



BEST PRACTICES IN BROWNFIELD MANAGEMENT

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0. Preface

The COBRAMAN project is one of five projects within the INTERREG IVB Central Europe programme dealing with sustainable urban development which finished till summer 2012. Brownfields, post-industrial and post-mining areas are a strong concern for territorial development in central and eastern European states. This is why 9 partners from 6 countries jointly developed this project aiming at “facilitating the establishment of a professional brownfield management approach in local administrative bodies.”

Applied under the first call of the CE-programme COBRAMAN started in December 2008 with its activities comprising exchange of experience, training seminars, local pilot project implementation and set-up of educational offers. More than 1000 people participated in public project events, contributing to the dissemination of the knowledge and lessons learned gained by the project activities.

Besides the documents published at local level in the different national languages and the wealth of web available information via www.cobraman-ce.eu COBRAMAN produced two final documents in English. These are a summary brochure titled “Brownfield regeneration management – from education to practice” and this document, “Best Practice in Brownfield Management - The COBRAMAN Manual”.

It is the aim of this manual, to link the COBRAMAN results on methodological aspects of brownfield management with the practical experiences gathered during the implementation of the local pilot projects. Doing so enables a proper illustration of the work and provides a wealth of instructive examples of the brownfield regeneration managers’ work in practice. Accordingly this document is mainly addressed to practitioners acting in city administrations and service providers in this area. Further it is a profound source of information for all related training activities and candidates preparing for their professional life in the urban development and brownfield regeneration business.

Table 1. COBRAMAN key facts

Programme	INTERREG IVB Central Europe
Priority	Enhancing competitiveness and attractiveness of cities and regions
Area of intervention	4.1 Developing Polycentric Settlement Structures & Territorial Cooperation
Duration	December 2008 - August 2012
Total budget	3.624.696,00 €
ERDF contribution	2.984.381,60 €
Partnership (9 partners from 6 countries)	City of Bydgoszcz (Poland) - Lead Partner, City of Stuttgart (Germany), University of Economy Bydgoszcz (Poland), City of Most (Czech Republic), VSB Technical University of Ostrava (Czech Republic), City of Kranj (Slovenia), City of Usti nad Labem (Czech Republic), SIPRO Ferrara (Italy), Urban Planning Institute of the Republic of Slovenia (Slovenia)

1. Introduction

Management of Brownfield Regeneration Processes

All over Europe revitalisation of brownfield sites plays an important role in avoiding urban sprawl and improving the quality of urban environment, thereby helping to create the conditions necessary for sustainable development. Moreover it strives to combat related social and spatial segregation that is threatening the competitiveness of European cities. Regeneration will be of growing importance in the CE member states, which requires large investments. Alongside any EU subsidy measures the know-how transfer from western to eastern countries as well as transfer from research to practice should be stimulated in order to achieve effective capacity building. However brownfield land can also endanger public health and create environmental risks. This is why nine partners from Poland, the Czech Republic, Slovenia, Germany and Italy initiated the COBRAMAN project “Manager Coordinating Brownfield Redevelopment Activities”.

It was one of the most important lessons learnt from previous European activities in the brownfield sector, that professional process management is a key factor for successful brownfield regeneration. Accordingly, the introduction of a new professional discipline - the brownfield regeneration manager - is in the basic rationale of the project.

The brownfield regeneration manager

Although in several countries jobs are already offered as e.g. “brownfield coordinator”, there is no well defined, unique job description. The requirements for the different job opportunities show a broad variance in terms of technical, managerial and communicative skills. However providing a streamlined profile for brownfield regeneration management jobs would facilitate the establishment of such jobs in public administrations as well as setting up training and educational schemes.

Accordingly the project activities consist of:

- » Drafting a detailed professional profile,
- » Providing the knowledge base and management instruments,
- » Brownfield regeneration training with selected staff of the partner cities by on-site advice and direct, project specific management support,
- » Developing an educational scheme for a “European School for Brownfield Management”.

The project started from the basic definition:

Brownfields are sites that: have been affected by the former uses of the site and surrounding land; are derelict or underused; have real or perceived contamination problems; are mainly in developed urban areas and require intervention to bring them back to beneficial use.

(CABERNET (2006): Sustainable Brownfield Regeneration, CABERNET Network Report, ISBN 0-9547474-5-3).

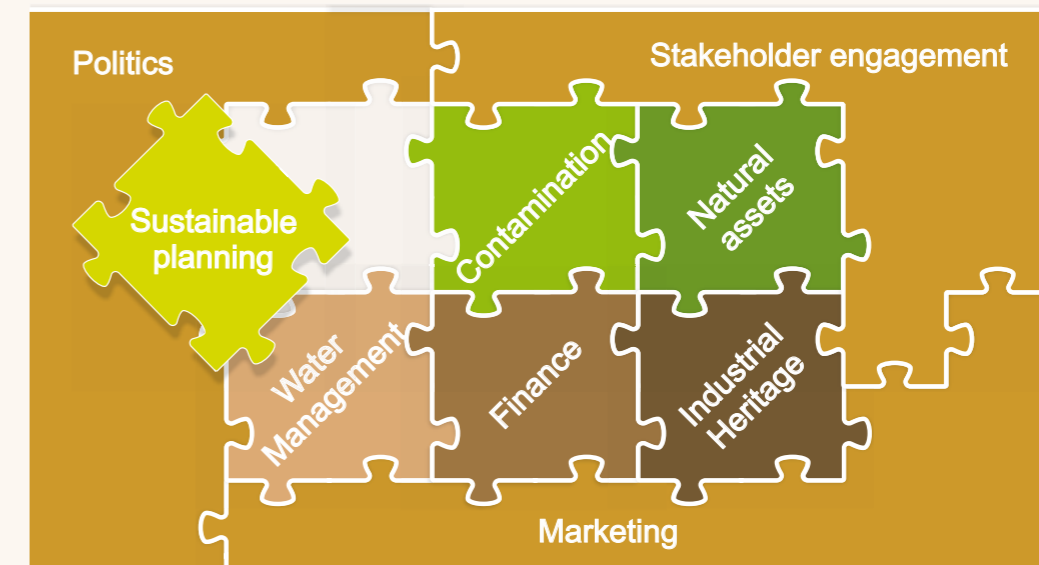


Fig. 1. The REVIT puzzle indicating fields of activities at strategic and operational level

Forty two months of transnational cooperation in regeneration practise have revealed, which terms are used or preferred, e.g. brownfield redevelopment or regeneration or revitalisation, urban regeneration or renewal. From a process management perspective the challenges are always the same. The real or perceived contamination problem of brownfields is just an “add-on” to all the other facets to be tackled in dealing with inner urban development in general.

Lengthy and complex revitalisation processes require professional management. At the international level available jobs are already described as brownfield project officer, brownfield manager, brownfield coordinator etc. They require many of the skills related to the topics represented in the REVIT puzzle above. The project team attempted to describe a comprehensive job profile for the regeneration manager.

Currently there is an abundance of methodological results, approaches and technical tools available from recent EU funded and national projects. They have been collected and assessed to be provided in a web guide. Management tools have been further developed according to the practical needs and now complement this guide.

The successful implementation of brownfield regeneration managers within European cities will enable effective and successful renewal and conversion processes. However, well-skilled staff is required alongside with the clarification of organisational aspects supporting such interdisciplinary tasks. Training for practitioners has been done in a series of training courses, all built around the practical requirements related to their local pilot projects. In a European framework the partners shared best practices, defined verified methods, applied them in practical cases and now finally offer them to others.

Specific professional or education standards do not exist yet. However educational courses and offers are evolving, both by planning and the environmental / civil engineering faculties, as well as the property management sector. Creation of training and educational schemes benefit from transnational cooperation between experienced academics as well as practitioners from the partner cities and their service providers. A master course, postgraduate courses and further e-learning courses have been set up to support students as well as already employed staff.

Best practice in CE cities and local administrative bodies



Fig. 2. COBRAMAN local pilot projects and their thematic focus

The Lead Partner of the project, the City of Bydgoszcz has been dealing with the underground remaining legacy of the former gasworks and its by-products used for other industrial purposes. The remediation of soil and groundwater contributes to the green development along the riverside in the central part of the city.

A strong focus on the optimisation of planning processes alongside large regeneration projects has been given by the cities of Most and Kranj. Kranj is dealing with extended industrial areas within the city centre. Most strives to shape its future after the mining era around the lake remembering to the open pit.

Information and communication to landowners, investors and stakeholders helps to build trust, which is prerequisite for any successful regeneration activities. Best practice in participatory approaches and the links to targeted marketing activities have been demonstrated in Stuttgart, Usti nad Labem and the province of Ferrara.

Turning a former sugar mill of the town Comacchio into a pilot photovoltaic park to be operated as a regional demo centre embedded in a sensitive environment with touristic activities and natural assets in close vicinity has been the key activity of the local development agency of Ferrara.

2. A New Profession and its Localisation in Administrative Structures

2.1. Brownfield Regeneration Management – a Professional Profile

Brownfield regeneration processes are often long term, complex and involve a wide range of professional disciplines as well as political actors and different stakeholder groups. Co-ordination and communication are essential to sustain complex projects, and the management of the process as such is more evident than sole technical aspects. Key tasks for professional regeneration managers are to develop and deliver opportunity plans and to steer revitalization processes. Furthermore the issue of community involvement as well as application of new market instruments to facilitate the redevelopment of brownfield sites lies within the responsibilities of the brownfield manager. The following paragraphs briefly describe the profession “brownfield regeneration manager”.

Doing the job – tasks and responsibilities

The widespread area of responsibility of the regeneration manager requires excellence in coordination and communication. However this is not simply a moderating role but strongly target-oriented. Basic knowledge in a broad range of disciplines is prerequisite. Open-minded attitude also towards unconventional and innovative approaches characterize the visionary and holistic thinking to be combined with managerial leadership.

Table 2 summarises tasks and responsibilities from the public perspective - the brownfield regeneration manager in the city administration. However these issues can be easily reflected with a wider perspective including jobs in the private sector. Then the aspects of forming the link between different levels from policy via decision making level down to technical implementation might be less dominant due to lean structures in the private sector. However it will be extended by the bridging function from the private sector to those different administrative levels, which all play a role in regeneration processes.

Table 2. Task and responsibilities of brownfield regeneration manager

» Tasks	» Responsibilities
<ul style="list-style-type: none"> » Provision of relevant and well targeted information for specific groups » Identification and involvement of community/ neighborhood and other stakeholders in redevelopment process 	<ul style="list-style-type: none"> » “One-stop-shop” for internal and external stakeholders (e.g. investors as well as for site owners) » Initiator and moderator of the stakeholder engagement process
<ul style="list-style-type: none"> » Internal communication in the municipality, short and direct channels enable short time project results » Set-up and steering a project-specific interdisciplinary working group 	<ul style="list-style-type: none"> » Acting as interface between policy makers, administration and the technical specialists » Coordinating information flow and work at any step in the development process
<ul style="list-style-type: none"> » Developing the visions/development plans which recognize existing policy, built on local needs and expectation » Preparation of political decisions, financial and institutional framework » Identification of potential partners » To adopt an interdisciplinary project team approach 	<ul style="list-style-type: none"> » Triggering the regeneration process
<ul style="list-style-type: none"> » To facilitate efficient project delivery » Coordination of revitalization process including time schedule and cost management » Quality and risk management » Coordination of all works and services required 	<ul style="list-style-type: none"> » Project manager

- » Branding – building a positive image for the area under regeneration
- » Marketing – initiating target group specific marketing activities
- » Initiator and coordinator of public relations and marketing activities

Basic skills

As mentioned previously the principal skills required by a brownfield regeneration manager are not only technical ones. Skills of conceptual thinking, leadership and consensus building, and the ability to understand the regeneration needs of communities are of utmost importance for this position.

The profound knowledge needed can be categorized into 6 groups shown in Table 3.

Table 3. The profound knowledge of brownfield regeneration manager

Management		<ul style="list-style-type: none"> » General project management » Conceptual and visionary thinking » Leadership - strong team player » Organizational skills
Communication		<ul style="list-style-type: none"> » Communication management » Moderation, negotiation, mediation » Ability to describe even complex and multidisciplinary issues in illustrative and simple words - spokesman qualities » Marketing and campaigning
Planning and design		<ul style="list-style-type: none"> » Landscape and urban planning » Architecture » Socio-economic dimension of urban development
Environmental and civil engineering		<ul style="list-style-type: none"> » Civil and construction engineering » Environmental engineering, geotechnics » Health and safety measures
Real estate industry		<ul style="list-style-type: none"> » Basic knowledge in project financing and calculation » Market mechanisms and trends » Life cycle considerations of real estate investments
Legal and administrative aspects		<ul style="list-style-type: none"> » Basic knowledge in all related legal areas » Municipal administration and structures » Understanding of municipal decision making processes and a keen sense of political feasibilities

2.2. Organisational Recommendations

Situation in Europe

There are significant differences between the old Western Member States and the Central and Eastern European Countries. E.g. in UK, Germany and Italy strategic brownfield policies are to be established and the need for a professional brownfield management is broadly accepted. Organisational structures are partly established (e.g. UK) since recent years, and based on early experiences a process has started to describe the requirements for such positions and jobs, paving the way to general introduction in municipal practice within the coming years. In the Central and Eastern Countries brownfields are an upcoming issue, to be recognised very recently as an important issue for local policy and development. Beyond the realisation of some big flagship projects in major cities with international investors involved, only few targeted activities have been initiated. So informing and convincing the public and political level about the need of a targeted brownfield management approach is still a top issue in these countries.

Examples from the US and Canada do clearly indicate a strong leverage effect of national or other superior funding programs to the local policy level. Such programs do support the public perception of the topic and help to initiate structural changes at lower level. European policy documents as the Leipzig Charta in combination with e.g. the operational programmes of EU structural funds support the implementation of the brownfield regeneration issue in national policies.

