HOMBRE
NEWS
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SEVENTH FRAMEWORK PROGRAMME
HOLISTIC MANAGEMENT OF BROWNFIELD REGENERATION

EDITORIAL

Soils provide a wide range of vital ecosystem functions, such as water filtration, storage, and food production. Soil sealing and associated land take lead to the loss of important soil functions. Soil sealing is getting higher on the policy agenda in Europe as a result of the conflict of interest between urban sprawl on one hand and increasing demand for agricultural land on the other hand.
The "Roadmap to a Resource Efficient Europe", adopted in 2011, sets an aim to achieve zero net land take by 2050. A measure for reaching this is the regeneration of brownfields instead of greenfield development. A challenge in brownfield regeneration is the number and diversity of stakeholders (public and private) which also need to be closer involved at an early stage of the redevelopment.

This newsletter presents a part of the tools and mechanisms that will be developed in HOMBRE to bring different stakeholders together (at an early stage) to eventually reach effective brownfield regeneration. The Brownfield Navigator, developed by HOMBRE, will be a web based tool to facilitate the process of bringing together different stakeholders. In this issue the status quo and further planning of the tool is given. HOMBRE will elaborate on a CEN Workshop Agreement, to bring different stakeholders together, by setting up a common glossary of terms related to brownfield regeneration. It will be further explained and you are cordially invited to participate. Finally, a short introduction of the second HOMBRE case Papigno (Terni, Italy) is given.

HOMBRE General Assembly and 2nd Stakeholder Workshop

On 19th September 2012 the HOMBRE consortium and members of the HOMBRE Advisory Board met for the General Assembly (GA) in Ferrara/Italy. The GA was followed by the 2nd HOMBRE Stakeholder Workshop on 20th September 2012 and a special session on HOMBRE at the 6th REMTECH ("Remediation Technologies & Requalification of Territory") Exhibition on 21st September 2012.

The main activities of the GA were to report on the progress in 2012 and plan activities for 2013 across the HOMBRE project. We were delighted to have input and feedback for both activities from the HOMBRE Advisory Board.

The Stakeholder Workshop focused on the stakeholders involved in the interaction of the HOMBRE work packages and some of the project's cases studies, namely:

- Terni (Italy)
- Genoa (Italy)
- Jui (Romania)
- Solec (Poland)
- Gelsenkirchen (Germany)

Updates for each case study were followed by intensive group discussions between HOMBRE partners and the representatives of the cases on each case study. The outcomes of this discussion will be used to develop the project's action plan for 2013.

The workshop included a session on the "Brownfield Navigator" (See also page 5), the interactive IT decision making tool that is being developed in HOMBRE. The Brownfield Navigator (BFN) aims to support decision makers in each phase of the land use, land use

Figure 1: Discussions during the HOMBRE Stakeholder Workshop in Ferrara

planning and brownfield regeneration process by providing a tool that helps to visualize the situation and collect and connect data to a geographical map for the brownfield location. The workshop demonstrated the latest version of the BFN and its tools and the participants were asked for recommendations on the further development of the BFN.

The Stakeholder Workshop also debated the impact of the Euro crisis on brownfield creation and reuse in Europe. The participants were asked to give feedback on the impact of the Euro crisis on the construction sector, manufacturing, skilled employment and the housing market in their home country and to think about possible solutions to the problems of new brownfields and slowed return to beneficial use of brownfield sites.

Here – amongst others – the following ideas came up:

- Use a different basis for measurement (from monetary valuation to holistic valuation).
- A surcharge on the price for building/ buying a building could be put into a fund for the eventual decommissioning of the building.
- Tax break for private investment in Research & Development.
- Bring together relevant parties (public institutes etc.) to solve the problem in a concentrated period of time – regulation by consensus workshops.
- Use brownfield sites as transport infrastructures nodes to increase connectivity – e.g. bus interchange; cycle pick up points.

HOMBRE includes running a CEN Workshop Agreement to support consensus building for brownfield regeneration concepts. This is a tool provided by the European Committee for Standardization (CEN) to elaborate a consensus document with agreed positions concerning a certain defined issue. The stakeholder workshop debated how HOMBRE would use a CEN Workshop Agreement. Participants lively exchanged on the possible scope and rationale for such a process. This debate carried on to subsequent Internet meetings. As a result of these discussions HOMBRE has decided to run a CEN Workshop on the elaboration of a glossary of terms for the holistic management of brownfield regeneration. The HOMBRE CEN Workshop will start in March 2013 and have a duration of approximately 18 months (see page 7).

