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Energetic renewal in large housing estates

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Abstract

Facing global challenges of climate change as well as augmenting energy prices, energy efficiency and decrease of the emission of greenhouse gases are central political aims of the Federal government of Germany. In order to foster on-going renewal processes and to support owners of large housing estates the Federal Ministry of Transport, Building and Urban Affairs invited to a competition “Energetic renewal in large housing estates” in 2009 which is the central topic of the paper. The competition aimed at housing associations, private owners or co-operations of different partners with a housing stock of 500 apartments at least. The participants had to show how they meet their actual challenges by managing energetic rehabilitation, neighbourhood improvement and social aspects in an economically reasonable way. The competition addressed to owners of large housing estates in order to initiate the energetic redevelopment of urban quarters as a whole. After an outline of the national context, the paper focuses on the aim and approach of the competition and highlights that the German-wide competition gave new impulses: For the first time, integrated concepts for the redevelopment of larger districts were drawn by private companies or associations, not any public authority. The paper presents an overview about the course of the competition and its participants and shows how the housing companies realised the integrated approach towards district development with focus on energy efficiency.

1. Introduction

Facing global challenges of climate change as well as augmenting energy prices, energy efficiency and decrease of the emission of greenhouse gases are central political aims of the Federal government of Germany. In total, housing accounts for 40% of all energy use in Germany. Of 39 million dwellings (in 19 million buildings), 75% were constructed before 1979 and show an inadequate energetic quality. In order to foster on-going renewal processes and to support owners of large housing estates by the compilation of integrated concepts, the Federal Ministry of Transport, Building and Urban Affairs invited to a competition “Energetic renewal in large housing estates based on integrated concepts for urban districts” in January 2009.

The purpose of the paper is to show how this German-wide competition gave new impulses to the housing industry. In the following, we begin with the national context (section 2) that discusses the current situation and challenges facing the housing markets in Germany and the strategies of the Federal government of Germany for more energy efficiency in the housing sector. After some notes to the objectives and the approach of the competition, some comments on large housing estate and the participants of the competition (section 3), the paper presents empirical insides of the competition (section 4) which then leads to the final conclusions and an outlook to the upcoming evaluation and monitoring of the energetic renewal of urban neighbourhoods (section 5).

2. The context of the German housing market

The housing market is influenced by several parameters that co-evolve in an interdependent way. Because the focus of our paper is the energy efficient renewal in large scale estates we only like to draft the current demographic and market situation in Germany and the efforts/measures of the Federal government of Germany to improve the energy efficiency of buildings. Further influencing aspects on the housing market however are not discussed in any detail.

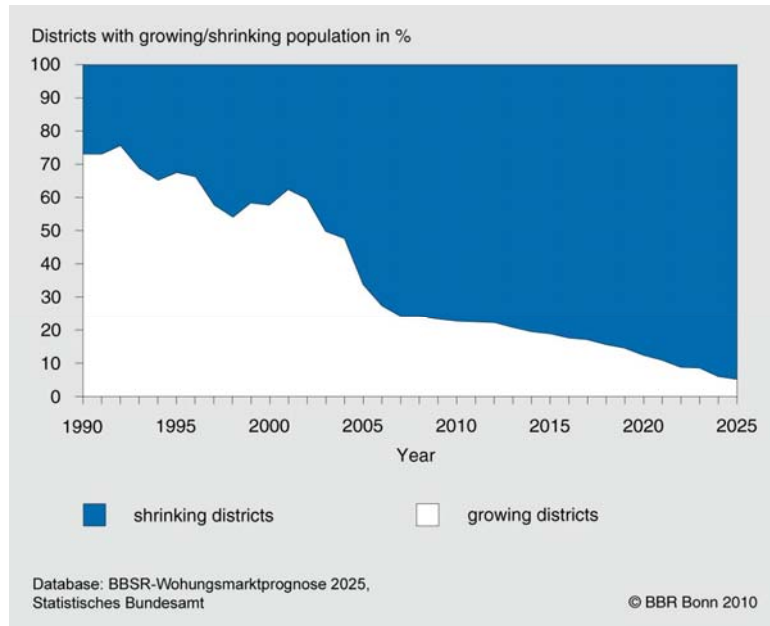
2.1 Demographic situation and trends

In this section we examine the key demographic situation and trends influencing the housing markets in Germany and thus focus on population and household numbers. According to various scientific papers a growing number of German districts and district-free cities will experience a decline in population and - more important - household numbers till 2025 (BBSR 2009). Furthermore, the composition of population is changing: there is a change of the national structure as well as the structure of age distribution of the population. Therewith the population in Germany becomes less, older and more international.

The demographic change will continue. It is expected that from 2010 to 2025, the population will decrease from 81.5 to 77.9 million in 2025. Dynamics of growth, ageing and internationalization show region-specific particularities in this context. The number of districts with a declining population continues to increase. Over the next 15 years the number of German districts with declining population sizes will increase rapidly (see figure 1).

Between 2010 and 2025 almost 85% of the existing 440 districts will experience a decline in population. Nevertheless there are still districts with population growth until 2025. The previous East-West differential is weakening. Decline will not be restricted to the new federal states and more peripheral regions, but will occur across the whole of the country. Ageing is proceeding particularly fast in the new federal states, especially in rural regions. The demographic change occurs in an astonishing spatial variety. This makes it more difficult to develop strategies and concepts to meet the undesirable impacts of population development appropriately.