The cities are key players for the realisation of brownfield related activities. Dealing with brownfields in city administrations can have a strong strategic coordinative component (e.g. land management in general, information systems etc.) or can be more focused on the role of a project manager in specific site developments. Whereas in smaller cities probably the generalist performing well in both components will be preferred, a more shared work between several persons in bigger towns allows more specific dedication of the duties. Current practice indicates that project specific appointment of staff in special purpose vehicles like development agencies and PPP constructions etc. can be an option to settle the specific project management aspects aside of the core structures in a city administration.

Structures at municipal level

The experiences of the partners reveal that integrating brownfield management is an important issue. However within the municipalities comparable and well settled structures do not exist yet. The COBRAMAN partners are all trying to establish brownfield management in their municipality by a bottom-up approach, as the need is not fully recognised and expressed in political decisions. Nevertheless, the experiences show that an appropriate placement in the organisation chart of the administration including procedural clarifications and further top-down support could effectively facilitate the process of implementation in municipal practice.



Fig. 3. General structure of public administration

A general structure of municipal organisation in most European municipalities is shown in Fig. 3. Nearly all technical departments are affected by brownfield revitalisation processes from section 1 business development benefiting from new created jobs during revitalisation and later on the newly developed site, over section 2 real estate and finances leading to section 6 in case contamination has to be remediated or new building plans need to be drawn.

However the sections mainly involved are the real estate department and the departments for planning and for environment. The business development department and building department are not as deeply involved as the others. The placement of a brownfield regeneration manager could fit better to the real estate department in cases when a broad portfolio of brownfield sites is owned by the city. Vice versa it could fit better to the planning department in case most brownfield sites are private. In such cases when significant contamination of the sites is expected or known, the brownfield regeneration manager would also fit well in the environmental department.

Setting up a Brownfield Management Unit

Wherever a “brownfield regeneration unit or management unit” will be located, the key scope of its activities will be:

- » Organising an interdepartmental working group, which includes the preparation of their work schedules and brownfield management procedure guidelines as well as the coordination of the groups contacts to all stakeholder groups
- » Acting as a one-stop-shop for all stakeholders as well as brownfield owners, investors and developers, providing information and advice and keeping the brownfield related information systems up to date.

In order to fulfil these duties properly a well described and empowered mandate from mayor level is as important as a contemporary attitude towards problem-oriented action and related procedures within an administrative body. This allows the regeneration manager to act powerful within his horizontal networks without coincidentally challenging existing hierarchical structures.

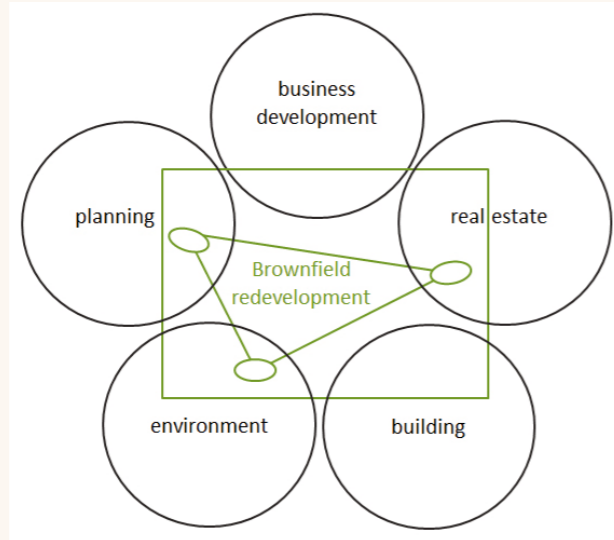


Fig. 4. Options for the localisation of brownfield regeneration managers in municipal structures

3. Education and Training

3.1 Master Course

Currently there are no professional or educational standards in the EU for brownfields regeneration managers, therefore the project, whose main objective is to find the way to solve brownfields issues, has been started. The purpose of study course is to produce graduates – experts who will be focused on the complex care of the environment in industrially influenced areas (including agriculture and military areas). The main aim of the study is to prepare graduates to manage project and work activities related to restoration and development of abandoned industrial areas – brownfields. Graduates will have detailed knowledge of:

- » Environmental assessment of brownfields
- » Civil engineering and technical assessment
- » Economic and socio-economical assessment
- » Remediation and regeneration of areas
- » Environmental protection and design

The study program is presented as a multidisciplinary study that is based on the combination of natural, economic, constructional and technical sciences. Teaching and education have their bases in scientific disciplines such as mathematics, physics and chemistry. It is expected that graduates of a bachelor study programme have acquired this basic knowledge.

The study plan consists of the following compulsory subjects:

Environmental Geochemistry, Engineering Geology, Contaminating Hydrogeology, Waste Management, Municipal Development, Urban Planning, Brownfield Management, Industrial Architecture, Introduction to IT, Information

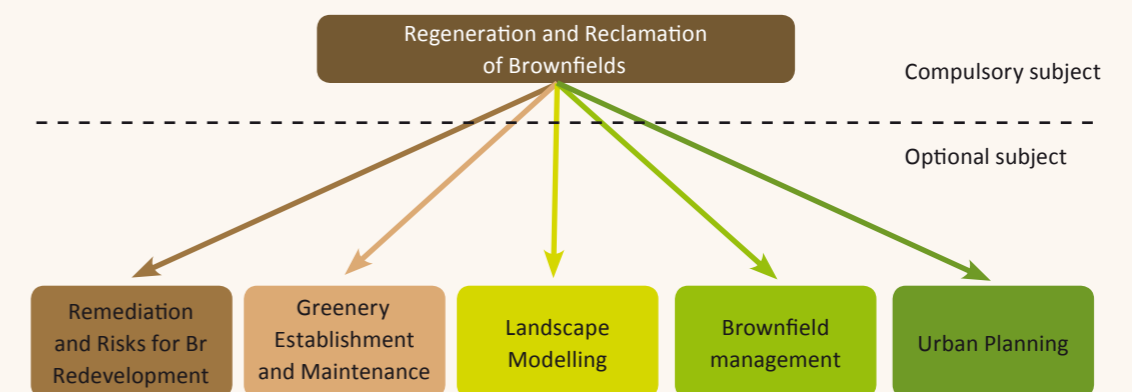
Systems at Landscape Cultivation, Modelling for Landscape Management, Greenery Establishment and Maintenance, Remediation and Risks in Brownfield Redevelopment, Social and Economic Tools for Brownfield Redevelopment, Investment Processes, Applied Ecology, Quality Management in Civil Engineering. Graduates will have detailed knowledge of environmental, ecological and technical disciplines, modern information technologies, database applications, and European environmental legislation. Graduates upon successful completion of the study course have

the rights to use the title Dipl. Ing. (Engineer; in many countries an equivalent of MSc for technical sciences). They will be able to find employment as managers and technological specialists in companies focusing on the revitalisation of derelict industrial buildings, landscapes and areas or as professionals and executive directors in municipalities, urbanistic centres; as experts in renovation in reuse of abandoned areas or also can be involved in research. Fig. 5 describes the subjects of the State Final Examination. Students must defend their Diploma thesis and take examinations in three subjects. A detailed breakdown of subjects and terms of exams is given in the study plan - Table 4.

Two cycles of non-accredited training courses labelled “European School for Brownfield Redevelopment” in the number of 10 seminars over 8 hours of instruction were organised during the COBRAMAN Project. Main aim of these courses was to test the lecturing materials prepared before the master programme will be introduced as a regular part of university studies offer. During the courses the students carried out an anonymous evaluation by the questionnaires (task fulfilment, quality of teaching and applicability). This should confirm the effectiveness and level of professional courses.

Basic subjects of Master’s Program:	Developing subjects:
» Selected topics of mathematics	» Computer practise
» Selected topics of physics	» Branch colloquium I.
» Statistics in the environment	» Branch terrain training
	» Branch colloquium II.
	» Branch seminar

Subjects of the State Final Examination:



Students will choose two optional subjects of the State Final Examination

Fig. 5. Subjects of the State Final Examination – students will choose two optional subjects

Table 4. Study plan of Master Study

University	VŠB – Technical University of Ostrava			
Part of university	Faculty of Mining and Geology			
Name of study program	N2102 Mineral Raw Materials			
Name of study branch	European School for Brownfield Redevelopment			
Name of subject	Range	Completion	Way of lecture	Year/ semester
Selected topics of mathematics	L2+E2	Cr/Ex	C	I.1
Environmental geochemistry	L2+E2	Cr/Ex	C	I.1
Applied ecology	L3+E2	Cr/Ex	C	I.1
Industrial architecture	L2+E2	Cr/Ex	C	I.1
Engineering geology	L2+E2	Cr/Ex	C	I.1
Computer practise	L0+E3	GrCr	C	I.1
Branch colloquium I	L0+S3	Cr	C	I.1
Selected topics of physics	L2+E2	Cr/Ex	C	I.2
Contaminating hydrogeology	L2+E1	Cr/Ex	C	I.2
Greenery establishment and maintenance	L2+E2	Cr/Ex	C	I.2
Socio-economic and economic tools for brownfields redevelopment	L2+E1	Cr/Ex	C	I.2
Development of cities and municipalities	L2+E2	Cr/Ex	C	I.2
Statistics in the environment	L1+E3	GrCr	C	I.2
Branch terrain training	E 1 Week	Cr	C	I.2
Branch practice				
Urban planning	L2+E2	Cr/Ex	C	II.3
Remediation and risks for brownfields redevelopment	L2+E2	Cr/Ex	C	II.3
Investment processes for brownfields redevelopment	L1+E1	Cr/Ex	C	II.3
Information systems for landscape management	L1+E2	Cr/Ex	C	II.3
Waste management	L2+E2	Cr/Ex	C	II.3
EU legislation in the living environment	L0+S2	GrCr	C	II.3
Branch colloquium II	L0+S2	Cr	C	II.3
Biotechnology	L2+E1	GrCr	O	II.3
History of technique and industrial heritage protection	L2+E1	Gr Cr	O	II.3
Landscape modelling	L2+E3	Cr/Ex	C	II.4
Brownfield management	L2+E3	Cr/Ex	C	II.4
Regeneration and reclamation of brownfields	L3+E2	Cr/Ex	C	II.4
Quality management in building industry	L1+E2	GrCr	C	II.4

Branch seminar	L0+S3	Cr	C	II.4
L – Lectures, E – Exercises, S – Seminars				
Cr – Credit, GrCr – Graded Credit, Ex – Exam				
C – Compulsory subject, O – Option subject				

Contents and extent of the Final State Exam

The Final State Exam consists of public thesis defence and the oral final state exam in standard conditions in VŠB – TUO.

Public thesis defence

With drawing up the thesis and with its public defence applicant should prove:

- » ability to be well informed about problems stated with the theme of the thesis
- » ability in professional research, creative or scientific work led by supervisor
- » ability to self-evaluation and interpretation own results
- » ability to present own results in writing
- » ability to present own result orally and to defend them before commission

The oral exam

The applicants carry out a compulsory subject examination Regeneration and restoration of brownfields, then has opportunity to choose other two subjects from the offer:

- » Remediation and risks in brownfields redevelopment
- » Brownfield management
- » Landscape planning
- » Landscape management modelling
- » Establishment and green maintenance

Requirements for passing the final state exam are described by the Dean and they are in line with study order of VŠB – TUO (<http://www.vsb.cz/okruhy/univerzita/uredni-deska/predpisy/vnitri-predpisy/>). Students are allowed to enrol (through the university database and information system EDISON) and passing the state exam or its part, if they accomplish study by the date, which is set by the study department. Before the state exam students have to:

- » complete all of written subjects and finish them with a credit or an exam according to the study plan
- » get ordered number of credits to the end of studies, i.e. 120 credits (ECTS)
- » submit a thesis prepared in two printed copies, insert text thesis in electronic form on media (CD, DVD), simultaneously save thesis electronically in pdf version to the University Information System for study and teaching of the university (EDISON)

The language used at the state exam is Czech for Czech students and English for foreign students.

3.2 Postgraduate Courses

Aim of postgraduate studies: training of project managers who could effectively create revitalization projects, and then skilfully manage them both in the public and private sector.

The dynamic technological progress forces us to occupy new space or modernize the sites which have already been developed. A large number of degraded areas, a tremendous impact on the landscape industry, changes in the formation of sites and the need to rebuild the infrastructure require specialists in urban planning with special knowledge of regeneration issues. Modern conditions have caused the demand for new professional project managers who could effectively create revitalization projects, and then skilfully manage them both in the public and private sector. This profession requires a wide knowledge in the field of effective management, real estate

management, architecture and urban planning, environmental protection, socio-economic sciences and law.

Detailed Information about the postgraduate study courses is available at <http://onte.wsg.byd.pl/cobra/file.php/1/pdf/postgraduate.pdf>

The postgraduate study courses are defined for: councillors, government and municipal administration employees, private sector representatives interested in investing, geographers, architects, urban planning and construction engineers etc.

A basic requirement for candidates is the completion of higher education with a master's degree, in one of the following specialties:

management, real estate management, architecture and urban planning, spatial development, urban spatial planning, geography, environmental preservation, civil or construction engineering.

The first postgraduate studies edition ended with the evaluation of the following issues:

- » postgraduate studies programme (appropriate subjects, sufficient number of hours),
- » session programme (methods of checking students knowledge),
- » Higher School's infrastructure (classrooms preparation, quality of multimedia equipment)
- » Moodle Platform (participants of postgraduate studies were the first group, which tested e-learning course on Moodle Platform),
- » the administrative securing of the studies (access to information, contact with employees etc.).

3.3 E-Learning

E-learning courses designed for students and graduates are an additional output of the COBRAMAN project. The structure of individual course modules was organized in such a way that participants of various backgrounds and experiences can benefit from it. To cover brownfields, individual module's content needs to be quite broad, usually comprising of more than one field of expertise. This is why the module content was broken down into individual sections. Only when this is done, the actual content of each module is clear. In order to ascertain the level of likely educational achievement, it is necessary to break each section into subsections, to which a level of educational achievement can be assigned. Assuming that most of participants are new to the brownfields as a subject the first module consist of an holistic introduction to brownfield issue.