The HOMBRE special session at the 6th REMTECH Exhibition on 21st September 2012 focused on “The approach of the European project Holistic Management of Brownfields Regeneration (HOMBRE) and the Italian experience”. The current structure of the BFN and the benefits of its use in the process of brownfield regeneration were introduced. Furthermore HOMBRE presented examples that illustrated the advantages of applying technology trains for brownfield regeneration. The session was closed by a presentation of the two Italian HOMBRE case studies (Genoa – see Page 2, HOMBRE newsletter 01/2012 and Terni – see Page 3).

HOMBRE at the CABERNET Conference

The approach and strategic goals of HOMBRE were presented at the 3rd CABERNET Conference on Urban Land Management which was held on 2nd – 4th October 2012 in Ustron, Poland. A special focus was given to the benefits that could be gained from the use of the “technology trains” (developed in HOMBRE work package 4). Different examples for soft re-use of brownfields (from HOMBRE work package 5) were also presented.

The conference included 140 participants (mainly from EU). It successfully highlighted many current problems of urban land management in Europe. The conference succeeded in bringing together multi-disciplinary experts, as well as public and private stakeholders, by combining the 6th Conference on Innovative Solutions for Revitalization of Degraded Areas and the 3rd CABERNET Conference on Urban Land Management.

The conference provided a multi-disciplinary overview across a broad range of tasks associated with the revitalization of degraded areas. Over 60 conference contributions were shared with the participants on a range of topics, such as: good practices, problem solving knowledge and expertise on the application of land management policies, new techniques and tools. The conference also featured a presentation on the principle of Circular Flow Land Use Management (see also Figure 9) as a solution for multi-stakeholder governance and interdisciplinary co-operation and highlighted the possibilities to include land management and brownfield regeneration in ERDF (European Regional Development Fund) regional programmes 2014 – 2020.

Case studies in HOMBRE: The Papigno site near Terni/Italy

What is the case about and how did it become a brownfield?

Papigno is located close to Terni along the River Nera, which is one of the most important rivers in central Italy and a tributary of the Tiber River. Terni was - as part of Valnerina Route – once a centre-piece of the 1800s Grand Tours of Romantics and as a city with important industries such as steelwork it was largely exploited during the pre-industrial and industrial era up to the Second World War.

The Papigno site is a large industrial brownfield area located on the outskirts of the Terni's administrative boundaries, approximately 5 km from the city centre. The site was occupied by nationally strategic hydro-plants and chemical industries that were built around 1900. The chemical plant on the Papigno site produced calcium carbide (CaC_2) and calcium cyanamide ($CaCN_2$). In front of the chemical plant is an area that was used as landfill for the industrial waste from the process. Industrial production stopped in the 1970s without any closure and reconversion programme. From that time on the site was abandoned. It was acquired by the municipality of Terni in 1994. Their wish was to keep and preserve the site as part of the city's heritage and industrial archaeology.

In 2002 the area was designated as requiring reclamation and of national importance (SIN[1] Terni Papigno). Remediation planning began in 2002, according to standards and procedures established by National Decree n. 471/1999 and Legislative Decree152/2006. Works were then carried out by the Council of Terni.

The Papigno site can be divided in two main areas (see Figure 2):

a) The main production buildings (former plant area);
b) The former landfill area

