also strong communication skills are required for an active networking of local actors and for the mobilisation of building owners. At certain points, also external knowledge needs to be used for an appropriate impact of the implementation management.

The implementation management can be carried out by municipality employees or a municipal company, but also redevelopment agencies and planning consortiums (e.g. associated companies of urban planning, engineering or architectural offices) can be considered. Experiences in Germany show that due to the broad spectrum of required skills, there is a need for a broader implementation management team involving experts from different sectors. This is the reason why a municipal administration usually needs competent external support. Moreover, an early involvement of the implementation management at the first stage of the strategy development is recommended.

## 2.4. Combination with other funding programmes

Based on the integrated energy strategy and an implementation management, suitable sources of investment are needed in order to implement energy efficiency measures. In fact, with the funding of an implementation management a vehicle is established to communicate the aims and opportunities but also to bring owners together with appropriate existing funding schemes and thus stimulate the process of energy-efficient refurbishment in the neighbourhood. The funding environment in Germany offers a broad spectrum of various specific funding options for different measures and at different levels (e.g. of municipalities, states, federal level or EU).

### 2.4.1. CO<sub>2</sub> Building Refurbishment Programme

The “CO<sub>2</sub> Building Refurbishment Programme” (‘CO<sub>2</sub>-Gebäudesanierungsprogramm’) is a building modernisation programme at the national level providing low-interest loans in combination with repayment bonuses or grants for the energy-efficient refurbishment of buildings. Target groups are private owners, housing associations, municipalities and municipal owned companies, but also the support of infrastructure for municipalities or commercial buildings is eligible for funding.

The KfW programme “Energy-Efficient Building Construction” (‘KfW-Energieeffizient Bauen’) supports the construction of new buildings that are consuming less energy than the national energy standard for buildings requires (defined in Germany’s “Energy Saving Ordinance” ‘EnEV – Energieeinsparverordnung’). The KfW programme “Energy-Efficient Building Refurbishment” (‘KfW-Energieeffizient Sanieren’) supports investments in the energy efficiency of existing buildings also exceeding the legal energy efficiency standards. Both programmes are available as loans or grants. The loans also include repayment bonuses depending on the reduction of energy demand achieved by the measures. The owners can choose between predefined investment packages of comprehensive measures of the “KfW Efficiency House” (‘KfW-Effizienzhaus’) or single measures for residential buildings (*Einzelmaßnahmen*). The packages of the “KfW Efficiency House” contain predefined energy efficiency measures of building refurbishment to substantially reduce CO<sub>2</sub> emissions following the idea: “The better the energy efficiency, the higher the financial support”. In addition, an expert for the supervision of the refurbishment or the new construction is subsidized by the KfW programme “Energy-Efficient Building Refurbishment – Construction Support” (‘KfW-Energieeffizient Sanieren – Baubegleitung’).

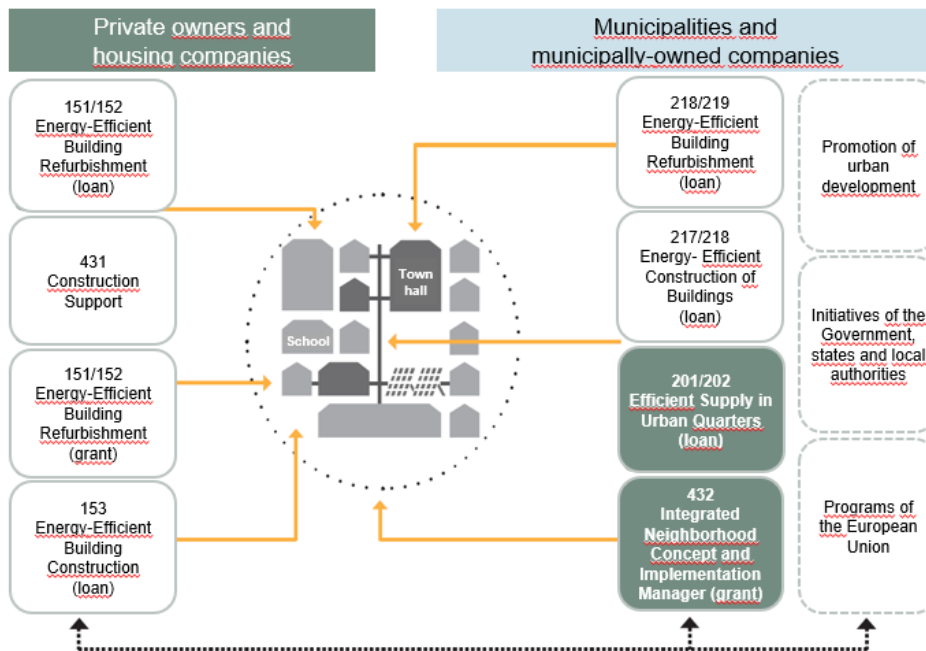


Figure 4: Utilisation of KfW programmes (updated 2017), Source: adapted from KfW

Where building substance is worth protecting, it is important to carefully balance refurbishment with a focus on energy performance and historic building considerations. In such cases, it is necessary to balance between refurbishment measures, building requirements and the objective of preserving an existing cityscape. Thus, the KfW programme “Efficiency House Listed Buildings” (*KfW-Effizienzhaus Denkmal*) offers funding especially adapted for historic buildings.

For improving the energy efficiency of municipal and social buildings or the energy supply, there are programmes for either municipalities or municipal owned companies. For measures in municipal infrastructure, the KfW programme “Energy-Efficient Urban Redevelopment – Neighbourhood Supply” (*KfW-Energetische Stadtsanierung – Quartiersversorgung*) offers loans in combination with repayment bonuses for energy-efficient heating and cooling, water and sewage systems. For measures in municipal buildings or buildings of social infrastructure, the KfW programme “Energy-Efficient Construction and Refurbishment” (*KfW-Energieeffizient Bauen und Sanieren*) offers loans in combination with repayment bonuses for structural and technical refurbishment of non-residential buildings and new energy-efficient buildings owned by the municipality or municipal and social enterprises. Also, the refurbishment or new construction of commercial buildings is funded by the “KfW Energy Efficiency Programme” (KfW programme number 276-278) (*KfW-Energieeffizienzprogramm*).

