



URBAN SMS Soil Management Strategy



Brownfield redevelopment as an alternative to greenfield consumption in urban development in Central Europe

G. Siebielec (ed.)
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Deliverable report

BROWNFIELD REDEVELOPMENT AS AN ALTERNATIVE TO GREENFIELD CONSUMPTION IN URBAN DEVELOPMENT IN CENTRAL EUROPE

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Partner responsible for this deliverable: PP8 – Institute of Soil Science and Plant Cultivation – State Research Institute

Contributing Partners:

LP: City of Stuttgart

PP2: City of Vienna

PP3: Umweltbundesamt, Environment Agency Austria, Vienna/ Austria

PP5: University of Torino

PP6 – City of Celje

PP9: Czech University of Life Sciences, Prague

PP10: Soil Science and Conservation Research Institute, Bratislava, Slovakia

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Authors:

Grzegorz Siebielec
Sabine Rabl-Berger
Petra Bluemlein
Michael Schweiker
Sigbert Huber
Isabel Wieshofer
Mattia Biasioli
Franco Ajmone Marsan
Peter Medved
Jaroslava Sobocka
Ivana Galuskova
Petra Vokurkova

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1. INTRODUCTION

Reduction of agricultural soil transformation rate into urban purposes and protection of agricultural lands as resources for future food production and environmental sustainability become the European Commission objectives. Regeneration of derelict and underused sites and devoting them to inner urban development might be a major way to limit pressure on valuable greenfield sites around cities. However, currently there are no specific brownfield regulations at the level of EU.

The report gives an overview of national or regional regulations, strategies, guidelines and funding opportunities concerning brownfields in the Central Europe. Furthermore the available information on scale of the problem in the partner cities, activities that left the brownfields and existing databases or inventories of brownfield sites are provided. Lack of spatial information including size, type of brownfields, infrastructure, contamination has been defined in previous reports (Ferber et al., 2006) as one of major bottlenecks for more frequent utilization of brownfield areas. The presented information was collected through questionnaires filled out by the project partners and referring to the cities they represented.

2. BROWNFIELD DEFINITIONS

Brownfield is a relatively new term. Its definition according to CABERNET report (Ferber et al., 2006) is the following “Brownfields - sites that have been affected by the former uses of the site and surrounding land; are derelict and underused; may have real or perceived contamination problems; are mainly in developed urban areas; and require intervention to bring them back to beneficial use”.

The national definitions are not in contradiction with the Cabernet definition. The common characteristics of brownfields are:

- abandoned
- often but not always contaminated,
- require reclamation/revitalization
- relict of industry, construction, agriculture, military or other anthropogenic activities.

In some countries the definitions are installed in the legislation or official strategies. Ordinance on Spatial Planning Strategy of Slovenia (Odlok o Strategiji prostorskega razvoja Slovenije, “SPRS”; Official Gazette of the Republic of Slovenia, N° 76/04) defines brownfields as *Degraded urban areas* that are: abandoned sites of industry, construction, depots, mining, military, railways, urban municipal community services, shantytowns,

inappropriate residential areas in suburbs or neighborhoods without historical value, etc.. or by the human activities contaminated sites.

Slovenian Spatial Planning Act (Zakon o prostorskem načrtovanju, “ZPNačrt”; Official Gazette of the Republic of Slovenia, N° 33/07, changes in 70/08 and 108/09) provides slightly more technical definition “degraded area is part of the village or area outside settlements, in which the technical, spatial design, housing, economical, social, cultural and ecological conditions are reduced to the state of uselessness and the renovation for revitalisation is needed or is the area outside the village where due to the human activity or inactivity has come to the degradation and its remediation is necessary”.

In 2009 the term was defined for the first time by the Austrian Standards Institute in their standard ON S2093 “Survey and assessment of the environmental status of used surfaces for real estate evaluation” as follows: Brownfield (Brachfläche): “previously used site or part of a site, which is presently derelict or underused. Owing to the site characteristics (e.g. dedication, status of its opening up for development, location) it offers a potential for reuse. The period, for which the site has been derelict, is not relevant”

REK 2007 (Räumliches Entwicklungskonzept – Local Development Scheme) of the City of Salzburg introduces the equivalent term “Umstrukturierungsflächen” (Restructuring Areas): “Derelict or underused areas, which could be generally used as land for building, but where the current dedication is in most cases no longer applicable (e.g. former caserns or trafficareas, which are no longer needed and which could be used for building)”

The German term “Brachfläche,” variously translated as derelict land/site, vacant land/site, brownfield site, is not clearly defined and covers a broad field of meaning. Its origins are in agriculture, where “Brache” means “fallow (land)” land left uncultivated for a year to restore its fertility in the three-field crop rotation system. In urban studies and urban planning practice, “Brache” has been applied to abandoned or formerly developed land particularly since the 1970s, when economic and technical structural change led to the widespread abandonment of sites. In contrast to fallow land in agriculture, the derelict or vacant sites in this context are not deliberately taken out of the use cycle, but usually find no subsequent use.