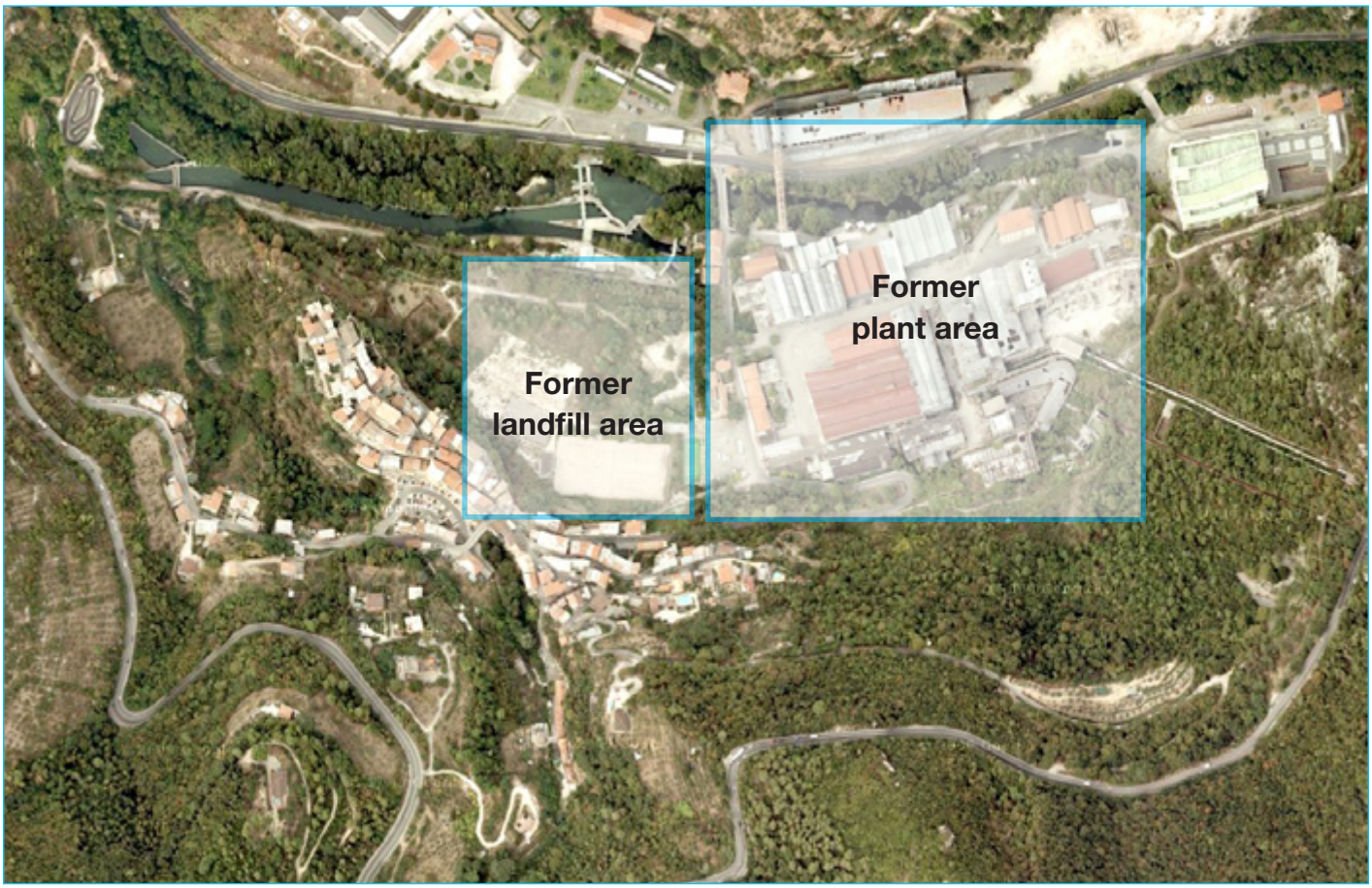

Figure 2: Satellite view of the Papigno site

a) Former plant area

The area also includes various industrial warehouses (see Figure 3). Some of these warehouses have been renovated and house a famous Italian filming company (Cinecittà Umbria film studios) and its main facilities. However, some still contain liquid and solid industrial waste, including mineral oils within large tanks. Residual asbestos is also present in parts of the buildings, while one building has major structural problems due to severe deterioration of its reinforced concrete and will have to be demolished. At the current state an initial characterization has been carried out assessing contamination of the soil with hydrocarbon, heavy metals and PCB.

1 SIN: **S**ito di Bonifica d'**I**nteresse **N**azionale

b) Former landfill area

The landfill contains a mixture of industrial wastes produced by the nearby industrial plant, soil and rocks from nearby excavation areas and, other wastes probably occasionally disposed in an uncontrolled way. The soil contaminations mainly consist of C>12, PCB, and some heavy metals, whereas most of the wastes currently present in the site are basically inert material, without any major evidence of contamination.