E-learning consists of following modules:

- » Holistic approach to the revitalization consists of the these sections: Civil law aspects of the revitalization of cities and settlements, Financing revitalization, Introduction to management and organization, Project management, Socio-cultural aspects of revitalization
- » Brownfield revitalization explains main problems connected with revitalization
- » Environment protection consists of following sections: Types of environmental pollution, Anthropogenic impacts of the environmental pollution, Tasks of the environmental protection and Costs of the environmental protection
- » Urban planning was divided into three sections: Introduction to urban planning, Planning framework and Urban design regulation
- » Culture heritage consist of following sections: Understanding industrial cultural heritage, Organizational and systematic framework for urban regeneration of degraded areas and Examples of urban regeneration of degraded areas and industrial cultural heritage.

E-learning modules are accessible through <http://www.cobraman-ce.eu/> (section Education) or through direct link <http://onte.wsg.byd.pl/cobra/>

4. Regeneration Management in Practice – Key Management Tools

The management of regeneration processes requires the application of established management tools. There is a wealth of existing instruments and tools to be used in process and project management. Those which proved to be the most important have been specifically adopted by the COBRAMAN partnership to the regeneration business. In the subchapters following the description of the Internet-Guide to Brownfield Management those COBRAMAN - tools are allocated to the respective responsibilities of the management staff.

4.1 Information Support – the Internet-Guide to Brownfield Management

Each area of human activity is based on information. The dynamic development of technology caused the cancellation of restrictions on the collecting, aggregation, evaluation and distribution of information. Information can be processed without limits in the extent or time and can be presented in multidimensional form. Information is stored in databases, a collection of interrelated data and objects, which in conjunction with the corresponding presentation tools allow its efficient use. Revitalization is not directly associated with IT technologies, but can properly exploit the opportunities that are offered. The greatest need for information is during the planning process of revitalization when are made the key decision. Managers need the relevant information of all revitalisation project related topics and activities fast and clearly.

The appropriate amount of data reduces the risk associated with decision. Between the information needed at this stage is included:

- » The information about the subject of revitalization,
- » The information about the processes of regeneration, where you can find a similar problem areas and goals.

The information from first group is obvious and there are a lot of databases public accessible on Internet. Description of brownfield sites offers a tool helps to gain the investors and is useful as an inventory and statistical tools also. The second group of information means in support of specific activities carried out in the process of revitalization. It allows finding the common elements, some analogies and to select and use the procedures that have already been successfully applied to other projects. Information on successful and unsuccessful projects can also serve as educational material for training managers for revitalization.

One of the results of the COBRAMAN Project is a database with aim to gather information on redevelopment projects implemented in Central Europe. The database was created by University of Economy in Bydgoszcz (Poland) with technical support of VŠB – Technical University of Ostrava. Database is connected with Internet "Guide to Brownfield Management" and together forms a revitalization project knowledge base.

The database content is:

- » Relevant key information about the significant Brownfields Projects
- » Used Specific Tools and Best Practices
- » Location, communication, access, contamination, description
- » External sources, maps, photos, documentation, etc.

The database and Guide to Brownfield Management is designed for:

- » Municipalities – method of brownfield treatments and operations
- » Regional Authorities – professional inputs to strategic planning
- » Universities – educational service
- » Business and Research Institutions – benefit from realization of projects
- » Individuals
- » Professionals – sharing knowledge and experience
- » Students – learning source for using the database is important to ease data retrieval and clarity of information presented.

The database of revitalization projects and Guide to Brownfield Management created during COBRAMAN project is accessible at <http://database.cobraman-ce.eu/> and the structure is presented on Fig. 6.

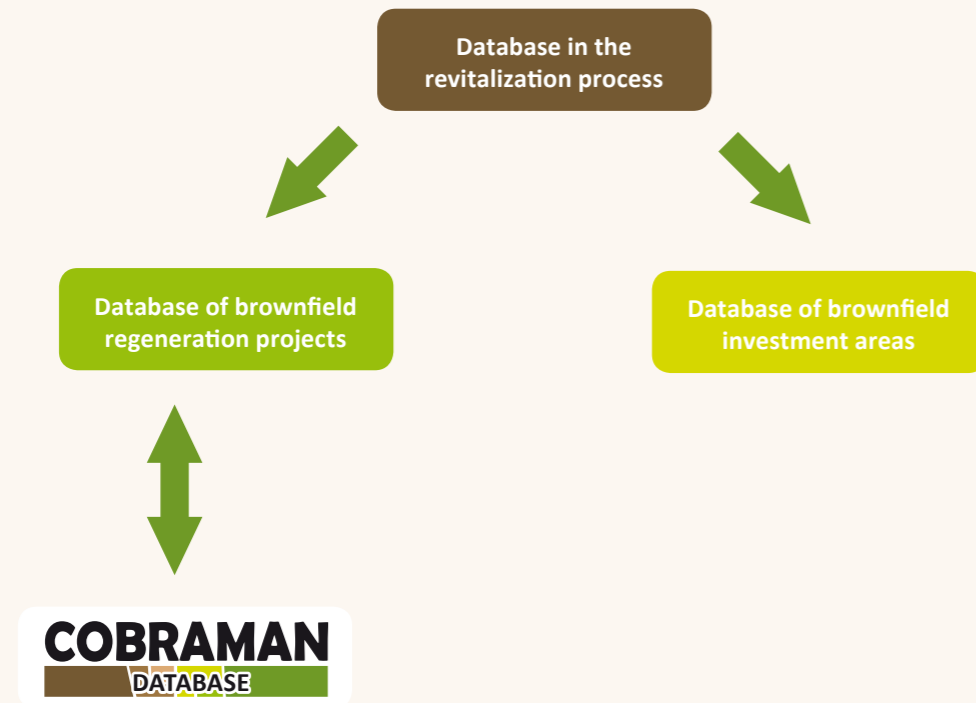


Fig. 6. Structure of the database

4.2 Information and Communication at City Level – GIS-Related Information Systems

The most important working base for brownfield managers is information. They need the overview of all project related topics and activities and they need to have fast and easily access to the relevant data. Information must be stored somewhere, and for these purposes the databases are created. The greatest need for information in the process of redevelopment occurs in the stages of preparation and planning, when key decisions are to be made.

A database integrated into a geographical information system becomes a promotional tool that increases the chances of attracting investors. At the same time it can offer inventorial and statistical data for individuals owning brownfield areas. It provides also significant support during the planning of specific activities carried out in the process of revitalization. It allows you to find the common elements, some analogies, and then select and use actions and tools that have been successfully applied in other projects. Huge amount of data can be analysed and summarized easily by a GIS. Different information can be combined and new conclusions can be drawn.

In many cities, like in Stuttgart, GIS is used to centralise geographical information of different departments, so that brownfield managers can easily get information about the relevant site (aerial photos, trees, contamination, current building law, ownership). The information of the GIS layers need to be readable, printable and extractable so that a brownfield manager can use data of the GIS data system to create his own project files with his special visualisation needs. GIS is also important for the web-based visualisation of data for citizens, investors and other interested stakeholders.

Related to brownfield management the city of Stuttgart works mainly with two databases, which are connected to the municipal GIS. The Department for Environmental Protection provides the “Information system for contaminated sites Stuttgart” (ISAS) where all potentially contaminated sites are gathered together with investigation results from the past, the current working status and the need for further action. The data management is done by the above mentioned department, but all other departments have the possibility to get information out of the database via the municipal GIS. The second system is managed by the Department for Urban Planning and Urban Renewal and is called “Sustainable management of building areas in Stuttgart” (NBS). In this system potential building land is stored. Relevant data can be provided by all registered users of the database.

The city of Ústí nad Labem operates its “City Map Portal” with a brownfield GIS layer. It was decided that splitting GIS layer into two levels – public and non-public (managerial) – is reasonable because data collection is very expensive and this saves data from misuse or resale. The GIS brownfield layer and its web solution were made as one of the results of the COBRAMAN project. It is based on data collected in 2010 during detailed brownfield inventory, also managed by the COBRAMAN project. The layer is edited and actualised by the Department of Urban Planning every 2 years due to Czech urban planning law restrictions and also in specific cases according to data delivered by the Department of Strategic Development. The brownfield GIS layer is linked with cadastral database, as the Czech cadastre is declassified. The public layer should have attractive appearance, should be user friendly and should have intuitive navigation.

Especially for smaller cities the costs for establishing and maintenance of a GIS might be a major concern. However basic GIS systems are available for free. Also the City of Ústí nad Labem puts this fact into consideration, but due to specific demands (planning, graphical or functional) the city opted for a comprehensive solution: it paid for license but several free of charge additional functionalities and updates are available to the user of the license.

In general there is growing awareness of the economic and strategic value of GIS. The benefits of GIS for brownfield management are following: cost savings and increased efficiency, better decision making, improved communication, better recordkeeping and managing geographically.

4.3 Information and Communication at Project Level – the Site Review

From the beginning of a project a multitude of information, planning documents, technical reports etc. will be produced by various participants involved. Keeping the overview, structuring and filing, assessing according to relevance and target groups as well as drawing appropriate conclusions are fundamental tasks to ensure the information flow within the project and its environment.

The site review is the mother document, outlining and summarising all relevant aspects, and linking to the wealth of existing specific documents. It is an internal working document continuously updated, collecting information from all members of the working group. It helps to bring all working group members to the same level of knowledge; it should be easily accessible for them. It should not be focusing on different target groups, but be considered as the source for specific documents (e.g. SWOT) and target group related information as e.g. marketing communication activities.

As many cities are already operating brownfield registers similar information systems, it has to be decided

- » which parts of information,
- » to which level of detail and
- » in which time intervals the transfer of updated content will be done from the site review to these public info systems.

The following table (Table 5) indicates the structure and content list of such a site review report.

Table 5. Structure of the site review report

Chapter	Content
Rationale and goals	<ul style="list-style-type: none"> » Structuring available information » Bringing working group members to same level of knowledge » Basis for SWOT and vision development » Basis for marketing communication activities
Project site and its	<ul style="list-style-type: none"> » Location within the city
Surrounding / Macrosite	<ul style="list-style-type: none"> » Background project name, delineation neighbourhood » How does it look “on site” » Development plans of neighbourhood
Historical and current use of the site	<ul style="list-style-type: none"> » Type of use » Ownerships » Site specifics

Conflicts and constrains for developments	<ul style="list-style-type: none"> » Contamination & remediation » Heritage/nature protection » General urban planning constrains (fresh air corridors, green belts, large scale future projects, etc.) » Ownership structure, pre-emption rights » Political interest
Current state of planning	<ul style="list-style-type: none"> » General planning principles of the city » Existing planning framework, land use plan and urban design » Zoning plan » Infrastructure and transport planning
Available investigation reports and studies	<ul style="list-style-type: none"> » External expertise / feasibility studies related to planning » Cost benefit models of various land use options » Any other expertise closely related in terms of location as well as in terms of "circumstances" to the development site
Currently ongoing activities	<ul style="list-style-type: none"> » Describe all activities (incl. political/public interest) » Keep the document updated!
Visions and potentials for development	<ul style="list-style-type: none"> » The brownfield SWOT » Strategies, development objectives, general principles » Mission statement
Basis requirements for preparation of land for building, contamination	<ul style="list-style-type: none"> » Soil and groundwater contamination, remediation concepts » Waste management » Geotechnical aspects » Social infrastructure required
Technical activities for preparation of land for building	<ul style="list-style-type: none"> » Demolition of buildings and infrastructure » Installation of public infrastructure » Geotechnical investigation » Explosive ordnance investigation and clearance
Impact assessment of building activities	<ul style="list-style-type: none"> » Occupational health and safety » Neighbourhood » Nature conservation
Finances and marketing	<ul style="list-style-type: none"> » Market and risk analysis, marketing concept » Project costs and revenues » Potential funding opportunities » Financial engineering » Partners in finance and marketing
Time schedule	<ul style="list-style-type: none"> » Definition of milestones and critical stages » Draft of project development schedule » Ongoing activities which might affect the schedule

Summary and conclusions	<ul style="list-style-type: none"> » Summary of decisions taken within the interdisciplinary working group regarding direction of development » Identification of the next steps to be taken » Updated regularly in parallel to the work progress
Bibliography, guide to project documentation	<ul style="list-style-type: none"> » Literature cited » Title and storage location of related expertise/reports » Table of people or organisations /departments involved including contact details » Annexes

4.4 Coordination – the Interdisciplinary Working Group

It is consensus that a working group with all actors represented is a must for coordinating the manifold activities around the brownfield regeneration process. The term "interdisciplinary working group" reflects the composition of this group comprising various departments and specialists involved. However, the name used for such a project specific working group might be chosen differently.

The working group structure will depend on the specifics of each case and it might vary during the subsequent phases of project implementation. It is recommendable to set up a formal statute for the working group, outlining:

- » aims and objectives, lifetime, meeting schedule,
- » membership, representation and participation,
- » competences and duties of the members,
- » rules for decision making,
- » chair and secretariat.

The more responsibilities and decision making power can be assigned from the different departments to such a group, the more effective their work will be. It is a key role for the regeneration manager to take over the chair or secretariat of the working group.

4.5 Strategy and Marketing – the Brownfield SWOT

SWOT Analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities and Threats involved in a project or in a business venture.

SWOT stands for:

- » Strengths: attributes of items that are helpful to achieving the objective.
- » Weaknesses: attributes of the items that are harmful to achieving the objective.
- » Opportunities: external conditions, which are helpful to achieving the objective.

Threats: external conditions, which could do damage to the objective.