In other countries, namely Slovakia, Italy and Poland, there are no legal definitions but the term “brownfield” enters the environmental language. In Slovakia such sites are understood as: “a site in a urbanized land which is not used effectively, abandoned probably contaminated it may be used efficiently only after reclamation and revitalization. It is a relict of industrial, agricultural, building or other activities”.



Photo 1. Underused post-industrial site in Piekary, Poland

3. EXISTING REGULATIONS

Similarly, as at the EU level, there are no specific national or regional regulations for brownfield management and regeneration in countries of Central Europe. However, the issue of brownfields appear in several regulations.

In **Austria**, this term can be found in regional development programs, which influence regional planning legislation.

REK 2007 (Räumliches Entwicklungskonzept - Local Development Scheme – City of Salzburg)

The Local Development Scheme offers an important basis for the development of the land use plan and the building regulation plans. The analysis of the given structure of the municipality is followed by an assessment and the formulation of aims and principles of development, along with necessary measures. The REK commits the municipality to consider both the aims of development and the measures in its planning. In the REK of the City of Salzburg some aims and measures dealing with brownfield redevelopment can be found:

- Conversion of attractive urban reconstruction areas also for housing-compatible commercial use, e.g. Stadtwerke Site or Riedenburg Casern
- Use of restructuring areas, especially redevelopment of derelict or underused land for building.

Declaration „Geschütztes Grünland“ of the City of Salzburg

In 1985 the City of Salzburg enacted the declaration “Geschütztes Grünland” in order to protect approx. 3.500 ha of greenfield land (green-belt) on a long-term basis and not to allow building measures in this area. With the adoption of the declaration in 2007 conversion of such special sites is permitted only for special public interests and only if these interests cannot be fulfilled without the usage of these sites (examination of alternatives, e.g. **reuse of brownfields**). In this document the preference of brownfield redevelopment over the use of greenfield land is stated.

STEP 05 (Urban Development Plan – City of Vienna)

The Urban Development Plan is a generic instrument for urban planning and urban development. It lays down the distribution of built-up areas and green lands, delineates development areas and defines their relationship to the overall transport infrastructure. STEP 05 now constitutes the basic document and scheme for any actions of spatial character taken by the specialized departments, downstream offices and enterprises of the City of Vienna.

One of the central concerns of STEP 05 is a request for brownfield redevelopment:

How can existing built-up areas in the city be adapted to meet the new challenges and quality demands to keep the pressure for new settlement construction as low as possible?

Large-scale projects are promoted by most European cities as a symbol of identity, **as an activity to transform the use of brownfields** or eliminate outdated uses, and to stimulate the economy. The actual contribution to urban development usually does not exceed 5 %, but is often essential for creating a new image or achieving a new economic profile.

There are a number of projects in Vienna that have achieved international recognition at the European level through international calls for tenders or outstanding architecture, thus contributing to a positive image of the city as a business location. These projects include Westbahnhof, Gasometer Erdberg, Bahnhof Wien – Europa Mitte, Aspang-Gründe, Nordbahnhof, Donau-City.

STEP 05 foresees brownfields regeneration not only for large scale projects - they can also be used for the creation of new urban residential areas. It emphasizes that due to shrinking land reservoirs and high cost of new developments brownfield redevelopment is playing an increasingly important role, also in the outer areas of cities. The redevelopment of protected historical industrial buildings from the 19th century is of special significance in this context.

There are many options for the later uses of brownfields that are in line with the goal of sustainable urban development in Vienna. For example, keeping the areas unbuilt as a protected landscape, use for children and youths' projects as well as the use for urban expansion projects within the scope of "inner urban development" schemes.

In the case of larger brownfield areas, it is necessary to proactively work on developing new uses in cooperation with the landowners or investors, with mixed uses being given preference in the inner urban brownfield areas (e.g. Kabel- und Drahtwerke AG - KDAG in the 12th district, and Gasometer City).

ALSAG

The ALSAG (Altlastensanierungsgesetz - Law for the Clean-up of Contaminated Sites) deals with the special type of brownfields and offers the legal basis for the remediation of contaminated sites, regarding both the investigation of potentials contaminated sites and the execution and financing of remediation actions of contaminated sites. Contaminated sites in this legal definition are old deposits and old industrial sites with soils and groundwater contaminated by them, which pose significant risk for the health of people and for environment.

German Federal Building Code and the Federal Spatial Planning Act stipulates that the recycling of vacant developed land takes priority over the use of previously undeveloped land. §1a of the **Federal Building Code** states that soil and space should be used economically and inner urban development by redevelopment of old sites has to be preferred instead of the consumption of open space. Sealing of soil should be limited.

