



Paths to Sustainable Land Management – Topics and Projects in the REFINA Research Programme

**Research for the Reduction of Land Consumption
and for Sustainable Land Management**



**Federal Ministry
of Education
and Research**

This brochure is published as part of the “Research Support for the Programme on Research for the Reduction of Land Consumption and for Sustainable Land Management (REFINA)” of the Federal Ministry of Education and Research (BMBF) (reference no. 00330795). The author is responsible for the content of the publication.

Published by

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Design and typesetting

Studio Prokopy, Werbeagentur und Fotostudio, Berlin

Printing and bookbinding

Spree Druck Berlin GmbH, Berlin

Photo Credits

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1

Saving Greenfield Sites and Intelligent Land Use – an Important Contribution to Sustainability



Why land use is an important topic

In spite of a slight reduction, greenfield development continues in Germany. Every day, about 100 hectares of valuable greenfield sites are converted into housing and traffic areas – this is equivalent to 125 football pitches.

In such a densely populated country as Germany, this land consumption does not only endanger the biodiversity but in the long run also the quality of life. When towns and cities continue to encroach upon their surroundings, this means that people have to travel further between their home, place of work and leisure facilities. This thus also increases nuisance due to noise, air pollution and lack of local recreation areas. Furthermore, this suburbanization changes the appearance of the towns, cities and landscapes – with repercussions on both their attractiveness (for tourists) and also on the identification of the inhabitants with their place of residence.



The changing landscape: increase in land use for development and transport (Plochingen am Neckar): 1958 (top) and 2007 (bottom)

The sustainability principle in land use

Apart from an effective reduction of the development of new areas, sustainability in land use means the redevelopment of brownfield sites and vacant lots and also the exploitation of potential for high-quality densification of housing. To this end, public and private investment must place more emphasis on developments in urban areas in order to make inner cities attractive for commercial and residential construction.



High-quality densification of urban buildings (Weseler Werft, Frankfurt a.M.)

Radical demographic changes are currently in progress in Germany, and will continue in the foreseeable future. The birth rate is low, the population is dwindling in a number of regions, people are living longer and the population is becoming more international, family structures and forms of living together are changing, as is the working environment for many people. These development trends are leading to an ever more differentiated demand for land and residential, commercial and industrial buildings.

A more intensive inner-city development contributes to making the cost of technical and social infrastructures transparent and acceptable today and in future. Focusing on internal development also leads to the value of public and private real estate remaining more stable. Sustainable land use also means high-quality density of construction,



Open spaces for climate, nature, recreation and landscape

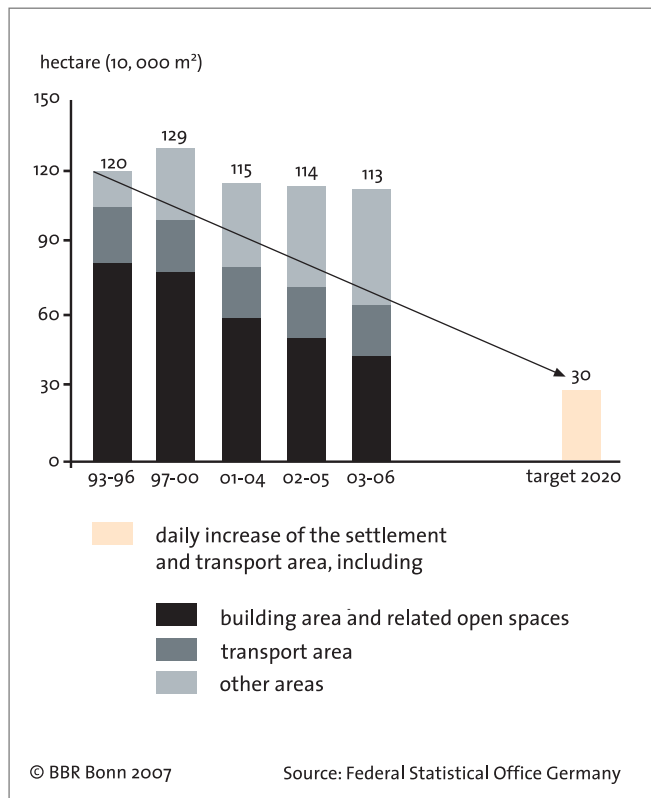
green spaces in the town and also areas for leisure and recreation, as well as maintaining open spaces on the outskirts of urban areas.

This type of integrated approach is also necessary to achieve sustainable climate protection – significant reduction of CO₂ emissions, retention of CO₂ sinks, raising the proportion of renewable energies, retaining open spaces important for the climate.

Finally, sustainable urban development and housing policy relies on the transparency of decision-making and steering processes and on the involvement of the general public in concrete measures for land use on the level of neighbourhoods, local authorities and urban regions. Communication between local government and administration, on the one hand, and the general public, on the other, is key here.

The Federal Government's sustainability policy

The German Federal Government's National Sustainability Strategy defines the reduction of greenfield development and the initiation of sustainable land management as a central task. In view of the disproportionately high level of growth in land consumption for housing and transport in comparison to the population trend, which also affects many spheres, sustainable development is imperative.



Daily increase in land use for building and transport

A dual policy consisting of quality control and a land use quota aims to achieve resource-conserving land management by 2020. Firstly, development in the inner-city region will be increased to threefold that of suburban development. Secondly, land use for housing and transport will be reduced to 30 hectares per day.