Figure 1: Share of districts with growing/shrinking population in Germany

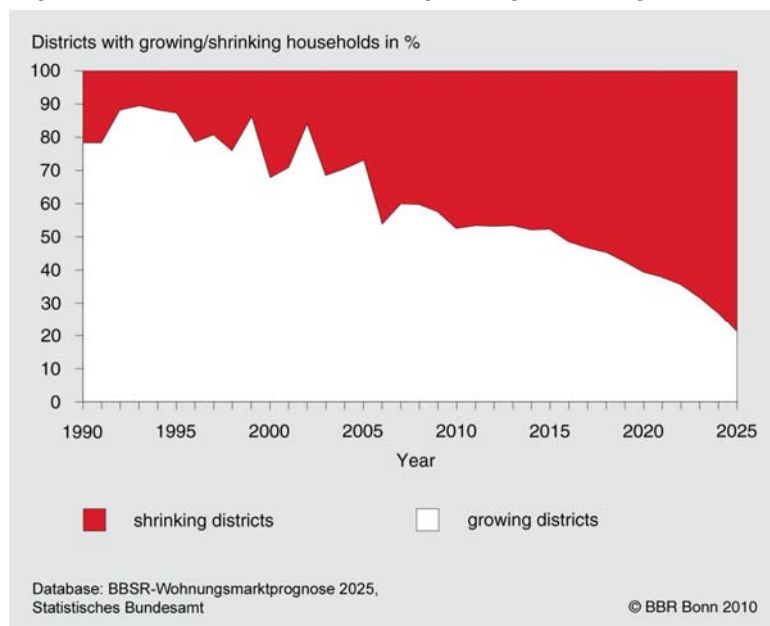


Source: BBSR 2010

Development of households

Of prime importance for the housing markets are the trends in the number and composition of households. Although the private households are closely associated with population dynamics, they show a greater dynamic force of development, which is determined by trends towards smaller households and the diversification into different household types. The total number of private households will decrease slightly (-0.1%) until the year 2025.

Figure 2: Share of districts with growing/shrinking household numbers in Germany

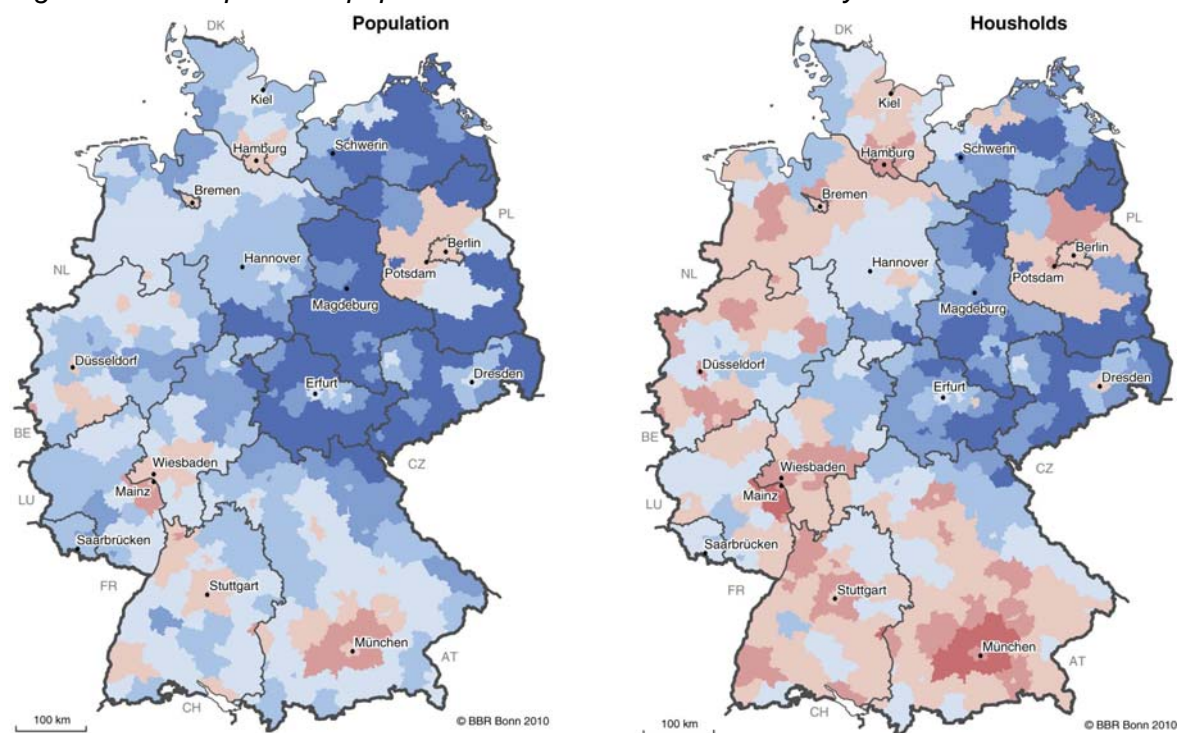


Source: BBSR 2010

The spatial shifts are also a reflection of population development with its coexistence of growing and declining regions, but they show some special features that stem particularly from changes in household size structures. In contrast to the development of the population the majority of districts will show growing household numbers until 2025 (243 from 440 districts), but also with a diminishing trend (see figure 2). An increasing number of districts will experience a considerable decline in both population and household numbers.

Germany is a country that is being and will further be confronted with growing and shrinking cities and regions at the same time. The maps clearly prove that decline and growth are distributed unequally in Germany (see figure 3).

Figure 3: Development of population and households in Germany



Development

Development from 2010 to 2025 in %



Source: BBSR 2010

The declining districts are concentrated in the East, the growing districts in the South. The few growth districts in the new federal states are found mainly in the area around Berlin as well as in the catchment areas of some large cities (e.g. Dresden, Rostock).