Redevelopment of the site so far

The Municipality of Terni has assigned to the "REMIDA[2] consortium" composed by the Regional Environmental Agency (ARPA Umbria), the Tuscia University and the National Research Council (CNR) the design of the remediation, reclamation and requalification of the portion of the site corresponding to the former landfill area. Remediation will be based on the application of phytoremediation techniques. The project goals are shown in Figure 4. The intention is to partition the site into two areas:

1. A sports area and parkland which will be given back to the citizens of Papigno for recreational end use after a combined use of risk analysis and removal of contaminated soil.

2. An area which will be used either for hydrological control of water percolation by plants (area of extensive treatment) or for the intensive treatment of more contaminated soils, using again phytoremediation techniques.

The phytoremediation will use poplar trees as they grow under variable climatic conditions and in soil with different composition.

Poplar trees support the decontamination of the site as they work as a natural water pump extracting and can treat soil up to 2-4 metres under the soil surface. Besides, it will be also possible to assess the possibility of using the produced biomass for energy production, possibly allowing to reduce or compensate the costs of cleaning up by selling biomass or selling energy produced by thermo-valorization of the biomass.

Data from the area will be collected and monitored in order to verify and to optimize the cleaning process. The use of the former landfill area will be restricted until the remediation work has been completed.

The partial redevelopment of the former plant area obtained so far has been the reuse of some of the buildings as location for the Cinecittà Umbria film studios (Figure 5) and for hosting a rafting center (Figure 6) owing to its close vicinity of the river Nera. However, most of the industrial buildings are not used and still have open environmental and safety issues.

What are the most important benefits

The main benefits for former landfill area from the implementation of the proposed remediation project are: the restitution of the area to public use, the reduction of environmental costs for clean-up of the site (by selling biomass or energy produced by thermo-valorization of the biomass, integration of the regeneration with renewable energy production and consequent cut of the carbon emissions (reuse of biomass produced in the site).