New ways of thinking and acting

In order to achieve sustainable land use, first of all the quality and efficiency of land use must be improved. From the larger perspective, this involves a reorientation away from expansion of settlement towards renewing old housing stock. The close relationship between land use and climate protection thus becomes evident. The sustainable reduction of land consumption, the concentration on inner-city development, retention of open spaces and recreation areas, rehabilitation of the building stock and reduction of commuter travel in private motor vehicles are the issues dealt with by integrated housing and traffic development.



Compact settlement structures – enjoying urban life

These quantitative and qualitative aims for land use management require new ways of thinking in planning policy and the intelligent focusing of instruments. One strategy and a new, action-oriented model is circular flow land use management, which also includes urban and regional land management oriented to the goals of sustainability. If the recycling mentality and the efficient use of resources can become standard in urban and regional land management then sustainable urban development will progress from theory to reality.

An Overview of BMBF's REFINA Research Programme



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2.1 Objectives

What REFINA stands for

As part of the FONA programme (“Research for Sustainability”), the German Federal Ministry of Education and Research (BMBF) launched the programme “Research for the Reduction of Land Consumption and for Sustainable Land Management”, REFINA for short. REFINA is implemented by the BMBF in cooperation with the Federal Ministry of Transport, Building and Urban Affairs (BMVBS) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). Since 2006, the projects funded have developed innovative concepts for reducing the rate of land consumption and for encouraging sustainable land management. REFINA is intended to enable approaches for environmental protection and nature conservation, economic growth, supply of socially equitable housing, quality urban development and mobility to be better harmonized. REFINA thus contributes towards the quality and quantity goals for land use laid down in the Federal Government’s National Sustainability Strategy.

Basic principles of REFINA

The projects funded as part of REFINA are based on a number of criteria which contribute to realizing the objects of the research programme:

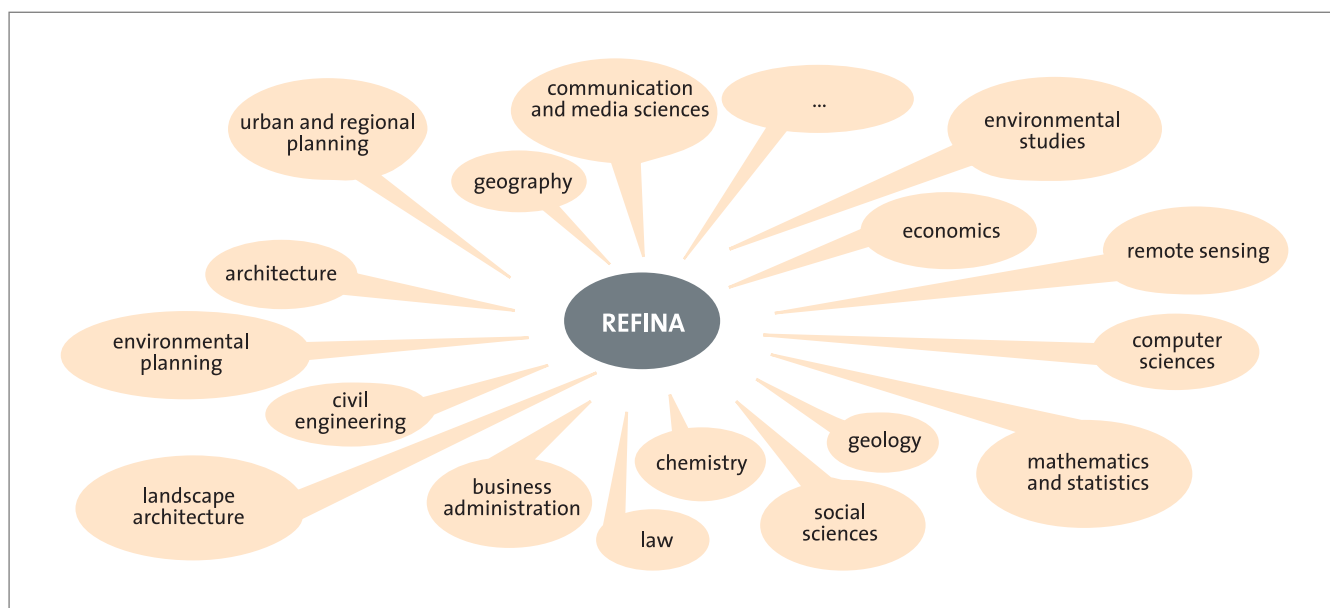
- **Action-orientation:** REFINA projects are not restricted to research activities but also concern the examination and implementation of the approaches and strategies developed in demonstration projects.

- **Transferability:** The results of the REFINA projects are examples capable of being transferred to other regions with similar economic, ecological and social “boundary conditions”.
- **Actor cooperation:** The science issues are dealt with in interdisciplinary cooperation between scientific institutions, local authorities and commercial companies in integrated collaborative projects, i.e. closely linked to practical applications.
- **Inter- and transdisciplinarity:** Successful concept development and project implementation is frequently only possible if different disciplines cooperate. REFINA therefore provides assistance in focusing expertise and capacity and in establishing transdisciplinary networks of expertise.