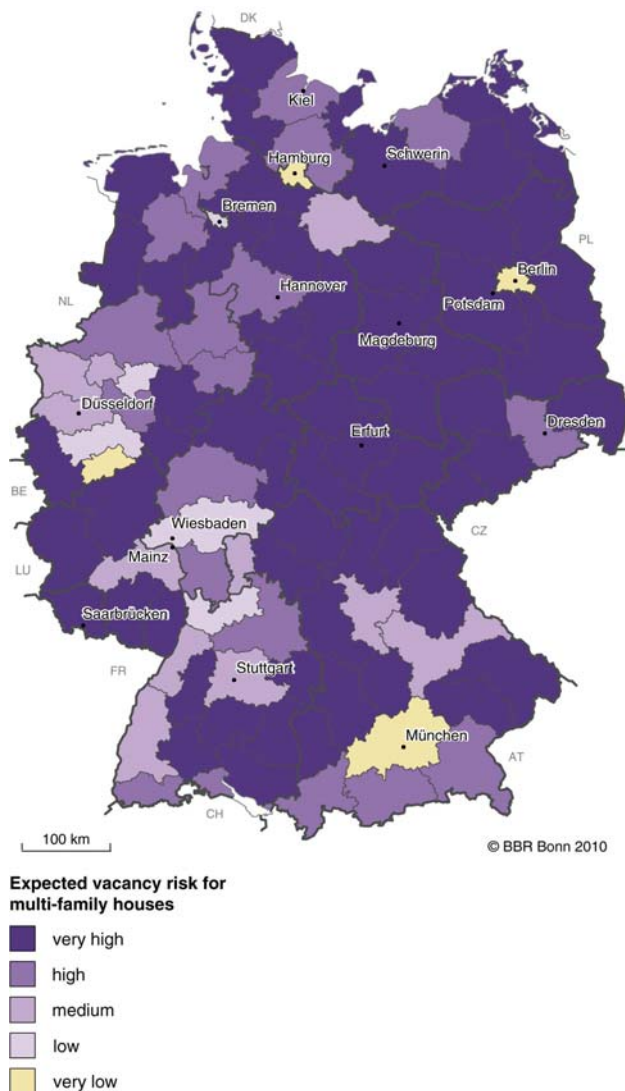
Decline is no longer a singular, local problem in the Eastern part of Germany. In the near future a growing number of districts in the old federal state like the Ruhr area, the Saarland, Upper Franconia and Lower Saxony, will also experience a serious decline in population and

household numbers. This brings up the question what consequences demographic decline can possibly have for the housing markets in Germany?

Risk of vacancies

Falling household numbers will present opportunities as well as threats for the housing markets. In districts currently suffering from serious housing shortages, a shrinking number of households will relieve pressure on the tight housing market and lower house prices. This makes it easier for housing consumers to buy the properties of their choice. However, in regions with housing surpluses a shrinking number of households may push up housing vacancy rates and may exacerbate segregation of lower income groups, leading to a reduction in the quality of the living environment. These negative consequences will be concentrated in specific districts or neighbourhoods.

Figure 4: Future vacancy risk for multi-family houses until 2025



Source: Scharmanski/Waltersbacher 2010

The uneven development of population, households and economic activity across Germany poses large risks in the regions that are losing population and households (see figure 4). Risks of vacancies will be especially high for multi-family rental dwellings, and especially in East Germany and the old industrial areas in West Germany (Waltersbacher/Scharmanski 2010). Without further demolition of existing housing stock the vacancies in the new federal states are expected to increase considerably up to 30 thousand units per year. Only in one fifth of the regions in Germany will the risks of vacancies be medium to low.

2.2 Policy framework for an energy efficient housing stock

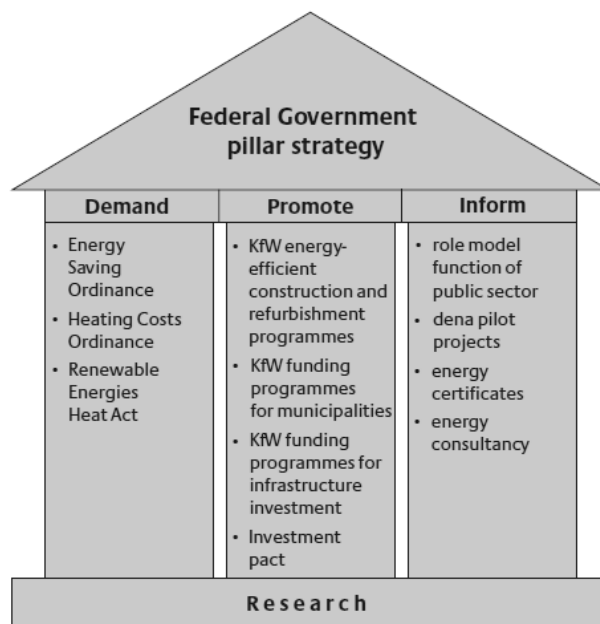
The Member States of the European Union agreed in March 2007 to reduce their CO₂ emissions by at least 20% by 2020 compared with a 1990 baseline, and at the same time to increase the share of renewable energy in their overall energy mix to 20%. Additionally, they agreed to reduce their energy consumption by 20% by 2020. The German Government has adopted much more ambitious targets, for example reducing greenhouse gas emissions by up to 40% by 2020.

In Germany, as in other industrialized countries in the world, the building sector accounts for about 40% of final energy consumption, thereof 85% for heating and warm water. This building stock is responsible for an emission of 113 million tonnes of CO₂ per year and thus has an enormous potential for energy savings.

