This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 265097

HOMBRE

"Holistic Management of Brownfield Regeneration"

D 6.3: Demonstration of the efficiency savings adopting this framework would have delivered for the HOMBRE case studies

Due date of deliverable: 31.11.2014
Actual submission date: 31.11.2014

Start date of project: 01.12.2010 Duration: 48 Months

Organisation name of lead contractor for this deliverable:
TECNALIA

Revision: [final]

Project co-funded by the European Commission within the Seventh Framework Programme (2007-2013)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including Commission Services)	
RE	Restricted to a group specified by the consortium (including Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Document Information

Title	Demonstration of the efficiency savings adopting this framework would have delivered for the HOMBRE case studies
Lead Author	Pierre Menger
Contributors	Katja Wendler Paul Nathanail Matthew Ashmore Paul Bardos Elsa Limasset Francesca Neonato Francesco Tomasinelli Wojciech Irminski Renato Bacchioci Uwe Ferber
Distribution	
Report Number	D 6-3

Document History

Date	Version	Prepared by	Organisation	Approved by	Notes
29/10/2014	Draft V01	Pierre Menger	TECNALIA		
12/11/2014	Draft V02	Matt Ashmore	UNOTT		

Acknowledgement

The work described in this publication was supported by the European Community's Seventh Framework Programme through the grant to the budget of the HOMBRE Project, Grant Agreement Number 265097.

Disclaimer

Contents

1. INTRODUCTION

The HOMBRE tools and approaches were developed and tested on seven suitable brownfield case studies sites distributed across Europe and represented a range of former uses: Markham Vale (UK) a former colliery, Genoa and Terni (Italy): an industrial waterway and former steelworks and a former industrial plant and landfill respectively, Gelsenkirchen and Halle (Germany): a former colliery and a former housing estate, Solec (Poland) a timber treatment works and Craiova (Rumania): lignite mining and power station fly-ash dump.

The sites also vary in their position in the land use cycle, for example Markham Vale is already in the transition phase, with plans already being implemented, the Terni site is partly developed and partly derelict and contaminated while in Craiova the site is still an undeveloped brownfield. Additionally, the regulatory regimes vary, with the established regimes in, for example, Germany and the UK versus the less mature regime found in Rumania and the regime identified in Terni where responsibility for remediation appears disconnected from that for regeneration.

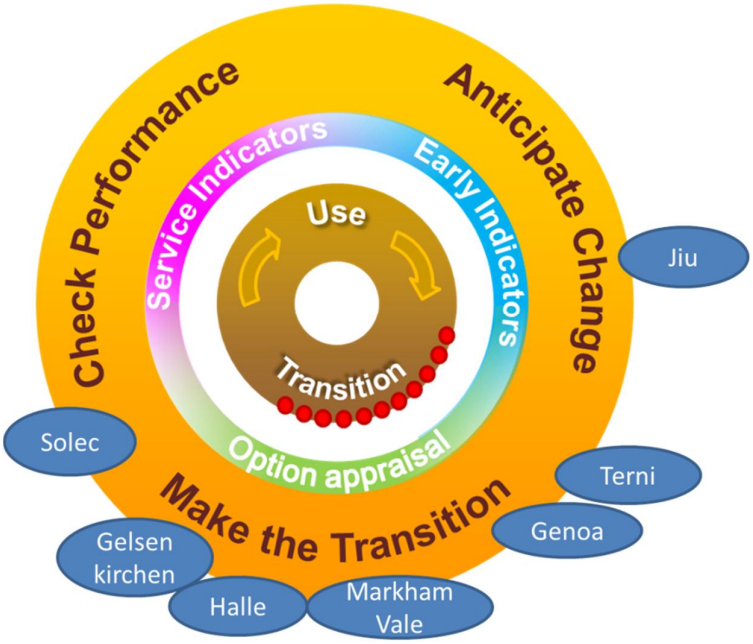


Figure 1. The position of the HOMBRE cases in the HOMBRE Zero Brownfield Framework

Sites were selected to address both technical and managerial issues, for example, Markham Vale concerned management in the selection of soft-end use (BOM) and assessment of system response to regeneration (BR2) while the German case studies focused on soft re-use. The on-going contamination issues at Solec were used to examine the application of technology trains, while the diverse stakeholder views at the Genoa site was used to test the application of the BFN and circular land management and early warning indicators were examined at Terni.

This report brings together the activities of the case studies to show where and how the HOMBRE tools and principles were tested. Subsequent chapters provide an overview of each case study and describe which tools were applied and how successful those tools were found to be along with the lessons learned and thoughts future directions.

The information was provided by the relevant HOMBRE partners in the form of a brief case study ID card detailing the site history and current situation, the stakeholders involved, particular problems and the HOMBRE tools and actions used along with references to complete case study reports in the relevant work package outputs. In addition a standard questionnaire (see Annex 1) detailing the HOMBRE actions taken, their effects and the stakeholders' perceptions of the project and individual tools, allowed partners to feed back their experiences for each site in a structured manner.

Not all objectives could be realised, for example sites were in the main already in the transition phase and thus HOMBRE tools and concepts were applied retrospectively. So, while this meant that conclusions from tools could be validated to some extent in those cases HOMBRE could add little value some of the sites in question. However the stakeholders involved in those sites were able to indicate the potential usefulness of the tools if they were available from the outset, and many expressed interest in maintaining contact with HOMBRE partners and using the tools and concepts in future projects. No stakeholders were involved at Craiova beyond the initial stages meaning work on early warning indicators on the site was completed with publically available data.

Stakeholders at the case study sites have found that collaboration with HOMBRE has opened up new perspectives on the regeneration process. For example, the management at the Markham Vale site (MEGZ), while initially sceptical of HOMBRE's approaches, ultimately found the tools and the process of applying them helpful and could envisage using them for future regeneration projects. In return, the HOMBRE partners involved realised other perspectives on the uses of the tools as communication and consensus building exercises thus, in keeping with the spirit of HOMBRE, found broader appeal. Stakeholders of other sites expressed similar views, for example stakeholders at the Terni site indicated that the experience of local practitioners was often narrow and consequently their strategies were narrow and conservative, the HOMBRE tools introduced extended the views of those present and encouraged meaningful dialogue between the different parties which was less limited by their individual competencies and experience.

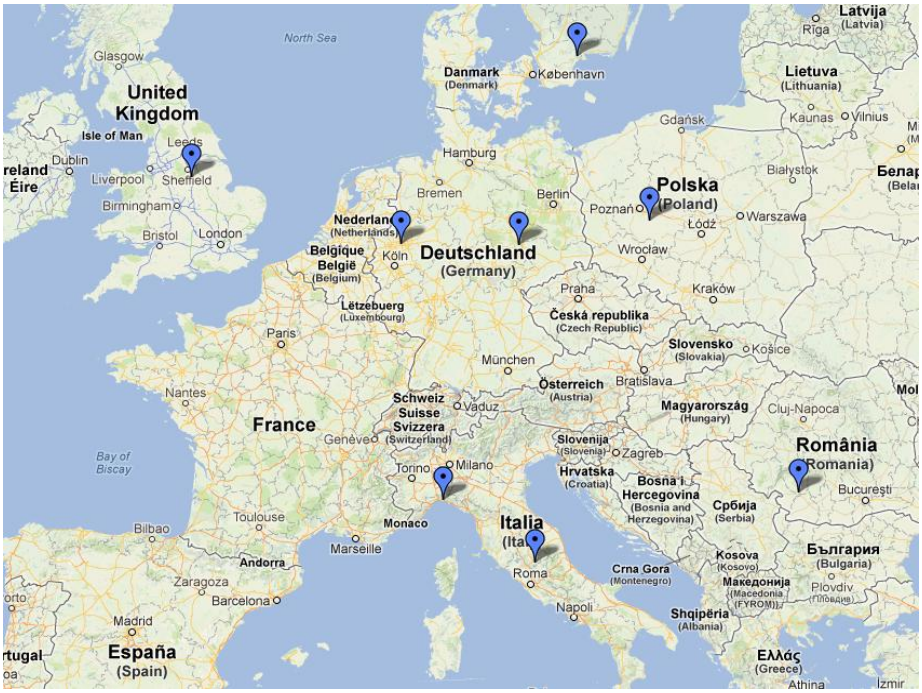


Figure 2: Map of HOMBRE case studies location

2. CASE 1 – MARKHAM VALE, United Kingdom

2.1 ID OF THE CASE STUDY

<table>
<tr><th colspan="3">CASE STUDY NAME AND COUNTRY: Markham Vale, UK</th></tr>
<tr><th colspan="3">LOCAL CASE STUDY CONTACT ORGANIZATION/PERSON:</th></tr>
<tr><td rowspan="2">Case study ID</td><td>Markham Vale:
the site straddles the M1 motorway, showing the east and west areas (left and right) the north area (bottom right) and the north and south tip areas (bottom left and top left)</td><td>  </td></tr>
<tr><td colspan="2">Short description of the case[1], i.e. location, history of the site use, environment, (soil, water, risks etc.), where is the site in the land management cycle, previous actions on the site for regeneration (if relevant),
Markham Vale is Derbyshire County Council's largest-ever regeneration project and aims to reverse the unemployment and deprivation which followed the closure of deep mines, loss of textile jobs and the general decline in heavy industry in north east Derbyshire.

The Markham Vale site lies in the East Midlands of England, between the city of Chesterfield and the town of Bolsover, straddling the M1 motorway. In total, it consists of 127 hectares of the former Markham Colliery site, plus two spoil heaps. The main colliery surface occupied some 37.5 hectares. The largest spoil heap (the North Tip) is 105.9 ha. The South Tip extends to 33.5 hectares The total area is 360 ha, some 205 Ha has been previously developed.

The total cost of the project is estimated at £77 million but this will bring in a further £150 million of commercial investment. The master-plan foresees the creation of 265,000 m^2 of commercial premises and 200 ha of surroundings will be environmentally improved.

The site is largely in Chesterfield District, but crosses into Bolsover and North-East Derbyshire Districts in places. The area is divided into Markham Vale North, East and West, as well as the North- and South- spoil heaps.