In SWOT analysis a careful identification of individual SWOT items is essential because subsequent steps in the process of planning for achievement of the selected objective may be derived from the SWOT. For a brownfield regeneration specific SWOT these items have been categorised into:

- » microsite aspects, e.g. current and future use, ecological aspects, financial issues, social and cultural aspects etc.
- » macrosite aspects, e.g. neighbourhood uses, infrastructure / transport situation, market situation & competitors etc.
- » stakeholder engagement, e.g. owners, investors, citizens in neighbourhood, politicians etc.

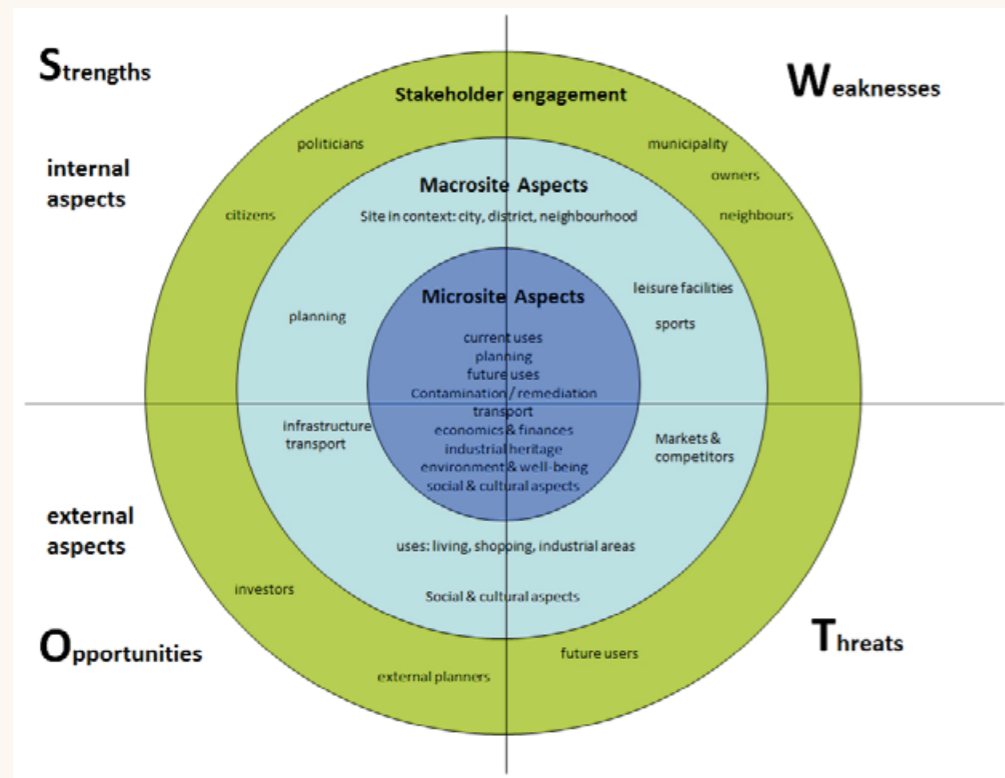


Fig. 7. SWOT systematic approach including external and internal aspects at different scales

This third category “stakeholder engagement” is considered to be the key function driving or blocking development, as their interests and activities are superposing site aspects (micro- and macrosite). This is well represented in the windmill principle (Fig. 8). “The stronger the wind is blowing, the faster the wings are moving”. This might be conveyed to “the strength of the interests and of the voices of certain stakeholders will define the progress in regeneration processes”.

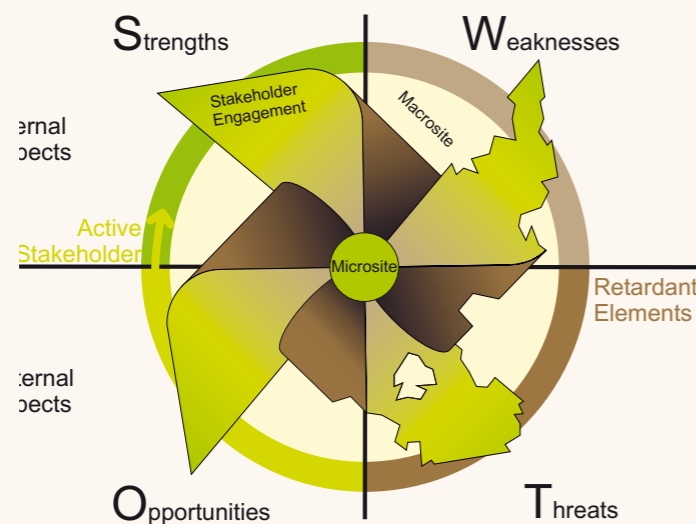


Fig. 8. Windmill principle in brownfield regeneration

Raising awareness of the different stakeholder’s understanding and problem characterisation

is also well visualised in the CABERNET “football model” (see <http://www.cabernet.org.uk/index.asp?c=1313>)

For the practical work on setting up a SWOT it is recommendable to work with a matrix for each category, as illustrated for the macrosite aspects (Table 6).

Table 6. Example of a matrix to be applied

macrosite aspects area in context	aspect	strengths	weaknesses	chances	risks
city, district, neighbourhood					
uses at surround					
infrastructure / transport					
plannings at surround					
industrial heritage					
realisation					
markets & competitors					
remediation					
ecological aspects					
sports / leisure					
social & cultural aspects					

4.6 Project Management – the Brownfield Regeneration Management Plan

This plan is similar to a classical project management plan. It is a formal, approved document that defines how the redevelopment project is executed, monitored and controlled. Depending on the complexity of the site it may be summary or detailed and may be composed of one or more subsidiary management plans and other planning documents.

It is like a roadmap for all project team members but especially dedicated to the BM. It explains how the intended project scope will be reached, guides through the stations from initiating, planning, executing, monitoring and closing the redevelopment project and helps to take care of various project constraints like scope, quality, schedule, budget, resources and risks. Once agreed and approved by at least the project team and its key stakeholders the plan is the binding framework for all activities during the redevelopment process.

What makes the difference? As in general project management matters it is all about persons, their aims & goals, the financial framework, the time planning, public relation and documentation. But the special situation in a redevelopment projects even enlarge the complexity of a project. This complicates the definition of clear and broadly accepted objectives, structures and main work flows and subsequently setting up of subsidiary plans for schedule, cost, risk and quality management as well as stakeholder engagement plans.

Although at project start the urban development framework and targets seem to be well defined, the longevity of the processes or technical risks and related modifications may imply changing boundary conditions, entrance of new stakeholders or substantial shifts in stakeholder’s attitude towards the development.

These imponderabilities hamper the setup of well defined management plans. On the other hand, they underline the particular importance of their strict application.

The general structure is divided in 4 categories (Fig. 9) and helps to keep the overview. The structure is as simple as possible but as complex as needed to cover all aspects of the redevelopment project in an adequate way. The importance of the single elements may vary from case to case but the general structure can be applied to all kind of redevelopment projects. The number of categories is not indicating the importance of the elements but is reflecting the logical and partly chronological sequence or a redevelopment process.

The COBRAMAN recommendations to build a brownfield regeneration management plan (BRMP) are based on the standard set and described by the PMBOK® Guide, Project Management Institute (2008), a guide to the project management body of knowledge, 4th edition (see <http://www.pmi.org/en/PMBOKGuideandStandards/StandardsLibraryofPMIGlobalStandards.aspx>). Free templates for all plans and subsidiary plans are available at <http://www.projectmanagementdocs.com>.

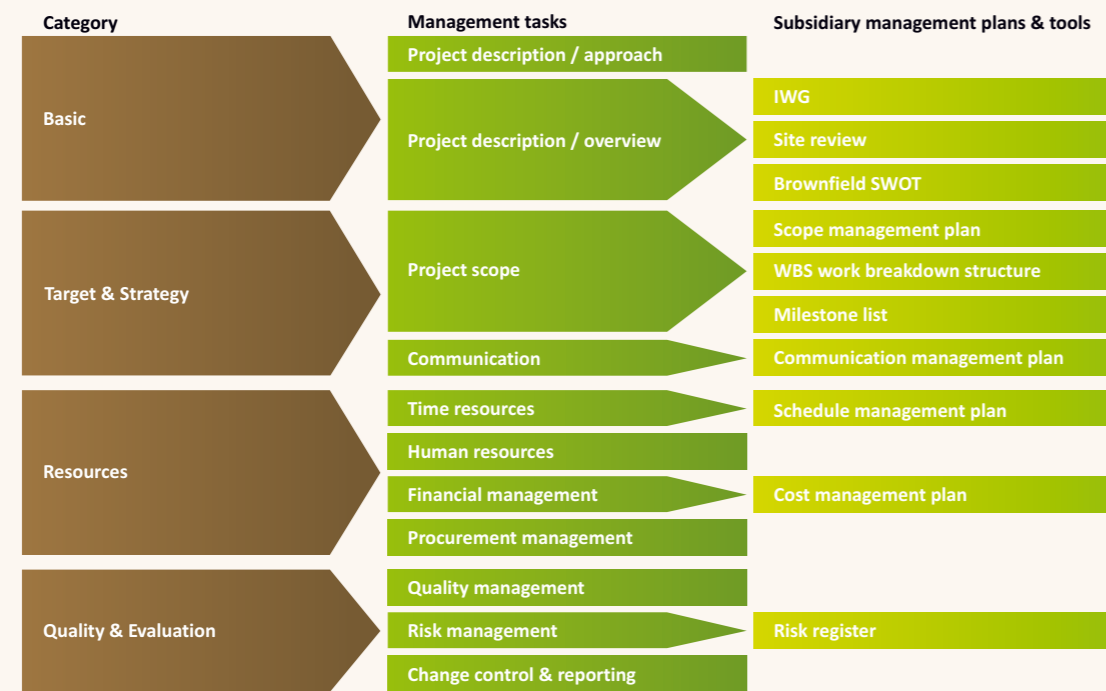


Fig. 9. Generic structure of a brownfield regeneration management plan

The first category is dedicated to collect the basic organization structure of the redevelopment project and lay down the key facts of the site. It serves as reference paper with regular updates. The SWOT analyses already show which potentials the brownfield site offers but also where are the risks and obstacles.

Under the headline target and strategy the second category comprises the scoping process as well as the communication processes. Both processes are continuously ongoing and have a very close link. Especially during complex redevelopment projects the communication with stakeholders is of outstanding importance as they may influence the scoping process.

The third category is dealing with resources and the way of managing these during the whole process. Time, human resources as well as budget issues are described. Due to the fact that during a redevelopment project a large number of external expertise is consulted, also a chapter how to manage the procurement with time consuming tendering procedures was introduced.

Last but not least with a very close link to the scoping process quality aspects of the project are treated in the fourth chapter "Quality and Evaluation". Which quality standards should be followed during the process and which quality standard should be reached with the final redeveloped site? The aspect of sustainability and criteria to check the envisaged goals are discussed. Another important task regarding quality is the risk management. How to monitor and evaluate quality criteria of the redevelopment process and how to follow up changes in the process which are for sure in such a long term complex project are described as well.

Each category comprises several aspects which have to be taken into consideration in the management of a brownfield regeneration processes. Some of these aspects are simple and self-explaining but mentioned here just not to be forgotten whereas some are demanding as they are complex, long termed, continuously under change or threatened by various risks. Explaining all aspects and related tools in detail would go beyond the scope of this document. They are included as subsidiary plans in the detailed project documents of the pilot projects on the COBRAMAN website.

5. COBRAMAN Best Practice

As described in section 1, each partner's local pilot project describes different aspects of brownfield revitalisation. These pilot projects have been implemented by the brownfield regeneration managers involved also in the transnational activities of the project, thus providing the "playground" for the training activities too. The projects and their achievements can be considered well founded as best practices in brownfield management.

5.1. City of Bydgoszcz – Green Stop-Over at the Brda River

During the pilot brownfield works in Bydgoszcz, the focus was put on a frequent blockage on the way to the successful development process, namely soil contamination. Soil contamination is a frequent deterrent in the process of regeneration of brownfields as each brownfield has its history that a future investor needs to face.

Official name of the site	Green stop-over
Area	1 130 m ²
Owner	City of Bydgoszcz
Former use	Part of tar paper factory
Planned use	Recreation area

History of the site

The industrial history of the pilot site lasted for 150 years. The neighbouring Bydgoszcz City Gasworks was located east of the pilot site and it operated in the years 1860 – 1973. The tar was produced in the gasworks as a waste byproduct and it was used for tar paper production. The tar paper factory and the gasworks operations resulted in heavy soil contamination. The soil quality was deteriorated further by subsequent operations of the city tram depot whose location was there and afterwards with the contamination induced by numerous private repair shops and service stations.

Starting conditions

The area designated to be developed within the COBRAMAN project is owned by the City of Bydgoszcz and it was an unused brownfield at the time of selection. The site is located in the very heart of the city along the riverbank. It covers the area of 1 130 m² and yet as small as it may have seemed, it was vividly noticeable to the passersby who had stumbled upon the neglected wall ruins (Fig. 10) with a heat pipe on them and conspicuous remnants of a previous building. To make matters worse, it was not solely the visible image of the site that was problematic but also the soil quality remained an issue due to the 150-year-long industrial use. The initial project tests identified soil contamination with BTEX, PAHs and phenols. The site was contaminated, neglected and popular among local vagabonds.



Fig. 10. Starting condition



Fig. 11. Playground at Brda river

Plans

The aim of the pilot investment was to conduct a process of regeneration, clean up the soil and develop the site for a future recreational use (Fig. 11). Ground contamination is a serious deterrent that has to be dealt with in many investments in Europe. The target was to not simply carry out the regeneration process of the contaminated brownfield but at the same time describe the path that had to be taken by the brownfield manager. As a result, the COBRAMAN recommendations were drawn that will equip managers of future similar undertakings in the know-how they need. Not only is the COBRAMAN pilot site going to be regenerated but the adjacent riverbank will also acquire

a new face soon, thanks to the revitalization process implemented through another project entitled “Revitalisation of the River Brda Boulevards”.