In the **Federal Soil Protection and Contaminated Sites** Act §2 (1): In case of a planned urban sprawl authorities and other institutions of the Federal Republic have to examine whether regeneration of brownfields and use of low quality soils is possible.

In **Slovenia** there are only general recommendations concerning brownfields in the *Ordinance on Spatial Planning Strategy of Slovenia* - primary use of inner city sites, brownfield sites should be taken into account as much as possible during new land use plans. In the process of land use planning and, especially later at preparation of detailed spatial plan, procedure of minimizing brownfield related environmental problems is taken into assessment within the process of SEA and if needed through EIA.

Legal documents in other countries only indirectly affect brownfield regeneration processes. In Slovakia there are methodical guidelines for old environmental contaminated sites (MSPNM a SKŽP No. 130/1992). It is concept for liquidation of contaminated sites containing the old Dutch A, B, C limits for earth and water pollution. The Polish Decree of Ministry of Environment on soil quality standards define contaminant content qualifying soil to remediation.

4. SCALE OF THE PROBLEM AND INNER DEVELOPMENT OPPORTUNITY

It becomes evident that lack of credible information in spatial format on number and area of brownfields is one of major bottlenecks for development of effective transformation programs. The Cabernet (Ferber et al., 2006) report clearly shows that different methodologies of data acquisition obstruct comparisons between countries and drawing any detailed conclusions. For example in case of Poland Cabernet reported 800,000 ha which number came from the share of soil samples with elevated (not necessarily contaminated according to regulations) metal contents (approx. 5%) within agricultural lands. Such data obviously do not correspond to real brownfield area.

Table 1 summarizes the data available for the assessed cities. Good documentation as inventories and spatial information layers exist in Stuttgart, Bratislava and Celje. In capital of Slovakia only the total area of brownfields is not known since not all sites were identified - recognition of brownfields is the ongoing process. In Bratislava there are three types of so-called environmental burden (not all are brownfields): A: potential environmental burdens which are under permanent use: like petrol stations, manure dumpsites etc, B: typical identified environmental burden or brownfields and C: sites after recultivation and reclamations. Up to date 13 sites of typical brownfields (category B) and 39 sites of potential environmental burdens (category A) have been identified whereas 30 sites have been subjected to reclamation and transformation. The brownfield identification program was performed by the Slovak Agency for Environment under the framework of the project ordered by the Ministry of Environment of Slovakia. The sites are listed in the report, register and the map in the scale 1:50 000 formats.

Celje is a small size city with one brownfield site that requires regeneration whereas two former brownfields have been successfully transformed.

Table 1. Availability of inventories, area and number of brownfield sites

City	Inventory	Map	Number of brownfields	Area (ha)	No. of transformed sites
Bratislava	Yes	Yes	13 (plus 39 potential)	n.a.	30 reclaimed
Celje	Yes	Yes	1	32	2 (21 ha)
Torino	No	No	30	approx. 30	50
Prague	No	No	n.a.	n.a.	n.a.
Salzburg	No	Yes	n.a.	48	n.a.
Stuttgart	Yes	Yes	462	615.5	60 (46.5ha) since 2003
Wroclaw	No	No	n.a.	n.a.	n.a.
Vienna	No	No	n.a.	n.a.	n.a.

To create a basis for discussion on the topic: “Industrial brownfield sites in Austria” and to obtain a rough estimation of the brownfield - situation, in 2004 the Environment Agency initiated an investigation on “**Industrial brownfield sites in Austria and their potential for reuse**”. The determination of the number of brownfield sites was based on two key indicators. The first starting–point for calculation was based on the closure of firms between 1981 and 1991. In a second attempt a combination of communal indicators was chosen combining both approaches with the average brownfield size per type of region and the determined intermittent brownfield sites as well as those arising from the closure of firms, shows that the number of brownfield sites for the whole of Austria amounts to approximately 3.000 to 6.000 covering a total area of 8.000 to 13.000 ha.

Basis for the calculation of the annual increase of brownfield sites per year was the data available on the closures of firms in the communes. By linking the average brownfield size to regional characteristics of the determined intermittent brownfield sites and those that arise from the closure of firms, the extent of annual increase of industrial/commercial brownfield sites was calculated to be about 1.100 ha.

However up to date neither Vienna nor Salzburg do have any inventory of brownfield sites available. Attached to the REK 2007 of the City of Salzburg maps are available, that show restructuring areas appropriate for housing and for industry. Even if not all restructuring sites represent typical brownfield areas, these maps can give an overview about the distribution of such sites across the city. There is no such map available for the City of Vienna. The REK 2007 for the City of Salzburg reports approx. 19.8 ha of restructuring areas available for

housing purposes and approx. 28 ha available for industrial purposes, which adds up to approx. 48 ha of areas ready for redevelopment.