### 2.4.2. Market Incentive Programme

Together with the “Renewable Energy Heat Act” (*Erneuerbare-Energien-Wärmegesetz, EEWärmeG*), the “Market Incentive Programme” (*Marktanreizprogramm, MAP*) funds measures that foster the use of renewable energy in existing buildings. The aim of MAP is to support market penetration of renewable heating and cooling technologies by investment incentives. The amount of funding depends on the size of the system (solar thermal systems) and their performance (biomass systems and heat pumps).

### **2.4.3. Combined Heat and Power Act**

In Germany, highly efficient cogeneration is funded by the “Combined Heat and Power Act” (*Kraft-Wärme-Kopplungsgesetz, KWKG*). The law aims to increase electricity production from cogeneration to 25 per cent. It regulates the purchase of electricity from combined heat and power generation (CHP) plants, the payment of surcharges by the network operator and the remuneration for electricity from cogeneration plants. The law obliges the grid operators to provide a connection to their grid for the CHP plants and units listed in the law and to accept the CHP electricity generated by these CHP plants and units in their grid. The price which the operator of the CHP plant or unit and the grid operator agree for this electricity has to be paid in addition to a surcharge stipulated in the law and dependent on the type of CHP plant or unit.

### **2.4.4. Urban Development Assistance Programmes**

At neighbourhood level, it is also very reasonable to combine the funding from Germany’s “Urban Development Assistance Programmes” (see Chapter 1) with funding from the KfW programmes. The combination of both offers a neighbourhood-related approach for redeveloping cities with a focus on energy and buildings.

### **2.4.5. Tax incentives**

If the redevelopment area is legally fixed by law, which is a prerequisite for the use of the funds of “Urban Development Assistance Programmes”, specific tax depreciation for owners are reclaimable for investments in building refurbishment and modernisation. This is also an incentive for actions of private owners in designated redevelopment areas.

## **2.5. Conclusion**

The KfW programme 432 “Energy-Efficient Urban Redevelopment” uses an area-based approach. For a particular area, energy strategies analyse potentials for energy savings, for energy efficiency and for the use of renewable energy. Based on this, the strategies define development goals and suitable measures aligned with possible funding schemes. Both, part A (integrated neighbourhood strategies for energy efficiency) and B (implementation management) of the programme focus on non-investment measures, working as vehicles to stimulate further investments in energy efficiency by other sources. While the strategy development is financially supported with grants, subsequent measures need investment of local owners, of the municipality, of other local stakeholders or of other funding sources either from the municipality, from the states, from the federal budget or from EU sources. Therefore, an implementation management as it is supported through programme part B (cf. 2) usually operates as local office pushing measures of the integrated energy strategy forward by activating local owners and stakeholders.

Illustrating an efficient use of different funding programmes, the following examples show how the administrations of Potsdam, Bielefeld and Wittstock/Dosse combined the funding of different funding sources for energy-efficient and sustainable urban development.

### 3. Examples for integrated urban and energy-efficient development

The following examples illustrate the way municipalities are handling contemporary tasks of urban re-development by improving the energy efficiency and reducing CO<sub>2</sub> emissions of urban areas. Thereby, energy efficiency is a key aspect, which requires adjusted measures depending on local situations and stakeholders.

#### 3.1. Potsdam-Drewitz



Figure 5: Potsdam-Drewitz, Source: City of Potsdam

Potsdam in the State of Brandenburg is a growing city close to Berlin. The residential area Drewitz is located at the south-eastern outskirts of the City of Potsdam, 8 km away from the city centre. The neighbourhood is dominated by five-storey apartment buildings in typical prefabricated large panel construction (called housing series ‘WBS 70’). Between the buildings are courtyards and open spaces.

Key player in the neighbourhood of 7.500 inhabitants is the municipal housing association ‘Pro Potsdam’, which owns more than half of the 2.900 apartments. Drewitz is a typical housing district, which offers close infrastructure as shops and kindergartens. There is a relevant number of low-income households and tenants who live in a difficult economic situation. About 17 per cent of the buildings in the district Drewitz have received an energy-efficient refurbishment already. An even much larger share has been modernized to current housing standards since 1990 without a specific focus on high energy efficiency standards.

##### 3.1.1. Targets of urban development

Different activities led to a complex “Master Plan Garden City Drewitz” focussing on an integrated urban development process. The integrated neighbourhood strategy for energy efficiency acts on the master plan for energy-related issues and links the urban development concept with fields of energy efficiency and climate protection in a complex way. The aim is to upgrade the overall image and quality of the neighbourhood through urban restructuring, energy-efficient refurbishment and well-balanced re-densification. In addition to the funding of the KfW for the strategy, the neighbourhood also combines funding from the programme “Social City” for social investments and upgrading and funding of the State of Brandenburg for social housing.

##### 3.1.2. Objectives in terms of energy efficiency

The scope of the integrated neighbourhood strategy for energy efficiency of Potsdam-Drewitz is very broad and examines the status quo and potentials. Developed measures address energy-efficient refurbishment of buildings, heat, electricity, renewable energy, climate-friendly mobility, public space as well

as adaptation to climate change and the reduction of CO<sub>2</sub> emissions. The goal for Potsdam-Drewitz is to save about 50 per cent of CO<sub>2</sub> emissions by the year 2025 and about 80 per cent by the year 2050. Furthermore, measures in mobility shall save up to 40 per cent of CO<sub>2</sub> emissions by 2025.