In order to pursue the targets set on national and European level, the German Government adopted the Integrated Energy and Climate Programme in 2007 which defines measures to increase energy efficiency, energy conservation and the use of renewable energy. These measures include three essential specifications for the buildings sector (see figure 5):

- The energy efficiency requirements to be met by buildings will be tightened in a first step by 30% in 2009 taking economic efficiency into account. The implementation is made mandatory in the German Energy Saving Ordinance (the German national building code) since October 2009. It is envisaged to tighten efficiency standards again in 2012. The regulations are valid for new buildings and for the comprehensive refurbishment of existing buildings (since 2009). The current public discussion is controversial: while investments in new dwellings might increase because of the new requirements, modernisation of the housing stock might be postponed as long as investment costs are not covered by market rents.
- When constructing a new building, the use of renewable energy for heat consumption has become mandatory in 2009. The goal is to increase the use of renewable energies to 14% by 2020. Depending on the energy used, the rate is between 15% and 50%.
- The promotional programmes for energy efficient residential buildings to reduce CO₂ emissions from buildings, which have been very successful so far, will be continued. From 2006 to 2009 the federal fund already provided an amount of at least 7.35 billion €.

Figure 5: Federal Government pillar strategy



Furthermore, the Energy Performance Certificate for Buildings has become obligatory in Germany for newly constructed as well as existing buildings. The certificate provides buyers and tenants with information on the energy performance of the building and includes recommendations on how to improve its energy efficiency. Thus the European energy performance of buildings directive has been completely implemented in Germany.

Within the context of the programme to reduce CO₂ emissions of buildings, the German government encourages house owners to improve the energy efficiency of newly built and existing buildings by providing loans and direct grants. The programme has now been running for several years and is managed by the national non-profit public banking group Kreditanstalt für Wiederaufbau KfW (Bank for Reconstruction). The investor may choose between either a loan with lower-than-market interest or a grant. With this programme, the energy efficiency of more than 2 billion dwellings have been improved since 2006, and about 310,000 new buildings have been constructed with a high degree of energy efficiency. In total, about 4.5 million tonnes of CO₂ have been or will be saved (over a 30 years period). In addition to energy conservation, the programme eases the burden on households by reducing heating costs and providing better living comfort. The programme helps to increase the refurbishment quota of the building stock from currently 2.2% to 3% to additionally reduce the climate change impacts.

3. The national competition on energy efficiency in large housing estates

In order to foster on-going renewal processes and to support owners of large housing estates by the compilation of integrated concepts, the Federal Ministry of Transport, Building and Urban Affairs invited to a competition “Energetic renewal in large housing estates based on integrated concepts for urban districts” in January 2009 which is the central topic of the paper. The competition aimed at housing associations, private owners or co-operations of different partners with a housing stock of 500 units at least. The great response to the competition shows that the housing companies appreciated the encouraged holistic approach which was concretised in the particular sections in more detail. Finally, in June 2009 the jury named 34 awardees as well as 19 concepts with recommendation to realisation that were presented to the public by the Federal Minister.

In the following by discussing some characteristics of large housing estates we first explain why the focus of the competition is on large housing estates. After that, we illustrate the objectives and the approach of the competition in some more detail.

3.1 Why is the focus on large housing estates?

Since the mid 90s, however, more and more cities in Germany have shifted the focus of their urban policies and have discovered the post-Second World War housing stocks, in particular the large housing estates, as important target areas (see Dekker/Van Kempen 2004). Thus the competition also focuses on large housing estates built in the second half of the 20th century. For the competition large housing estates are defined as groups of at least 500 housing units that are recognized as distinct and discrete geographical areas planned by the state or with state support. In most cases these areas are nowadays considered to be of monotonous urban layout (e.g. prefabricated dwellings). The physical layout is mainly the same: large low- or high-rise multi-family dwellings where large green public spaces predominate. The housing stocks are predominantly planned by the state or with state support and property of housing cooperatives and municipal housing companies.

Due to the different housing policies of the two states and within the federal system, the large housing estates are distributed unequally in Germany. The post WWII large housing estates of the 50s to the 80s provide 2.4 million dwellings (7.5% of the total housing stock in Germany). In the old federal states only every 60th household is living in this type of housing stock whereas in the new federal states every 4th resident is housed there. Anyway the focus of the competition is on large housing estates because they are home to more than 5 million inhabitants in Germany.

In the West, even though the regional proportion is considerably higher in some old industrial areas and at the periphery of some of the major cities, the large housing estates are only one small part of overall housing and are not predominant factor of the urban socio-spatial environment. Compared to the West many large cities and also small towns in the new federal states have a proportion of large estates of over 50% and some are virtually only existent through this segment of the built environment. This dominant role applies also to the

participants of the competition. In some cases their housing stock covers 20% of the whole stock of the city. From this follows that these housing companies possess options for governance regarding the local housing markets and therefore they bear high responsibility for the urban development. Even though their quantitative impact varies from city to city the large housing estates clearly serve an important function for low- and middle-income households, in this respect they provide adequate and affordable housing opportunities, allowing also low-income households to have a relatively spacious home with a reasonable quality.

Unfortunately a long list of problems is rather common for many of these large housing estates. Many dwellings show clear signs of physical decay. E.g. maintenance is problematic for many of these estates, especially for estates where the building materials used are of low quality. Sustainable development of these residential areas has become particularly important to reduce the downgrading processes in some of these estates. Because of the disproportionate increase of additional costs in non-renovated stocks there are large energy efficiency potentials in this market segment.

3.2 Objectives and approach of the competition

The competition “Energetic renewal in large housing estates based on integrated concepts for urban districts” had the following objectives:

- to increase the energy-efficiency of large housing estates
- to integrate further aims concerning urban, social, economic and managerial aspects of the rehabilitation
- to shift the focus from the single building to the housing district
- to upgrade and to stabilize these housing districts
- to integrate various stakeholders (housing companies, local authorities, local administration, energy supplier, tenants etc.)
- to support the knowledge transfer between housing companies, local authorities etc.
- to stimulate the players of the housing industry to create integrated concepts on their own (bottom-up)
- to consider whether and how national policy could contribute to more effective responses to problems associated with these estates
- to set out best practices for future sustainable development

The core objective of the competition is not just to increase the energy-efficiency of large housing estates but also to integrate further aims concerning urban, social, economic and managerial aspects of the rehabilitation (see figure 6).