[1] More detailed information will be found in section 2.2 of this report and in Annex 2</td></tr>
</table>

Main brownfield drivers	Mining history affects the area, perceived (and some real) contamination and stability issues, spoil heaps. The South Tip is extensively contaminated on its surface by airborne pollution (including dioxins) from the formerly adjacent *Coalite* plant which produced smokeless fuel and chemical derivatives from coal. The closure of the mines in the 1980s and loss of other economic activities has a broad impact on the local area, which has since suffered from urban decline and blight and low levels of employment. The site is part of a complex of deprived urban areas and other brownfield areas. A recent source of uncertainty is the development of a new high speed rail route to the North of England which would cross the development area. As planned this would transect the South Tip and also affect some of the major built development projects under planning.
Stakeholders involved	Local Authorities: Derbyshire County Council and Chesterfield, North East Derbyshire and Bolsover District councils. Henry Boot Developments Ltd who are Derbyshire Country Council's development partner for the built infrastructure. The Council retains responsibility for the non-built areas of the site, e.g. South and North Tips. Funding Contributors include : the Department for Transport, Department for Communities and Local Government, English Partnerships, East Midlands Development Agency/Alliance Sub-regional Strategic Partnership), European Union's Regional Development Fund British Coal. Environment Agency Severn Trent (water company supplying sewage sludge) The Markham Vale Employment Growth Zone management team were the stakeholders consulted for HOMBRE
Actions taken with case study	*Meeting, workshop, site visit, on site work, etc…* Exploratory meetings through 2013 (r3 and University of Nottingham). Development meeting, September 2013 (coordinated by WP6) reviewing the range of HOMBRE outputs across the entire project Brownfield Opportunity Matrix testing and development meetings June-July 2014, Markham Environment Centre, on-going liaison by phone and e-mail to October 2014 Brownfield REMIT/RESPONSE (BR2 tool) testing and development meetings Head of Markham Employment Growth Zone, July-Sept 2014 plus phone/email liaison to October 2014
Tools and concepts presented / tested on case	Brownfield Opportunity Matrix Brownfield REMIT RESPONSE (BR2)

Comments / incidences	

Documents and references related with case study – (more in Annex 2)	
Type of document/ Title	Content of document
HOMBRE Deliverable 5.2	Description of the testing and development of the Brownfield Opportunity Matrix for the soft end uses of the Markham Vale site in general, but the North Tip in particular
HOMBRE Deliverable 5.3	Description of the testing and development of the Brownfield Opportunity Matrix for the soft end uses of the Markham Vale site in general, but the North Tip in particular
HOMBRE Deliverable 6.2	Description of the testing and development of the Brownfield REMIT/RESPONSE tool for the whole of the Markham Vale site

2.2 CASE STUDY / HOMBRE COLLABORATION KEY ISSUES

2.2.1 RELEVANCE OF THE CASE FOR HOMBRE

Markham Vale was a useful case study for HOMBRE for several reasons, being relevant to its interests and matching its objectives in several ways.

HOMBRE focuses on strategies, technologies and solutions for brownfield (BF) management that emphasise the positive value of available resources and potential social, economic and environmental benefits. The Markham Vale case study allowed testing of two HOMBRE tools: the Brownfield Opportunity Matrix (further called BOM), tool for finding solutions for BF management and the Brownfield REMIT/RESPONSE tool (BR2) which allows analysis of potential redevelopment options. A core concept in the BOM is enhancing the value proposition for the soft re-use of brownfield sites.

For BF regeneration our target is finding new uses that will allow generating revenues (directly or indirectly on the site) and wealth (social, health, economic), while maintaining negative impacts to a minimum (environmental, disturbances of noise, odours, aesthetic, traffic congestion, etc.): the application of the BOM to Markham Vale case study helped to identify possible new uses, mostly for the North Tip scenario. BR2 allowed the analysis of the original plans in order to examine the potential effects of the scheme on the surrounding urban system, and the system's effects on the scheme to identify weaknesses or bottle-necks.

HOMBRE's research objectives are to provide:

- Better understanding why, how, where and when BF's are formed in order to avoid future BF's , in different areas in the EU and in three main fields: urban, industrial and mining areas: the story of Markham Vale allows to better understand why it has been a BF;
- Better planning and more attractive communication technologies that allow more holistic appraisal of BF regeneration options and early stakeholder involvement: the BOM could have been used in the development of the Master Plan for Markham Vale during the planning phase as well as during stakeholder engagement activities. The Systems techniques in BR2 would be used in the planning stage to compare options and model the redevelopment with time. The options appraisal and decision process could may be better discussed-with and explained-to stakeholders and the decisions and assumptions stored in a structured way to better monitor

progress and show when interventions may be necessary to keep the redevelopment better on track.

- Better and more creative solutions for long-term land use of current and potential future BF's

The BOM and its application to the case study fits largely into third objective, and partially into the second objective as it can be used as a communication tool. BR2 would help to reinforce and communicate the benefits of soft-end uses such as the effects on quality of life of local residents. Markham Vale is the Derbyshire County Council's largest-ever regeneration project that aims to reverse the unemployment and deprivation which followed the closure of deep mines, loss of textile jobs and the general decline in heavy industry in north east Derbyshire. It is both an exciting and a difficult project. The difficulties affecting the project are largely not technical ones but relate to the intractable nature of job creation in the area during the economic downturn since 2008, and a number of specific barriers discussed in Deliverable 5.2/5.3.

2.2.2 SITUATION OF THE CASE STUDY BEFORE HOMBRE INVOLVEMENT

The closure of Markham Colliery in 1994 brought to an end more than 150 years of deep mining in Derbyshire. Not surprisingly, it resulted in very high levels of unemployment – 3,300 miners living in Derbyshire lost their jobs. It had a knock-on effect on service and supply industries and left high levels of social deprivation - the northern coalfield was in England's top 20% of the most deprived districts.

Figure 3: Aerial photo of Markham Colliery and development plots

Markham Vale was born out of a Coalfield Task Force Report in 1998 which challenged local authorities to create an employment growth zone centred on the former Markham Colliery. Derbyshire County Council led the *Markham Employment Growth Zone (MEGZ)* a partnership of interested bodies taking up the regeneration challenge. MEGZ aims to provide the infrastructure for the creation of 5000 jobs to regenerate the local area as well as providing environmental improvements including establishing short-rotation coppicing on the North heap. The employment zone became known as Markham Vale, with the coppicing project being known as "Markham Willows". In the region of 10% of the job creation aim has been achieved as of 2014.

The ambition of Markham Willows was to sell heat energy rather than wood chip, as the margin on wood chip was very low. The business model developed envisaged a local boiler replacement programme for schools and other local authority facilities, as oil powered boilers came to the end of the operating lifetime. Economic modelling by (AEA Technology Ltd) had shown that the revenue from selling heat was sufficient to run the boiler replacement and the biomass plantation in a profitable way[1]. This concept was known as "wood heat".

In addition to biomass energy production, plans for the North Tip included leisure and grazing (a pre-existing use). The North Tip had already been largely top-soiled. In 2012 Markham Vale was subsumed in a large enterprise zone (Sheffield City Enterprise Zone) providing valuable tax breaks and capital allowances for businesses locating into the area. The attraction to the site owner (Derbyshire County Council) for biomass energy was and is the offsetting of the landscape management costs for the areas restored surrounding the built development platform, which the Council would have to meet, along with its potential for improving land values in the vicinity and supporting job creation . A detailed master-plan including qualitative risk assessments, waste re-use plans and economic modelling were produced for Markham Willows in 2004. The Council believes that local communities are largely supportive of the proposals as a means of removing dereliction at minimal cost to the local Public Sector. Markham Willows was to be linked to an Environment Centre, and the vision was one of encouraging businesses with a strong sustainability interest to the site, along with providing linkages to local education and skill development for environmental technologies. The Environment Centre was to make use of biomass energy.

A number of factors have constrained the development of the original Markham Willows concept. The Environment Centre has been built and includes both conferencing facilities and accommodation for small businesses. However, design issues with the biomass boiler have meant that it cannot be easily used, for example ash removal requires trips up and down a staircase. The impact of this on perceptions of biomass utilisation severely undermined the wood heat concept. Should biomass production be further developed at Markham, biomass products (wood chip) are likely to be sold on the open market, rather than via a wood heat solution.

Consideration has been given to wind and solar energy. However, a major difficulty with this is that the North Tip is on the sight lines from the viewpoints of an important local visitor attraction, Bolsover Castle, managed by a Public Body called English Heritage (www.english-heritage.org.uk/daysout/properties/bolsover-castle). This makes solar or wind power renewable installations unlikely to be acceptable.

The South Tip was never envisaged for active forms of re-use because of the presence of dioxin contamination on its surface. It has spontaneously revegetated including woodland, and it was considered that the disturbance of this was a riskier operation than leaving the site as it was.

An additional renewable energy interest at Markham has been the recovery of coal bed methane which provided renewable energy for several years (www.alkane.co.uk), although this is now reduced. The company involved has now moved onto aquifer heat energy extraction using heat pumps[2].

[1] r3 environmental technology limited and AEA Technology PLC (2004) Markham Willows Masterplanning. exSite Research Ltd, Hillam, Leads, UK. DOI: 10.13140/2.1.4233.0249

[2] Complementary information on site history and events are given in Annex 2 of this report.

2.2.3 HOMBRE ACTIONS WITH CASE STUDY

Use of decision support

Stakeholder discussions took place between the HOMBRE team and staff from Derbyshire County Council. These individuals were both experienced in land regeneration as a practical, applied commercial process, and also the technical interventions necessary to achieve redevelopment and re-use projects. Once introduced to the BOM they found no real difficulties in its interpretation and use, and suggested a number of useful technical enhancements and changes. Discussions using the BOM were principally carried out by Erika Rizzo a secondee to r3 from University of Venice over June to August 2014, with support from r3 directly and from another r3 secondee from the UK contracting company Vertase-FLI. No additional stakeholders were involved in the BOM discussions. However, a scoping workshop in September 2013 also included the Council's private sector development partner and a consultant involved in the original "Markham Willows" project design from outside the HOMBRE team.

As part of the phased development the management of the South and North Tips has recently come under reconsideration. The Brownfield Opportunity Matrix (BOM) was used to explore possibilities for moving forward with the North Tip. The outcomes of this process are largely informal, and remain in development with the site owner. They have however, led to some valuable learning outcomes both for the BOM development and the option appraisal for the North Tip.