Procedures, steps taken.

Polish law, the Law of 30 April 2007 on preventing environmental damage and repairing it sets out principles of dealing with contaminated brownfields. According to it, the owner or the administrator of a brownfield of a real estate with documented environmental damage to the earth surface is obliged to carry out corrective actions with respect to the land which shall result in removing the threat to human health. Corrective actions should be conducted in the manner and within the scope agreed with the Regional Directorate of Environmental Protection.

Redevelopment steps:

- » Site investigation
- » Remediation concept
- » Remediation plan
- » Remediation works
 - » preparatory work (demolition, plot demarcation, establishment of the site, securing the piezometers etc.),
 - » extraction and export of unspoiled soil from a zone on the depth of 0-2 m, the extraction and transfer for treatment single portions of contaminated ground from this zone,
 - » extraction and export of contaminated ground and transfer for treatment,
 - » preliminary treatment pumping of the groundwater,
 - » the injection of yeast solution directly to the excavation pit,
 - » initial backfill excavation pit,
 - » the injection of bio-preparations into the ground,
 - » final backfill of the excavation pit with clean sand,
 - » technological and observation boreholes: t1, t2, t3 and restoration of the existing piezometers CBR1-CBR4,
 - » injection of bio-preparations through the boreholes CBR1-4 and t1, t2, t3, monitoring the progress of the ground remediation process.
- » Recreation area design documentation
- » Installation of recreational area (playground)

Although the pilot site and neighbouring areas were previously investigated, additional tests were necessary owing to the possible migration of contamination. The results of the ground and groundwater investigation carried out by an external expert confirmed the existence of PAHs, BTEXs, phenols and oils. With a view to selecting the optimal remediation solution, first three remediation concepts were elaborated, then analysed by the municipal expert group and finally the remediation project was set up.

The remediation was carried out in a two-phase process. In the *ex-situ* phase contaminated ground was removed for outside-the-plot recycling. In the *in-situ* phase the ground was cleaned on the site by bio-preparation with a high assimilation characteristics for petroleum hydrocarbons. Additionally, the pretreatment of the groundwater was carried out.

Prior to the remediation, the quantity of the contaminated ground for excavation had been determined by a series of probing in the net intervals of 4x5 m. In total 73 ground samples were analyzed from the level up to 3.6 m bgl. Due to the location of previous activity in the western part of the plot and due to the water flow direction the highest contamination that exceeded the allowed concentration that was observed at 2-3 m bgl in the organic fraction.

Ex-situ phase



Fig. 12. Demolition of remains (A); excavation of contaminated ground (B); filling the trench with clean sand (C)

The first step was to demolish the ruins located on the site. In total, 1090 Mg of rubble were removed from the site for recycling. Only afterwards, the excavation of contaminated ground started. 1921 Mg of contaminated ground were excavated and transported on the bioremediation field, where the ground was formed in 2 meters piles and sprayed with microorganism solutions. The total area was finally covered with 2302 Mg of clean sand, 411 Mg of planting soil and 70 Mg of humus.

In-situ phase

- » Pretreatment pumping

The floating pump was installed on the excavation pit. It pumped the contaminated water to the petroleum separator. Water went through the gravel filter and activated carbon to return to the excavation pit.

- » Application of bio-preparation to the excavation pit

Yarrowia lipolytica yeast was used for the bioremediation. It is a non-hazardous and non-pathogenic species that was awarded by the General Technical Organization in Wrocław.

- » Pressure injection of bio-preparation

A GEOPROBE machine was used for the injection of yeast solution *Yarrowia lipolytica*. In the western part that was the subject of *ex-situ* remediation 25 injections were done into the saturation zone (4-7 m bgl). In the eastern part 24 injections were applied (4-7m bgl). Additionally, 27 injections were carried out on slopes (2-4 m bgl).

Application of the bio-preparation to the boreholes

4 observation boreholes were reconstructed and 3 technological ones were made. 7 samples of ground and groundwater were taken from each borehole from the saturation zone for the laboratory analysis.

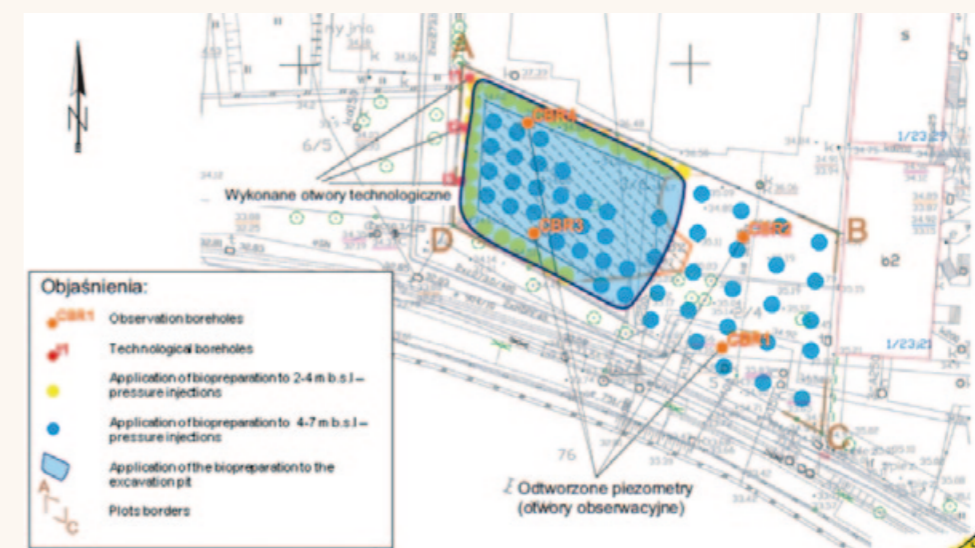


Fig. 13. Application of bio-preparation (Report on remediation works, SEGI-AT)

Results of groundwater analysis show that the level of WWA concentration was reached in the bottom of the excavation pit, beneath 20 mg/kg PAHs, so the ecological effect was reached. The highest contamination is noticed in the western part of the plot (technological boreholes t1, t2, t3) where the excavation was not applied. In this part the biological process is taking place.



Fig. 14. Site after remediation

Playground – the final step

The COBRAMAN pilot site functions in the spatial planning as a leisure area and belongs to the non-industrial urban areas according to the national law. Land elevation is about 35 m above sea level inclined towards the river. The works started from the preparation of the design documentation and acquiring all the necessary building permits. Demolition works design documentation was drawn in this phase as well. Only when the site was cleaned from the debris and only when the ground was remediated, did the new development start.



Fig. 15. Playground visualisation

Development includes:

- » Picnic benches
- » Playground for small children (sandbox, slide, swings, see-saws, springs)
- » Pathways, benches, trash cans
- » Greenery (trees and shrubs)

Currently the city is realizing the project entitled: “Revitalisation of Brda River Boulevards” which also foresees the redevelopment of the pilot site neighborhood. Open-air ground chess pawns, new paths, benches and street lighting together with the COBRAMAN development will change that part of the city more than significantly (Fig. 16).



Fig. 16. Photos of the playground

Timeline

Date	Action	Duration
4/2010 - 7/2010	soil investigation (investigation, elaboration of report on soil condition and fulfilling administrative requirements)	3 months
8/2010	remediation concept	1 months
6/2011 - 7/2011	remediation plan	2 months
8/2011 - 9/2011	remediation plan approval by respective authority	2 months
9/2011 - 10/2011	tender for remediation works	2 months
1/2012 - 4/2012	remediation works (ex situ and in-situ)	4 months
3/2011 - 7/2011	recreation area design documentation and approval by respective authority	4 months
4/2012	tender for recreation area works	1 month
5/2012 - 6/2012	recreation area works	1 month
4/2012 - 12/2012	remediation: application of bio-preparation to the ground	8 months
2014	ground and groundwater monitoring	still running

Actual achievements

- » Brownfield Manager coordinating redevelopment process of pilot investments who works within the municipal structures
- » Cooperation between different departments as one Interdisciplinary Working Group
- » Setting up management tools for a redevelopment process
- » Removal of ground contamination and improvement of environment
- » Decreasing human health hazards
- » Development of a recreation area for citizens who can rest by the Brda River banks.

Practical recommendations

- » Do not underestimate the preparation phase
- » Get a broad knowledge on the previous and current state of the area and include it in the site review
- » Make the site review the reference document for the politicians, investors, administration staff and other interested parties and continuously update it
- » Choose the Interdisciplinary Working Group members only from those who are willing to make the effort to cooperate on day-to-day basis and problem-to-problem basis
- » It takes more than the investment know-how to make the investment successful – you need management skills and strong political support as well
- » Decision on the subcontracting mode whether one company shall carry out the planning and remediation works or to separate them shall be thoughtfully considered at the very beginning of the procedures, taking into consideration all specifics of the site and the scope of the works planned
- » Bear in mind that the tendering process takes substantial amount of time and knowledge. Good preparation of the tender documentation will result in good contractors
- » Remediation is not typical work and the range depends on various factors, so a precise estimation of the costs has to be done by an expert who knows the current financial trends in the remediation market

Besides having broad knowledge of the environment protection and of specific remediation legal aspects, one has to be aware that most remediation works are dedicated to waste management law

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5.2. City of Stuttgart – Area Quellenstraße

Stuttgart, the State Capital of Baden-Württemberg with about 581000 inhabitants, covers about 207 square kilometres. As centre of the Stuttgart region with 179 cities and municipalities and 2.7 million inhabitants, Stuttgart is a highly attractive business location facing several problems in urban development. Stuttgart is a green city: about 50 % of its boundary consists of forests, vineyards and spaces for recreation. At the same time, Stuttgart is famous as city of industrial players as Daimler, Bosch or Porsche and comprises as well a vivid spectrum of medium-sized businesses. Due to these preconditions, areas for housing and further commercial industrial development are limited. So an intelligent reuse of inner urban site potentials is inevitable to secure a sustainable, forward-oriented, socially and economically compatible urban development. Since the early 1990s, Stuttgart focuses on inner urban development. The revitalisation of brownfields to activate existing potentials is a challenge for municipality, investors and citizens. Due to the industrial history of many city districts, brownfield redevelopment needs clear agreements between several departments and other involved stakeholders. Although a lot of projects, integrating planning and remediation in a cooperative way have been finished successfully, other sites could not be developed by conventional proceedings yet. Therefore the City of Stuttgart focused in COBRAMAN on the testing of new organisational structures by implementing Brownfield Managers to activate derelict brownfield sites with a highly negative image.

Official name of the site	Area Quellenstraße
Area	30700 m ²
Owner	City of Stuttgart
Former use	Mineral oil recycling company
Planned uses	Craftsmen centre 2.0 – industrial / commercial uses

Pilot site in context

The pilot area Quellenstraße is located in the traditional industrial zone “Pragstraße” in the western part of Stuttgart. Due to ongoing structural changes, the industrial zone “Pragstraße” is characterized by industrial, commercial, cultural and administrative uses and heterogeneous structures. Although changes in uses could be established already (cultural and creative uses), most parts of “Pragstraße” give an unattractive impression, hindering marketing activities to succeed.

The municipal COBRAMAN pilot area Quellenstraße consists in fact of two single plots: the former industrial site Epple (8700 m²) and the neighbouring site “Hasenweiden” (22000 m²) form together area Quellenstraße.



Fig. 17. Aerial view on Epple site before the demolition of industrial buildings and afterwards

History of the Epple site

The Epple Company was active in petroleum and tar oil recycling business since the end of the 19th century. Due to over 130 years of industrial utilization and damages during Second World War soil and groundwater were heavily contaminated. At the eastern neighbouring site about 40 tons of pure oil were extracted by the drainage system. In 1995 the ownership of the site changed and the investigation activities on the site were intensified so that from 2001 to 2003 about 63500 tons of contaminated soils were excavated. By the end of 2003 the investigation and remediation costs amounted to 4.3 million €. In 2005 the City of Stuttgart became the owner of the site which was now prepared for new developments.

Starting conditions - conflicts and obstacles

In Stuttgart and beyond, the former Epple site is well known as “the biggest environmental damage, the City ever had to deal with”. Thus all subsequent promotion activities failed. In spite of good traffic connection by surrounding main roads and close stations of public transport, the accessibility to the area is insufficient: Vehicles can drive into the area only from one direction. The western part and the eastern part are completely disconnected. The Epple site itself is split into two parts, separated by a bulkhead with 10 meters height. The Hasenweiden site comprises mainly green land, just 25 % of the space may be used for new developments. The industrial zone Pragstraße as macrosite possesses no attractive public spaces, no gastronomy and no retail services for daily supply. The foreseen future uses are mainly focused on commercial uses whereas residential and retail sales are excluded.

Plans and targets for development

The main target of COBRAMAN’s activities was to improve the existing bad image connected to the area Quellenstraße, especially to the Epple site. Therefore the activities within the COBRAMAN projects aimed at the overcoming the hindrances for marketing and the securing of a sustainable development of the area.

A joint development of both sites (Epple and Hasenweiden) alongside with a successful branding for the area Quellenstraße and serving as a lighthouse project for the surrounding industrial zone was thus target of COBRAMAN’s activities.

Procedures, steps taken

Analysis by COBRAMAN-Team

The Brownfield Manager first analysed the bygone marketing attempts and compiled a site review, covering all aspects of the site and its surrounding, to provide a basis for internal and external communication and to carve out the most feasible development options. To eliminate the burdened expression “Epple site”, the COBRAMAN-Team decided to establish the wording “Area Quellenstraße”, including former Epple site and Hasenweiden. First contacts to neighbours, potential investors and other stakeholders were established.