Obviously, the high number of identified sites in Stuttgart does not refer to specificity of the city but tells about the high level of detail of the existing information (Fig. 1). There is a brownfield database in the city of Stuttgart running since 2003. The name is “Sustainable management of building areas”. The database is running on the municipal GIS system. A internet-based version can be found on www.stuttgart-baueflaechen.de. It contains basic data about size, location, floor space, ownership and specific data on price, current use, building law, traffic/accessibility, infrastructure, contact persons, condition of buildings and site, ownership and environment. Also current activities and particularities like constraints, public easement, investigation or pre-emption rights can be filled-in. Maps, aerial photos and other documents are linked. In the category environment the quality of the soil is documented according to the soil quality map (0 to 5).

Since the database set up in 2003, 60 sites with altogether 46.5 ha were redeveloped. One half of the redeveloped sites are residential uses, about one quarter is of mixed uses (residential/commercial/trade). The rest is industrial/commercial, public area or special uses. The average per year was about 10 sites with about 5.2 ha. Currently 44 sites with the total 63.3 ha area are under the redevelopment process.

The area of brownfields identified in Stuttgart proves the potential for an inner development in Central Europe cities through transformation of underused sites. Such area is comparable to the magnitude of 15 y increase of artificial surfaces in the city corresponding to demand for urban development.

Similarly as Vienna, Wroclaw and Prague do not possess complex information on brownfield sites.

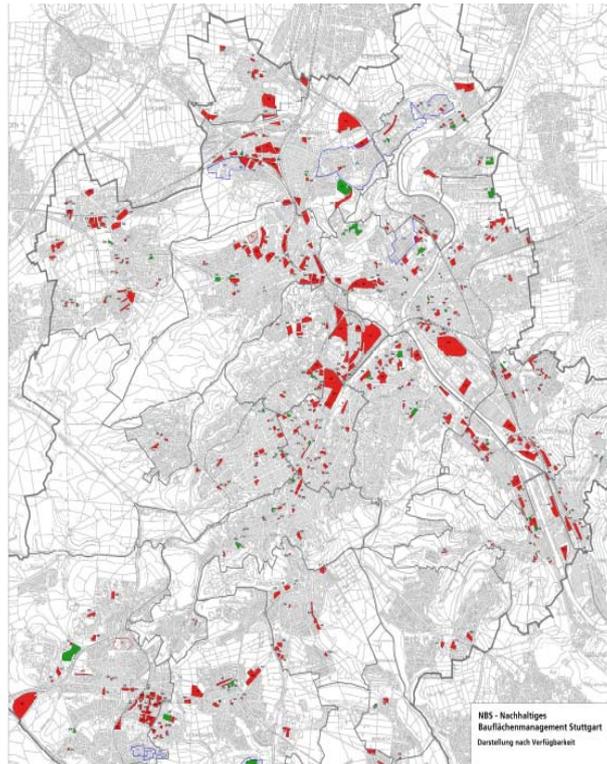


Figure 1. The map of redeveloped sites and areas designated for redevelopment in Stuttgart

The brownfields in the cities covered by the questionnaire most frequently represent the following former uses:

- mining and smelting industry
- chemical industry
- military infrastructure
- waste management
- car manufacture
- railway stations and other transport infrastructures.

For example, in Vienna the big potential for inner urban development is offered by areas, which became needless due to technical development in railroading or due to optimised logistics and changes in organisations, e.g. Nordbahnhof (75 ha).

5. PROBLEMS RELATED TO BROWNFIELDS

Individual brownfields or areas with high brownfield density can generate environmental, social and economic problems. The type and scale of the related problem is a basic issue for feasibility of a brownfield regeneration.

Environmental problems that might appear:

- soil and groundwater contamination
- human exposure to contamination

- hazardous wastes disposed
- air pollution.

It must be clarified that not all brownfield sites are contaminated. For example in Austria as based on findings of the study “Industrial brownfield sites in Austria” it is estimated that about 85% of the industrial brownfield sites in Austria are not, or only little contaminated. For about 15% of the brownfield sites, soil- or groundwater contamination is suspected. But it can be assumed, that only a small part of the total area is contaminated in a way that remediation measures are required.

Frequent social problems:

- migrations
- job loss
- concentration of problematic inhabitants
- vandalism and crime risk
- movement of labor
- areas affected by noise and air pollution can not be transformed into sensitive uses.

In Stuttgart, due to topography of the city characterized by deep valleys, the climatic issues are of high importance for the life quality. Some areas are highly affected by noise and air pollution so the new uses such as residential purposes are not possible in some locations. Additionally the need for corridors for fresh and cold air inflow are very important and limit the potential for the reuse (height of building).