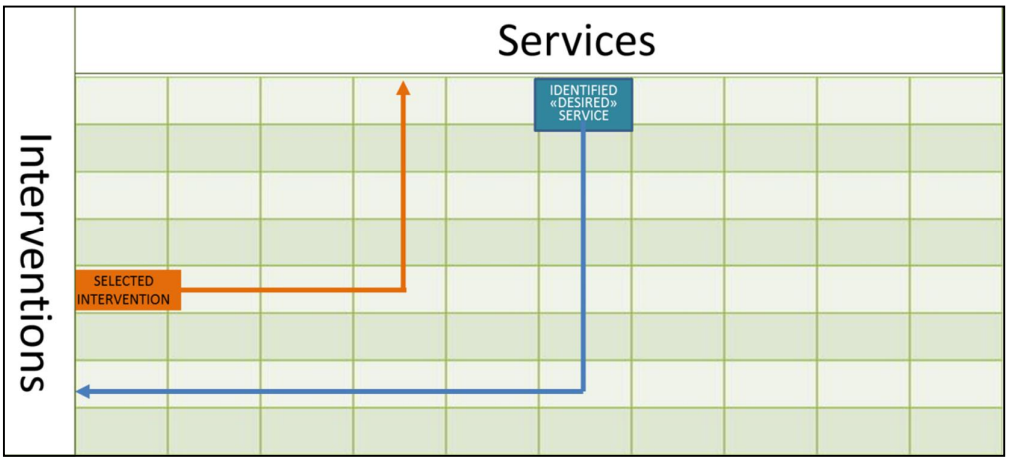


Figure 4: simplified scheme of Brownfield Opportunity Matrix (BOM)

Brownfield Opportunity Matrix for Soft Reuses: Application to the Markham Vale Case Study

The BOM can be applied in the early design stage of a project (i.e., scoping application), but also in a later stage to validate the project or to check if all desired services and interventions have been identified, or need to be identified (i.e., retrospective application). Since Markham Vale is already in a transition phase, many actions have been taken in order to regenerate it, with varying outcomes. Hence for Markham Vale the BOM was applied firstly in a retrospective way to re-consider the original 2004 Markham Willow feasibility study findings, and the subsequent activities; and secondly in a scoping way to check if new services and interventions, which means new opportunities, could be identified from a more recent perspective. The decision support activities undertaken are summarized below.

1. PREPARATION
    - Presentation about the BOM to DCC;
    - Definition of the case study area;
    - Definition of scenarios for application (space and time dimensions have to be considered);
2. RETROSPECTIVE APPLICATION
    - Check which services the on-going project has provided (underline with a colour, for instance yellow);
    - Check the interventions that took place to produce those services (underline with the same colour used to underline services provided);
    - Check Intervention/Service Interaction Cells (ISICs), which show how an intervention interacts with a service;
3. SCOPING APPLICATION
    - Check which other possible services the site could provide and underline them with a colour, for instance pink;
    - Check if, in order to attain those new services, extra interventions are required. If so, underline those interventions with the same colour used to mark new services.
4. OPPORTUNITIES IDENTIFICATION
    - Two possible situations may occur:
        - Few new desired services identified (this could happen in the case of a well-established project such as Markham Vale, where many interventions were planned and have been done or will be done. Identifying relatively few new services, is a validation process.
        - Many new desired services identified. This is more likely to be the case of a brand new project. This situation would then probably then require the prioritisation of the interventions.

The BOM was applied to two scenarios:

- "1. Markham Vale as a whole", i.e. to the entire area under the DCC jurisdiction (e.g. excluding areas handed on to Henry Boot Developments),
- "2. The North Tip" (see below highlighted in yellow).

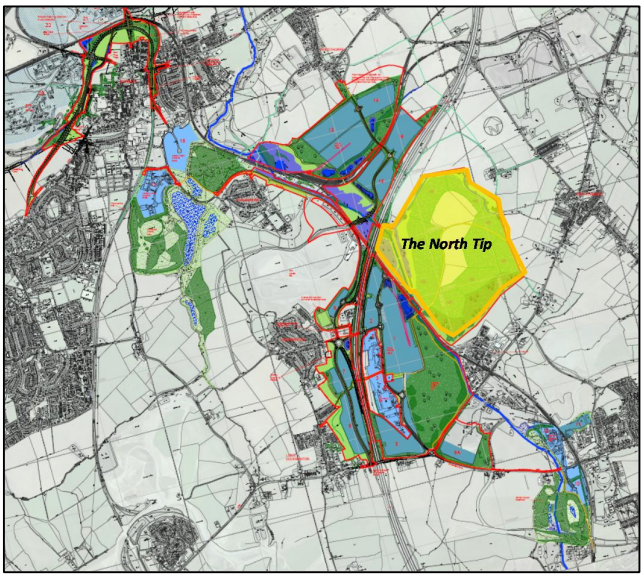


Figure 5: Area of Markham Vale brownfield. Location of the North Tip is marked in yellow

Details on process and outcomes of BOM application on Markham Vale are given in Annex 2 of this report.

2.2.4 FEEDBACK FROM CASE STUDY

The reactions from the stakeholder (DCC) to the BOM were not initially positive, but through use became much more positive:

- First reactions: slightly sceptical, possibly reinventing the wheel, questioning whether the BOM had a practical use or was it just an academic exercise?
- Later reactions: The HOMBRE team were enthusiastic, the diverse mix of expertise and perspectives was refreshing to work with. After working with the team and applying the BOM to Markham Vale and more specifically the North Tip its usefulness was apparent as an early planning and possibly a post development validation tool. The BOM could be a useful tool when discussing a scheme with regulators at the Planning Approval stage.
- Overall feelings: pleasant experience, good to have an independent assessment that found that the interventions and outcomes were as predicted at the design stage of the MEGZ scheme.
- The BOM could have been used: at the planning stage to give an overview of the potential interventions and outcomes. And possible as a post development tool to validate a scheme's 'green credentials'.
- BR2: the structured way of considering components of the site and regeneration plans was thought to be beneficial in options appraisal stage and as a communication tool to inform/consult stakeholders. The tool gives transparency to the process, making it easier to see the reasons why a particular decision was made and could act as a focal point for the various investigations and modelling in the planning stages. The systems analysis results help to reinforce conclusions and decisions.

The collaboration with HOMBRE seemed to be a beneficial experience for DCC technical staff. The MEGZ scheme is large (364 hectares), its original design had been conceived and developed by a team of people that have considerable expertise in the reclamation of brown field land and the techniques available to achieve any given desired end result. This expertise also extends to what was achievable and desirable at a local, regional and national level and an understanding of the limitations that surround such a scheme undertaken by a Local Authority. Consequently, in the case of MEGZ scheme all of the interventions and opportunities that could be practicably exploited and employed were planned prior to the development of the BOM tool and HOMBRE visit. However HOMBRE did bring enthusiasm and some interesting ideas. These may be more suited to being undertaken by an external body wishing to invest in the locality. The collaboration with HOMBRE brought forward a "critical-friend" review of work to date and will feed ideas into future stages of the project. Broad benefits were identified.

- Benefits: defining new opportunities, exchange of ideas between local stakeholders and the HOMBRE team, which was very beneficial to everybody, promotional benefit to DCC of connecting Markham Vale to FP7 Project, and lastly creation of opportunities and ideas for further collaboration. The HOMBRE team partly acted as critical-friend by encouraging DCC to review reasoning and justifications for areas of work already being actioned. It was useful to the DCC team to consider and reiterate ideas behind the actions.
- The BOM seems useful as a tool for on-going considerations at the North Tip for benchmarking soft reuse options and exploring on going questions. In theory it could also have been used as a template for briefings, planning applications.
- BR2: it was felt the tool contributed to the structure, communication and transparency of the options appraisal stage.

- Is was useful for the DCC team to consider areas of work where future use of the HOMBRE tools could be put to use to help in project delivery, particularly with decision makers, i.e. funders, regulators and other key stakeholders.
- Both the BOM and BR2 will be useful in developing plans, and presenting plans for regeneration, to regulators, funders and other decision makers.
- From HOMBRE's perspective the discussions with Markham Vale were very valuable in testing and assisting the development of the BOM and BR2

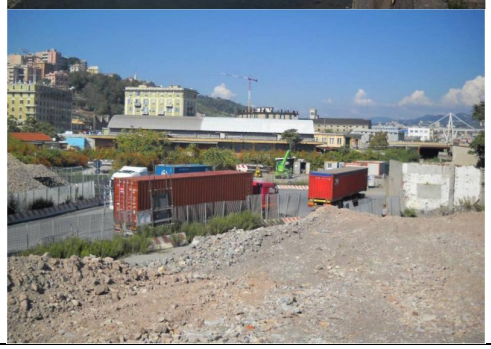
Additional benefits might be found for other stakeholders connected with the project (although these were not consulted during this case study): Henry Boot Developments Ltd (land-owners and developers), administration; secondary beneficiaries (local community and businesses).

While the BOM and BR2 seem highly relevant, of high value for beneficiaries, and reasonably achievable to use; an open question is who would be ready to invest substantial financial resources for obtaining expected benefits in a real life project. There is an interest from DCC in staying engaged with the HOMBRE team and further use of the tools (potentially on other sites as well which are closer to initial design option appraisal). However, the terms of any future engagement will need to be clearly defined. There are no funds within the existing project to procure advice from HOMBRE and if such funds were available then competitive procurement issues need to be addressed. DCC asked: is the intention that the HOMBRE project group brings funding with it for future work? The main opportunity for this might be via projects in schemes such as Interreg or LIFE+.
DCC have highlighted the need for adequate communication and dissemination of the BOM and other HOMBRE outputs:

- The background and outcomes from the HOMBRE tools and concepts should be disseminated to peers in the reclamation and regeneration professions/industries. Initially as papers through journals/conferences but accompanied or followed by worked examples. The Markham Vale project is a very large and complex project covering many environmental, social and economic aspects of regeneration. As it is complex, it is also a lengthy, time-wise, project. Does HOMBRE work best with this scale of project, or is the opposite true?