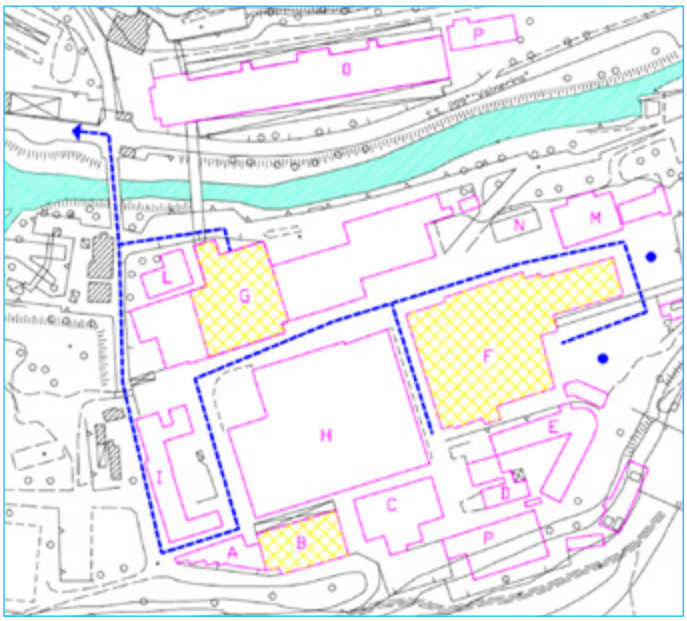

Figure 3: Layout of the former plant area

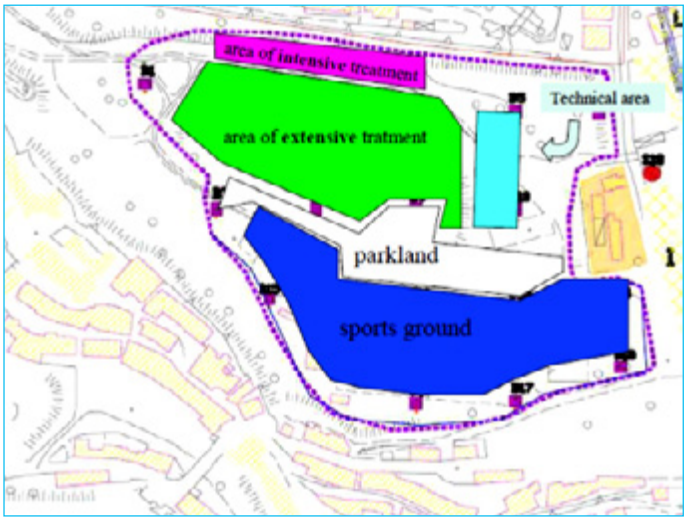

Figure 4: Layout of the REMIDA intervention on the former landfill area

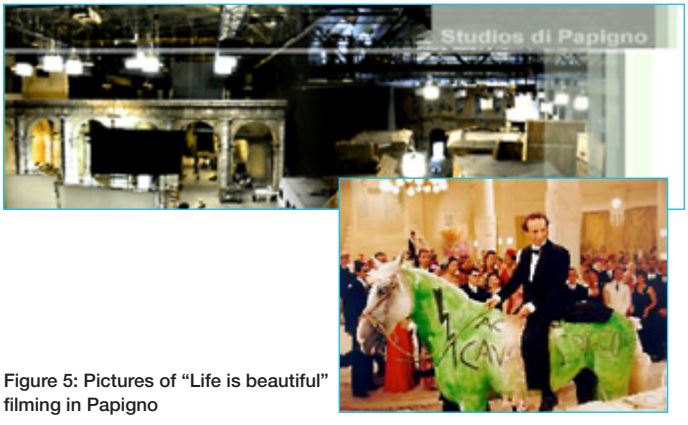

Figure 5: Pictures of "Life is beautiful" filming in Papigno

2 REMIDA: **R**emediation & **E**nergy production in soil **M**anagement – **I**.B.A.F **D**.I.S.A.F.R I. **A**rpa U.

The main driver for the re-use of the former plant area is linked to its high potential for tourism use, primarily because of its vicinity to the Valnerina route and the Marmore's waterfall (Figure 6). Touristic interest is a strong influence on the municipality's desire to use part of the existing buildings as an industrial archaeology museum.

Figure 6: Marmore waterfall and rafting on the Nera River

The Brownfield Navigator – development of an interactive decision support tool

The Brownfield Navigator (BFN) will be one of the results of the HOMBRE project. It is a map-based online instrument that will help stakeholders to navigate towards a successful BF regeneration. With the BFN key aspects (economic, social and environmental) for BF regeneration can be logged and assessed by the user. It can be used for different scales (regional, portfolio, site/project): to determine if any locations are at stake of becoming a brownfield (BF), and site level: to assist the regeneration of the BF. The BFN combines decision support frameworks used with a geographical information system (GIS). It will be possible to use the BFN on a design table (Figure 8) or via a normal desktop or laptop. The BFN will be available online (web-based instrument).

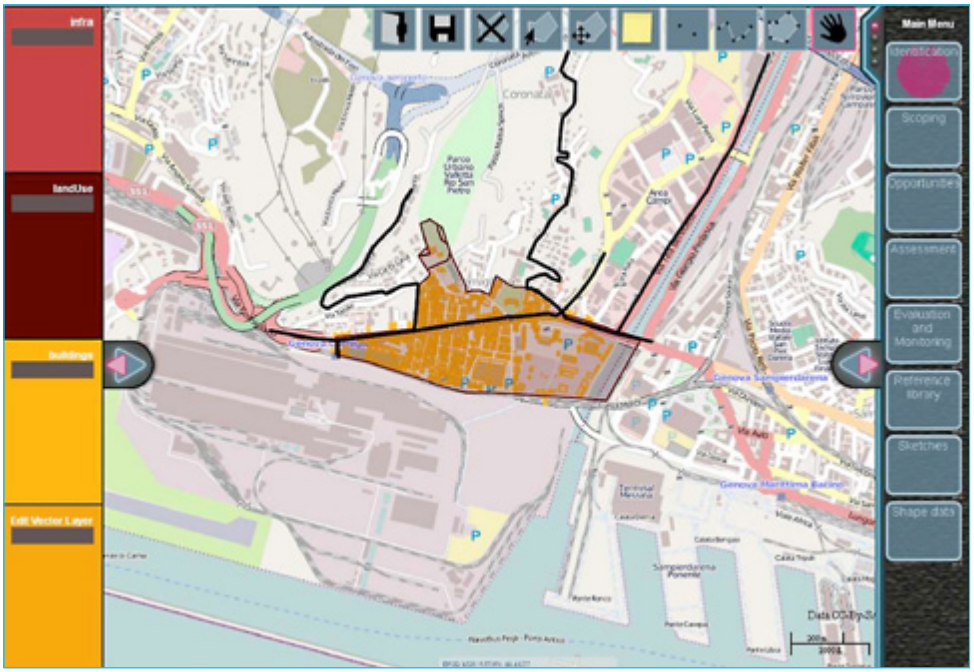

Figure 7: View of the welcome page of the Brownfield Navigator

Current state of the Brownfield Navigator (BFN)