Social issues are sometimes connected to the redevelopment of brownfields and price of remediation. As the majority of former brownfields are being reconverted into residential areas, if remediation costs are too high, builders have to increase the selling price of the new allotments. This imply a change in the population structure more oriented to upper classes that can afford higher prices. Other problems arise when redevelopment is started, as very often former buildings have to be demolished and large volume of soils excavated. This results in noise, increasing airborne particulate matter, increasing traffic in the surrounding areas, with consequent impacts on citizens living nearby.

Economic problems recognised in Central Europe cities:

- remediation cost
- cost of site investigation in terms of contamination
- land price decrease

- low attractiveness for investment
- cost requirement
- uncertain responsibility for contamination and remediation.

Part of brownfield areas are or will be public (e.g. may become parks, open spaces etc.). The cities often do not have the economic strength to face these costs and has to rely on external sponsors, regional or national support etc. Large/complex sites can often only be redeveloped by big investors. In such cases there might be incompatibilities between the investor plans and political strategies of municipalities.

The advantage of the brownfield redevelopment might be that they often possess infrastructure (transport, water, electricity, etc.) which fact in some cases might reduce the cost of the investment.

6. BROWNFIELD REGENERATION IN PILOT CITIES

Review of brownfield regeneration processes in the cities represented in the Urban SMS project revealed that the sites have been transformed into various land uses - mainly residential areas and commercial areas, such as industrial parks, shopping and sport centers, offices (Table 2). In some locations (e.g. Torino) new green spaces have been developed.

Table 2. Brownfield redevelopment directions in the selected Central Europe cities

City	Former use/situation	New use
Bratislava	Industry with contaminated soils	Industrial parks, shopping centers
Celje	Brick and wood industry	Shopping and sport centre
Torino	Metallurgy, car industry	Residential, commercial, green areas
Prague	Industrial buildings	Offices
Salzburg	Fuel industry	Residential and business area
Stuttgart	Railway, military	Residential or mixed residential/commercial
Vienna	Cable industry	Housing and park area

6.1. Barriers

It has been investigated what are the most important barriers for bringing the brownfields into beneficial use. Although brownfield sites often offer already an excellent infrastructure, investors still prefer new locations for industries and residential purposes on undeveloped land (“greenfields“) that are free of many risks associated with brownfields. The major barriers include:

- the question of liability if a remediation of the site is required,
- unknown remediation cost,

- limited funds both public and private
- potential limitations to the use of the site (such as the impossibility to use the site as a garden or playground) due to real or suspected contamination,
- financial requirements for the investigation and elimination of risks,
- difficulty to estimate “loss of time“ resulting from remedial measures,
- scarce information on contamination,
- ownership structure (e.g. community of heirs),
- different interests of investors and the city, but also oppositional interests within the city administration (planning, environment, economic development), interference by the political level
- lack in incentives/detaxation for their redevelopment.

In Vienna in addition to these barriers, significant problems seem to be site availability and high price, especially for the sites located at former railroad sites,. As high site prices handicap the successful development especially of big areas, also so called “fast-selling sites” (good location, partly existing infrastructure) lie idle for a longer period.

6.2. Existing strategies and guidelines

Austria

ON S2093 “Survey and assessment of the environmental status of used surfaces for real estate evaluation”

This standard can be used for the determination of the market value of areas with prior industrial, communal or military use, urban brownfields and infrastructural areas. With the help of this standard, the basic information for the assessment of the environmental status regarding site reuse is defined. This information can be used for the determination of redevelopment cost or for the design of brownfield redevelopment projects (www.astandis.at).

(Bau)Land in Sicht

In 2008 the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management published the brochure “(Bau)Land in Sicht – Gute Gründe für die Verwertung industrieller und gewerblicher Brachflächen” (Good Reasons for the Re-Use of industrial Brownfields) in order to provide incentives for the reuse of brownfields. As a practice-oriented guideline it offers help to investors and public authorities in the planning of new

opportunities of site reuse. In addition some creative practice examples can be found in the document. The brochure can be downloaded: www.lebensministerium.at

Leitbild Altlastenmanagement

As the first result of the project „Altlastenmanagement 2010“ (Contaminated Site Management 2010) in 2009 the „Leitbild Altlastenmanagement“ (Overall Concept for Contaminated Sites) was presented. It offers an orientation guide for future direction of the assessment and remediation of contaminated sites based on six principles. One of these principles is directly connected to brownfield redevelopment: Creation of a better framework for the reuse and reintegration into the economic cycle of contaminated sites.