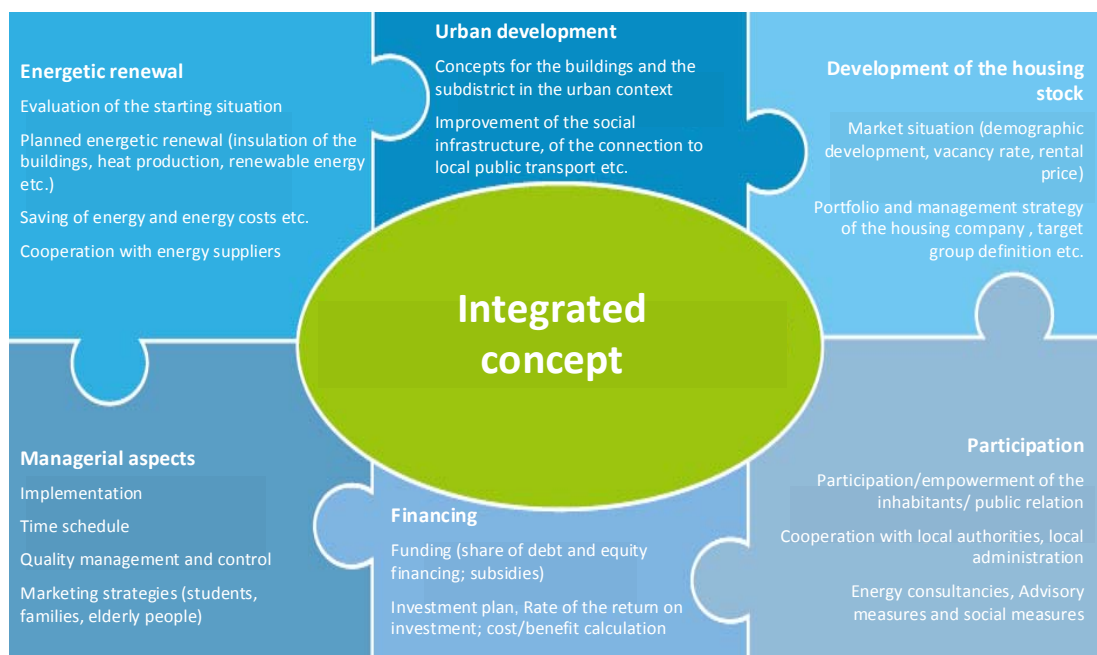
The sub concept Energetic renewal includes amongst other things an evaluation of the starting energetic situation of the housing stock and the planned energetic energy-related

measures for the buildings (e.g. insulation of the buildings, window replacement, new heating system, individual consumption billing). Moreover, the housing companies should illustrate the savings of energy and energy costs due to the energetic renewal. Additional strategies concerning the cooperation with the central heating/energy suppliers should be presented.

The sub concept Urban development targets the integration of existing urban development concepts (e.g. realized within the scope of the “Social City programme” or the programme “Urban restructuring in the new or old federal states”) into the energetic renewal of the quarter. The urban development is particularly focused on the following key issues: create socially stable urban neighbourhoods, redevelop infrastructure to meet the needs of older people, strengthen cities as centres of business, optimize the connection to local public transport and improve interaction between local authority planning and private investors.

In addition to the energy-related activities the housing companies should present further building measures that will be performed such as the modernization of bathrooms, changes in floor plans, low barrier redesign for elderly tenants. The Development of the housing stock includes the development of a long-term portfolio and management strategy for the large housing estates that consider the future target groups or market situation (demographic development, vacancy rate, rental price).

Figure 6: The integrated approach of the competition



Source: Walter/Scharmanski/Neußer 2010

The participants should involve the tenants throughout the modernization process. Participation projects could offer venues for involvement like tenant councils as well as a broad range of counselling and support services. The sub concept should in particular stress the energy-related consultancies and advisory measures because technical measures alone will not suffice to reach the energy efficiency targets. A change in the tenants' behaviour is

also required. Furthermore, public relation concepts and planned networking with local authorities, local administration should be demonstrated in the sub concept.

The sub concept Financing addresses the funding of the modernization measures. This includes information about the share of debt and equity financing and the application of subsidies. To assess the profitability of the modernization measures a complete financing/investment plan, the rate of the return on investment, the debt service expenses and a cost/benefit calculation etc. should be integrated into the concept. At the same time the concept should show the effects on rents. Do the reduced operating costs create a financial scope for increasing the basic rent without increasing the overall rent for the tenants?

Besides the time schedule for the modernization process the Managerial aspects refer to the quality control and monitoring of the project. The modernization measures often aim at attracting new target groups like students, families or elderly people to the large housing estates. The sub concept should therefore show the marketing strategies of the housing companies (image campaign shows etc.).

The submitted concepts had to integrate concepts as well as action plans concerning energy efficiency, district development, housing, participation of inhabitants, financing and managerial aspects. Thus, the participants had to show how they meet their actual challenges by managing redevelopment measures, neighbourhood improvement and social aspects in an economically reasonable way.

Whereas the CO₂ Reduction Programme released by the promotional and development bank KfW was mainly accessed by private owners (of small-scale dwellings) so far, the competition explicitly addressed to owners of large housing estates in order to initiate the energetic redevelopment of urban quarters as a whole. The German-wide competition had also the aim to stimulate the players of the housing industry to create integrated concepts on their own. For the first time, integrated concepts for the redevelopment of larger districts should be drawn by private companies or associations, not any public authority.