3. CASE 2 – GENOA, Italy

3.1 ID OF THE CASE STUDY

<table>
<tr><th colspan="3">CASE STUDY NAME AND COUNTRY: Polcevera, Genoa, Italy</th></tr>
<tr><th colspan="3">LOCAL CASE STUDY CONTACT ORGANIZATION/PERSON: Francesca Neonato</th></tr>
<tr><td rowspan="2">Case study ID</td><td>View of the area</td><td> 
  </td></tr>
<tr><td colspan="2">Short description of the case, i.e. location, history of the site use, environment, (soil, water, risks etc.), where is the site in the land management cycle, previous actions on the site for regeneration (if relevant)
Polcevera Stream valley is an important link between the eastern and the western part of the city of Genoa, in North-western Italy, a privileged lane for the north-south transport of goods, especially along the European corridor 24 Genoa-Rotterdam. Despite of the tumultuous recent urban/industrial developments, the Polcevera valley still displays obvious signs of a not so distant past characterized by agricultural and light manufacturing activities. Last but not least, this stream corridor also represents one of the most used migratory routes followed by birds (but also insects, larvae and pollens) during their annual migrations from the African continent to the great plains of the Eurasian continent.
At the moment the Polcevera stream delta is an heavily urbanized area, inside the borough of Cornigliano, with the steel industry Brownfield lying to the west of the stream for about 6 ha. An old 17th century historical building, Villa Bombrini, borders the area.
The Polcevera project aims at complete regeneration of the area and a connection between the stream and garden/recreational area that is planned on the western bank by the PUC (Municipality Urban Plan, approved in 2014). The overall project includes also the redevelopment of the brownfield, a former steel industry. This case is a C-site, selected because of its focus on a Mediterranean area and a good selection of stakeholders with their own views, so it can offer different challenges for requalification. At the moment, reclamation has been done for new productive destination and the Administrators at different levels (Region, Municipality) are still</td></tr>
</table>

	assessing the final end use, even if 50% is already designated to green and open spaces
Main brownfield drivers	List those factors which are the main reasons why this site is a brownfield The Polcevera stream mouth hosted steel industries on the west bank that ceased production in the 1996 due to the iron crisis, caused by loss of competition position to 'low salary countries' (India, China), stricter environmental laws and public protests. In 1998 a bufferzone was created around the industrial area.
Stakeholders involved	Genoa Municipality: Marco Doria, Mayor of Genoa Stefano Bernini, Vice-Mayor and City Planning Councillor Giorgio Guerello, Town Council President Valeria Garotta, Environment and Parks Councillor Pierpaolo Grignani, Public Servant Medio Ponente Borough: Giuseppe Spatola, President Ferruccio Bommara, Environment Councilor Paola Rossi, Public servant Paolo Collu, Coordinator working Group Roberto Ferrara, AGESCI GE 56 Cristina Pozzi, Association "Per Cornigliano" Maura Gandolfo, Cornigliano Philarmonic, President Mauro de Salvo, Association of Lucani of Genoa Fabrizio Cartabianca, President Pro Loco Domenico Turco, Pro Loco Riccardo Ottonelli, newspaper "Il Corniglianese" and Circolo ARCI "Rizzolio" Agostino Razzore, newspaper "Il Corniglianese" Giovanni Bisso, Association Nazionale Alpini Società per Cornigliano Spa Enrico Da Molo, Director Società per Cornigliano Spa
Actions taken with case study	From 2011 up to 2014 • Site visit • Meetings between HOMBRE case study responsible PN STUDIO and local stakeholders • Workshop - testing tools and concepts - Feedback

	
Tools and concepts presented / tested on case	Circular Land management concept Brownfield navigator Holistic approach for Brownfield regeneration Brownfield Opportunity Matrix and stakeholder engagement process
Comments / incidences	

Documents and references related with case study - (more in Annex 3)	
Type of document/ Title	Content of document
Deliverable D5.2	Decision Support System on soft re-use
Deliverable D3.3	Evaluation of the test results from the Brownfield Navigator use in case studies

3.2 CASE STUDY / HOMBRE COLLABORATION KEY ISSUES

3.2.1 RELEVANCE OF THE CASE FOR HOMBRE

The Genoa case study could be classified as a C-site, following the CABERNET definition. This means, it is highly probable the site may only come back to the economic cycle if public money is invested as private investors may estimate the financial risks of redeveloping such sites may be unacceptable.

The site has been selected for HOMBRE as it represents a Mediterranean area and was particularly relevant for the variety of stakeholders concerned by the regeneration of the area. Especially appealing on this case is the great variety of stakeholders' views and priorities for regenerating the area. Such context was thought to be especially interesting for testing tools and concepts that might help stakeholders converging towards regeneration options where relevant synergies could be identified and serve as trigger for launching a project with consensus.

Given these premises, special expectations were set on testing the benefits of the Brownfield Navigator (BFN) as communication and guidance tool for decision making. It was expected the BFN could allow more holistic appraisal of BF regeneration options and early stakeholder involvement. In this case, the BFN was thought to be used to support the design of alternatives for soft re-use options within the planning area. The testing of the BFN was further supposed to deliver useful feedback on optimization of the tool. Interest of stakeholders was expressed on the potential of understanding what broader benefits could be generated from the BF regeneration and how could these be integrated in the process of decision making. Hence, there were some expectations on getting support for decision making with specific tools focused on soft re-use options.

3.2.2 SITUATION OF THE CASE STUDY BEFORE HOMBRE INVOLVEMENT

In the last decade, great expectation and willingness from local authorities and politicians act as driver for engaging the regeneration of the Cornigliano area. As part of the plan to up-grade the area, old steel industry buildings and other infrastructures have been completely demolished. In 2005 a contest was held by Municipality to select best projects for regenerating the area but no choices were made at short term. In the following years remediation works could eliminate soil contamination on the site up to standards corresponding to industrial use of land. However, remediation works carried out were not sufficient to redevelop the area for more sensible uses such as residential use. If such use would be desired, more remediation would be required. In 2006 a feasibility study to create a natural area in the stream and the Brownfield was carried on by a consultant. By the start of the HOMBRE project, the site was managed by a public company, Società per Cornigliano. Regeneration and future use of the area used for factories was still to be agreed on.

The case study quickly revealed there were several barriers for the redevelopment of the area to take place smoothly. These were essentially due to major discrepancies between economic, social and policy ambitions set in the area. The following drivers were thought to be the most relevant as for understanding the stalled situation of the case:

GOVERNANCE AND POLICY AMBITION

This barrier was revealed through major discrepancies among decision makers at different levels: on one side, the region of Liguria insists on the priority of building a new hospital with capacity for 700 patients right on the stream banks in the area of the Brownfield. This project was even reinforced after a feasibility plan was conducted. Further, the Municipality of Genoa strongly supports the idea of re-developing the area as a general/multiple public services area (also stipulated in the Municipality's Urban Plan) with special attention to the development of green areas and open

spaces. This idea is also supported by the Medio Ponente Borough representing local communities. Hence, two major stakeholders groups support two different visions for the regeneration of the area. For more information about stakeholders involved in the case study and in local workshops, please consult Annex 3.

DRIVING THE ECONOMY

In absence of clear redevelopment plan of the nearby port and industrial area, defining or prioritizing a concrete use of the Cornigliano area becomes even more challenging. It has been approved that a new network of roads would cross the area of the brownfield. This will allow connecting the north with the south quickly, however this would also intensify the dense traffic in the area of the brownfield. A local redevelopment company operates to returning the area back to economic activities by looking for investors. However, given the situation of the real estate market and considering the lack of funding from the Municipality for bearing the costs for further remediation, conditions are not optimal to attract private investors. This is even reinforced by the fact that public administrators do not yet have a clear idea on possible final uses of the area.

SOCIAL CONCERNS

The expectations of the local community are very high, in terms of urban requalification with new spaces being devoted to residential uses, sports activities and green areas. A stakeholders and local community involvement project held by Municipality revealed that a park with multiple uses like sport, culture, leisure, walking etc….would be favoured.

3.2.3 HOMBRE ACTIONS WITH CASE STUDY

The collaboration between HOMBRE and the case study aimed essentially to

- providing the stakeholders with a new perspective on possible opportunities for redevelopment of the area using specific communication technologies and tools for supporting decision making
- getting feedback from case stakeholders on the tools developed by HOMBRE

Right at the start of collaboration with HOMBRE, the opportunity was given to stakeholders to express specific desires and expectations. Thus meetings were held with the Municipality of Genoa by early 2012 revealed great expectations in finding support for managing a highly complex problem of urban revitalization affected by residual soil contamination in a strategic location. Expectations were focused on getting more detailed assessment and valuation of different redevelopment scenarios and advise on best solutions (backed up with cost benefit analysis) suitable with soft re-uses.

As HOMBRE project developed, stakeholders have been regularly informed about the progress on key tools they were especially interested in, i.e. the brownfield navigator BFN and guidance for the design of regeneration options focused on soft re-use. Communication channels were maintained through Italian consortium partner PN STUDIO in order to deliver regular up-dates on the developments of tools. This communication has revealed itself to be crucial in order to manage stakeholders' expectations and thus also adapt and align their ambitions and expectations with HOMBRE's developments. The process allowed giving them more insight on the tools operation, layout and functionalities. Along HOMBRE project duration, the following meeting points with Polcevera stakeholders were maintained:

- 2011 - Four meetings with stakeholders: aim was to introduce HOMBRE project. The project team could gain a first impression of stakeholders' expectations. The project team and the stakeholders had a visit of the brownfield area.
  12-13 September: HOMBRE meeting with Genoa Municipality (Urban Lab) and site visit of the case study area.
- 2012 - Stakeholders involvement process. This was requested by local Borough, started in February. This process was aimed at collecting specific ideas of collaboration and express further expectations of the collaboration with HOMBRE. These inputs have been used to prepare the final workshop to be held in 2014.
  Meetings were held to up-date stakeholders about concepts and tools under development by HOMBRE team. Plans and former redevelopment ideas could be presented to HOMBRE team so that more insight could be gained on drivers and barriers for regeneration on the area. Definition of an official document with proposal about the reuse of the site presented to the Municipality. Participation of two stakeholders from Genoa Municipality to Hombre General Assembly, held on 19-21 September in Ferrara (I).
- 2013 - Meeting with local Borough to assess the results of stakeholders involvement process and deliver them to Genoa Municipality. Resolution presented to Genoa Municipality asking for "temporary use" of a portion of the area as a park.
- 2014 - Two meeting to update stakeholders about Hombre outputs and as preparation of the workshop.
  May 2014:-BFN and Brownfield Opportunity Matrix (BOM) workshop[3] with stakeholders
  - 19 stakeholders present in the WS
  - Presentation of key features of BFN and demonstration of latest version
  - Presentation of key features of BOM and demonstration of latest version
  - Discussion on the use of tools on case study virtual project

3.2.4 FEEDBACK FROM CASE STUDY

Thanks to the regular exchanges and workshops/meetings most stakeholders involved with HOMBRE could gain good insight on the aims, scopes and use of HOMBRE tools, i.e. BFN and BOM. Though, given the broad panel of stakeholders involved and their field of expertise, some of them thought the use of the tools might be challenging without the support of HOMBRE project team. Hence, some of the contents of the tools may require special expertise in technical fields related with remediation and soil/water management issues; this was especially the case for the Brownfield Opportunity Matrix (BOM). Considering these difficulties, some stakeholders suggested to develop a lighter version that could be more accessible for non-experts. They estimated such changes would allow better dialogue between stakeholders and facilitate discussions on option design. Best practice examples of brownfield regeneration projects from the Mediterranean area would have been appreciated in the BOM tool. Despite this hindrance, stakeholders recognised unanimously that HOMBRE offers very innovative tools which are of great help in early phases of regeneration planning. Thus, some stakeholders thought that HOMBRE BFN would have been very useful when they started discussion on Cornigliano regeneration planning several years ago. This would have helped to save precious time and resources but also provide a wider view of the opportunities at stake in the area. There is a common view of stakeholders saying that the BFN allows visualization and planning of the areas in very few steps, thus avoiding long delays. The wide and international view on possible remediation options called their attention. Stakeholders showed further great interest in the cases of regenerated areas, highlighted in the reference library of the BFN.