To reach these goals, the local housing companies need to refurbish all residential buildings by 2050 to the current standard of “KfW Efficiency House 55”, which allows only 55 per cent building energy consumption referring to the standard building energy consumption regulated in Germany’s “Energy Saving Ordinance” (*EnEV*). To reach the goals by 2050, the municipal energy and water suppliers need to convert the current district heating into green district heating, which is carbon neutral by supply agreements. Also, the potential for solar heat and photovoltaic in the neighbourhood needs to be fully activated. Until 2025, the energy supplier will contain the long-distance heat supply network and raise the share of CHP by installing CHP plants and integrate a heat accumulator. In addition, until 2050, lower network temperature and the feed in of solar power are planned.

For citizens, the environmentally friendly mobility is focussed as well as energy-efficient consumption behaviour and renewable energy.

### **3.1.3. Implementation management**

Main goals for energy efficiency in Potsdam-Drewitz are the refurbishment of the prefabricated buildings in a balanced way correlating with adaptations of the district heating. Therefore, the arrangement of housing associations with the heat supplier is important for suitable measures. Another aim is to balance the social impact of measures which needs to be considered in the weighting of measures favouring low-cost measures with maximum efficiency. Therefore, different funding sources are combined. In addition to KfW funding for buildings and energy infrastructure, funding of the State of Brandenburg for social housing is used to finance parts of the refurbishment costs and thus to avoid the increase of rents. Activities of the housing companies and associations include the establishment of a tenants’ management to ensure communication and to minimise nuisance during refurbishment either by construction works or by increasing rents. Furthermore, the programme “Social City” funds measures in the living environment and for citizen participation. The participation of residents is an important key to success: In a survey, tenants confirmed their willingness to pay two per cent more for operating costs of electricity and heat supply from renewable sources. This amount is sufficient to implement appropriate actions for “greening” the energy supply.

The implementation management was already involved in the development of the integrated neighbourhood strategy for energy efficiency. As Potsdam-Drewitz is dominated by institutional housing, the main task of the implementation management is the establishment and running of a platform and office for all purposes of integrated and energy-efficient urban redevelopment, including funding management or the development of relevant instruments. Furthermore, the pooling and networking of local key stakeholder is the day-to-day business. The collaboration of key stakeholders was the precondition for the strategy development of Potsdam-Drewitz. Likewise, the continuous positive collaboration will be a basic requirement for implementing the far-reaching goals of transforming Potsdam-Drewitz into an energy-efficient green neighbourhood with sustainable and integrative public transport. Drewitz benefits of the close cooperation with the City of Potsdam, the local energy supplier (EWP/SWP), the municipal public transportation services (VIP) and the local housing companies.



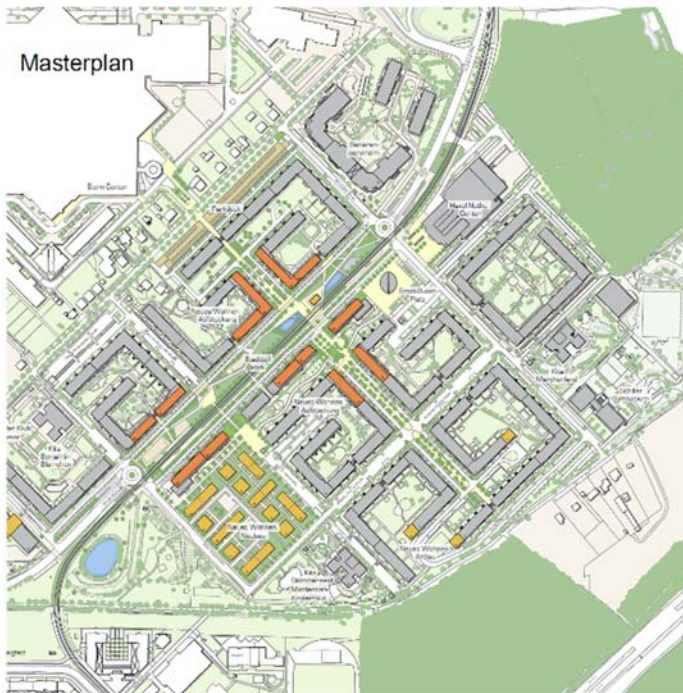


Figure 6: Master plan of Potsdam-Drewitz with re-densification areas, Source: City of Potsdam

### 3.2. Bielefeld-Sennestadt



Figure 7: City of Bielefeld, Sennestadt District, Source: Jung Stadtkonzepte

The City of Bielefeld implemented in its district Sennestadt different urban development programmes, starting with the programme “Social City”, the programme “Urban Restructuring” and finally the KfW-programme 432 “Energy-Efficient Urban Redevelopment”. The neighbourhood’s character was shaped by a growing population in the 1950s. Town houses and apartment buildings are home of 21.000 inhabitants. Predominant are especially owner-occupiers in town houses and condominium associations but also housing companies and single-handed landlords are active.

#### 3.2.1. **Targets of urban development**

Beside energy-efficient measures, urban deficits of Sennestadt are addressed with measures of the programme “Urban Restructuring”. Main goals are the rectification of neglect and loss of function, the improvement of the community, neighbourhood, housing and infrastructure (road decommissioning,

modernising social infrastructures, conversion of schools building) as well as measures stimulating business, employment and training or an available fund for citizens.