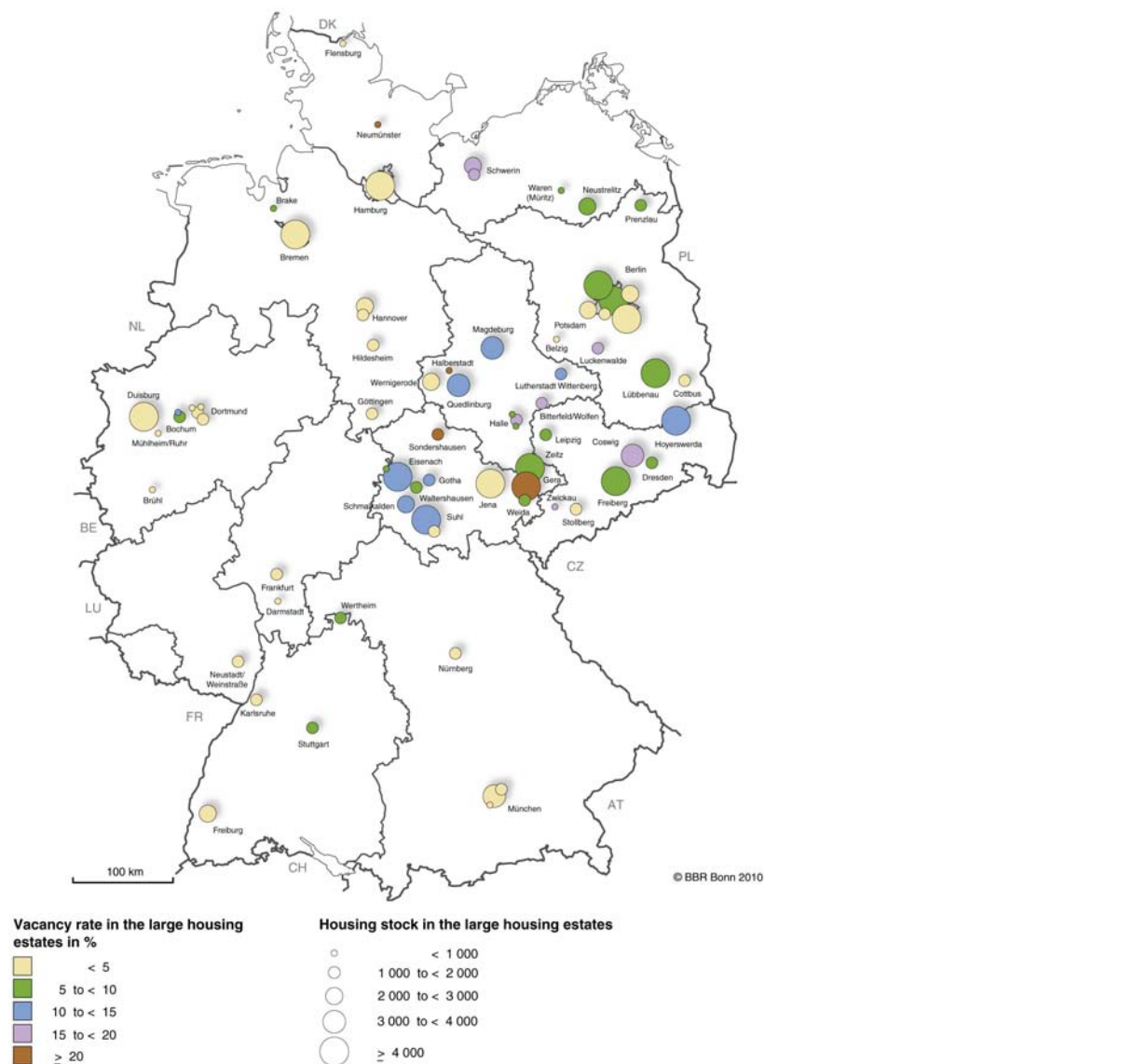
4. Empirical insides

The purpose of this section is to give a short overview of the participants of the competition and their large housing estates. Demonstrating case studies, the section presents then an overview about the course of the competition and shows how the housing companies realised the integrated approach towards district development with focus on energy efficiency.

4.1 Participants and areas of the competition

All in all 68 housing companies and project groups submitted 76 concepts to the competition. The competition covers large housing estates in 59 cities. Figure 7 shows the spatial distribution of the cities in which the estates are located.