The BFN is under development and at this moment (end of 2012) the BFN consists out of:

1. An online environment, where the BFN is hosted and will be expanded. This is the base of the BFN. Currently this environment is hidden behind a log in, because the tool is work in progress (steps 2+3);

2. A hard-copy description of the zero brownfields framework which will be implemented in the BFN. The zero brownfields framework describes different steps in the land-use cycle including a description of proposed tools for each step. The steps and proposed tools will be further implemented as buttons and options in the online environment of the BFN. At the moment the zero brownfields framework description is still a concept and will be elaborated in more detail the next period.

3. A map and sketching functionality in the online environment, that supports and guides through the different steps of the zero brownfields framework. This is the most elaborated part of the BFN, but the layout and some of the functionalities (such as uploading your own maps) will be improved.

The main focus for the further development of the BFN is item 2. The zero brownfields framework (see "Brief facts about HOMBRE" on page 8) will be further worked out, by fitting the described steps and tools in the final zero brownfield framework on which the HOMBRE work packages are working on. We expect to have in 2013 sufficient 'luggage' for the framework to make it operational in the BFN online environment. The BFN steps, the corresponding tools and how we propose to use them will be described in a report, which is under construction and will be finalized next year. After finalizing the framework in sufficient detail to operationalize it into the BFN, the software will be built in the online environment completing the BFN.

This work will continue until the end of 2013. Also during this time parts of the framework will be tested, such as the indicators, synergies and technology trains. The process/ steps of the BFN and some of the tools will be tested using stakeholder focus groups.

Figure 8: Example of a design table of the Brownfield Navigator

UPCOMING ACTIVITIES

HOMBRE at the AquaConSoil 2013

On **16-19th April 2013** the AquaConSoil (www.aquaconsoil.org), the 12th International UFZ-Deltares Conference on Groundwater-Soil-Systems and Water Resource Management, will be held in Barcelona/Spain.

During the AquaConSoil HOMBRE together with the related FP7 project TIMBRE (www.timbre-project.eu) will have a special session on "Sustainable Brownfield Regeneration – synergies with the land cycle" on 17th April 2013, 16.00 – 17.30 h.

You are kindly invited to join the session to learn more about sustainable brownfield regeneration and the potential opportunities and services for society that can be offered by brownfields.

We are looking forward to meeting you in Barcelona!

UPCOMING ACTIVITIES

Why consider a CEN Workshop Agreement in HOMBRE?

A CEN Workshop is a platform offered by the European Committee for Standardization (CEN) to elaborate a consensus document with agreed positions concerning a certain defined issue, the "CEN Workshop Agreement" (www.cen.eu/cen/Products/CWA/Pages/default.aspx).

It is not a formal standard run by standards bodies. Rather it is a means of developing a discussion about key harmonization needs, and is open to any group of stakeholders to use directly and in an informal way.

Participation in the CEN Workshops is open to stakeholders from all institutions inside and outside Europe who are interested and willing to contribute to a particular topic.

After detailed discussions internally and with its Advisory Board, HOMBRE has decided to use the CEN Workshop mechanism to elaborate a shared glossary of terms for dealing with brownfield regeneration. HOMBRE hopes that this activity will be shared by several other FP7 projects with related research interests to provide a common terminology between then them to facilitate communication and discussion, and also to avoid end-users being faced with different terms from different projects. Ideally, HOMBRE would also like to go further and link this terminology to equivalent or comparative definitions from related communities, such as spatial planners to ease the mutual understanding. Participation in the CWA will be widely promoted and open to all.

HOMBRE's principal interest is to better communicate the concept of "circular land use management" (illustrated in Figure 9), an integrative, strategic and governance approach. Its aim is to primarily and systematically seek to exploit the potential to develop existing building sites and reuse derelict land. This concept will provide a frame and the background for the glossary. In addition findings and results developed in the different HOMBRE work packages will also be integrated.