### **3.2.2. Objectives in terms of energy efficiency**

Based on a technical, economic and social analysis, the integrated neighbourhood strategy for energy efficiency describes key projects and pilot projects of the district Sennestadt that are important to raise energy efficiency. For the implementation, mainly driven by the implementation management, the key projects are:

- In cooperation with the municipal utility company, a detailed concept of the future distribution network will be established that will draw options of raising energy efficiency of the heating network by linking decentralized CHP plants together and establishing the supply of households with heat and electricity. Furthermore, the foundation of a civil company of the heat and electricity distribution network (*Bürgernetzgesellschaft*) is planned which allows local building owners to acquire parts of the distribution network in order to finance investments and generate returns.
- Suitable feasibility studies for the apartment buildings owned by condominium associations/owner association (*Wohneigentümergeinschaften*) will be developed to find solutions for the refurbishment. By developing economic, technical and energy-related solutions owners are offered valuable information for options of refurbishment. The implementation management of Sennestadt GmbH also accompanies the process of communication in the refurbishment of condominium buildings to raise the owners' awareness for energy-efficient measures and to activate them.
- A model house (*Musterhaus*) of possible solutions for the refurbishment of town houses offers owners gradual applicable measures with detailed information on expenses, costs and benefits for applicants. About 600 town houses in Sennestadt have been built similarly and owners can find solutions for energy efficiency, enlargement of living space or barrier-free redevelopment.
- The development of a new housing quality index aims to factor measures of urban redevelopment, of investments in energy efficiency and renewable energy and in alteration of infrastructure systems into the price of buildings.

### **3.2.3. Implementation management**

The implementation management started in 2014, just after the launch of the strategy. The main task is to implement the measures of the strategy. Therefore, the implementation management needs information and communication skills and cooperates with relevant stakeholders and local owners.

The implementation management is carried out by a consortium of private companies whose management is linked to the municipal owned company Sennestadt GmbH. This company was established in the early 1950s for the building of Sennestadt. Today, it is responsible for the needs of urban redevelopment and improvement for the district. Besides energy efficiency, the Sennestadt GmbH also implements urban redevelopment measures funded by the programme "Urban Restructuring" and other local projects for improving the neighbourhood. Therefore, a key characteristic of the Sennestadt GmbH

is the common development of goals and the joint implementation of measures, using synergies, its recognition and trust of owners and other stakeholders.

For the measures of the energy-efficient refurbishment, the Sennestadt GmbH works jointly with the municipal utility company and the municipal administration for urban development.

The implementation management operates in an on-site office with different consulting and motivation activities for local stakeholders, owners and tenants. A variety of workshops, lectures, surveys and offers of technical assistance as well as regular reports in local newspapers and magazines brings the urban energy-efficient refurbishment closer to the public/owners. First results are already visible with the pilot-refurbishment of a model house and in the increasing interests of owners in energy-related refurbishment.

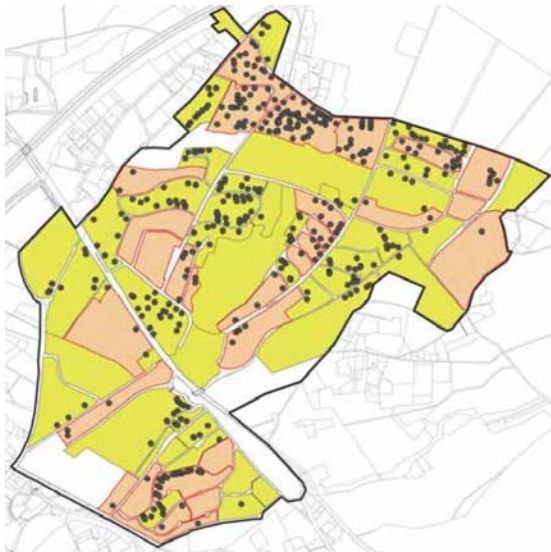


Figure 8: Energy supply in Sennestadt, Source: City of Bielefeld

Legend: yellow = natural gas supply, red = district heating partially, black dots = oil heating, white areas = no information available

### 3.3. Wittstock/Dosse, ‘Röbeler Vorstadt’



Figure 9: City of Wittstock/Dosse, ‘Röbeler Vorstadt’, Source: City of Wittstock/Dosse

Wittstock/Dosse is a typical city of the State of Brandenburg that struggles with demographic challenges, e.g. with a loss of inhabitants. Northeast of the city centre of Wittstock/Dosse, the district ‘Röbeler Vorstadt’ emerged in the 1940s as a settlement for military officers. The typical prefabricated two-storey houses were supplemented in the period of the German Democratic Republic (GDR) with three- and four-storey houses. After 1990, the buildings were partially restored to varying degrees. Currently, the area lacks attractive housing with modern living space, attractive living environments and public spaces as well as energy efficiency. 900 inhabitants live in the 40 buildings of the municipal housing company with large open spaces. Energy supply is managed by gas and heat supply.

#### 3.3.1. *Targets of urban development*

With funds of the programme “Urban Restructuring in the Eastern States”, the aim is to preserve and develop a long-term attractive residential district for elderly residents as well as for young families by well-balanced rent prices and a good quality of housing space. As other districts of Wittstock/Dosse are affected by vacancies and deconstruction, ‘Röbeler Vorstadt’ will continue to provide required apartments for households of other parts of Wittstock/Dosse. Therefore, urban redevelopment goals are the refurbishment and modernisation of apartment buildings, including barrier-free access and new balconies, improvements of the public spaces, reorganisation of technical networks (water) and the modernisation of street lighting.

#### 3.3.2. *Objectives in terms of energy efficiency*

The energy refurbishment of largely homogeneous properties with low-income households is the primary goal in ‘Röbeler Vorstadt’. A central aim is the redesign of the heat supply as well as securing affordable heating costs in the long run. Therefore, the construction of a local heat supply system using the existing long-distance heat distribution network is planned. A new CHP plant will deliver heat and electricity to households via the local heat supply system. Another aim is the use of renewable energy via solar heat panels and heat pumps. Those heat supply utilities for the local heating network and seasonal storages will work coherently with the CHP plant, which will cover medium and peak loads. Concerning the refurbishment of residential buildings, low-cost measures with relatively high effects are favoured, followed by further energy-efficient measures like wall insulation if the measures are economically feasible.