External feasibility and marketing study

To get a vision for future development, the Wüstenrot Haus und Städtebau GmbH (WHS) in cooperation with a renowned Stuttgart planning office was commissioned in March 2010 to provide a feasibility and marketing study. The ideas developed from March to August 2010 by WHS, external urban planners and municipal Brownfield Managers focused on a boulevard, connecting all parts of the quarters and representing a central spine to create local identification. Evaluating former planning and current market research studies three alternative possibilities were drafted: office buildings, indoor playground and Craftsmen Centre 2.0. The last option as unique selling point was identified as most promising and market-driven. A small scale development considers the interests of adjoining private owners which defined a strong need for marketing measures to create a new image. Accessibility should be improved by extension and revaluation of the Quellenstraße.

For upcoming marketing activities further steps were recommended:

- » Installation of an Interdisciplinary Working Group (IWG)
- » Further dialogues with “Big Neighbours”
- » Development of concrete marketing measures
- » Ongoing project management by a Brownfield Manager
- » Further clarification of craftsmen’s needs
- » Investigations of site contamination and remediation costs
- » Checking of funding possibilities (national funding programs).

Intense contacts to stakeholders

In parallel, the Brownfield Managers intensified the contacts to neighbours and the Local Craftsmen Association. The discussions pointed out that a common marketing would be desirable and could support and strengthen their own activities (win-win situation).

Finalisation of marketing study

After the positive feedback of the responsible political decision makers the marketing strategy, including a cost effectiveness study, was finished during January and February 2011. For a future marketing campaign the implemented management structures are to be continued, contacts to neighbours and investors interests need to be intensified. The development of industrial commercial modules was recommended.

Workshop towards a successful marketing campaign

For the implementation of the vision into a professional marketing campaign a workshop with representatives of all affected municipal departments, possible users, experts from real estate business and local stakeholders was carried out in June 2011. This strategy workshop was also the kick-off for the interdisciplinary working group IWG Quellenstraße.

The participant voted for a thematic "Label" to be put on area Quellenstraße. To attract users, a concentration in marketing to the topic Smart Home and adjoining sectors was identified as useful.



Fig. 18. Strategy workshop June 2011

Timeline of activities

Date	Action	Duration
09/2009 – 02/2010	Site Analysis COBRAMAN-Team, Site Review, contacts to relevant stakeholders etc.	6 months
01/2010 – 03/2010	Tender for Feasibility & Marketing study	2 months
03/2010 – 08/2010	Feasibility & Marketing study phase I	5 months
09/2010 – 12/2010	presentation to decisionmakers	4 months
09/2010 – 12/2010	Talks to stakeholders	4 months
01/2011 – 02/2011	Feasibility & Marketing study phase II Finalisation	2 months
03/2011 – 04/2011	Tender for Workshop Marketing Campaign	2 months
06/2011	Workshop Marketing Campaign & summary of results	1 month
09/2011	Start of marketing activities of the department of economic development	still running

Actual achievements

The feasibility and marketing study clarified the potentials of area Quellenstraße. A common vision within Stuttgart municipality can be communicated clearly towards future users, citizens and neighbours.

As marketing responsible, the department of economic development will go on in marketing activities for area Quellenstraße respecting the ideas developed in the Workshop. A strong cooperation with the Local Craftsmen Association is foreseen. If the focus should prove to be too narrow, the search for new owners should be enlarged to related professional categories like e.g. young engineers, architects, R&D sector etc.

The IWG will support the department's activities and strengthen the interdisciplinary approach towards a successful marketing.

Marketing and promotion activities on the Schoch site in Stuttgart-Feuerbach

Based on a detailed marketing study done in 2008, Stuttgart municipality started marketing activities for Schoch area in 2011, as the economic development after the financial crisis has provided stimulus again to the local market on commercial estates.

With support of the local political level a "Open Day of Schoch site", including a public workshop as kick-off for a further participation process was organised on the site on 15th October 2011. Local interest groups, citizens and potential investors participated in the event where municipal representatives presented the current situation and the next steps in realising a new urban quarter. As the event was promoted by leaflets, posters, the municipal homepage and reports in local newspapers about 400 people used the opportunity to get informed about the site and the future developments. About 120 people discussed their ideas in two first citizens brainstorming sessions with municipal experts, to introduce their interests and to register for a strategic planning workshop in spring 2012 preparing inputs for the upcoming urban development competition.



Fig. 19. Impressions of Open Day and public workshop at Schoch site

In April 2012 about 60 interested citizens, owners and potential investors discussed in a public workshop further ideas for development of Schoch-area. The results were brought into the tender for the upcoming urban planning competition. Thus identification with the planning process and the development was strengthened on local level. Further the way to smooth marketing in the future was paved.

Practical recommendations

- » The Site Review as central document, including all relevant information about macro- and microsites as history, planning, environmental situation, general problems and framework conditions, is an inevitable tool for Brownfield Managers.
- » A SWOT Analysis, developed by Brownfield Managers as neutral parts within municipal structures helps to clarify all aspects and development chances of a Brownfield Site.
- » The Installation of an IWG and a Brownfield Manager to steer and overview the revitalisation process helps all municipal staff involved to keep the project in mind as a whole. Thus the members of the IWG learn about all aspects of the site, the needs to prioritise and to find well based agreements. In case of public events the IWG is representing the interests of the municipality towards citizens, investors and public and is able to give an adjusted vision for the future development
- » Early and intensive contacts with owners, political decision makers, investors, neighbours, interest groups and other stakeholders are necessary. Participatory processes beyond legal framework do pay out in further development.
- » Intensive dissemination activities to reach politics and broad public shall support brownfield management permanently.
- » Flexible planning approaches and working structures, reacting on changed necessities in development will strengthen the position of a municipality,

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5.3. City of Most – Most Lake

Because of the former CSSR Government decision the old city of Most, as part of the coal basin, had in the seventies of the twentieth century to give way to mining in the volume of about 100 million tons of brown coal. As a technological method of extraction was chosen open cast mining, which is very effective but it damages massively and nearly irreversible the surrounding landscape. New city of Most was built. After the demolition of the old town and the coal excavation a brownfield of enormous dimensions remained. Part of the area has undergone extensive reclamation, resulting in a new shape of the landscape and the areas planted with grass and trees. Also numerous technical communication roads and trails were built. The open pit remaining after coal extraction was flooded to create a large lake, which could be used again. The City of Most decided to actively deal with the problem. One of the activities associated with this brownfield site has been the involvement of such a vast territory of the future Most Lake as a pilot project site to COBRAMAN. Most Lake site with an area of nearly 1500 ha is a complicated territory, consisting of a dump, natural terrain, remains of industrial activities, water surface and industrial communications, also partly influenced by former underground mining. In the area of the future Most Lake site, 10 projects are planned or already realised. However, it is necessary to figure out a systematic and most feasible use of all parts of this area whether for industrial, housing or leisure activities. In the frame of project COBRAMAN a series of four studies was prepared for this purpose that aimed to outline the direction of development of the site in the coming years. These studies, which are just one of the outputs of the project, can serve as an example how to work with other brownfields in the city or in the region.

Official name of the site	Most Lake
Area	12 520 000 m ² (1 252 ha)
Owner	state, City of Most, 23 small private owners
Former use	open cast mine
Planned use	leisure, housing, high-tech industry
Pollution and remediation	area after open cast mining and storage of building rubbish/rubble, basic reclamation works finished (drainage, surface treatment, lake water filling)

Starting conditions

Basic technical rehabilitation of the land has been created and is currently completed by a public (state-owned) company. They create a basic landscape relief and prepare large areas for further use, e.g. the planting of grass and vegetation, creating a network of roads and communications, basic engineering connections, strengthening the banks of the lake for future flooding and eventual storm water events. So far it is primarily the state's responsibility to take care and manage this brownfield area.

The lake is located within the main area of the City of Most. Thus there is a need to clarify if at least part of the land will be returned to the city, when this will happen and under what conditions this restoration occurs. And what will happen with the returned area which is in a generally good condition, but the technical aspects for the revitalisation and resettlement are not yet sufficiently prepared.

Plans

The studies performed are dealing with a wide range of brownfield related issues covering technical and urban design, economic development, marketing strategy and the implementation of a brownfield regeneration management system in the framework of the city administration. The study of technical and urban design aimed to collect all previously known data on the given territory to capture all known projects, plans and identify sub-areas in the locality, preferably used for construction, recreation or as a nature reserve. The economic study has analyzed the costs related to the regeneration of the basic maintenance area, the costs of the development projects planned and the estimated amount of investment in basic infrastructure throughout the entire area. The marketing strategy showed how to deal with the site as a future "good or asset". These studies will serve in the future as a basis for the planning process.

Within COBRAMAN also a hydrogeological and geotechnical survey has been performed for the part of the territory, which is considered as a location for construction of family houses and apartment buildings. The knowledge about the geology of the site gained with this survey is enables to choose effective solutions to foundation conditions for

future buildings. Other studies were architectural and urban studies of resettlement of the future Most Lake area. These futuristic concepts were created in 2009 by students of the Faculty of Architecture Technical University in Prague. All the studies form a large and complex collection of data, procedures and methods, how to work with such an extensive territory left after mining and related activities. This is a unique collection, which may well serve as an example of good practice in preparation for large investments in brownfields to other European cities, professional institutes and specialist development companies.

The study on appropriate management approaches and structures considered first the possibility that the project will be managed within the organisational structure of the city, with an especially established department or unit that will concentrate on the development site. The city retains influence on the development of the locality but on the other hand, officials are not always able to act as entrepreneurs. Another option is to create a regional development agency partly owned by the city, partly private entities. In addition to managing the development of the locality among responsibilities of the Agency would be also to seek for appropriate sources of funding. In this case, it is likely to ensure a balance between political and social influence on the development and necessary business approach. The third option is to pass in an appropriate form the entire territory under the administration of private developers. It certainly opens up wide possibilities for rapid and dynamic development of the locality. On the other hand, there is a danger that the city will lose control. If city management is not strong enough, we recommend the second option - the establishment of regional development agencies.

Procedures used

In developing ideas for further use and development the organisation of "round tables" or "expert panels" can be recommended. We invited experts from various professions and fields of life - hydrogeologist, sociologist, expert on geographic development, investment professional, civil engineer, architect, also politician responsible for regional policy development. The discussion resulted in a very interesting and unusual perspectives on the development of the solution as well as useful recommendations, what steps should be followed in the future.

- » Analysis of available data, measurements and information relating to the territory
- » Expert panel to gather different perspectives on the possible development
- » Professional workshops with specialized companies that deal with various aspects of the development
- » Meetings with representatives of political life
- » Communication with potential funding sources - particularly grant programs

Timing

Date	Action	Duration
Autumn 2008	Summary of land reclamation works and plan for reclamation finishing	3 months
March 2009	Strategic decisions on brownfield area development planning	3 months
September 2009	Preliminary SWOT and identification of 4 area development studies	6 months
September 2010	Comprehensive information on economic, technical, marketing and brownfield management aspects	12 months
September 2011	Input of strategic studies into the regional development management and preparation for next programming period	12 months

Actual achievements

The City of Most is now equipped with important documents - documents that allow further steps to develop the whole area:

- » Technical study of state and urban area development opportunities
- » Economic study for further investments in the locality
- » Marketing studies for working with the locality as an asset
- » Proposal for a management system for brownfield development

These documents are ready for negotiations on a political level and for communication with the public, to negotiate with governmental organisations to take over the whole or part of the locality. Furthermore, these inputs are used for the preparation of individual projects located in the territory, negotiating with potential investors and project preparation for grant programs of the Czech Republic and European Union. All the lessons learned will now put into practice with the preparation of the Integrated Development Plan for use in the future programming period of Structural Funds.



Fig. 20. Most Lake before and after filling

Practical recommendations

- » All available data are required. This means that before the new work is started it is appropriate to survey intentions, plans or ideas on the development and use of the locality already processed in the past. Further collect all the results of geological, environmental, infrastructure and other site characteristics. Site review as a comprehensive collection is the key document.
- » The organisation of “round tables” or “expert panels” proved to be a powerful instrument for creating of ideas as well as consensus building processes.
- » Include the public from the very beginning in decision making processes, e.g. via questionnaires and surveys, public hearings and involvement in working groups. It is not appropriate for the development of the area to be affected only by a small group of engineers, economists or politicians.
- » Prior to the commencement of the work on investment in the brownfield is a good start with his promotion. Especially if they are in the vicinity “competing” sites with a similar experience, one must pay the utmost attention to research and market influence.
- » It is appropriate from the beginning of the brownfield development planning to consider the possible sources of funding for this development - private financing, national or European grant sources, the city’s own budget. Strategic decisions on available sources of funding will affect the subsequent selection of projects to be implemented and also the way of managing the development of this area.
- » If it is on such a large area such as the Lake Most, it is best to decide about the management structure for the entire regeneration project. If city management is not strong enough, we recommend to establish a regional development agency.

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5.4. City of Kranj – Railway Station Kranj

Official name of the site	Railway Station Kranj
Area	90000 m ² (9 ha)
Owner	Ministry of transport, Merkur (trader), other smaller landowners
Former use	Warehouses, train station
Planned use	Passenger centre (train station, bus station, public area), offices, other services
Pollution & Remediation process	Asbestos, noise pollution

Introduction to the city, history

Kranj is the capital city of the Gorenjska region. It has almost 50000 inhabitants (June 2011) and is the third largest city in Slovenia. The old medieval center with its rich history is situated on a natural cliff between the rivers Sava and Kokra, offering a wonderful perspective of the city. Constant growth of the city has been noted since the 15th century when its importance as a trading city increased. At the end of the 19th century it became the most important industrial city in the Gorenjska region, mostly focusing on textiles, rubber and electronic industrial production, with the production plants mainly situated near the Sava River. At the end of the twentieth century industry production rapidly decreased, mainly due to the shift of factory locations to less developed countries. Cheaper production and labour force costs in these countries affected the city and triggered the issue of degraded areas.