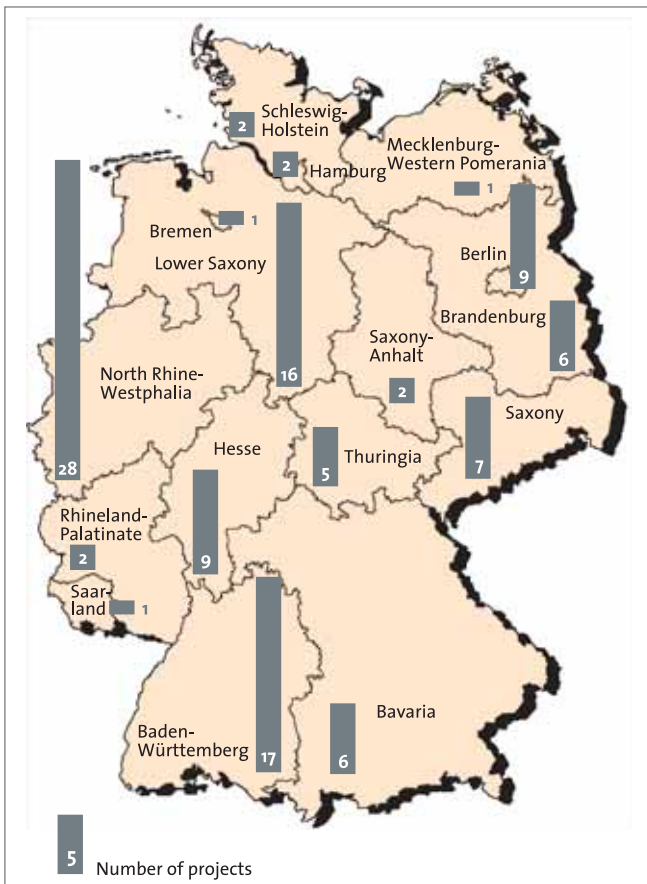
2.2 Projects and products

REFINA research projects

More than 100 projects in about 50 research collaborations and individual projects are involved in the REFINA research programme. They receive about € 22 million in funding from BMBF. The universities, local authorities, companies, associations and consulting engineers involved have at their disposal a wide range of specialist approaches, methodological procedures and different spatial perspectives for dealing with issues of reducing land consumption and establishing sustainable land management. REFINA projects work on models for specific individual sites, individual local authorities and regions – in both urban and



A large number of disciplines are involved in REFINA



REFINA projects can be found in all the German federal states

rural areas – in all the German federal states. They establish and test new methods and instruments or develop new forms of information and communication. The “boundary conditions” in the model local authorities and regions involved are determined by demographic aspects and also by the development paths of growth and stagnation. In coming years, the success of REFINA will be judged by the good examples of basic planning principles and sustainable concepts for the reuse of inner-city brownfield sites as an important indicator of economical land use.

Products

In the REFINA projects, practice-oriented guidelines, brochures, working aids, recommendations for action, tools, methods and models, forecasting instruments and software products are compiled. The transfer of know-how is additionally supported by further training courses tailored to practical applications in the local authorities. Furthermore, selected results from the projects will be prepared for specialists and local authorities and published in a dedicated series of publications.

Public relations

REFINA also includes numerous workshops and expert meetings on various aspects of land consumption and sustainable land management. Comprehensive information on the projects involved, a literature database, calendar of



A wide range of information is available at the REFINA website

events and many other offerings representing a broad knowledge base are available to the public in German and English at www.refina-info.de. This is a selective offering aimed at decision-makers and disseminators in politics, administration, industry and society, and also supports intensive feedback for practical applications.

2.3 Coordination and networking

Project management and cross-project support

On behalf of the Federal Ministry of Education and Research (BMBF), Project Management Jülich (PTJ) coordinates the implementation of the REFINA programme and provides scientific and administrative support for the projects. In collaboration with BKR, Aachen, the German Institute of Urban Affairs (Difu) forms the research support team. Its tasks include above all cross-project networking, integration, synthesis and documentation of research results as well as transfer of know-how and results, designing the REFINA internet pages, organizing and implementing international REFINA activities.

Steering group

The REFINA steering group functions as an interface between research, practice, politics and science and thus takes on a special role in the research programme. Federal

and state ministries are represented in the steering group as well as higher federal agencies, central organizations of the local authorities, the Council for Sustainable Development and professional associations. This working group ensures that existing results of departmental research are incorporated in the programme and coordinates the flow of information between the institutions involved. As experts with a wide range of contacts, the members of the steering group function as disseminators for REFINA. They take part in joint events concerning the research programme and also in individual events related to selected projects. Furthermore, there are also close contacts between the REFINA committees and the Federal interministerial working group (IMA) on "Land Consumption" under the overall control of the Federal Ministry of Transport, Building and Urban Affairs (BMVBS), which prepares progress reports on the implementation of measures for reducing land consumption (for example, also in research) as part of the Federal Government's National Sustainability Strategy.



Delegates from the projects exchange views at the 1st REFINA Status Seminar (March 2007)

Wide range of networking activities

With its intensive cooperation and networking offerings and interfaces with a wide range of subjects, the REFINA programme is designed as a learning collaborative research programme. As part of the research support team, numerous workshops and expert meetings are held as well as annual status seminars, which target the research programme and the projects involved and encourage networking within REFINA. At these events, members of the REFINA projects can exchange experience with respect to research methodology, discuss open questions and problems, and

extend their knowledge on the practical application and relevance to sustainability of research and products in the research programme. This exchange of experience and know-how is organized according to so-called cross-cutting topics including:

- Information on land and soil,
- Site and land appraisal,
- Communication and actors,
- Economic instruments,
- Scenarios,
- Steering and management.