### 3.3.3. Implementation management

The implementation of the measures is a comprehensive, interlinked project rather than a set of individual measures. The complex process of implementation combines funding by “Urban Restructuring in the Eastern States”, by the State of Brandenburg for social housing and by KfW regarding energy-related measures, integrated neighbourhood strategy for energy efficiency and implementation management. This combination of funding allows refurbishment of housing in a socially viable way.

The implementation management was already directly involved in the strategy development. Here it became clear that the activation of residents will be very difficult. For them, the technical way of reducing CO<sub>2</sub> emissions is of relatively low importance and the process of strategy development presenting structural solutions has not been able to awake any interest. Far more attention was given by tenants to the development of rents and of the quality of their living environment after the refurbishment.

In the process of implementation, a timeline structures the following steps, starting with the installation of the CHP plant, the re-organisation of the district heating supply system, the refurbishment of residential buildings and the improving of urban spaces in short-term. In the medium-term, additional buildings will be connected to the heating network. Finally, in the long-term after 2018, the district heating network will be converted into a low-temperature heating network.

Main stakeholders in the process are the Ministry of Infrastructure and Planning of the State of Brandenburg, the municipality administration of Wittstock/Dosse and the municipal housing company. Besides funding from KfW and the Federal Government, also EU funds are used for the project. It is part of an urban-rural cooperation consortium with other towns and municipalities of the region that receives ERDF funding. One specific measure of the urban-rural cooperation strategy funded by the ERDF will be the restructuring of the heat supply system in the ‘Röbeler Vorstadt’.



Figure 10: Vision of heat supply for the entire area with solar heat, Source: City of Wittstock/Dosse

Legend: green = CHP plant, red = seasonal storage, purple = renewable energy plant with biomass, yellow = solar heat, orange = energy port, blue = water port

## 4. Recommendations for Lithuania

Reflecting Germany's experiences in integrated and energy-efficient urban redevelopment by the "Urban Development Assistance Programmes" (*'Städtebauförderung'*) and by the KfW's programme 432 "Energy-Efficient Urban Redevelopment" (*'Energetische Stadtsanierung'*), several recommendations can be made with reference to the situation in Lithuania.

### 4.1. Defining a suitable neighbourhood

One of the first crucial issues for running a successful integrated energy-efficient urban refurbishment process is the delimitation and designating of a suitable neighbourhood. This should be done based on clear criteria. The first question is: What is the right size? There is no clear answer to this. But the experiences show that the neighbourhood should not be too big. In some cases, a neighbourhood can also just comprise a few buildings. But in case of smaller towns and villages, it can also be the whole territory. The examples also demonstrate the broad range of neighbourhoods addressed by the KfW programme in Germany ranging from 900 inhabitants in Wittstock/Dosse to 21.000 in Bielefeld-Sennestadt.

A second question is if there should be a concentration on any specific settlement or urban structure. Here the examples in Germany show that it more or less works in any kind of structure, but according to the different situations especially in terms of building types, ages and ownership structures, there are very diverse strategies and measures and also the tasks of the implementation management differ. Some criteria might be a rather manageable size, the access to other funding, the willingness for refurbishment measures by the owners, refurbishment measures for buildings and energy infrastructure that are possible in a cost-efficient way, as well as good conditions for adapting long-distance heating or realising decentralised energy supply networks.

For implementing the latter, it is also recommended to make a formal designation act for the neighbourhood by the municipality. For the "Urban Development Assistance Programmes" in Germany, the municipal council defines the respective neighbourhood by a local statute which provides a legally binding status and is needed as legal basis for funding for infrastructure, building and public space investments and for the tax exemption on private building refurbishment. However, the formal designation process should not be made too complicated with too many formal requirements.

### 4.2. Integrated Urban Development Strategies as conceptual basis for action

The most important basis for an integrated energy-efficient urban redevelopment process is a sound, realistic and implementation-oriented strategy. This strategy should, however, not be drafted only in a purely technical way by only some professionals, but in a joint cooperative and communicative development process integrating different departments of the municipality as well as a broad range of other relevant actors. Thus, the development of an integrated neighbourhood strategy for energy efficiency should comprise the following aspects:

- Participation of crucial stakeholders, e.g. by a special board: There could be one board involving the different concerned departments of the municipal administration and another board for external parties like representatives of public and private building owners, flat owner associations/condominium associations and building managers, neighbourhood associations, organisations of the local business community, energy providers and energy agencies/advisors, urban planning experts and financing institutions. The boards should meet on a regular basis to discuss and work on interim results of the strategy development, agree on jointly supported goals and on concrete measures.
- Start with a sound but not too sophisticated baseline analysis of the local situation: At the beginning, the most important features in terms of energy efficiency of buildings and energy supply infrastructure as well as the socioeconomic, ecologic and urbanistic situation need to be analysed and summarised in a baseline inventory of the urban area. This includes the analyses of building features, the building owners and other actors with their specific potentials for energy-efficient refurbishment measures. Although a sound basis is needed, the analysis should not be too sophisticated (e.g. no analysis of each building) but work with building types and try to refer to existing data on the socioeconomic situation.
- Based on the baseline analysis, the strategy development process should assess different direct and indirect energy efficiency investment measures suitable for reducing the energy consumption and the CO<sub>2</sub> emissions of the urban area. The assessment should include a broad range of possible measures to be realised by the different actors: the municipality itself as well as other public authorities, private building owners, households as well as businesses. The most cost-effective measures for the best climate effects should be selected for a concrete action plan by also addressing the interrelations between single measures, e.g. the energy-efficient refurbishment of buildings and the modernisation and adaptation of energy production and supply infrastructure. Moreover, the action plan should include a chronological synchronisation of different modernisation and maintenance cycles of buildings and of the energy supply infrastructure.
- Apply an integrated approach: Although there should be a clear focus on energy and energy-efficient refurbishment, the strategy should realise an integrated perspective and approach and address urbanistic, social, housing, demographic, mobility and environment aspects to combine them with energy-efficient modernisation. Therefore, one important goal is to interconnect a more sectoral energy and climate strategy with an IUDCs. Energy efficiency should be regarded as a cross-sectoral issue that is considered in all other spheres of activity: refurbishment of buildings, modernisation and adaptation of technical infrastructure (energy supply, sewage system, street lightening), climate-friendly mobility, healthy urban climate, attractive public spaces, cost-efficient and climate-friendly energy production and supply (with use of renewable energy) as well as energy savings in businesses.
- Clear orientation on implementation: Based on the analysis, the strategy needs to define concrete, practical and realistic energy-efficiency measures that are cost-efficient, socially acceptable and do not disrupt a valuable environment and architecture. Moreover, for these measures responsible public and private stakeholders need to be designated that are in the position to