[3] Minutes of the workshop are attached as annex 3 to this document

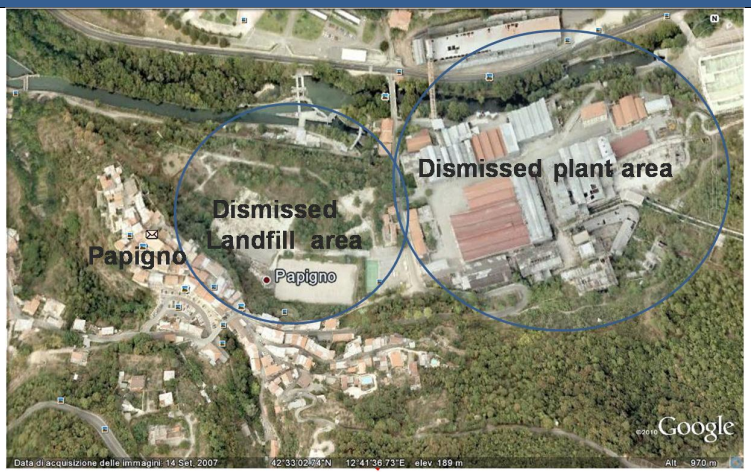
From the viewpoint of HOMBRE case study responsible PN STUDIO, the concepts and tools presented to the local stakeholders were helpful to broaden their vision on the various opportunities and potential benefits from the regeneration of their site. The holistic approach supported by HOMBRE has created new perspectives in terms of services that can be provided from the regeneration of the site.

One of the main positive issue it that HOMBRE brought stakeholders with different backgrounds and roles around the same table, thus favouring an environment for exchanging perspectives and seeking consensus. Hence, the BFN (especially sketching tool) helped stakeholders to immediately visualize scenarios and find common grounds. This was especially relevant as the BFN enabled to get politicians and other stakeholders (i.e. local communities and administrations) closer. In this sense it was estimated that the BFN was the right tool to promote bottom-up processes by engaging with broader groups of stakeholders in early explorative phases of projects.

The Municipality representatives expressed interest in maintaining a link with further developments of HOMBRE tools like the BFN, especially if these could deliver quantified valuation of regeneration projects. In such cases, collaboration with HOMBRE partners involved with follow-up initiatives would be very welcome. As a relevant feedback to HOMBRE, stakeholders recognised the potential financial benefits HOMBRE tools and concepts could generate in real life projects, even though at the moment, quantitative valuations are not feasible. Special interest in this sense was focused on tools capable of quantifying maintenance costs of parks and other green infrastructures.

4. CASE 3 – TERNI, Italy

4.1 ID OF THE CASE STUDY

CASE STUDY NAME AND COUNTRY: TERNI Papigno, Italy		
LOCAL CASE STUDY CONTACT ORGANIZATION/PERSON: Renato Baciocchi		
Case study ID	View of the area	
	Short description of the case, i.e. location, history of the site use, environment, (soil, water, risks etc.), where is the site in the land management cycle, previous actions on the site for regeneration (if relevant) The Papigno site is a large industrial brownfield area located on the outskirts of the Terni's administrative boundaries some 10 km off the city centre. The site housed nationally strategic hydro-plants and chemical industries of the1800s. The size of the area that is subject to regeneration is around 105, 450 m2. The site is split into two different parts; one part is a dismissed landfill and the other part is a dismissed plant area. The industrial site is almost completely abandoned. "On the site disused workshops and abandoned infrastructure (e.g. water & carbide penstock) are present. Infrastructure, like pipes and channels, are present in the ground and some of them are still operative and used by the Galleto hydroelectric power station" (Fioretti, personal communication, 2012). As a result of industrial use in history, parts of the soil and groundwater are contaminated. The nature around Terni attracts tourism and the nearby waterfalls „Cascate Delle Marmore" allocate some 300.000 visitors a year. The river Nera that flows through Terni is used for leisure and activities like canoeing and rafting are offered The Papigno site was acquired by the Municipality of Terni in the mid-1990s. Its acquisition was much the idea of enlightened administrators and local engineers to keep and preserve the site as the city's heritage and its industrial archaeology. Its current use was much the result of a fortuitous encounter of Mr Benigni and his main producer who were looking for locations for the shooting of the Hollywood awarded film "Life is Beautiful" and who over the years massively invested in the renovations of Papigno's main warehouses whose capacity have made them among the largest in Europe as it comes to filming standards. Today Papigno is set to provide a complementary alternative to Rome's Cinecittà Studios that will manage the site up the late 2013.	

Main brownfield drivers	List those factors which are the main reasons why this site is a brownfield Even though some parts of the site have been redeveloped for cultural activities (cinema production until 2006) and some industrial activities (hydro-electric power station) major parts of the site have not been regenerated and are still abandoned with buildings affected by structural and contamination problems. Also parts of land are contaminated. The main bottleneck is political and is mainly due to the poorly efficient use of the legislative tools available for coordinating the competences of the different public bodies involved in the decision process. Such governance problems have hindered the development of a comprehensive regeneration project for the industrial area
Stakeholders involved	• Municipality of Terni (different departments, planning, environment, tourism) • Region Umbria, ARPA • Province of Terni • Indirectly, Ministry of the Environment (though not directly involved during project time). The ministry is responsible for approving remediation measures as the site is classified SNI (Site of National Interest) • Cinecitta Film Studios
Actions taken with case study	Site visit in February 2012 – Exchange on the situation of the site
Tools and concepts presented / tested on case	Circular Land management concept Holistic approach for Brownfield regeneration
Comments / incidences	

Documents and references related with case study	
Type of document/ Title	Content of document
HOMBRE D 2.2: Cost effective monitoring within the Circular Land Management Framework	Zero Brownfield Concept Circular Land management concept Early Warning indicators
HOMBRE 2nd newsletter	General description of the site with photos illustrating the use of the area for cinema production, different areas of the site (landfill area

4.2 CASE STUDY / HOMBRE COLLABORATION KEY ISSUES

4.2.1 RELEVANCE OF THE CASE FOR HOMBRE

The case study of Terni-Papigno is of particular interest as it is one of the few Hombre case studies involving large abandoned industrial sites, with the presence of building and contamination. The case study of Terni-Papigno includes at least two former industrial sites, whose activities have been interrupted in the 70s. The Papigno site was the subject of a detailed assessment of its situation and possible regeneration pathways during the HOMBRE project (see following point 2), whereas for the Gruber site the involvement was limited to the application and testing of technology train 2. The site was even interesting for intermediate reuse (cinema experience) with collaboration between public and private parties.

4.2.2 SITUATION OF THE CASE STUDY BEFORE HOMBRE INVOLVEMENT

The Papigno site is characterized by an industrial area and a landfill area, located along the river Nera, near to the famous Marmore falls. The latter one is the part of the site with contamination by HC and PCBs and is closed to any use since 20 years. The industrial area hosts a number of buildings, a few of which have been temporarily reused for filmmaking starting from the late 90s till few years ago. Now the site is once again not used anymore. The Municipality of Terni is now trying to update plan actions to re-launch a new season of private investors involvement. The other site (former Gruber) located in the heart of the city of Terni, also nearby the river Nera, hosts several abandoned buildings and is characterized by a very limited contamination by HCs, metals and PAHs.

There are several barriers that stakeholders explain being the reason why this site is still a brownfield. The low attraction of the area for investors is seen as a major barrier for site regeneration; there are no clear opportunities identified on the area, at least any that meets some consensus among the involved parties. As an environmental barrier, there is evidence that the site is contaminated and the clean-up project is still to be approved. However, until no clear redevelopment plan is available remediation can only aim at meeting minimum regulation thresholds. This problem is also evidenced by the fact that in the Italian legislation the responsibility for urban planning on one side and remediation on the other side is separated, so that the regeneration of the site is strongly hindered by governance problems, making difficult to propose an integrated regeneration project for the BF.

4.2.3 HOMBRE ACTIONS WITH CASE STUDY

The collaboration between HOMBRE and the case study aimed essentially to:

- Getting to know the governance frame at stake in the case, understand barriers. This knowledge was planned to help scoping and improving HOMBRE concepts of holistic approach on brownfield regeneration and help to design concepts and tools HOMBRE was seeking to develop. As such, TERNI could be considered as survey case
- Present to stakeholders key principles of circular land management getting feedback from case stakeholders on the concepts developed by HOMBRE

In the second year of project, HOMBRE took contact with case study stakeholders in order to get better insight on governance issues related with the brownfield regeneration. Especially following stakeholders were approached and interviewed in order to better understand interests,

responsibilities and interdependencies, hence governance. These can be summarised as in the following table:

Actor	Interest	Authority	Resource	Dependency (in relation to problem owner)
National government (ministry of public works, ministry of environment, ministry of infrastructure and transportation , ministry of economic development)	Environmental remediation	Approving remediation plan	Competency Financial resources	High Large importance and low substitutability
Region of Umbria	Environmental remediation Urban regeneration	Regional Territorial Plan (PTR) Selecting sites of national priority (empowered by the Ministerial decree n. 468 in 2001)	Competency (in approving spatial plans & to select National priority sites) Financial resources	High Large importance and low substitutability
Province of Terni	Integration of policy domains, sustainable development	Providing provincial Territorial Coordination plan (PTCP)	Knowledge Competency	High Large importance and low substitutability
Municipality Terni	Environmental remediation Regeneration of the site	Municipal Master Plan (PRG) Municipality	Competency (only in relation to urban redevelopment) Financial resources Production resource (land) Knowledge	High Large importance and low substitutability
ARPA Umbria (regional environmental agency)	Environmental remediation	Providing research results to the municipality Advising the ministry of the environment and/or region on environmental issues	Knowledge Competency legitimacy	High Large importance and low substitutability
Cinecittà Studios	Profit	-	Financial resources.	Medium-high At the moment Cinecittà is one of the few investors in

				the area. Investors can be replaced. However, this is difficult at the moment
Comitato (residents association)	Protecting quality of life	-	Legitimacy (exert pressure)	High Large importance and low substitutability
Research institutes and Universities (IBAF-CNR & DISAFRI)	Environmental remediation	Research soil contamination and solutions	Knowledge	Low Knowledge could be gained through other organization that also have knowledge on soil remediation
Civil groups (daily protection of the industrial heritage "Soprintendenza alle Belle Arti")	Protecting industrial heritage	Grant authorization	Knowledge legitimacy	High This institution provides legitimacy in regard to the approach to industrial heriatage

The analysis of stakeholders rapidly revealed that environmental regeneration and planning objectives were managed separately, i.e. at different levels (scales) and in different organizations. Policy domains covered by the Municipality of TERNI are wide (i.e. economic development, social issues, environmental issues) however its capacity to decide (i.e. responsibilities) was estimated to be small, essentially due to compartmented responsibilities on development and environmental issues. This factor is considered particularly relevant as it supposes a major barrier for more integrated and holistic approaches on designing regeneration projects.