At expert meetings and status seminars, other interested parties from the specialist community can be included in order to provide fresh impetus, gather suggestions and exchange experience with groups outside REFINA.

International exchange

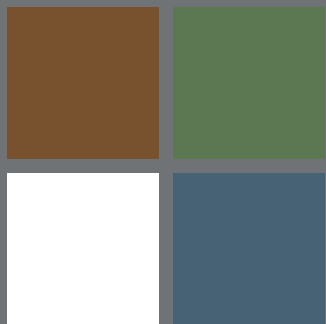
The REFINA projects are linked to international research collaborations, networks and disseminators. International policy approaches, implementation strategies and instruments for reducing land consumption are analysed and reappraised. One building block is the transatlantic research cooperation between the U.S. Environmental Protection Agency and BMBF. In the current phase of this research cooperation, selected REFINA projects are cooperating with American practitioners under the main topic of "Sustainable Revitalization of Brownfield Sites" in order to reflect on new concepts and approaches bilaterally and in workshops and to develop new, unconventional solutions. On the European level, REFINA is represented, for example, at conferences and exhibitions.



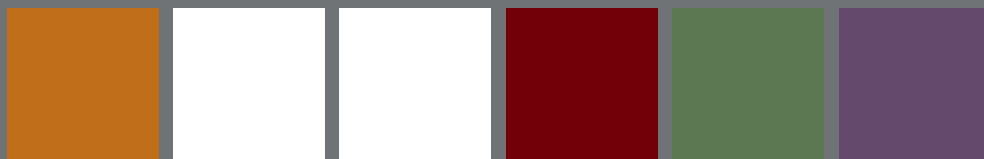
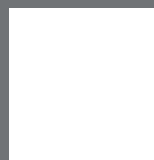
The REFINA research programme is represented at international conferences and trade fairs

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Research Topics



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3.1 Overview

The individual projects in the REFINA programme take different paths in order to make a contribution to sustainable land management. One group of projects is primarily devoted to the development of new methods and instruments. This is concerned, for example, with obtaining and utilizing improved information on soil and land, and making the actual cost of greenfield development apparent. Other projects focus on processes of communication and participation and also new constellations of actors. They investigate, for example, the way in which heightened awareness of the problem can be established thus highlighting sustainable utilization of the scarce land resources. A third group of projects mainly deals with the implementation of integrated model concepts as examples on the level of individual sites, local authorities and regions making use of various instruments and methods.

Topics	Priority
Information on soil and land	New methods and instruments
Cost of land consumption	
Communication and participation	New processes and constellations of actors
Revitalization of individual sites and conversion areas	Integrated model concepts
Model concepts for local authorities	
Regional model concepts	

Overview: topics in the REFINA programme

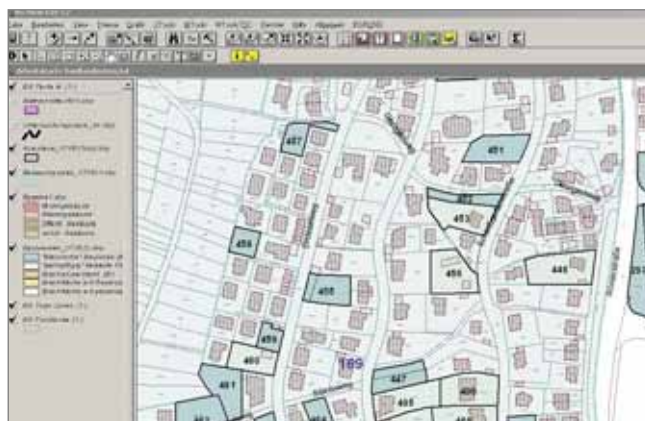
In the following, the six topics will be presented in more detail. In practice, the individual REFINA projects often work on aspects from several topics.

3.2 Information on soil and land

Information basis for sustainable land management

Soil and land information is of central significance for sustainable land management and the implementation of the site-specific quantity and quality goals of the National Sustainability Strategy.

- In recording, assessing and mobilizing land potential for inner-city development/reserves of land suitable for development,
- As a basis for planning subsequent use, for compensation schemes in connection with nature conservation and also for cultivation concepts,
- As parameters for periodic land monitoring,
- As a basis for communication and information concepts for the public and for political decision-makers on all levels from local authorities, administrative districts, regions, federal states up to the national level.



Land register for Pfullingen (screen shot): showing the densification potential revealed by the "HAI" project

One of the greatest challenges in reducing land consumption and in sustainable land management is reconciling different objectives for the same area of land – such as soil conservation, environmental protection and nature conservation, industrial development and also socially acceptable housing supply, quality urban development and mobility. Information on soil and land and its assessment within the objectives of sustainable development represents an essential prerequisite for coping with these tasks.

Soil information

The necessary conditions will be created for concepts with comparable standards for evaluating the need to protect selected areas and for assessing soil functions using detailed concepts of soil and land conservation. Particularly

in areas of settlement, there is a lack of knowledge about the properties and the evaluation of soils affected by human activities with regard to redevelopment concepts – for example, for urban development planning. This gap can be bridged, for instance, by the project “Funktionsbewertung Urbaner Böden” (Functional Assessment of Urban Soils).