implement them and thus have required finances and refinancing capacities – also in combination with available funding. In addition, a timeline for implementation should be defined. Therefore, it is advisable to already think about the implementation management from the beginning – and maybe start with the implementation management during the strategy development process already – and include the relevant implementation actors at an early stage in the strategy development process.

- Embedding neighbourhood strategies in an overall city development strategy: An energy-efficient redevelopment strategy for a specific urban area should be linked to and be embedded in an overall urban development strategy for the whole city.

The development process for the strategies takes time and considerable resources. Thus, a programme for supporting the strategy’s development should provide enough funding of at least 18 to 24 months for the strategy development process. The KfW programme 432 “Energy-Efficient Urban Redevelopment” funded only one year for the strategy development at the beginning – which was too short as experiences have shown.

### **4.3. Mobilising private owners and other actors for the energy-efficient refurbishment**

A crucial aspect for the success of an integrated energy-efficient refurbishment process is the mobilisation of the private building owners for refurbishment measures and for their contribution to a change of the energy supply system of the neighbourhood. This is especially difficult and takes a big effort in urban areas with very heterogeneous ownership structures like in Lithuania, where most of the private building stock are buildings comprising private owned single flats/condominiums. For those neighbourhoods, specific activation and mobilisation strategies are needed that are targeted to the specific needs, skills, economic capacities and socio-cultural background of the owners and inhabitants. For addressing the specific challenges of condominiums, the strategy should especially target and work with the building managers and use them as interface for mobilising the associations of building owners.

The activation strategy should combine information and communication tools for sensitising and informing a broader public with a direct personal contact that actively uses home visits or other low-threshold contact options with owners (*‘aufsuchende Beratung’*). There is a broad range of communication, information and advice tools to be used: information via articles and advertisements in the local media, information desks in the neighbourhood, local energy events, competitions or internet platforms. For directly addressing building owners and to provide specific information and advice on refurbishment possibilities, there is a need to directly contact and visit building owners. Especially specific free-of-cost-advice offers that show different refurbishment options and economic efficiency calculations can offer convincing arguments for energy-efficient refurbishment. When designing and implementing a communication, information and activation strategy, the different investment strategies of various building owners with their different financial, economic and socio-cultural backgrounds as well as their personal interests in energy-efficient refurbishment need to be considered.



In addition to information and advice offers, a reliable and continuous supervision of the overall refurbishment and modernisation processes can assist owners in a neutral, competent and realistic way. This will help building owners in taking the decision on an energy-efficient refurbishment. Doubts and uncertainties relating to technical questions and difficulties, the economic viability and amortisation can be addressed. The access to financing and funding can be eased and the management of the whole refurbishment process can be improved. Especially the specific challenges and obstacles of condominiums need to be addressed: the complicated decision process, low reserves or other financial means for maintenance, the weak qualification of building managers as well as information deficits of all actors. To achieve a successful investment process, a crucial prerequisite is a well-functioning “triangle of actors” of condominium owner associations, building managers and building planner/architects.

Experiences from Germany show that the administration of the municipality is often not the best actor to directly contact and advise the building owners as there is often rather mistrust and reluctance towards public authorities. Thus, the direct communication and contact should be rather done by a neutral and reliable external institution as intermediaries mandated by the municipality. It is very important that the local inhabitants trust those organisations. A good intermediary might be the building managers who know the neighbourhoods and can organise easily a direct contact to the building owners.

For all communication, information and advice activities, it is also very important to have a transparent strategy development and implementation process. Thus, the added value and advantages, but also challenges and obstacles of the energy-efficient neighbourhood refurbishment need to be communicated in an open and transparent way to the different actors, especially the building owners and the inhabitants in order to avoid mistrust and reservations and reach an active participation. It is also important to demonstrate that the advantages of an energy-efficient refurbishment process go beyond the single apartment or building and will contribute to a sustainable, cost-efficient and secure energy supply, a stable and attractive urban area and thus will also raise the dwelling and property values.

#### **4.4. Organise a functioning implementation management**

The experiences of managing urban redevelopment (*Stadtsanierung*) and urban restructuring (*Stadtumbau*) as well as of the implementation management of the KfW programme show that the realisation of urban redevelopment processes requires a designated medium- to long-term implementation management covering the following tasks:

- Continuous, neutral and reliable sensitisation, information and advice that addresses the owners in their normal living environment with their needs and potentials. This can be done by a contact point or a contact person in the neighbourhood or by direct visits providing information and advice on energy-efficient refurbishment measures as well as on funding and financing options.
- Supervision and companionship of all measures and processes relevant for urban refurbishment through all stages of the refurbishment from planning to realisation: Specialists can be assigned with the implementation management after they were introduced to the technical and financial issues.