The Province of TERNI though revealed to have both a wide range of policy domains and relatively wide capacities of decision making. Because of its structure the organization seems capacitated to address brownfield regeneration from a broader perspective, including social, economic and environmental dimensions. The region of Umbria and ARPA are estimated respectively to have relatively wide and small policy domains. However they both evidence small capacities for decision making on the brownfield site respectively due to separated responsibilities between the environmental department, i.e. remediation of the site and development area, i.e. regeneration of the area. As far as ARPA is concerned, its role seems to be limited essentially to advice on remediation solutions. The other stakeholders concerned by the case study have been estimated to have both small policy domains and responsibilities.

Beyond the analysis of policy domains and responsibilities, the evaluation of the case also revealed that stakeholders involved, i.e. municipality and region follow relative conservative strategies towards the brownfield regeneration i.e. the ideas emerging from stakeholders are relatively isolated from its context and appear to be narrowly bound to their respective domains of competences.

The conclusions of the research were that:

- The Terni case develops relatively isolated from its context is more reluctant to new solutions and rather inflexible.
- There is a strong correlation between the boundaries judgements (i.e. policy domains and responsibilities) made by actors and the strategies they follow. However, the case study of Terni-Papigno shows some exceptions. This is a remarkable finding of this research. The case study of Terni-Papigno shows that if managers on the project have a broad assignment their boundary judgements can be wide but their strategy can still be conservative. The explanation can be

found in the fact that they do not have the possibility or the experience to connect to other actors and other policy domains. Fragmentation is reflected on the project due to long history of fragmentised policy domains.

- The strongest correlation has been found between the strategies employed and support to the project. The project of Terni-Papigno evolved in a more conservative way. The progress, problem solving capacity and legitimacy (transparency & support) are estimated as average in the Terni case. The perceived governance capacity is scored average but the support is scored negative (-)Terni-Papigno case

4.2.4 FEEDBACK FROM CASE STUDY

Despite the fact that tools could not be tested directly on the case, there was great acceptance of the concepts presented to stakeholders as these were valued as being highly relevant for the complex situation of the case (see above problems of governance). Thus, feedback from case study stakeholders is valued as positive. Specifically, during the survey performed 2012 to better understand governance issues; great interest was showed by stakeholders. The information that was provided to them on the developments of circular land management rose specific interest. HOMBRE case study contact reported that currently the Municipality of Terni has a good perception of Hombre Project and inserts the relative experiences in its official documents and projects. The policies developed by the Municipality begin to integrate a different strategic vision about the management of the site focusing on better communication pathways and information exchange. It has been mentioned that the issue of Papigno site will be discussed in a future platform "PrendoParte" in the frame of the European project E-coop.

Unfortunately, the level of collaboration with HOMBRE on concepts and tools was not sufficient to open new perspectives of addressing specific problems and help overcome barriers. There was some advance in the definition of regeneration technologies aimed at reusing the soil in the site. Hombre Project was presented to local politicians and technicians like a good opportunity to know good practices in Europe and innovative models of land management. The collaboration with HOMBRE and sharing of new concepts and tools raise expectations and motivate stakeholders to maintain a relationship with HOMBRE beyond project's end for example, in assessing new opportunities for brownfield regeneration in a more quantitative dimension for this case or others to come in the future. There is a special interest among stakeholders to be regularly updated about further developments of HOMBRE tools and concepts, through training sessions or tailored info leaflets. Especially, the Brownfield Navigator was estimated to be of relevant importance as it would help the different stakeholders to find another mean of communication and support design of integrative strategies for regeneration.

To summarize, the cooperation with HOMBRE opened new regeneration perspectives accounting for a different management policy and the valorisation/exploitation of existing resources inside and outside the Papigno site.

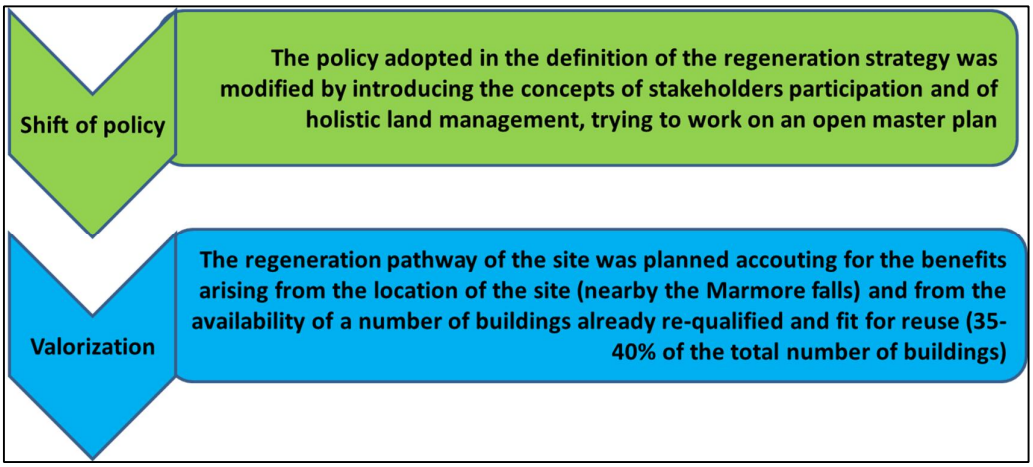


Figure 6: Contribution of HOMBRE on specific issues for the Papigno site

5. CASE 4 – GELSENKIRCHEN, Germany

5.1 ID OF THE CASE STUDY

<table>
<tr><td colspan="3">CASE STUDY NAME AND COUNTRY: Gelsenkirchen, Germany</td></tr>
<tr><td colspan="3">LOCAL CASE STUDY CONTACT ORGANIZATION/PERSON: Uwe Ferber</td></tr>
<tr><td rowspan="2">Case study ID</td><td>Above: View of parts the area of Gelsenkirchen

Below: Structural concept for biomass plantation HUGO. (EnergieAgenturNRW)</td><td> 
  </td></tr>
<tr><td colspan="2">Short description of the case, i.e. location, history of the site use, environment, (soil, water, risks etc.), where is the site in the land management cycle, previous actions on the site for regeneration (if relevant)
In Germany on the outskirts of Gelsenkirchen (located in the Ruhr area in the region of North Rhine-Westphalia), 22 hectares of a former coalmine (“Hugo”) have been redeveloped to include biomass production. Biomass production will start by short rotation crops (SRC). The concept of the remediation is to create a leisure or recreational use combined with a temporal or permanent biomass production site. The area is subject to urban planning regulations and a structural plan for biomass cultivation using short rotation crops (poplar and meadow).
The project was faced with several problems. After the demolition of the present mining and coal power plant structures, the site´s situation was still not sufficient for an immediate reuse in that other remedial measures were required. Moreover, annual costs for traffic safety and regulatory obligations occurred. The earthworks</td></tr>
</table>

	started on land assessed of its suitability for biomass production in 2011.
Main brownfield drivers	List those factors which are the main reasons why this site is a brownfield The general decline of coal mining in Europe and also Germany in the last decades of the 20th century led to the closure of the coal mine "Hugo" in 1997.
Stakeholders involved	Owner/cultivator: RAG Montan Immobilien GmbH. Municipality of Gelsenkirchen Ministry of environment Federal agency dedicated to forestry and wood production in North Rhine-Westphalia (EnergieAgenturNRW)
Actions taken with case study	The stakeholders were being updated on HOMBRE activities regularly. Yearly site visits Questionnaire for assessing biomass potential on the area was send to case stakeholders Interviews with the project manager (RAG Montan Immobilien GmbH). Involvement of RAG Montan Immobilien GmbH in the HOMBRE workshop in Ferrara (September 2012).
Tools and concepts presented / tested on case	Concepts of circular land management and holistic brownfield management were presented to stakeholders though not tested on the case Concept of landscape design within biomass project was presented
Comments / incidences	Due to massive earth works the project is still under construction

Documents and references related with case study (reference number in annex of deliverable)	
Type of document/ Title	Content of document
HOMBRE D 5.1: Valuation approach for services from regeneration of Brownfields for soft re-use on a permanent or interim basis	Short information on Gelsenkirchen case study
HOMBRE D 5.3: Bio energy clusters for linking marginal urban brownfield site re-use	Link to criteria and priorities in the decision tree and to the landscape recommendations

5.2 CASE STUDY / HOMBRE COLLABORATION KEY ISSUES

5.2.1 RELEVANCE OF THE CASE FOR HOMBRE

The case study is of special interest to the HOMBRE project because of the:

- Innovative and economically and environmentally attractive solution for brownfields in shrinking regions
- Establishment of a new development and value creation potential

- Commercialization of biomass in the value chain of the energy use
- Use of synergies with the German Ecopoint System and soil management procedures
- Transferability of the achieved results

5.2.2 SITUATION OF THE CASE STUDY BEFORE HOMBRE INVOLVEMENT

Remediation work for the site started in 2008 with the commencement of demolition work and the development of the initial concepts to create a leisure or recreational area combined with a temporal or permanent biomass production site. Given the low quality of the subsoil, the developer decided to use the site as central soil deposit for the Ruhr area. The earthworks for the portion of land which is suitable for biomass production started in 2011

The implementation of biomass project faced several problems. Extra remedial measures were required even after the demolition of the mining and coal power plant structures on site. Moreover, annual maintenance costs for traffic safety and regulatory obligations occurred

5.2.3 HOMBRE ACTIONS WITH CASE STUDY

In the case of Gelsenkirchen, the collaboration between HOMBRE and the case study essentially aimed at gaining feedback on the drivers and barriers which were most relevant in the implementation of biomass project on the area. Thus the collaboration consisted in assessing with case stakeholders the process of biomass project implementation while taking into account site specific, local and regional criteria that had influenced the location of biomass project and its development. The assessment was realized on basis of a specific questionnaire addressed to local stakeholders and site owner.
Major stakeholders involved in the case study were the following:

- RAG Montan Immobilien GmbH: site owner
- Municipality of Gelsenkirchen
- Ministry of Environment
- Energie Agentur NRW – regional agency dedicated to forestry and wood production in North Rhine Westphalia

The Gelsenkirchen case has demonstrated that the presence of soil contamination does not directly exclude the possibility of biomass production. Crucial aspects to consider in such contexts should include the type, concentration and biodegradability of the contaminant as well as the uptake of the contaminant by vegetation (bioavailability).
The amount of effort required for restoring soil quality when it has been disturbed by a building and foundation as well as potential soil contamination must be studied on site specific basis. It appears that if there is no specific financial support for these activities, for example from European or national funding programs, the land plots should then be discarded from the selection as financial risks would increase drastically.