Starting conditions

Degraded areas in the city of Kranj are a major issue. On one hand, there is significant pressure for greenfield development for housing, but on the other, Kranj has a lot of degraded land that needs new investment in regeneration. With detailed analyses of degraded city areas we discovered that there are almost 100 hectares of degraded areas in the city, divided into ten smaller, mostly abandoned sites. Some are still functioning, but with low profit businesses or warehouses, which are considered to be underused.



Fig. 21. City of Kranj and pilot site at railway station with degraded industrial areas (marked in violet)

The Valley of Sava River was the core area of industrial production in the city of Kranj. It consisted of five larger factories, today only one is still in operation. Through analyses it was decided that the pilot site will be the area of the Main Railway Station Kranj. There were several reasons for this decision. First and most important was that the area of the railway station is situated in the middle of the entire degraded areas in the valley. After revitalization it will be seen as an important start-up model for surrounding areas. The second important reason is that the municipal strategic planning document stipulates this area as the major passenger centre for the Municipality

of Kranj, complemented by the main bus station. The third reason is the small number of landowners, i.e. the 9 hectares of land are owned by only six different landowners. The pilot site has very good infrastructure and traffic connections, which also proves to be an advantage when compared to other degraded areas.

Accessibility for pedestrians and cyclists from other parts of city to the train station is a key issue, which will have to be solved during the revitalisation process, is. The old city centre lies at a short 10-minute walking distance, but the experience can be dangerous due to traffic and is not easy-going. There is also a 35-meter difference in elevation, which is another problem for a comfortable connection with other parts of the city.

Plans

In the year 2009 the Municipality prepared a vision for the railway station. It will become a central passenger centre with main bus station, train station, parking garage, as well as new buildings for commercial programmes, offices, recreational activities and other functions. The Municipality is aware that anything more would be unrealistic and difficult to achieve. The train station is hard to move and its central location is perfect for the passenger centre. Combining the train and bus stations with the parking garage is also necessary if we want to achieve a well-functioning passenger centre. Other commercial buildings are essential for increasing investment interest in degraded areas, such as the train station. The Municipality at present does not have a willing investor, so all efforts should be focused on attracting one with adequate inclination.

The planning goals for regeneration of the train station area in Kranj are:

- » consolidate fragmented urban structure in the Sava valley
- » deal with the spatial consequences brought by the change in ownership and land use
- » confront the environmental challenges
- » renew municipal infrastructure
- » introduce more sustainable public transport
- » develop important public projects close to the city centre

Procedures used

After analysing the degraded areas and choosing the pilot site, a special Interdisciplinary Working Group (IWG), with experts from different departments of the municipality, was created. Particular expert from separate departments were entrusted with working tasks. After creating the IWG, a decision was taken for the preparation of an important document, titled Site Review, where complete information about the redevelopment project was summarised.

The Site Review proved to be a useful document/tool in the process of urban regeneration. It was used to collect information from different databases, personal input from various municipal departments, expert studies and other important sources. The main advantage was that it represented the state-of-the-art of the pilot area. The information from the Site Review was an interesting source of information for the Mayor, Municipal departments, city council members, potential investors and different media. At the beginning of the project, the structure of the document was set and only few chapters were filled with data. During the development of the project, additional information and analyses (i.e. SWOT analysis) were added to the document, while the present data have been updated regularly. The document was posted on the municipal intranet, but only IWG members were able to edit it. Using the Site Review as a tool in the regeneration process was both helpful as a management tool as well as a communication and marketing tool. The municipality decided to use this tool in other urban regeneration processes in the future as well.

Another analysis was very crucial for the Municipality. The Municipal Environmental Protection Programme gave results about contamination on the pilot site. In the area there were no factories in the past, but only warehouses and infrastructure for transshipment. The soil is fortunately not polluted. However the pilot area contains another potential dangerous material – the asbestos roofs of the buildings. The Municipality and also investors will have to be careful when investment commences. The legislation on demolishing and depositing this dangerous material is very strict. The problem is that removal of asbestos will start parallel to the investment on the train station and putting new roofs on old buildings, which will potentially be demolished, is not very economic. The Municipal Environmental Protection Programme also proscribes necessary noise abatement measures. This is initially an issue mainly for designers and constructors, since they will have to find adequate technical solutions for the pilot area.

Setting-up an information point around the station area had been considered a key investment to facilitate stakeholder and public engagement in the regeneration processes. The Information point will host special events, workshops and contemporary visions. The goal of these events is to attract politicians, potential investors, landowners, journalists and other stakeholders, i.e. all the actors in the further redevelopment process.



Fig. 22. Information point in four construction phases

Timeline

Date	Action	Duration
December 2008	Decision to initiate preparation of a detailed municipal spatial plan for the pilot area - published in the Official Gazette.	1 months
January 2009	Analysis of degraded areas in city of Kranj	3 months
May 2010	Municipality environmental protection program was confirmed	10 months
June 2010	Internal contest for best solution for Information point	4 months
July 2010	Interdisciplinary working group was created	2 months
August 2011	Public disclosure for Municipality Master plan	1 month for public disclosure (3 year all procedure)
January 2012	Lease contract was signed between Slovenian Railways and Municipality Kranj	1 year
February 2012	Starting with investment in Information centre	3 months
May 2012	Opening ceremony of new information centre located on pilot site	17 th May, 2012

Actual achievements

Redevelopment of the railway station area was integrated in the Municipal Strategic Spatial Plan. The planning process includes change of land use and potential programmes for the area that include integration of the main railway and bus stations. The planning process continued with the preparation of expert guidelines for the Detailed Municipal Spatial Plan. Additionally an innovative informal spatial planning document was prepared that will be used as a tool for easier negotiation between the City and potential investors during the regeneration process.

Parallel with changes to the Municipal Strategic Spatial Plan, the municipality started communication with the main landowners. The first step was getting information from the two biggest landowners and their wishes. The first, the trading company Merkur, owner of 30 percent of the area, is willing to sell out. The largest owner: Slovenian Railways, is prepared to cooperate, but their financial condition is poor. Together they own 92 percent of all the land in the pilot area. In conclusion, the decision was taken that it needs a strong investor that is willing and prepared to start a public-private partnership.

An important step forward was the placement of the Information point on a plot of land inside the pilot area. With the Information point we wanted to trigger interest for redevelopment of degraded area and inform potential investors about activities on the pilot site. The Information point is also the start-up project, which shows that the municipality is very interested in redevelopment. In connection with the Faculty of Architecture from Ljubljana we organised a students' competition to find a solution, which will satisfy the landowner, Slovenian Railways. The Information point was combined with bicycle storage successfully. The site was also picked very thoughtfully: the goal was to attract as much visitors as possible.



Fig. 23. Winning project for the Information centre at the Kranj Railway Station and opening ceremony 17.05.2012

An innovative spatial document for the degraded urban area of the Kranj Railway Station. When developing a spatial document, the first step is to formulate a global vision for the area in a rough sketch. It is important that this vision is checked according to the development initiatives. In the second step, the development initiatives must meet regulations, which are essentially negative, limiting measurements. Within this process or working method, which functions well in complex urban conditions, a strategic steering instrument focusing on control of dynamic variables will be developed for the degraded urban area of the Kranj Railway Station. The dynamic variables considered will be the relation between plot-form and size, building typology, the public space network, traffic capacity and other factors. Such an instrument will allow the city to enter into dynamic negotiations with private owners, but the negotiations will not be forced. If the negotiations do not take place, public owners will lose their profit bonus and will remain committed to rigid basic standards.

Practical recommendations

- » Well-prepared analyses and inventory of kind and quantity of brownfields in the city are very important. Such thorough information facilitates decisions, which degraded area is most important for the city when starting the revitalization process.
- » An Interdisciplinary Working Group (IWG) should be created inside the municipality for each regeneration project. The size of the IWG can be adjusted to meet ongoing demands and current situation of a revitalization project and can be enlarged with external stakeholders and experts.
- » The Site review proved to be an important document, which must be created at the very start of a regeneration project and requires constant updating.

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5.5. City of Ústí nad Labem – Usti Brownfield Strategy

Visiting the City of Ústí nad Labem, one can notice that within the urban fabric there is a high incidence of rundown and dilapidated properties and a large number of buildings which are empty or used in an inappropriate way. And this makes one think, what is the reason for this state of affairs? At a closer look, it is not only the bad image that is endangering the City of Ústí nad Labem's development potential, but also several other negative features which follow from it - such as increased criminality, drop in resident numbers, issues of social stratification and the lowering of property market prices. These are serious threats for the City of Ústí nad Labem and this is why the City is participating in the COBRAMAN project and focusing on tools helping to combat the threats of brownfields. The region has a population of over 800000 inhabitants, the city itself more of 98000, which makes Ústí nad Labem the seventh largest city in the Czech Republic.

Official name of the pilot document	Usti Brownfield Strategy
City Area	9 400 ha
Built up Area	3 671 ha
Browfield Area	429,5 ha
Owner	Private in majority
Former use	Mainly housing and industrial
Planned use	Mixed
Pollution and remediation	Site specific, estimated at about 50 % of plots

Starting conditions

Burdens from the past: the City arose around the chemicals, food and coal industry in the 19th century and until the Second World War its development had rising tendencies. During the war Ústí suffered from bombing, which destroyed a few city districts. After the war 75 % of the inhabitants left the city due to political decisions and displacement. The city of Ústí became a place of abode for people from all over Czech and Slovakia, with many Ukrainians and Poles also arriving. The chemicals industry was also over dimensioned and attracted workers with low education levels. In the seventies the city received a socialistic appearance, characterised by demolishing complete streets and blocks and building mono-functional oversized properties that actually bring problematic and expensive maintenance for the city and private owners. The centrally run economy failed in 1989 and Czech cities gained properties without the knowledge of how to deal with them. Traditional local industries decreased rapidly, many industrial estates have become brownfields. Also, a great number of private owners failed to manage their properties and financial crises often placed them in a critical state. Businesses are restructuring towards services, but the change is slow and is not pushed by demand, as local purchasing power is weakened by the high unemployment rate. In addition, the city has a bad image, even though environmental conditions have improved considerably. All the facts mentioned above have led to a migration balance in negative figures.

Plans and aims of the work

During 2010 a detailed brownfields inventory was completed in the city and its surrounding areas, all under the auspices of the COBRAMAN project. Analyses of the collected data have shown that the number of brownfields located within the City and their total area is so high that the problem calls for a long-term specific, focused and strategic solution. The empirical data gathered do further support the decision-making processes.

Procedures used - Inventory and its methodology

It should be noted that prior to the implementation of the COBRAMAN project, no such sample of quality brownfield data existed for the district of Ústí nad Labem. The aim of the applied methodology was to provide a unified approach, to promote cooperation between the territorial planning department and the strategic development department and to establish the methodology as an example of best practice in developing inventories of brownfields in the Czech Republic. The most important outcome of the methodology is the inventory system in a GIS environment, providing users with a layer of polygons depicting brownfields. To facilitate fieldwork, the project developed the 'Brownfield Card'. The card was designed with simplicity in mind, significantly streamlining the work of inventory teams in the field, as well as providing easily comprehensible information to owners of the brownfields being surveyed. The Brownfield Card includes entries identifying the specific site (e.g. GPS coordinates), describing it (as an

ownership status or a size category) and limiting the redevelopment (for example ecological risks). The card involves graphical part with photos and maps.

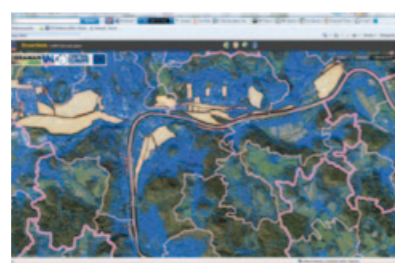


Fig. 24. GIS of the degraded areas in the City of Ústí nad Labem and presentation of the database in the City of Ústí nad Labem

Actual achievements

The Pilot Application “Inventory of brownfields in Ústí nad Labem district”, within which an analysis of the current state of affairs was elaborated, used already existing data on brownfields in the district of Ústí nad Labem. The updated brownfield database for Ústí nad Labem district included 115 sites (including anticipated, or forecast, brownfields), following a survey in the autumn of 2009. These 115 brownfields represent 1,23 % of the entire administrative area of the district - covering an area of approximately 497 ha. Within the territory of the City of Ústí nad Labem, 97 brownfields were identified, covering an area of 429,5 ha. A further 22 sites were included under the ‘anticipated brownfields’ category, to be re-evaluated at a later date. Brownfields located within the city account for 11,7 % of the built-up urban area, covering 4,5 % of the respective administrative territory. All the brownfields on the territory of the City of Ústí nad Labem cover 68 % of areas suitable for building on.

Master plan – the way how to paralyse brownfield management

During the last 2 years the master plan has been prepared by the Planning Department and external professionals. Ideally, master planning should support the brownfield regeneration effort and if it comes together it will bring a positive influence to cities’ development. The Ústí Master Plan for 2012 – 2027 designated 715 ha of new plots for building which will definitely not bring any reviving process in brownfield regeneration. The city lost one of its strongest instruments in directing building on greenfields.

Activities Timing

Date	Action	Duration
Autumn 2009	Methodology of brownfields inventory prepared	3 months
Autumn 2009	Field work – data collection	3 months
April 2010	Analysing collected information	2 months
May 2010	Creating Strategy draft	2 months
June 2010	Public discussion on strategy	1 month
September 2010	Creating GIS layer	5 months
May 2011	Strategy approval by the city’s assembly	1 year
September 2011	Web solution of GIS	5 months
September 2009, March 2010, June 2010, November 2011	Promoting brownfields regeneration activities and communicating with owners	3 years
November 2011	Handbook for brownfield owners released	10 months

The Ústí Brownfield Strategy – a nice piece of paper or a proper tool?

The main objectives of the Brownfield Strategy are

- » to reduce the number of brownfields in the city’s built-up area by 100 ha (23,28 %) and
- » to create conditions which facilitate the restoration of an active utilisation of today’s brownfields, hence being no more considered as a burden and generating revenue or other benefits within 10 years.