- Act as an interface to important further stakeholders in the neighbourhood like energy suppliers, energy experts (e.g. energy agencies), city administration, financial institutions, craftsmen, construction engineers, building planners or architects etc. They should address, involve and interconnect these actors and direct them to specific training offers for energy-efficient refurbishment.
- Act as a guide for funding and financing for private building owners providing information and access to existing financing and funding schemes.

Due to these broad tasks and the complex knowledge in various fields, the implementation management can only be done by a management team that combines the different skills and competences of different professionals in urban planning, construction, building and energy technology, energy supply, information and communication as well as funding and financing. Thus, the best is to have an interdisciplinary network of different organisations involved like urban redevelopment agencies, energy agencies and urban planning and engineering offices.

Moreover, it takes time and resources to implement a stable management process and to really reach to tangible mobilisation. Especially contacting, addressing, convincing and mobilising owners is related to high efforts at the beginning of the implementation process which might decrease in later phases. For the “Urban Development Assistance Programmes” in Germany, the time periods for neighbourhood redevelopment are between minimum 5 and maximum 15 years. The KfW programme 432 “Energy-Efficient Urban Redevelopment” started with a funding period for implementation management of two years and maximum costs of 100.000 EUR, which has been extended to three years and 150.000 EUR in 2013 and to five years and 250.000 EUR in 2015. Referring to these experiences, the funding for the implementation management should be at least awarded for five years and allow for the financing of personnel costs for at least two full time positions plus expenditure for material, rents for a neighbourhood office etc. However, cycles for building maintenance and refurbishment as well as infrastructure modernisation go far beyond this period. Therefore, it should be foreseen to transfer the implementation management started with the specific programme into a long-term management that is organised and financed within the existing local structures and resources, also using other resources during the funding period.

#### **4.5. Direct and indirect access to investment funding and financing**

For motivating more municipalities to develop and implement, integrated neighbourhood strategies for energy efficiency, there should not be only funding for the strategy and implementation management expenses, but also direct investment funding linked to the strategies. With regard to Germany’s experiences in urban redevelopment and neighbourhood refurbishment, direct funding of investments defined by the IUDCs is one of the main advantages of the “Urban Development Assistance Programmes”. Otherwise, the KfW programme 432 “Energy-Efficient Urban Redevelopment” seems to be less attractive for municipalities, as there is only funding for the development of the strategy and the implementation management available but not for investments, e.g. in public building refurbishment or modernisation of the energy infrastructure. Thus, for municipalities, it is important to have a direct investment

funding linked to urban redevelopment programmes, especially for financing their own municipal activities and measures in the urban infrastructure.

Thus, the Lithuanian programme should include specific investment funding for financing especially those measures defined by the strategies for which insufficient or no other public funding is available. These can be investments in innovative and thus still very costly ways of low carbon energy supply infrastructures, investments in low carbon urban mobility, refurbishment of social and cultural infrastructure (schools, kindergartens, museums or community centres) as well as upgrading the living environment and green areas. According to the type of measure, the funding can be done by non-repayable loans or by loans with very good interest and payback conditions. For measures with a good return on investment (e.g. energy supply infrastructure) a loan might be more suitable (perhaps linked with a non-repayable part), whereas upgrading green areas and refurbishing social infrastructure might be better funded by a non-repayable grant.

However, it will not be possible to fund all the needed cost-intensive investments for an integrated energy-efficient refurbishment process by only one single programme. Thus, as the approach of the KfW programme shows, it is also very important to combine different sectoral funding schemes from national and EU funding as well as private financing. In Germany, there are good results in areas where different funding schemes are bundled, e.g.

- grants and increased tax depreciations for building and infrastructure investments by the “Urban Development Assistance Programmes”,
- low-interest loans and grants of KfW for the “CO<sub>2</sub> Building Refurbishment Programme” (*‘CO<sub>2</sub>-Gebäudesanierungsprogramm’*),
- KfW low-interest loans for social and municipal infrastructure,
- social housing assistance funding,
- ERDF grants for the regional operational programmes etc.

Thus, one important part of the integrated neighbourhood strategy for energy efficiency should already be to identify and denominate the different funding and financing possibilities and specify their potentials for the implementation of the different investment measures. Moreover, for the implementation management, one important task is to make these funding schemes and financing resources available for the implementation of the different measures.

To facilitate these tasks, it would be very helpful to set up a specific support structure for identifying and channelling the various available funding and financing schemes and assisting and advising the local actors developing and implementing the strategies in their access to funding and financing. This support structure can be organised in a ‘one-stop shop’ to give a comprehensive overview of existing national and EU funding ([ERDF](#), [ELENA](#), [EFSI](#)), to provide links to the responsible programme management institutions and to advise the municipalities and implementation managers in accessing funding and financing.

#### **4.6. Enable local authorities to be responsible for urban redevelopment processes**

The responsibility for the strategy preparation and the implementation process should be within a local public authority with adequate capacity and know-how. This has not to be necessarily a department of the local administration but can also be a public urban or neighbourhood development agency (if existing), a public energy company or a public building management company.

Especially in cases where the local administration lacks know-how and capacity to implement all the different tasks itself, it is recommended to use the assistance and advice of private external urban development consultants, service providers and experts. In many cases in Germany, the development of IUDCs and the realisation of investment and management measures are executed by external urban development or planning offices on behalf of the municipalities' administrations. Especially for the implementation management and for the direct communication and contact to building owners, experiences in Germany show, that a neutral interface can be more suitable, as there is often a certain reluctance and mistrust towards public administrations from the private side. The interface could be a consultant, a building management company or a neighbourhood management organisation.