Land information

Apart from the use of existing geodata information systems (automated real estate register, official topographic and cartographic information systems, local register of brownfields, surveys of actual use etc.) and the interpretation of historical and current aerial photographs, the projects “Automatisierte Fernerkundung” (Automated Remote Sensing) and “Flächenbarometer” (Land Barometer), for example, focus on new methods of aircraft- and satellite-based remote sensing of types of land use. In this way, evaluation techniques are developed for generating information on land use for various users. These techniques improve the large-scale information base and thus permit optimized and smoothed monitoring of land use.



Automated remote sensing: similar pixels in one aerial photograph (right) are automatically combined into segments (centre), from which a data set of use types (left) can be compiled by classification

Furthermore, methods for differentiated regional and supraregional analyses of the sustainable development of populated areas (data basis, data management, trends and scenarios) are being developed and evaluated. On the basis of regional and supraregional examples, methods for recording and assessing land and settlement structures are being investigated and applied to model cases. In this con-

text, criteria for or indicators of sustainable land management are being (further) developed and tested, giving due consideration to land, environment and quality of life as well as demographic changes.

3.3 Cost of land use

Focus on follow-up costs

A wide range of investments are required in order to develop new residential and commercial areas and to connect them to the existing road network and mains. New sites also incur extensive follow-up costs for the local authorities involved. For example, social infrastructures must be created and operated. The utilization of greenfield



Greenfield developments involve a wide range of follow-up costs

sites also involves extra expenditure for private households. Particularly at sites on the outskirts of town, the new inhabitants spend a good deal of time and money “on the road” between home, work and leisure. Interventions in the ecosystem must also be expressed in terms of cost. A number of REFINA projects concentrate on the improved identification, assignment and communication of the related costs – in short in making costs more transparent.

Planning and development costs

Planning, preparing land for development and measures accompanying planning work lead to considerable costs. The nature and extent of these costs depends on the efforts required for development and the standard of development required. If costs are made more transparent this can improve the sustainability of the choice of site and the land zoning policy. In this way, development costs can be reduced for sites that are compact and well integrated with respect to position and infrastructure. The designation of new housing developments frequently involves encroach-

ment on natural areas and landscapes, which requires compensation (e.g. by measures for restoring the natural state, extensification of land use, reforestation etc.). The level of the costs of such measures depends, on the one hand, on the degree of encroachment and, on the other hand, on the standard and quality of the measures.

Cost transparency for local authorities

The central task of a number of projects, for example “LEAN²”, is creating transparency with respect to the follow-up costs of greenfield development. Cost transparency is intended to make it easier to weigh up the pros and cons of various planning alternatives leading to a greater degree of sustainability. Cost-saving plans may frequently also be land-saving plans. They make use of building land that has already been developed, thus ensuring that better use is made of the existing infrastructure – especially with respect to future demographic developments – avoiding new burdens on the infrastructure.

The extent to which the resulting costs have to be borne by the local authority depends on the extent to which the local authority can pass the costs on to the other parties involved. The costs arising for the local authority for the creation of development infrastructure differ greatly. For example, as a rule local authorities have to bear all the costs of external development with transport routes, while the costs for establishing the electricity, gas, water mains and district heat pipelines are the responsibility of the utilities. Inner-city development could, for instance, be consolidated by an appropriate use of cost-oriented assessment systems. This is being investigated in the project “FIN.30 – Flächen Intelligent Nutzen” (Using Land Intelligently) by developing an assessment framework for evaluating and selecting new areas for development according to the aspects of sustainability and cost effectiveness.

Follow-up costs for private households

The choice of place of residence determines the costs arising for those living there. However, private households usually



A house in the country: property prices are often lower, but mobility costs higher

only consider the costs of buying or financing a property or renting. They often do not consider follow-up costs such as additional mobility costs. At first glance, it therefore seems cheaper to move out into the country rather than live in town. Several REFINA projects are therefore developing specific instruments for showing the entire range of costs to those seeking accommodation and wishing to purchase properties. The “KomKoWo” and “Integrierte Wohnstandortberatung” (Integrated Information Services on Choosing a Home) projects, for instance, are working on developing and advertising web-based information instruments and specific advice on where to live according to target group.

3.4 Communication and participation

REFINA as an opportunity to communicate land-related issues to the general public

Reducing land consumption has not yet established itself as a topic in the public awareness. On the contrary, the positive image of a house in the urban periphery continues to drive urban sprawl in many regions. Even in areas where the population will begin to dwindle in the foreseeable future due to demographic changes, new private houses “in the open countryside” or the establishment of new industrial estates continues to be encouraged although even today an ample supply of housing is beginning to depress prices on the housing market. It is therefore necessary to communicate to the general public the fact that sustainable housing development is not only important for nature conservation but also for maintaining and increasing one’s own quality of life and for maintaining the value of one’s own property. The REFINA research programme represents a unique opportunity for this on the basis of its range of projects and their relation to specific local sites and regions. Almost all REFINA projects are therefore concerned in one way or another with the topic of communication.