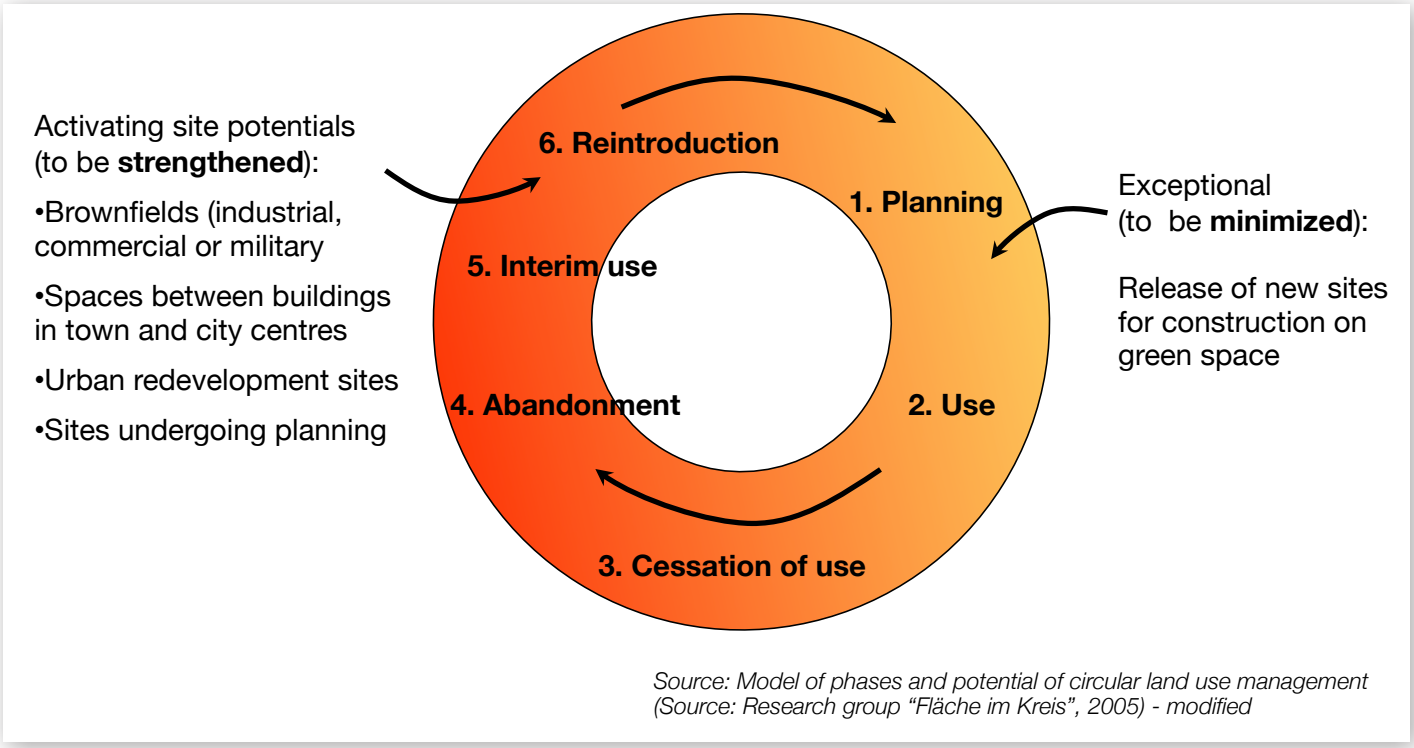

Figure 9: Circular land use management: Model of phases and potentials (modified from German Institute of Urban Affairs – Difu, Research Group "Fläche im Kreis", 2005).

The advantages of the CEN Workshop mechanism are that it carries little bureaucracy, and is fair and transparent, cost-efficient and fast. The process of developing the HOMBRE CWA will last for approximately 18 months.. The tasks, objectives and working procedures will be laid down in a workshop business plan that then has to be approved in the CEN Workshop kick off meeting. This kick-off meeting will be held at DECHEMA in Frankfurt am Main in Germany on **25th March 2013** (for further information on the kick-off meeting and the participation in the HOMBRE CEN Workshop in general please contact Katja Wendler, wendler@dechema.de).