Figure 7: Participants of the competition – housing stock and vacancy rate

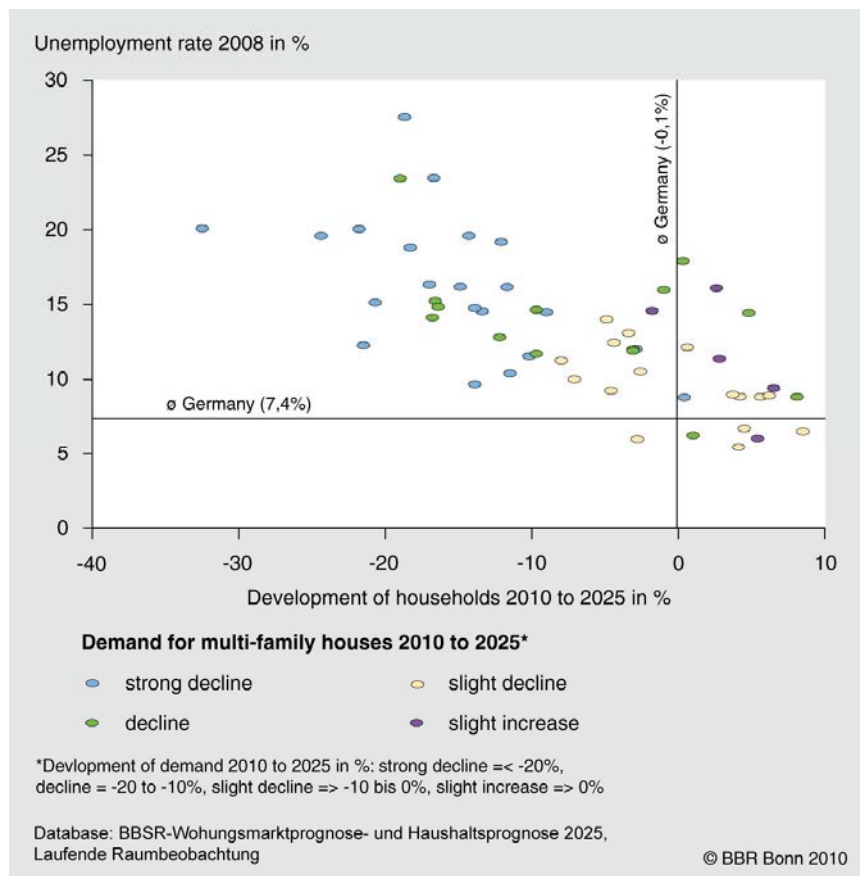


Source: Walter/Scharmanski/Neußner 2010

The map shows that the size of the estates ranges from about 500 units (e.g. Halberstadt) to more than 10,000 (such as Maerkisches Viertel in Berlin). The map also shows the high vacancy rates of the involved housing estates of 5 to over 20% in the new federal states. At present, vacancies still play a smaller role in the large housing estates in the western parts of Germany. However, the demographic development has led to the emergence of about 10% vacancies in certain western former industrialised regions like Bochum. In the long run vacancies will also be a widespread regional feature in parts of the West, contrasted by a high market pressure in the South.

Figure 8 reflects the combination of problems that have been identified in the selected large housing estates. The unemployment rates are above national average and in some cities they are becoming increasingly associated with social exclusion. Another major factor of the estates becoming problematic is the loss of quantitative demand due to a sharp decline in population and households. The shrinking number of households may reduce the demand for apartments and push up housing vacancy rates.

Figure 8: Participants of the competition – problematic market structures



Source: Walter/Scharmanski/Neußer 2010

4.2 Case studies

By presenting examples from the reference cities of the competition the section will show different managerial approaches of the housing companies that were involved into the competition.

Berlin – Maerkisches Viertel

The large housing estate of Maerkisches Viertel in the Berlin district of Reinickendorf is situated towards the north-western periphery of former West-Berlin. It is an urban infill in a predominately suburban polycentric district. GESOBAU entered the competition with the modernisation concept for Berlin's Maerkisches Viertel. The submitted concept was awarded the Gold prize by the jury.

Currently the complete modernization of the large housing estate Maerkisches Viertel is being presented in the Chinese pavilion at the Expo Shanghai 2010 as an example for ecological urban renewal as well as enormous climate protection effects and the future for large housing estates as resource-saving forms of living with low space utilisation.

Maerkisches Viertel was built in the early 60s. Instead of the loose, row house construction of the Fifties, the planners aimed for an urban structure with sculptured high-rise formations that nonetheless should offer a high quality of life (modern baths and kitchens, district heating, recessed balconies etc.) with lots of green space. Today the large housing estate is confronted with new challenges. The apartment buildings have aged and hence in no way comply with today's energy efficiency standards. Moreover the changes in society, especially aging and growing social heterogeneity among the population demand adequate responses.

Figure 9 and 10: Renovation process and renovated houses in Maerkisches Viertel



Source: GESOBAU

The municipal GESOBAU company, owner of more than 15,000 residential units in Maerkisches Viertel and thus bearing decisive responsibility for the development of the entire quarter, adopted a comprehensive modernization plan. As of the end of 2009 some 2,500 apartments were finished. 3,000 additional apartments will be under construction in 2010. Successive total modernization of the entire residential development complex will be under way until projected completion in 2015, at a cost of some € 440 million. This expense is set-off by savings in maintenance costs as well as additional income through higher rents and lower vacancy rates. The basic rent increases on account of the modernisation allocation. However the total rent burden for the current tenants only increases slightly because the currently enormous operation costs of 3.53 € per sqm are assumed to decrease to approx. 2.70 per sqm. A nearly stable rent level is also decisive for the acceptance and success of the overall measures since many of the current residents can not pay higher rents.

GESOBAU employs energy-conservation modernisation as a means to create a residential quarter sustainable for the future in every aspect: This means satisfying high ecological requirements, offering pleasant housing to people of various origins and living conditions, and thus demonstrating that large housing estates also have a sustainable future. At the same time the housing company produces a realistic, economically optimal solution. Here the premise is always to find a balance between social policy, ecological and economic requirements.

As in many post-war housing developments the energy balance of apartments in Maerkisches Viertel is poor. By means of the energy-conservation modernisation measures in Maerkisches Viertel, the housing company will reduce the CO₂ emissions by more than half: from current emissions of 40,000 tons annually to only 17,000 tons annually after the modernisation is completed. Additional climate protection effects extend from its own efforts through GESOBAU cooperation for the long-term heat supply to the large housing estate with the central heating supplier for Maerkisches Viertel, a Vattenfall Europe subsidiary.

Vattenfall is modifying the district heating plant for Maerkisches Viertel to make it a biomass combined heat-power plant, based on power-heat generation technology. The reduced energy requirements after modernisation plus installation of regenerative energy at the central heat supplier assure that Maerkisches Viertel will be the largest low-energy large residential development in Germany with a CO₂-neutral energy balance.