On-the-spot dialogue creates room for political manoeuvre

In the REFINA projects, communication is not just an abstract goal that first has to be attained, on the contrary it is put into practice in the model regions by joint handling of the projects. The projects frequently provide the first opportunity to openly discuss the problem of greenfield development and to attempt to discover joint measures that can be taken by different cooperation partners in residential and commercial estates during the planning phase to implement more sustainable management of such land, which is in short supply. Public and private partners often rethink their ingrained habits of more and more greenfield devel-

opment and are creating new room to manoeuvre by a holistic consideration of unexploited inner-city brownfield sites, on the one hand, and the necessary limitation on consumption, on the other.

Specific offerings for local government

Local government frequently involves unpaid officials working in an honorary capacity. In communicating ideas to local politicians it is important to provide specific suggestions related to the local area and not a flood of general information. The project “Gläserne Konversion” (Transparent Conversion) shows that this is the only way to meaningfully communicate information leading to local action. Convincing local politicians is the first step on the road to a new, sustainable land policy.

Scenarios are therefore an important instrument for initiating communication processes on the spot. They enable different development paths to be acted out thus generating an awareness of the cause and effect relationships. Examples of this approach are the “komreg” and “Nachhaltiges Nutzungszyklusmanagement” (Demand-Driven Life-Cycle Management) projects.



“Transparent Conversion” project: at the spring festival, several thousand visitors took the opportunity to view the converted Hülsmeier barracks at Barnstorf in Lower Saxony

Addressing new target groups with innovative offerings

Young people, in particular, are an important target group in order to introduce a long-term change of attitude among the general public. Communication strategies appropriate for young people can make use of the so-called new media. Educational material in a digital form can be used for interactive games involving land as a resource. Examples of this

are being produced in the “Freifläche” (Open Space) project. However, computer games can also be used to attract other sections of the public. This is done in the “Spiel-Fläche” project by simulating the processes of land use.



“Open Space” project: young people use new technology to trace settlement development

3.5 Revitalization of individual sites and conversion areas

New life at old sites

Economic structural change and geopolitical change lead to abandoned industrial and commercial sites, railway yards and docklands and also former military sites. The redevelopment of derelict land and empty buildings offers a great opportunity for reducing land consumption. Commercial premises, housing, leisure and recreation areas can be built on these sites that frequently have good infrastructure thus relieving pressure on greenfield sites. Creating new life at old sites is, however, associated with enormous challenges, which are being taken up in a number of REFINA projects. In order to prepare sites in the most inexpensive way and in accordance with demand, it is necessary to identify innovative remediation methods, concepts of planning and use, and new forms of funding so that complex project management tasks have to be dealt with.



Structural change makes room for residential and commercial buildings (HafenCity Hamburg)

Intelligent remediation methods

Contaminated sites are often a significant obstacle to the revitalization of land. Their elimination involves expense and risks that put off many investors. New remediation technologies and an improved coordination of remediation and land use could reduce the funding required. For example, the “BioRefine” project is developing instruments for an improved assessment of the actual risk posed by soil contamination which will help to reduce remediation costs. If a number of sites requiring remediation are combined in one overarching plan then this may lead to benefits in risk minimization. The project “Integrale Sanierungspläne” (Integrated Remediation Plans) is exploring such an inter-site approach.



Disused military site (Bad Kreuznach)

Management of conversion projects

Whether in the town or countryside, whether small sites or large areas: the revitalization of derelict land is always a complex management task in which planning, development, funding and marketing have to be dovetailed. At the same time, the problem is also to cater for such a wide range of persons involved and affected – owners, government authorities, developers etc. The differences involved in the individual cases make it difficult to identify a simple recipe for successful conversion projects. The “REFINA KoM” project is therefore concerned with recording on the basis of typologies the wealth of experience available in numerous projects that have already been completed.

Grey turns to green

If there is little demand for land and in cases where extensive remediation is required it can be difficult to use derelict land for new commercial purposes at reasonable cost. Ecological upgrading of such unmarketable land may be a meaningful approach – whether as an interim step or a long-term solution. Special plants do not only provide

green cover they also aid the necessary remediation processes. This leads to valuable “second-hand” natural areas, which improve residential amenities in conurbations and combat the exodus from the cities. New models for supporting organizations, management and funding – as are being developed in several REFINA projects – can help to green our cities.



The greening of old industrial areas (Landschaftspark Nord, Duisburg)

3.6 Model concepts for local authorities

Overall strategies on a local level

In Germany towns and local authorities play an important part in sustainable land management. They are in a position to compile an effective package of instruments concerning information, planning law and funding and to implement them in cooperation with public and private partners. A number of REFINA projects focus on the application of customized solutions going beyond the simple revitalization of individual sites. In view of the different problem constellations and administrative capacities, specific approaches are developed for cities and rural districts.

Encouraging inner-city development

The development of inner-city sites for work and residential housing is an important strategy for reducing land



New homes for various groups of users and residents at the site of an old factory in the east of Stuttgart

consumption. To this end, instruments for identifying and prioritizing suitable sites are urgently required as are approaches for advising and raising the awareness of owners, investors and subsequent users, as well as providing accompanying support programmes. The aim is to reach land types and owner groups that have been neglected so far. Taking the example of the city of Stuttgart, the project entitled “KMU entwickeln KMF” investigates how, in particular, small and medium-sized enterprises can encourage the development of small and medium-sized sites. The “HAI” project concentrates on the development potential for brownfield sites in rural areas – for example abandoned farm buildings.