Czech Republic

The National Brownfield Regeneration Strategy of the Czech Republic is a project funded by the EU and managed by CzechInvest (Established by the Ministry of Industry and Trade, CzechInvest is the investment and business development agency of the Czech Republic - its services and development programmes contribute to attracting foreign investment and to developing Czech companies) on behalf of the Ministry of Finance. The overall aim of the project is to develop an integrated strategy for securing the regeneration and redevelopment of brownfield sites across the Czech Republic. This requires the project team to work with CzechInvest at a national level, in order to establish a framework which will facilitate brownfield regeneration. This is likely to require changes to legislation and to the planning system, as well as the provision of appropriate economic incentives and practical advice. One component is likely to be the establishment of a Brownfield Regeneration Unit (BRU), which will be able to provide specific technical advice and assistance to local authorities in the regions.

There exist another 5 strategic documents concerning (directly or indirectly) brownfields: State Environmental Policy of the Czech Republic 2004 – 2010, Environmental Sustainable Development Strategy of the Czech Republic, National Innovation Policy 2005-2010, Regional Policy Strategy, Spatial Development Policy document.

Germany - City of Stuttgart

The priority to save green land and to focus on inner urban development is implemented at state and municipal level by different strategies and approaches. The environmental agency of the Federal Land published a guideline about urban land

management in 2003. In January 2009 the Ministry of Economics of Baden-Württemberg published a target agreement with their District Authorities on the benefit of the reduction of Greenfield consumption and the strengthening of the inner urban development.

City of Stuttgart has prepared the document: **Sustainable Management of Building Areas (NBS)**. The general aim of the NBS is to locate mixed commercial and residential areas predominantly in already developed areas and reduce the use of new lands for urbanisation. Sustainability is understood, in accordance with the principles of the Land Use Plan 2010, as inner urban development and ensuring an optimal urban density, promoting mixed residential, business and infrastructure land use, and placing constructions in central locations and locations in the catchment area of S and light rail.

The NBS contains the current survey of all existing potential construction sites in the city. For each the potential area so-called "area passes" exist that contain the key information. Potential built-up lands within the NBS are: brownfields, underused land as reserve land, conversion land and new development areas with a potential of more than 2000 square meters of gross floor area. Over 400 locations with a total area of approximately 600 hectares are covered. The information is managed as the database. Periodically, the municipal council will be informed in the form of an annual report about the current status of the NBS.

Implementation (responsibility of municipal urban planning office):

- Type of instrument: spatial planning, inner urban development
- Methodology: Development of an information platform (GIS and database-driven) and on basis of this, building of an internet presentation.
- Data sources: mapping of sites with potential building land with so called "area passes" based on GIS technology, including brownfields and contaminated sites
- Suitable urban planning procedure or other legal instrument: Land Use Plan and Building Regulation Plan.
- Status: already implemented in the Land Use Plan

The NBS is the essential component for implementing the sustainability and inner urban development goals of the Preparatory Land Use Plan 2010. Thanks to the NBS, the potential construction areas can be identified, activated and made marketable.

Italy, Slovakia, Slovenia, Poland

There are guidelines on how to deal with environmental issues (contaminated sites) but these are not specifically designed for brownfields (e.g. they are applicable also for industrial sites still in operation).

6.3. Incentives and funding opportunities

In general, there are no specific brownfield devoted funding instruments in Central Europe. The funds can be gathered indirectly through EU structural or cohesion fund systems and national grants.

Austria

There are no federal funding opportunities for brownfield redevelopment projects in Austria; subsidies for such projects can be gained indirectly from other funding pools, where applicable:

- housing
- business development
- preservation of historical monuments.

The City of Vienna offers no specific funding opportunities for brownfield redevelopment, however there are two general programs, which can be used also for this purpose:

- Wiener Wirtschaftsförderfonds (Vienna Business Agency) for industrial sites
- wohnfonds_wien (fund for housing construction and urban renewal) for housing sites
 - Land procurement for social housing,
 - Preparation, development of projects, quality assurance and realization of measures for urban renewal, especially consultation, coordination and control of subsidised housing improvement

The **ALSAG** offers a funding instrument at national level in the field of contaminated sites. Applications for ALSAG public funding can be made by both private parties (site owners or polluters) as well as public institutions. Finally the finance corporation “Kommunalkredit Public Consulting” decides upon applications for public financing up to 55% (for private parties) and up to 95% (for public institutions, e.g. municipalities) of the remediation costs.

In **Italy** the incentive issues are very often left to a discussion with municipalities, they are not regulated. In particular, if a builder takes in charge a remediation of a portion of brownfield that has to become a green area or a park it often receives some incentives e.g. reduction in building fees that have to be paid to the municipality.