5.2.4 FEEDBACK FROM CASE STUDY

Feedback from case study was used to develop decision support guidance and key principles for assessing appropriate locations and possible viability of biomass projects from the perspective of local level down to site specific conditions. Specificities of decision guidance can be found in deliverable D5.3 Use of bio-energy clusters for linking marginal urban brownfield site re-use with sustainable urban energy.

Case stakeholders highlighted the relevance for them to be involved within a European project in which bio-energy production was considered under the perspective of urban regeneration. Especially, stakeholders welcomed the opportunity to get to know other initiatives of biomass production in other European countries. Interest was expressed in being informed about developments of biomass markets on Europe and especially on other biomass production developers. The developer recognised benefits were achieved for him by comparing competing projects in Europe and gaining more knowledge on the use of different technologies as it is the case in the UK.

6. CASE 5 – HALLE, Germany

6.1 ID OF THE CASE STUDY

<table>
<tr><th colspan="3">CASE STUDY NAME AND COUNTRY: Halle/Saale, Germany</th></tr>
<tr><th colspan="3">LOCAL CASE STUDY CONTACT ORGANIZATION/PERSON: Uwe Ferber</th></tr>
<tr><td rowspan="2">Case study ID</td><td>View of parts the case study sites in Halle / Saale</td><td> 
  </td></tr>
<tr><td colspan="2">Short description of the case, i.e. location, history of the site use, environment, (soil, water, risks etc.), where is the site in the land management cycle, previous actions on the site for regeneration (if relevant),
Land cycle: interim use
The case study in Halle / Saale are 3 individual sites with together 3 hectares. All of them are former prefabricated housing estates, i.e. a former urban housing area in Halle Neustadt and Halle Silberhöhe in Eastern Germany.
They are part of a national programme for demolition in shrinking cities and so the residential buildings were dismantled due to vacancy and soil preparation took place so there is no contamination left.
So far there is no concept for an intended future use but as intermediate use biomass production through planting of poplar trees as short rotation crops for energy purposes started in 2006 and 2008.</td></tr>
<tr><td>Main brownfield drivers</td><td colspan="2">List those factors which are the main reasons why this site is a brownfield
The main drivers are the raising maintenance cost of vacant housing estates after demolition; one minor driver was the need of wooden based biomass as additive for local biomass installations.</td></tr>
<tr><td>Stakeholders involved</td><td colspan="2">Owner: Gesellschaft für Wohn- und Gewerbeimmobilien Halle
Tenants/Cultivator:Hallesche Wasser und Stadtwirtschaft GmbH</td></tr>
</table>

	Other partners: • a horticultural enterprise • Municipal of Halle/Saale especially departments of green area and of urban planning • Water Authority of Saxony, Lower Conservation Authority of Saxony
Actions taken with case study	Exchange with national and international biomass experiences Evaluation of harvesting results Questionnaire for assessing biomass potential on the area was send to case stakeholders
Tools and concepts presented / tested on case	Bioenergy decision tree could not be tested in Halle because of the lack of a municipal brownfield register - (done in the city of Cottbus – results of the test are outlined in deliverable D5.3 -)
Comments / incidences	

Documents and references related with case study (reference number in annex of deliverable)	
Type of document/ Title	Content of document
HOMBRE D5.2 "Valuation approach for services from regeneration of Brownfields for soft re-use on a permanent or interim basis Creating opportunities from synergies between environmental, economic and social improvements"	Short information on the case study
Hombre 5.3 Use of bio-energy clusters for linking marginal urban brownfield site re-use with sustainable urban energy	Evaluation of criteria in Halle for the decision tree

6.2 CASE STUDY / HOMBRE COLLABORATION KEY ISSUES

6.2.1 RELEVANCE OF THE CASE FOR HOMBRE

The City of Halle has been experiencing a process of population shrinkage and an increasing number of vacant buildings and abandoned housing areas for the last several years. Accordingly, demolition activities, as supported by national funds, have created large plots of undeveloped land in urban locations. Within the area of the case study, a biomass production site was implemented to improve the ambiance of the area and to test the impacts and maintenance costs of such a site.

HOMBRE was interested in the pilot project, especially for the testing of the feasibility and economic viability of biomass projects on urban land.

6.2.2 SITUATION OF THE CASE STUDY BEFORE HOMBRE INVOLVEMENT

All of the foundations and buildings on the site were demolished before the involvement of the HOMBRE project. The deposit of new top soil (30-40 cm) and the planting of the seedlings were both financed by municipal funds dedicated to urban restructuring. A short rotation plantation (poplar) was operated on a 0.8 ha area. 18,000 seedlings were planted in 2007 and were ready for harvesting after 3 to 4 years.

The barriers to brownfield redevelopment included:

- Poor soil quality,
- A lack of experience in the process for the granting of permission for biomass use,
- The restriction on the use of pesticides for the monoculture plantation,
- The changing national framework for funding activities.

The municipal company *Hallesche Stadt- und Wasserwirtschaft* decided to consolidate its infrastructure system and launch a biomass project on a plot of land dedicated to urban restructuring, which led to the demolition and the resulting reduction of use of the city's infrastructural system. The site chosen by the company was owned by a municipal corporation responsible for housing and business real estate (Gesellschaft für Wohn- und Gewerbeimmobilien).

6.2.3 HOMBRE ACTIONS WITH CASE STUDY

HOMBRE mainly accompanied the test phase of the project and was not involved in the project design phase of the project.
Action undertaken included regular updates on HOMBRE activities, yearly site visits and interview with the project manager. Furthermore, a contribution towards the discussion on the implementation of new biomass sites in Halle was made.

6.2.4 FEEDBACK FROM CASE STUDY

The HOMBRE philosophy was positively received by the stakeholders who recognized that biomass production represents a key phase within the land use cycle. The local stakeholder could not participate in the Ferrara workshop because of national events pertaining to the "Energiewende" in Germany (English: Energy Transiton). Final feedback on the HOMBRE project has not been received yet. HOMBRE widened the local perspective by introducing further European perspectives and addressing the strategic urban importance of biomass plantations in shrinking cities. The HOMBRE concept of spatial approach to biomass production of brownfield and the decision tree showed the urban importance of the pilot project. The involvement of a European research project supported municipal and wider stakeholder interest on biomass plantations in Halle.

Stakeholders stated that the collaboration with HOMBRE and sharing of new concepts and tools increased expectations and served as an incentive to maintain a relationship with HOMBRE beyond project's end for assessing new opportunities for brownfield regeneration in a more quantitative dimension by using the HOMBRE decision tree for the identification of potential sites.

There was a stated interest in networking with other biomass production developers in Europe.
Stakeholders valued that benefits obtained from using HOMBRE tools are foreseeable, however they estimated that the level of achievement was unsure and would assume only low investment efforts in order to minimize risks. Such precaution was justified by the uncertainties linked with the reorientation of the instruments in the context of the "Energiewende" (Energy Transition) and the role/support for bioenergy production.

7. CASE 6 – SOLEC, Poland

7.1 ID OF THE CASE STUDY

<table>
<tr><td colspan="3">CASE STUDY NAME AND COUNTRY: Solec Kujawski, Poland</td></tr>
<tr><td colspan="3">LOCAL CASE STUDY CONTACT ORGANIZATION/PERSON: Wojciech Irminski</td></tr>
<tr><td rowspan="2">Case study ID</td><td>Above: view of the case study site in Solec Kujawski

Below: View on parts of the brownfield site with half full creosote container</td><td> 
  </td></tr>
<tr><td colspan="2">The urban and postindustrial case study Solec Kujawski is located in Northern Poland on the Vistula River. At the terrain with a size of 16,44 ha a former manufacture for wood impregnation (1876 – 2001) was located, demolished, abandoned area. The ground (sands) and groundwater (4,5 m depth) are heavily contaminated with PAHs, BTEX, Phenols. Around the city of Solec Kujawski there are also several other brownfield sites which are not being taken into account for HOMBRE.

Currently the site is in the phase of „Making the transition”. The remediation of the site has started in July 2013 with the removal of the dangerous substances still present at the site (e.g. creosite containers) and is being followed by soil washing and bioremediation.</td></tr>
<tr><td>Main brownfield drivers</td><td colspan="2">The period, when the land was degraded as a result of more than one hundred years of use for wood impregnation between 1876 – 2001 was followed by a period of unregulated use for several years. The area was finally bought by the Municipality of Solec Kujawski in 2009. Its buildings were demolished</td></tr>
</table>

	subsequently, but the ground and groundwater are still heavily polluted by creosote. Investigations were made for private (2001) and public (2009) plans of investments. The heavy pollution of ground and groundwater makes remediation difficult and expensive.
Stakeholders involved	Mayor / Vice mayor, city representatives, local authorities
Actions taken with case study	3 stakeholder workshops were organized in April 2013, June 2013 and September 2014
Tools and concepts presented/ tested on case	Early Warning Indicators, HOMBRE Zero Brownfield Framework, "Golden Rules" for Technology Trains
Comments / incidences	

Documents and references related with case study - (more in Annex 7)	
Type of document/ Title	Content of document
HOMBRE Newsletter (Issue 01/2013)	Article on the case study and introduction to its history and present situation (July 2013)
HOMBRE D 2.2: Cost effective monitoring within the Circular Land Management Framework	Description of the HOMBRE land management and decision guidance framework that integrates the knowledge on the early indicators of impending Brownfield (BF) formation and the cost-effective monitoring of the different stages of the land use cycle, including the BF stage. It contains a chapter on the case study in Solec Kujawski and the workshops held there in 2013.
HOMBRE D4.4: Evaluation of technological and process aspects for development of the Zero Brownfield Perspective	Possibilities of Technology Train application on the case

7.2 CASE STUDY / HOMBRE COLLABORATION KEY ISSUES

7.2.1 RELEVANCE OF THE CASE FOR HOMBRE

The relevance of the case rests essentially on the high level of environmental burden in an urban area and absence of willingness from decision makers and investors to address such complicated site in Poland (i.e. high levels of contamination on an industrial site of former wood preservation manufactory), hence the hopeless situation of the site (as described by HOMBRE local case responsible).