Upgrading inner-city neighbourhoods

If inner-city residential neighbourhoods are “past their prime”, mobile sections of the population threaten to leave,



The large housing estates of the 1950s to 1970s often need modernization

which has a negative impact not only on the social structure but also on greenfield development in the surrounding areas. Targeted private and public investments can therefore



New life in a rehabilitated neighbourhood

help to maintain the quality of life in such neighbourhoods. In the “Nachhaltiges Nutzungszyklusmanagement“ (Demand-Driven Life-Cycle Management) project, for instance, instruments are being developed by means of which the need for action in the large housing estates of the 1950s to 1970s can be identified, communicated and implemented in cooperation with the owners and local authorities. In two other REFINA projects, ways are being tested of how offerings on advice for selected target groups can attract the interest of those looking for housing to purchase or rent.

New forms of funding

The redevelopment of brownfield sites often involves special investment costs and risks – for example, since the remediation costs are difficult to estimate. These problems can be reduced by balancing risks and opportunities between various projects. The project “Nachhaltiges Flächenmanagement Hannover” (Sustainable Land Management in the City of Hanover) is concerned with designing a private-sector fund model for remediating derelict sites. This could lead to a new product for reactivating land, which would be of special significance for sustainable housing development.

3.7 Regional model concepts

Opportunities for regional cooperation

On the basis of their planning responsibilities, local authorities exert a quite decisive influence on regional



Industrial land cleared of buildings as a potential site for inner-city development (Cologne)

land development. They designate land for new housing developments on the outskirts of town and create building regulations for inner-city areas. However, if there is a lack of regional coordination during the planning phase then this can lead to an excessive supply of new building land which reduces the chances of developing brownfield sites. In various REFINA projects, urban and rural authorities are cooperating with scientists in a concerted effort to develop approaches for achieving sustainable land management. New instruments and cooperative projects for various types of land (residential, commercial etc.) are being developed and tested for these concepts. This is frequently undertaken in collaboration with public and private partners from the region. Cooperation on a regional level enables towns and local authorities to consider the potential of the area as a whole, and then plan and implement measures jointly.

Different regions

Regional cooperation can be undertaken on a small scale, for example as part of a city network, within bodies for spatial planning, between a city and its surrounding municipalities, or in large metropolitan regions. This is reflected in the wide range of structures and experience on which the REFINA projects are based. Model concepts are developed for different types of regions that are characterized by special requirements:

- Densely populated conurbations with high economic growth have a correspondingly high demand for building land. Considerable potential is often available here in the form of inner-city brownfield sites.
- Areas from which the population is migrating display a low demand for building land. Attention is focused here on assessment and planning frameworks for reducing further greenfield development.

Regional land management

Towns and local authorities can cooperate in a number of ways on the road to sustainable land management. One approach taken by regional model concepts is to identify the potential development land in a region and to make it transparent. There is often no data available on brownfield sites and land in reserve. This is why, for example, the network of towns comprising Balve, Hemer, Iserlohn and Menden in North Rhine-Westphalia is working on a joint register of industrial and commercial land.

Another step on the path to regional land management is the coordination or joint creation of guiding principles and plans with the aim of agreeing upon, as far as possible, sustainable sites and acceptable target quantities. These concepts can be used to define the first implementation steps

with regional pilot projects, as is envisaged for the urban region of Gießen and Wetzlar in the German federal state of Hesse.



Densified region: close networking across district boundaries (here: Stuttgart region)

Joint land recycling

Local authorities can also cooperate in the development and redevelopment of land. More than a dozen local authorities are therefore collaborating in the establishment of a pool of industrial land in the "REGENA" project initiated by the Regional Planning Association of Baden-Württemberg's Neckar-Alb Region. The members of the planned joint authority will also contribute brownfield sites to this pool and share the costs and benefits of development. By sharing the risks among several partners there is a good chance of reducing the demand for greenfield sites for industrial and commercial premises in this region.

Many regions affected by structural change have a wide range of industrial brownfield sites at their disposal which may be converted into valuable natural areas. In the north of the Ruhr, scientists are cooperating with towns and



“REGENA project”: Hechingen in the shadow of Hohenzollern Castle has joined a regional pool for industrial land

large-scale land owners in the project on the “Parkpflegewerk Emscher Landschaftspark” (Regional Park Maintenance Scheme Emscher Landscape Park) to develop a concept for the regional management of these areas and also quality standards for maintaining different types of land.

New planning instruments

A number of projects are concerned with the question of how the regional planning tools can be further developed. The

“FLAIR” project is developing a new generation of regional plans for the Southern Upper Rhine Valley regional association, taking specific land use conflicts as its starting point. In the “DoRIF” project, four planning regions in east and west Germany are testing whether a quota system for the total quantity of greenfield sites for housing and traffic and also the establishment of a system for trading planning rights between the authorities can lead to sustainable land use. The opportunities and consequences of a complete moratorium on designating greenfield sites as building land by the specific activation of brownfield sites is being explored in the project known as “Flächenkonstanz Saar” for the Saarland.

Regional dialogue

A regional harmonization of local planning requires a common perception of problems and an approach balancing the different interests involved. About a dozen local authorities in the Freiburg region (Baden-Württemberg) coordinate their policy for designating building land in the “komreg” project with the aid of model-based scenarios. This makes it possible for politicians and administrators to gain a concrete picture of what consequences present planning decisions will have on future developments. The model concepts for a town and its surrounding areas drawn up for Elmshorn and Pinneberg in Schleswig-Holstein include financial compensation for the advantages and disadvantages of planning moderate greenfield development.