After the kick off meeting the workshop will work predominantly electronically, i.e. in addition to an exchange by e-mails, online meetings will be held – to ease communication and input and to save time and travel expenses.

Please feel kindly invited to join and contribute to the development of the HOMBRE CEN Workshop Agreement!

Brief facts about HOMBRE

Objectives:
HOMBRE seeks to create a paradigm shift in sustainable brownfield land management practice to "Zero Brownfields" where brownfields become areas of opportunity that deliver useful services for society, economy and the environment, instead of derelict areas that are considered useless. This ambition will be met by looking at how synergies between different types of services might leverage change where none was possible before.

The HOMBRE shift in thinking relates not only to the redevelopment itself, but also to gaining better understanding in early recognition and prevention of land that might become a brownfield in the future, and how to monitor this as part of the land use cycle.

The goal is to enable better communication between stakeholders about opportunities and inspire them to find better solutions with higher benefit. HOMBRE will illustrate what might be possible with a number of case studies where implementing suites of 'hard' and 'soft' technologies, has facilitated cost-effective, timely, and sustainable brownfield regeneration along with broader services.

Approach:
HOMBRE will develop practical, science based guidance to deliver the concept of a land cycle as a working system for planners and land managers – the **"Brownfield Roadmap"**. The strategy will be based on indicators for early recognition of why, how, and when brownfields come into existence, as well as on indicators that signal potential for sustainable, cost-effective and timely site renewal. By monitoring these indicators, timely intervention may avoid brownfield formation or at least mitigate the negative effects. It will ensure that scarce resources are focused on solving genuine problems, e.g. by avoiding unnecessary remediation, and on creating long lasting opportunities. The final **"Framework for Zero Brownfields"** will also incorporate the experiences obtained from the HOMBRE case studies, market and stakeholder guidance on all methodologies and technologies developed, and a policy brief on Brownfield regeneration.

Furthermore HOMBRE will develop integrated stakeholder communication and decision support technology for the optimal selection of brownfield regeneration options, approaches and technologies of decision making, the **"Brownfield Navigator"**. This will apply a set of common principles, but support their use at different geographical scales and different stages in land management decision-making. The Brownfield Navigator will enable to assess the key environmental, economic and social aspects of brownfield regeneration scenarios in both local and regional contexts. It will integrate a set of rules and principles from HOMBRE's strategic guidance; modelling and GIS technologies using the 'design table' visualization approach to support interactive and cross sectoral decision-making.

A **"Technology Train"** is a term to describe how different technical approaches can be combined to offer an enhanced benefit. HOMBRE will explore Technology Trains in two contexts: the 'hard' built environment context, and a 'soft' re-use context linked to urban greening and/or bio-energy production. The following combinations are being investigated:

- Train 1: Energy re-use and contaminated water restoration
- Train 2: Resource efficiency (e.g. of building materials) and contaminated soil management.
- Train 3: Remediation, sustainable urban drainage and soil capacity building.
- Train 4: The benefits of remediation and urban green space
- Train 5: Remediation, organic matter recycling and bio-energy production to provide a solution and revenue for abandoned land.

Project References:
Contract number: 256097;
Theme: FP7 ENV.2010.3.1.5-2: Environmental technologies for brownfield regeneration;
Duration: 12/2010 to 11/2014

Organisations:
ACCIONA Infraestructuras – Spain
(www.acciona.es)

BRGM – Bureau de Recherches Géologiques et Minières – France
(www.brgm.fr)

DECHEMA e. V. – Society for Chemical Engineering and Biotechnology – Germany
(www.dechema.de)

Deltares – The Netherlands
(www.deltares.nl)

Geo-Logik – Poland
(www.geo-logik.pl)

PN-Studio/Italy
(www.pnstudio.net)

Projektgruppe Stadt + Entwicklung – Germany
(www.projektstadt.de)

r³ environmental technology ltd. – UK
(www.r3environmental.com)

Tecnalia – Spain
(www.tecnalia.com)

TNO – Netherlands Organisation for Applied Scientific Research – The Netherlands
(www.tno.nl)

University of Nottingham – UK
(www.nottingham.ac.uk)

University of Rome "Tor Vegata" – Italy
(www.uniroma2.it)

University of Science and Technology in Cracow – Poland
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