There is a strong need for political support from the beginning of any integrated energy-efficient refurbishment process. Thus, the city council should at least be informed that an integrated energy strategy will be developed – and even better make a formal decision on it. The council should also be informed on the interim results and finally decide on the completed strategy and the defined measures to lay the formal basis for implementation.

The funding programme should not cover all costs of the strategy development and the management process and require a co-financing by the municipality. This is suitable to demonstrate the municipalities' commitment. In Germany, the normal co-financing is one third of the costs in case of the "Urban Development Assistance Programmes" and 35 per cent in the case of the KfW programme 432 "Energy-Efficient Urban Redevelopment". However, with reference to specific financial constraints in the municipalities' budgets, this co-financing can also be reduced. Thus, several states provide additional co-financing to facilitate the participation of municipalities in the KfW programme despite difficult budget situations. For Lithuania, on the one hand, a suitable co-financing rate should be determined, e.g. 20 per cent according to the ERDF co-financing rates for objective 1 areas. On the other hand, a lower co-financing rate could be accepted to enable municipalities to participate despite severe budget constraints. Moreover, co-financing from other public and private sources should be accepted as well as in-kind contributions by municipal personnel to reduce the direct financial expenditure of the municipalities. This should be organised in an easy and flexible way.

#### **4.7. Exchange, training and monitoring for improving programme implementation**

As energy-efficient redevelopment of urban areas is a new and quite complex approach, it requires specific skills, methods and instruments that need to be developed along with the implementation process. Thus, one important aspect is to foresee activities for exchange, learning and capacity building. Within the “Urban Development Assistance Programmes” and the KfW programme 432 “Energy-Efficient Urban Redevelopment”, the Federal Ministry and the state ministries are organising a broad range of activities for networking, exchange and learning for the local actors implementing the urban development and refurbishment processes, e.g. conferences, workshops and training seminars. Moreover, there is a continuous scientific monitoring of the national funding programmes for adapting the programme conditions and methods to detected needs, shortcomings and current developments. Also during the continuous monitoring process, a broad range of workshops and seminars is dedicated to the exchange with the different programme actors. For all those activities, the ministries get professional support by urban planning and refurbishment consultants.

Thus, a Lithuanian programme on integrated energy-efficient urban redevelopment could contain the following features:

- Install a network for exchange and learning between the different municipalities, implementation managers and national bodies participating in the programme. This will assist the programme actors on national and local levels to improve the implementation of the integrated energy-efficient refurbishment activities on the ground and the running of the national programme.
- Organise an exchange beyond the national level and including experiences and know-how from other EU member states. This can be done by participating in EU cooperation and exchange projects ([INTERREG](#), [URBACT](#), [Horizon 2020](#) etc.).
- Plan a continuous scientific monitoring and research for the programme implementation for identifying and spreading good examples on the one hand and for detecting needs for adopting the programme according to the first results and identified shortcomings in the implementation process.

Moreover, for developing a community of professionals with the needed skills in energy-efficient refurbishment, there is a need for specific advanced training activities. These should especially address urban development and refurbishment specialists and building managers of condominiums, but also energy consultants, architects, energy and construction engineers and craftsman. For securing a professional implementation of the energy-efficient refurbishment measures, the competences of these actors should be trained, so that they can manage the realisation and supervision of the energy-efficiency measures in a successful way. Especially, for building managers of condominiums it is important to get professional expert knowledge on energy-efficient refurbishment.

All exchange, networking and training activities could be organised by BETA as national authority responsible for the programme implementation. BETA could be assisted by a private service provider with knowledge on energy-efficient refurbishment of urban areas.

#### 4.8. How can measures start as soon as possible?

For starting a new energy-efficient urban redevelopment programme it is very important that first activities start in a rather short-time period and quite soon show first visible results. For a programme like the KfW programme 432 “Energy-Efficient Urban Redevelopment”, this is very challenging as informing and mobilising municipalities to use the funds for developing strategies and realising implementation management, to receive, assess and select applications and finally to set up and sign funding agreements is a time-consuming process which can easily take one year.

Therefore, it is recommended to start with a ‘pilot or fast-runner phase’ to get the programme running in several months and to prepare the standard application and granting process in parallel for a second phase at the end of a year. This was also done in the case of the KfW programme, for which about 70 strategy areas have been selected as pilots in cooperation with the states. Partially, those strategy areas are based on former pilot and research projects (*‘ExWost Energetische Stadterneuerung’*) as well as on a federal competition for energy concepts for larger housing areas. In the case of the urban-rural Competition of the State of Brandenburg selecting inter-municipal co-operations for granting EU structural funding, there was a ‘fast track’ application phase for those municipal consortia that were able to prepare applications in a very short period.

For a fast and successful start, it is also important to have first projects that can build on existing experiences, structures and preliminary work. Thus, it could be good to first apply the new programme in areas already active in integrated energy-efficient urban redevelopment from former activities. Those can use the new programme to finalise and complement already started energy concepts, to fund identified suitable and broadly accepted investments as well as to get an implementation management ready to work. Therefore, the three pilot areas of the Advisory Assistance Programme’s (AAP) project “Energy-efficient redevelopment of urban areas in Lithuania” can be selected as pilot areas for starting implementation measures of the new programme. Moreover, other municipalities and respective areas in which there is already ongoing work in this field should be detected and informed about the new programme by BETA and be motivated for participation. After the political agreement on the programme’s structures and funding conditions, it might be very helpful to gather those interested and suitable municipalities at a very early stage in a meeting to explain them the new programme, the activities in the three AAP project pilot areas and the modalities to participate in the first ‘fast track/pilot’ phase.

For a successful start of the ‘full’/standard programme, a key event should be planned and conducted for presenting and explaining the programme, its contents and modalities to a broader public of stakeholders in municipal and urban development/energy refurbishment and for announcing the starting date for the applications in due time.