4.

List of REFINA Projects



Information on soil and land

- Automatisierte Fernerkundungsverfahren (Automated remote sensing methods)
- ESYS – Entscheidungssystem zum Infrastruktur- und Flächenbedarf (Decision-making scheme for appraisal of long-term requirements for infrastructure and land)
- Flächenbarometer (Land barometer)
- Flächeninformationssysteme auf Basis virtueller 3D-Stadtmodelle (Land information systems based on virtual 3D city models)
- FLITZ – Flächen ins Netz (Commercial land on the internet)
- Funktionsbewertung urbaner Böden (Integration of soil evaluation into land use planning focused on urban and industrial areas)
- PANTA RHEI REGIO (Regional and supraregional analysis of settlement development based on a macroeconomic and multisectoral forecasting model)

Cost of land consumption

- FIN₃₀ – Flächen Intelligent Nutzen (Using land intelligently)
- Kostentransparenz (Cost transparency)
- LEAN² – Kommunale Finanzen und nachhaltiges Flächenmanagement (Municipal finances and sustainable land use management)
- NKF – Neues Kommunales Finanzmanagement (New financial management for local authorities)

Communication and participation

- Flächenakteure zum Umsteuern bewegen! (Persuading actors to change course on land management)
- Freifläche – Jugend kommuniziert Flächenverbrauch (Open Space – young people spread the news about land consumption)
- Gläserne Konversion (Transparent conversion)
- Integrierte Wohnstandortberatung (Integrated information services on choosing a home)
- KomKoWo – Kommunikation zur Kostenwahrheit bei der Wohnstandortwahl (Communicating the truth about the costs of choosing a home)
- Spiel-Fläche – Computerspiel (Computer game)
- Public-Private-Partnership im Flächenmanagement auf regionaler Ebene (Public-private partnership in land management at the regional level)
- WissTrans – Wissenstransfer durch innovative Fortbildungskonzepte beim Flächenmanagement/Flächenrecycling (Transfer of knowledge via innovative advanced training concepts for land recycling/land management)
- Zukunft Fläche (Creating awareness for the reduction of land consumption in the Hamburg Metropolitan Area)

Revitalization of individual sites and conversion areas

- BioRefine (Assessment of pollutants in the sustainable management of areas based on availability and bioavailability)
- OPTIRISK (Optimization of concepts for site development of contaminated land based on the identification and monetarization of the risks involved)
- Integrale Sanierungspläne im Flächenrecycling (Integrated remediation plans)
- KOSAR – Kostenoptimierte Sanierung und Bewirtschaftung von Reserveflächen (Cost-effective reclamation and maintenance of brownfield sites)
- Nachnutzung von Altindustriestandorten (Development of analytical and methodological repertoires to reintegrate brownfield sites into functional urban areas modelled on examples in Germany and the USA)
- NAPS – Nachnutzung von Altablagerungen (Subsequent use of contaminated sites)
- REFINA-KoM – Konversionsflächenmanagement (Management of conversion land)
- SINBRA (Basic strategies for a sustainable reuse of non-competitive brownfield sites – the case of the former military site in Krampnitz – a suburb of Potsdam)

Model concepts for local authorities

- Businessplan Stadt – Entwicklung (Business plan for cities and their development)
- HAI – Neue Handlungshilfen für eine aktive Innenentwicklung (New aids for action on active inner-city development)
- KMU entwickeln KMF (Small and medium-sized enterprises develop small and medium-sized sites)
- Nachfrageorientiertes Nutzungsflächenmanagement (Demand-driven life-cycle management)
- Nachhaltiges Flächenmanagement Hannover (Sustainable land management in the city of Hanover)

Regional model concepts

- DoRiF (Options for the design and implementation of spatial planning instruments for the reduction of land consumption)
- Flächenkonstanz Saar (Saarland's balanced land-use concept – "Zero-Growth" of developed land)
- FLAIR – Flächenmanagement durch innovative Regionalplanung (Land use management by innovative regional planning)
- GEMRIK (Sustainable management of industrial sites by intermunicipal cooperation)

- Integriertes Stadt-Umland-Modellkonzept zur Reduzierung der Flächeninanspruchnahme (Integrated model concept for a town and its surrounding area to reduce the consumption of land)
- komreg – Kommunales Flächenmanagement in der Region (Land management for local authorities in the region)
- KoReMi (Cooperative regional land management in central Germany)
- Nachhaltiges Siedlungsflächenmanagement Stadtregion Gießen-Wetzlar (Sustainable management of settlement areas in the urban region of Gießen-Wetzlar)
- REGENA – Regionaler Gewerbeflächenpool Neckar-Alb (Regional pool of industrial real estate Neckar-Alb)
- Regionales Parkpflegewerk Emscher Landschaftspark (Regional park maintenance scheme Emscher landscape park)
- Regionales Portfoliomanagement (Regional portfolio management)

Research for the Reduction of Land Consumption and for Sustainable Land Management (REFINA) is a research priority as part of the FONA ("Research for Sustainability") programme of the Federal Ministry of Education and Research (BMBF).



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