Germany/City of Stuttgart

Field of action	Service (Advice and funding)	Name	Description
Urban Development Funds	<ul style="list-style-type: none"> _ Urban Development in preferred areas for urban renewal _ Advice service _ Funded by Federal and State funds (60%) and municipal funds (40%) 	Reclamation and Redevelopment funds of Federal Republic and State [Bund-Länder-Sanierungs- und Entwicklungsprogramm (SEP)]	Funding of reclamation and development activities in officially approved reclamation areas.
		Social City programme Bund-Länder-Programm of Federal Republic and State [Soziale Stadt (SSP)]	Funding of city quarters with grave deficits in social infrastructure, structure of building, living quality of the neighbourhood and environmental situation
		State reclamation programme [Landessanierungsprogramm (LSP)]	Funding of reclamation and development activities for urban renewal in officially approved reclamation areas.
		City conversion west programme of Federal Republic and State [Bund-Länder-Programm Stadtumbau West (SUW)]	Funding of actions for sustainable urban structures in areas with extensive losses of their function
Housing Funds	<ul style="list-style-type: none"> - Creation of dwellings for families, couples and single parents with children - Advice service - Funding 	Building programme for families [Familienbauprogramm]	Funding of the purchase of new and used homes by loan concessions of the „state residential property funding programme“ [Landeswohnraumförderungsprogramm], and also by municipal subsidies for building costs (“young families”)
		Reasonable priced proprietary [Preiswertes Wohneigentum]	Funding of new self owned homes by property from the city at a reduced prize and by loan concessions of the „state residential property funding programme“ [Landeswohnraumförderungsprogramm]
		Social housing programme for rented flats [Sozialer Mietwohnungsbau]	Funding of the creation of rented flats for households with low income for new buildings, enlargements, conversion
		Rented flats for middle income people [Mietwohnungen für mittlere Einkommensbezieher]	Funding of the creation of rented flats for households with moderate income by property from the city at a reduced prize
Funds for Contaminated Sites	<ul style="list-style-type: none"> _ Investigation of municipal contaminated sites for buying and selling sites _ Advice service and funding 	Communal funds for contaminated sites of the state Baden-Württemberg	Funding of the inventory, investigation and remediation of municipal contaminated sites with a high endangerment for nature
		Municipal funds for contaminated sites Stuttgart	Funding of investigation and remediation activities on municipal sites or on site in the interest of the city

Gaps between buildings	Funding Advice service for owners	Mobilisation of unused building land	Support for revitalisation of gaps between buildings by the Department for city planning and urban renewal concerning possibilities for financing, recycling, construction; search for investors, mediation with administration and owners
Economic Development	Advice service	Development of the stocks and settlement of new industries	Advice service for companies concerning question about planning and investment incentives, support for permissions and procedures, search for sites, marketing support for industrial sites of the city
Advice service for building activities	Advice service	Citizen's service for building activities	Information and advices concerning real properties, building permission, contaminated sites, procedures

7. SUMMARY

The report aim was to review regulations, strategies and guidelines, funding opportunities, barriers and available data concerning brownfields in the Central Europe. Brownfields are understood as sites that are abandoned, often but not always contaminated, require reclamation/revitalization and are relict of industry, construction, agriculture, military or other anthropogenic activities. Only in some countries the term brownfields has been installed in legislation. Similarly, as at EU level, there are no specific national or regional regulations for brownfield management and regeneration in countries of Central Europe. However, the issue of brownfields appears in several regulations, such as regional development programs. Lack of information in spatial format on number and area of brownfields is one of major bottlenecks for development of effective transformation programs and real knowledge on the potential of inner city development. However the area for potential redevelopment is substantial, e.g. in Stuttgart such area is comparable to the magnitude of 15 y increase of artificial surfaces in the city, therefore equal to the demand for urban development in that period. The major barriers for wider redevelopment of brownfields are of legal (questionable liability of remediation, ownership structure, lack in incentives/detaxation), knowledge (unknown remediation cost, fear of potential use limitations due to real or perceived contamination, scarce information on contamination), financial (limited public and private funds, financial requirements for the investigation and elimination of risks) and political character (different interests of investors and the city). However, there are good examples in Central Europe – new residential areas, industrial parks, offices and shopping centers have appeared on restored sites.

8. KEY MESSAGES

- Lack of spatial databases of brownfield sites is an important barrier for the successful regeneration processes
- National brownfield identification programs are good solutions for generation of required data
- Brownfields are real alternatives for the green lands in the urbanization process – their total surface might be comparable to long-term demand for land in a city
- Many brownfields do not need clean-up actions since their soils and groundwater are not contaminated
- Existing infrastructure might reduce cost of investment
- Legal barriers for brownfield regeneration must be erased e.g. through clarification of legal liability of clean-up measures
- Effective incentives located in legal documents must be developed in order to encourage to brownfield regeneration

9. GOOD EXAMPLES

Brownfield regeneration project: Im Raiser / Grenadierkaserne (alternative name)

FORMER USE, SIZE OF AREA, TIMEFRAME

Military barracks, 83.000 m², 1993-2002

PROJECT AIM

Conversion of a military site to a high quality residential area; 210 apartments for a heterogeneous population

TOTAL COST

27.053.400 €

FINANCIAL SOURCES

- Sales revenues 65%
- Refunding Fed. Rep. for contamination 21.5%
- State funding "inner urban housing" 0.5%

- Municipality funding "Young families" 13%

PROJECT DESCRIPTION

In 1936 barracks were erected on the site. After WW II the US forces used the site until 1993. After the quit of the US forces the site got back to the Federal Republic of Germany.