The Ústí Brownfield Strategy was approved by the City Council in May 2011 after a creative process of defining priorities and activities by the Strategic Development Department of Ústí City Hall, external experts from the Institute of Sustainable Development of Settlements and discussions with brownfield owners and the public. The document called The Brownfield Strategy of the City of Ústí nad Labem demonstrates the commitment for the next 4 years. The strategy has set measurable indicators, assigned responsibilities and established the post of a brownfield manager within the city hall structure, whose responsibility will be to deliver the strategy and monitor its outcomes. There exists an important obstacle to applying the strategy: the municipalities’ austerity budget, which is the cause that only low budget activities are approved by the Council. Practically, this means that the Brownfield Manager’s job in the following period will be to coordinate the work on non-investment actions.

Practical recommendations

Frequently, brownfield ownership represents huge barriers to brownfield reuse and redevelopment. The role of the Brownfield Manager in the next period will be to apply the Building Act and all the formal and informal municipality tools towards brownfields owners and also to improve communication between all the stakeholders concerned. The City of Ústí nad Labem recently joined the Czech Brownfields Partnership, a platform for sharing experience in brownfield regeneration. This will ensure continuity of effort heading for brownfield regeneration in the City.

General recommendations for brownfield revitalisation for municipalities:

- » Quality mapping of brownfields should be the basis for making any decisions on brownfields.
- » Splitting the GIS layer as a tool for brownfield management into 2 levels – public and non-public (managerial) – the reason for this is that collecting data is very expensive and this protects data from misuse or resale. Using the ESRI system proved to be a well functioning solution, linking the GIS with the cadastral database is very interesting for web application visitors and the public layer should have an attractive appearance and should be user friendly with intuitive navigation.
- » Continuous communication with brownfield owners facilitates to build up trust and should lead to sustainable city development.

Recommendation for private owners:

- » Your brownfield is also a problem for the municipality, it can help you – if not financially, then through master planning, public transport amendments or marketing.
- » Preparation of a proper business plan will guide you to making the right decision on what to do with your brownfield – regenerate, revitalise, interim use or sell.
- » In case a public interest exists, cooperation can reduce your costs. Always communicate with the municipality.

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5.6. Comacchio, Province of Ferrara – Former Sugar Mill of Comacchio

Comacchio is a Municipality of about 22400 inhabitants located in the Southern-Eastern part of the Province of Ferrara. It is therefore decentralised within the provincial territory but at the same time well connected to the main towns of the North-Eastern Italian territory by an effective road network. The State Route “Romea” no. 309 is one of the main roads that links Venice to Ravenna along the coast and to the Ferrara – Porto Garibaldi motorway junction and from the A13 Ferrara South motorway exit it cuts through the provincial territory towards the Adriatic Sea. Comacchio is one of the main centres in the Po Delta Park area. The city and its valleys are the “heart” of the Delta. The Municipality of Comacchio encompasses a 23 km long coast line along the Adriatic Sea, with seven sea resorts equipped with different tourist facilities. Thanks to its specific geographical features, Comacchio has succeeded to develop and strengthen social, economic, political and recreational sectors by enhancing its strategic position, its special natural environment and its historical memory that still lives in the traditions of its inhabitants.



Fig. 25. Comacchio historical centre – Trepponti bridge

The local economic vocation is historically linked to fishery, which is still performed especially in the delta valleys. The fishing industry has always been linked to the salt farming, some of which are still present in the municipal territory. The historical events and land reclamation activities have deeply changed the territory from an environmental point of view with significant repercussions on its economic development opportunities. Through successive land reclamation stages, more than 60000 hectares of land have been reclaimed from the sea and about 13000 hectares of wetlands have remained flooded. In addition to fisheries as the main source of income, agriculture has also been introduced and starting from the last decades of the 20th century seaside tourism has rapidly developed in the seven Comacchio seaside resorts. Starting from the Eighties, the lagoon town has also become a naturalistic tourism destination, thanks to the presence of the Po Delta Park. At present, further tourist development opportunities have emerged, in the framework of its local economic vocation, along with the important activities linked to the fishing industry and lagoon fish farming activities.

Official name of the site	Former sugar mill of Comacchio
Area	345000 m ²
Owner	SIPRO Local Development Agency-Ferrara
Former use	Sugar mill
Planned use	3 scenarios have been outlined, 1 chosen regeneration plan: “Energy Park”
Remediation process	Concluded (asbestos removed and hydrocarbons in soil eliminated)

The pilot site - Starting conditions

The sugar mill was built in 1951. In the year 2000, upon the closing down of the sugar mill, public stakeholders involved SIPRO in the regeneration process identifying it as the responsible body and, after the Agency purchased

the whole land, a whole set of studies and analysis started in view of the site clean-up. The final objective was to assure a sole referent for the identification of the site’s regeneration plan, trying to avoid bureaucratic slowing downs and delays. The industrial estate covers an overall surface of about 345000 sq. m, 145000 sq. m of which occupied by office and residential buildings, industrial plants, warehouses, deposits, loading and parking areas, roads, cement tanks and green parks. The rest of the surface, about 200000 sq. m, is occupied by the sugar beets washing and processing waste water settlements basins. The site clean-up activities have allowed to dispose hazardous waste scattered throughout the area, carry out a soil analysis and finally design a development plan. Asbestos has finally been removed, pollution due to hydrocarbons of point type remediated and all the buildings that could not be recovered have been demolished.

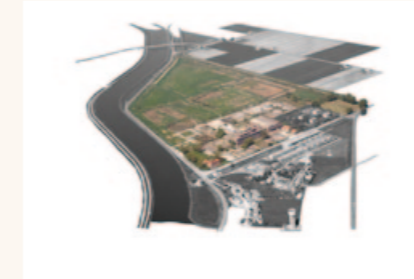


Fig. 26. Aerial view of the former sugar mill in Comacchio



Fig. 27. Impression from the quality of the buildings in the former sugar mill

Plans and targets

The main target of the activities was the identification of a regeneration plan considering the “sensible” site’s location - due to environmental, historical and tourist reasons - as well as the effort to define a process additional to former studies implemented in the past years. The aim was to outline a regeneration plan which could deal with the past achievements in terms of impact on the territory (in terms of road connection, main users, settlements) and could also be coherent with the comprehensive plans for the economic and environmental regeneration at provincial scale. SIPRO was therefore interested in monitoring the development and the progress of the revitalisation project, which was supposed to be consistent with the proposals defined by the administrations, capable of resulting in real growth opportunities for Comacchio and contribute with new useful elements for the Province of Ferrara.

Procedures

Along with environmental surveys, a few urban and functional regeneration hypotheses have been put forward in the area. Local authorities have agreed to set up a whole set of activities that may contribute to the enhancement of the local economic system. SIPRO intends to invest in an experiment in the field of renewable energies and the management of photovoltaic systems, and it will be directly involved in this project for the next few years. The use of the site in question as a renewable energy thematic park results in a wide range of advantages, both economic ones and in terms of technological competitiveness, which have been analyzed in detail within the COBRAMAN project activities. In particular, as far as this site is concerned, there is the possibility of starting to collaborate with the University of Ferrara - Dep. of Physical Science - which still represents the state of the art at a national level - for an innovative photovoltaic project.

The definition of a SWOT analysis has been crucial for the outline of the site’s redevelopment plan, as it has enabled a synthetic but at the same time clear and direct assessment of the plan’s strengths, weaknesses, opportunities and threats. Urban planning issues, historical events occurred over time and geographic location of the site, as well as investments modalities and stakeholders’ involvement have been analysed and assessed. Therefore all the information collected have been integrated and placed in an overall picture enabling the definition of the site’s potentialities and, at the same time, the identification of the main critical aspects requiring to be improved in order to implement the project. The SWOT analysis has emphasized the coherence of site’s redevelopment plan as an Energy Park with the assumptions identified during the initial analysis and the environmental constraints applying at the area. As a matter of fact the site is located in a flat territory and has an optimum solar orientation. Furthermore the site’s size should enable the structure of a permanent cooperation with the University of Ferrara, along with the setting up of a test laboratory for the solar panel’s efficiency monitoring, which after some time might become a didactic laboratory.

The conducted study has been shared with the local public authorities especially concerning the impact the actions for the adoption of renewable energy production systems might have on the enhancement of the image and the economy in the Comacchio area, both in terms of investments and employment. At the same time several critical aspects have been identified, especially the SWOT analysis has shown the crucial role played by the economic factor, which will require a public-private partnership from the very beginning, in order to assure the project implementation.

Project timing

Date	Action	Duration
June 2009	Technical Table setting up: SIPRO, University of Ferrara, Municipality of Ostellato, Province of Ferrara	6 months
November 2009	SIPRO Architecture Award 2009: identification of alternative redevelopment solutions	10 months
November 2009	Public workshop about the regeneration of dismissed sites	1 month
May 2010	Definition of strategies & methodologies to involve stakeholders-identification of the main working steps	3 months
November 2010	Identification of SIPRO as “technical body” brownfield manager for the whole province	7 months
February 2011	Implementation of BP for the site’s regeneration as Energy Park	6 months
November 2011	Conclusion of the site’s remediation process	7 years
February 2012	Promotion and dissemination of the BP results; potential investors involvement	In progress

Actual achievements

The main general result achieved during the project implementation is the identification of SIPRO as technical body for the coordination and implementation of actions for brownfield regeneration in the province of Ferrara. This has been an important result as it has contributed to the idea of attaching this task to an operative body without the need to establish a specific department in charge of these activities within the local administrations. Moreover, it has been possible to define an alternative scenario for the site’s regeneration, involving different actors both public and private (e.g. University of Ferrara, private actors from the photovoltaic sector) for the outline of the redevelopment process.

Practical recommendations

- » The appointment of a technical body for the implementation of brownfield regeneration processes should avoid bureaucratic slowing down while favouring the involvement of different decision making levels both at local and regional level.
- » The regeneration process is a unique chance to tackle territorial development issues; the involvement of local stakeholders offers the opportunity to strengthen the relationship with the territory, to “treat a wound” with the local community, finding project solutions satisfying all the actors.
- » The final redevelopment solution should contribute to define an “offer” for potential investors including a remediated area and an agreed and approved master plan.
- » Risks to be considered as a threat to stop the process are e.g. regional and local elections; periods of political instability and changing of the political priorities; long-lasting negotiation process with stakeholders; private investors’ loss of interest.

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6. Establishment of Professional BM in European Cities – Lessons Learned from COBRAMAN

A thorough analysis of the recommendations and lessons learned from the different project activities leads to a set of general conclusions, which can be grouped in 3 categories.

6.1 Strategic Level

There is no unique European brownfield policy. Procedures are governed by national law for environment and planning as well as the real estate investment framework conditions. Strategies have to consider these nationally or maybe even regionally varying boundary conditions.

The definition of and political decision on a local **brownfield regeneration strategy** will significantly enhance urban development on brownfield land. Key components to be considered are

- » a planning framework
- » operational targets and indicators within a realistic timescale
- » adequate human resources and organisational conditions
- » a communication plan.

Its implementation requires a qualified brownfield management team capable to operate successfully within a well defined and appropriate structural and financial framework. However the establishment of a brownfield unit within traditional hierarchical administrative structures can be a highly delicate issue and requires besides an unambiguous political mandate sensitive actors in operation.

Steering urban development requires an understanding of the processes and comprehensive data sets on changing land use patterns – such as a GIS-based brownfield inventory and a well interlinked information system. Regularly updated it is both a source of information for urban development and a promotional tool for attracting investors.

Brownfield redevelopment is a never-ending story, an ongoing process as illustrated by the CABERNET math model. This illustrates that setting in place a brownfield strategy and an operational unit is not a temporary measure, but an issue of administrative modernization in urban development for a city. With a wider scope this may lead to a circular flow land use strategy as currently developed and promoted by transnational European activities as the CirCuse project <http://www.circuse.eu/>



Fig. 28: The CABERNET Bath Model, indicating ongoing brownfield creation and development

6.2 Operational Level

Besides all technical expertise required it is the management skills of the staff which steers the regeneration process in general. In this context the COBRAMAN key management tools proved to be highly valuable and are recommended for practical use, e.g. the COBRAMAN Site Review can be considered as an essential standard tool to be applied.

The planning framework and related legal specifications should be kept flexible and enable to react on investment opportunities. This is a well known recommendation. However this does not mean less planning efforts, but it is an even more challenging task for urban design to well define degrees of freedom in line with the overall development targets. Further it should be realised that existing infrastructure is in most cases not an advantage for development of a brownfield instead of a greenfield, as the existing infrastructure does usually not fit to the requirements for new developments.

Long-term developments are facing the risks related to political changes – the cornerstones should thus be safeguarded. Securing institutional buy-in could be key issue for this.

Intensive communication processes and exchange of information with site owners and stakeholders enable to build trust among the players involved, which is prerequisite for widely accepted development plans. Moreover such communication activities around public engagement and participatory planning processes might also stimulate the re-branding of the brownfields. Accordingly it is recommended to make use of any opportunity around the redevelopment works for marketing and promotion – thus aiming at creating a positive image.

6.3 Education and Training

Professional experience and soft skills are key qualifications for brownfield managers. As this can hardly be gained at university, training of practitioners plays an important role for recruitment of staff in the near future. The first generation of brownfield managers will be experienced and trained staff from practice, paving the way for those following from university and educational training programmes.

The feedback on the educational measures performed so far, showed very high interest in the courses, especially in the (unfortunately to date) non-accredited master course. Also e-learning is strongly frequented which demonstrates big interest in brownfields training measures. As a consequence from the project experiences and the general need to foster the transfer of know-how from research to practice as well from experienced Western European Countries to the Central and Eastern European actors, the academic brownfield programmes should be linked to European networks, both to strengthen the multidisciplinary character and the societal context.

Such networking should take up again the activities set in place by the CABERNET and EUBRA networks, www.eubra.eu and <http://www.cabernet.org.uk>

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