Waren - West

Waren a.d. Mueritz is a small town in Mecklenburg (Northern Germany) with 21,000 inhabitants facing the typical problems of the remote areas in the new Bundeslaender: the population is shrinking and ageing. Though, Waren gains in-movers from the surrounding rural areas due to the lack of infrastructure as well as from the old Bundeslaender – people who once had to move because they did not find job perspectives in Waren and now come back to spend their retirement in their home place. Waren is attractive not only to tourists: it is the centre of a region dominated by huge lakes and riverside and is about one hours' drive away from the Baltic Sea coast.

One of the important housing companies in Waren is WOGEGA Wohnungsbaugesellschaft Waren mbH. It owns housing stocks in all parts of the city and all market segments, including large housing estates but also old buildings under historical preservation order. The strategy of the company is to renovate its stock step-by-step: each year, another project is initiated. This allows the company to get the necessary funding as well as to learn from its projects and to implement new knowledge into new projects.

Currently, WOGEGA plans to modernize one huge housing block in the quarter Waren-West. Waren-West is a typical East German housing quarter that was built during the 60s and 70s. Most of the 5,500 inhabitants of this quarter first moved in after the houses were built, so the quarter is facing an immense generation change due to the average age of the tenants. Parts of the quarter are already renovated to a good energetic standard and living comfort, but some objects are still remaining more or less non-renovated, such as the one in Carl-Moltmann-Straße.

Figure 11 and 12: Carl-Moltmann-Straße in Waren



Source: WOGEGA

The company's strategy in Waren-West is to modernize the whole building stock and to create different standards for different demands regarding price and comfort. Target groups are on the one hand elderly people that represent the majority of the tenants at this moment as well as "new" groups, most notably families.

The house Carl-Moltmann-Straße which will be modernized next is five floors high and stretches about 200 meters (10 staircases) along one important road leading through the quarter. Thus, this one house is of importance to the whole quarter as regards urban development. Starting the refurbishment in 2011, the company will first tear one staircase down so that this huge building will become two houses. Furthermore, some flats will be removed, in result the whole building will be terraced by different heights of the roof tops. In doing so, the company will remove 43 flats and this way is anticipating expected vacancies in future time. Furthermore, the monotonous appearance of the whole quarter will become more attractive, floor plans of the flats may be adjusted individually. Energetic renewal

includes insulation of the building, the complete renewal of the heating system as well as the use of solar energy for warm water.

The rents were calculated also with view to the tenants that are dependant on social welfare which sets a framework for the refinancing of the refurbishment process. Whereas the rents will rise for new tenants, the remaining tenants should finally not pay more rent (including heating costs) than before. Only the construction of balconies will add to the rental fee which is expected to rise about 0.50 to 0.60 Euro per sqm. Financing of the whole refurbishment is mainly realized by using own capital, whereas about 30% of all costs are financed by programs offered by the Federal State.

During the whole refurbishment process, tenants will stay in their flats. In order to offer them a retreat during the day, the WOWEGA aims to build up a neighbourhood centre which will later on be used by young people, active associations etc. WOWEGA itself will manage this centre.

The case study of Waren shows how a smaller housing company acting in a tenants' market may refurbish its housing stock not only with view to energetic standards. The energetic renewal is embedded in a holistic strategy for the whole quarter; different target groups are identified and served and financial scope calculated.

5. Results and Outlook

Large housing estates represent an important segment of the German housing market offering a differentiated supply for all population and income groups. Often, these quarters are facing urban and social problems and the challenge of integrating different migrant groups. The structural and energetic refurbishment may contribute to the stabilisation of large housing estates.

In the New Laender, the competition could give fresh impetus following the program "Urban Reconstruction in East Germany". In the Old Laender, either already started concepts were further developed and completed or the competition could give impetus for new integrated approaches.

The interest of mainly public housing companies and associations in the competition shows that addressing private owners with activities of public interest remains a challenge and would probably need stronger incentives as well.

The holistic approach of the competition aimed at encouraging co-operation between the involved stakeholders: politics, housing and real estate companies as well as tenants. The impulse of better networking was strengthened by all participants and was very much appreciated.

One aspect of central relevance to all housing companies and associations is the economic efficiency of the refurbishment process. Yet, various market barriers inhibit energy efficiency improvements in existing buildings and result in energy savings that are significantly lower than potentials. Although energy-efficient technologies make sense on a life-cycle cost standpoint, their higher initial costs often represent an insurmountable barrier for customers. Furthermore, the so-called user-investor-dilemma describes that savings realized by energetic refurbishment are awarded to the tenant while the landlord bears the investment costs for the refurbishment and may not allocate all of these costs to the tenants (because of the tax law). Moreover, depending on the market situation of each participant of the competition, there is often low potential for rising rents.

Since the German Energy Saving Ordinance commits landlords to certain energetic standards when renovating their stock, the energetic renewal has to become one strategy in a holistic, integrated approach on further developing an owner's housing substance and avoiding potential vacancies: Due to rising energy costs, the operating costs of an apartment are perceived as "second rent". Reducing energy consumption ensures affordable housing for all income groups, as highlighted at present by the actual economic crisis.

The competition gave a first impetus. The submitted concepts will be further worked out and implemented in upcoming years. In order to accompany this process and to gain knowledge from the companies' experiences, two research projects were started this year. One is an evaluation of the implementation of the concepts based on a panel inquiry, interviews and questioning of inhabitants. This project will answer to the question what effects the implemented measures have on energy efficiency of the quarter. Financing and re-financing

as well as effects on the tenants' rents are discussed. Furthermore, barriers to energetic renewal should be identified. The second project focuses on eight "model projects" in order to identify exemplary ways of realisation of integrated renewal strategies. Interviews and regular workshops promote an intense information exchange between the model groups and allow peer group learning.

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