In 1999 the City of Stuttgart bought the site except one building. The demolition of the other facilities was carried out until summer 2001. The regeneration and the marketing of the site were carried out by a private development company.

The investigation of contaminated sites started in 1993. During the preparation process for building unexpected contamination was found (12/2000). It was remediated during the construction works. In 2002 first construction works started and first property sales as well as land development measures were initiated. Until 2006 237 housing units (121 funded terraced houses, 52 funded apartments, 64 terraced/double/single family houses) were installed for approximately 900 people.

DESCRIPTION OF BEST PRACTICE

Environment:

- Early integration of environmental planning aspects (major function for climate and air quality, old deposits and contaminated sites, inside the drinking and mineral water protection area, short distance to groundwater)
- Preservation of existing natural areas to protect fauna, flora and save costs (green belts with high biotope quality, hedges, single trees and natural stone walls).
- Establishment of additional natural functions (beds for plants, reuse of organic material and natural stones with high quality, provision of nesting sites)
- Innovative construction works (extensive green roofs, low energy houses, minimization of sealed area, infiltration of rainwater)

Contamination:

- after contracting the development agency the previous investigation activities were summarized and a target-oriented concept of the remediation plan was elaborated together with the department for environmental protection
- Unexpected contamination was found during the preparation of land for building. The remediation was carried out by excavation in parallel to the preparation activities. 95.000 t of soil, 100 % more than expected, had to be disposed.

- Additionally a remediation for the top soil was implemented in Nov 2001 for safety of the inhabitants.
- Due to the contamination left in the soil the planned rain water infiltration could not have been realized.

PROJECT MANAGEMENT:

The private development company „Wüstenrot Städtebau- und Entwicklungsgesellschaft mbH“ was contracted as development agency. A central contact point at the city of Stuttgart was established for the internal and external information flow and organisation.

LESSONS LEARNT

- Central Contact Point was very efficient for project communication, project management and information flow
- A detailed investigation of the potential contamination is a precondition to prevent delays and additional costs in the project implementation
- Parallel planning action (changing zoning plan and creation of new building plan) as well as participation of public and other stakeholders at an early stage saves time
- Besides state funding special local funds are very helpful to support the settlement of interest groups like young families

Multifunctional housing - Vajnorska street (district Nove Mesto of Bratislava)

Contaminated soil from the chemical industry (ISTROCHEM) was decontaminated and revitalized. After this process the location will be used as a multifunctional complex of housing (20 000 inhabitants) including administration, commercial, various services and hotel. Decontamination and revitalization of the area, which was permanently used for chemical industry, can contribute to the change of the urban site use. The goal of the project is to re-shape the area into a multifunctional building complex.

The Act on identification of environmental loads in Slovakia

In Slovakia the Environmental act on identification of environmental loads has been approved as the only such regulation in Central Europe). The Act allows to direct financial funds in Slovakia for elimination of pollution of registered brownfields.

Based on the current studies there is about 30 000 potential sources of pollution in Slovakia and 1845 localities represent serious risk for human health and the environment. They represent areas of industrial plants, railway infrastructures or uncontrolled waste dumps. The main goal of the Act is to find the originator of the environmental load who has to pay for the remediation. The Act launched the national list of contaminated sites.

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URBAN SMS Soil Management Strategy



This paper belongs to the following section of URBAN SMS work plan:
WP6 Acceptance and awareness / 6.1 soil protection measures / 6.1.3
Brownfield redevelopment as an alternative to greenfield consumption in
urban development in Central Europe

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Contact details of project partner commissioning / responsible for this paper:

Mr Grzegorz Siebielec, Institute of Soil Science and Plant Cultivation, ul. Czartoryskich 8, 24-100 Pulawy, PL, gs@iung.pulawy.pl

Other URBAN SMS Partners contributing to this paper:

Petra Blümlein & Michael Schweiker, City of Stuttgart, Department for Environmental Protection, DE

Isabel Wieshofer, City of Vienna, Environmental Protection, AT

Sabine Rabl-Berger & Sigbert Huber, Environment Agency Austria, Vienna, AT

Franco Ajmone Marsan & Mattia Biasioli, University of Torino, Department of Valorization and Protection of Agroforestry Resources, Agricult. Chemistry, IT

Peter Medved, City of Celje, SI

Ivana Galuskova & Petra Vokurkova, Czech University of Life Sciences Prague, CZ

Jaroslava Sobocká, Soil Science and Conservation Research Institute, Bratislava, SK



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