The brownfield is estimated to be a big problem for the environment. The site prevents any development in the area. Even though the site was valued as very difficult for testing HOMBRE tools and concepts due to its complexity and the relative short timeframe of HOMBRE project, thanks to the involvement of local stakeholders (i.e. municipality and others) and local HOMBRE partner, it has been possible to raise interest from authorities and get them to mobilize financial resources to assess remediation options and redevelopment opportunities on the area.

This opportunity opened new perspectives on the possibilities of testing HOMBRE tools and concepts, especially the Brownfield Navigator and Technology Trains for addressing remediation and redevelopment (i.e. real estate developments). The opportunity of collaboration with an EU project addressing innovative pathways for brownfield regeneration also gave raise to new perspectives of brownfield regeneration among authorities and the local community, especially on the role industrial sites can play on urban regeneration. Interest were also found on the possibilities of testing early indicators of brownfield generation as a means to counteract the degradation and loss of land value, an issue that is particularly worrying in the area.

7.2.2 SITUATION OF THE CASE STUDY BEFORE HOMBRE INVOLVEMENT

The site was in a state of abandonment for several years. The area located in the central part of the city without fencing was easily accessible to people for vandalism and/or as uncontrolled playground. Among neighbouring communities, the area was famous for its unpleasant odour due to organic compounds present on the site. The creosote contamination of the site reached levels exceeding standards for industrial use. Groundwater flowing from the site to the city was heavily contaminated with PAH, BTEX and phenols. The city bought the land from a private company that after planning a settlement abandoned the idea and tried to divide the land into smaller parcels and trying to sell them. The city is now in charge of redeveloping the land. Major barriers for site redevelopment were reported to be the following:

- complex ownership legislation
- administrative – slow processes, heavy bureaucracy
- economic – lack of funding schemes and lack of investors, low rate of return on investments expected.
- complex mechanisms of subventions for remediation works and redevelopment works

7.2.3 HOMBRE ACTIONS WITH CASE STUDY

The collaboration between HOMBRE and the case study opened perspectives of practising the application of concepts, tools and technologies on the site with stakeholders. From their side, special expectations were focused on instruments that will enable evidencing new opportunities for brownfield redevelopment but also stakeholders were keen to get more insight on innovative technical solutions to solve the contamination problem in the area.
It has been estimated that the possible application of technology trains developed within HOMBRE was limited to the water/energy train, where ATES could be combined with bioremediation of carbohydrates. However, the installation of an ATES system at the location was valued as unrealistic as no significant demand of either heat or cold is to be expected in the near future. Further, the thickness of the phreatic aquifer was estimated to be too weak in order to allow cost effective storage of heat and/or cold. More details on the evaluation of opportunities of applying technology trains on the site can be found in deliverable D4.4 Evaluation of technological and process aspects for development of the Zero Brownfield Perspective.

In April and June 2013, two workshops were organised jointly between the Hombre project and Solec Kujawski municipality. The April workshop was an internal Hombre-Solec affair, in preparation of the June workshop that aimed to address an external and more regional audience. The objectives of the April workshop were for Solec Kujawski to get better acquainted with the Hombre ideas and concepts, and for Hombre to test the concepts developed so far against a real situation. HOMBRE wanted to know if and how its concepts contributed to the analysis and subsequent solution of the Solec Kujawski BF issues, seeking answers to questions like:

- Where does Solec Kujawski stand?
- Where does it go?
- What needs to be done to make that work?
- What additional potential benefits may be gained?
- Are concepts like circular land management, early indicators, zero BF perspective, synergy, recognised/understood at the practical level?
- Are they relevant?
- What aspects are missing or overlooked in the Hombre framework?

The objectives of the June workshop were to present the approach taken by Solec Kujawski to address its BF issues and disseminate the Hombre concepts and approaches to a wider audience. The June programme also included a presentation of the results of the TIMBRE pilot.

The exchange between Hombre and Solec Kujawski made clear that the municipality of Solec Kujawski easily adopted the Zero BF philosophy of HOMBRE, as it is very much in line with the type of policy they have been implementing for some years already. The municipality is very active in advancing the cities development in general, including the remediation of contaminated BFs and trying to find new solutions for abandoned areas, in order to make an attractive and sustainable city for its inhabitants.

In order to attract new investors an industrial park was founded – here the industries can make use of the benefits of the Solec Kujawski's location between two big cities Bydgoszcz and Torun, close to a big road and Vistula river. Regeneration examples from the recent past are the successful attraction of the National Polish radio station to the municipality, which now settles on a former bomb and military training area; the realisation of the "Jura Park", a theme park built in parts of the old town park with approximately ½ million visitors per year; but also the restoration buildings: the former cinema is now and education centre, and the local museum occupies one of Solec Kujawski's historic buildings.

The cooperation with Hombre made Solec Kujawski realise that these latter restoration initiatives, and not just the cities contaminated locations, are also examples of - former - BFs. Based on that, their analysis showed that Solec Kujawski is confronted with three different types of BFs:

1) Post-industrial (partly contaminated) BFs, specifically the location of the wood preservation factory, a former tannery, an excavation and post construction plants;
2) Abandoned areas that have not been affected by industry, such as the town park Miejski.
3) Buildings that were no longer used for the purpose they were originally built for.

The stakeholder workshop in June further showed that a method like a "World Café" discussion is indeed a powerful tool to help identify new possible routes and synergies in further regeneration and development planning. Specifically encouraging was that this appeared true for an audience not yet acquainted with this type of informal discussion, and for stakeholder subgroups that had been involved in addressing Solec Kujawski's challenges for a long time already.

The third workshop was hold on September 18th 2014. There, stakeholders were invited to test the Golden Question as a means for defining the boundaries in which technologies can play a role. At the Solec site the Golden Questions were tested for their relevance and helpfulness in understanding the choices for technologies as well as recognizing the driving forces at specific BF sites. Results obtained during the workshop are summarised in deliverable D4.4 Evaluation of technological and process aspects for development of the Zero Brownfield Perspective.

Major outcomes of the workshop could be resumed as following:

- Legal boundaries are key drivers for brownfield regeneration as there is prohibition in re-using the site within five years after remediation is completed.
- Setting regeneration ambitions for the area becomes easier for stakeholders when considering a holistic approach, i.e. not an approach exclusively focused on remediation of contaminated areas (i.e. broaden the scope towards social, economic, energy, leisure issues)
- Having the broader picture of the area in mind, it was found that the Solec site could serve several purposes at regional scale, such as a new platform in transport infrastructure (i.e. due to its strategic position between Torun and Bydgosczcz) or an area for sports and leisure.
- Public Private Partnership initiatives are seen as attractive solutions to face brownfield regeneration as public investment can serve as driver to attract further private investors in areas where these would rather not take financial risks. Transparency in PPP contracts is seen as critical in order to avoid suspicion of corruption
- Technology Trains as such are not the main drivers for the redevelopment of the BF site.

7.2.4 FEEDBACK FROM CASE STUDY

Given the very challenging situation of the brownfield at project start and considering the uncertainties among local stakeholders on how to address the BF issues, the collaboration with a European project focused on innovative management concepts and decision making tools opened new perspectives for the case. Thus, Solec stakeholders and HOMBRE case study responsible agree that collaboration over project time has generated "considerable effects", i.e. confidence in the opinions about how to look at degraded areas, meaning that these should not be considered as problems but as new opportunities for urban regeneration and sustainable land management. Decision makers have greatly appreciated the benefits of looking at brownfield areas from a broader perspective, larger scale and wider time horizons.

It was reported by HOMBRE case study responsible that a direct "post HOMBRE effect" was that local administrations are now more aware about the usefulness of investigating abandoned industrial areas in the vicinity in order to identify best opportunities and synergies for regeneration and creation of benefits for economy, society and the environment.

Given these positive impacts on local stakeholders, there is great readiness in applying concepts learned on future regeneration initiatives. In order to support local stakeholders in developing their knowledge acquired through HOMBRE, it has been commented that further collaboration with a post-HOMBRE initiative (respectively with HOMBRE participating partners or other European experts from the brownfield area) would be greatly appreciated through yearly meetings. These meetings would be seen as an opportunity to exchange on experiences gathered on good practices and problems.

The Solec Kujawski case study was of particular value for the Hombre project, in that it showed

- how circular BF management is executed in practice, and that the framework developed in HOMBRE fits with this practical situation;
- that early warning indicators indeed help to look ahead,
- that a city (or BF regeneration project) needs a "brand" , an overall focus to have a goal for redevelopment (Solec Kujawski focusses on recreation and sports, which is rooted in a long standing tradition);

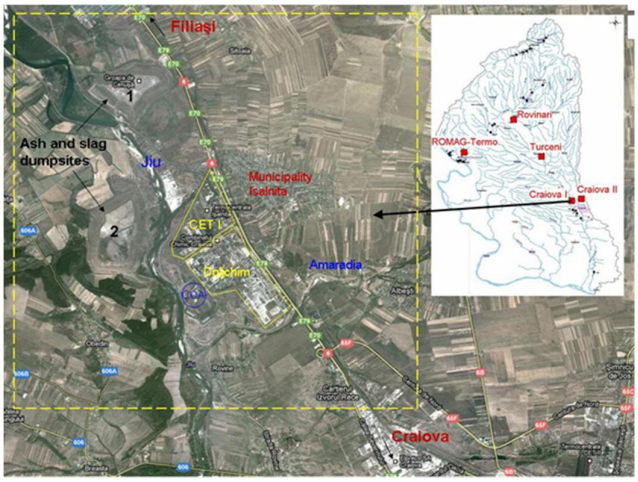
- that what caused a site to become a BF (for example outfacing of industry) may be another driver than the driver used to regenerate the BF (importance laid by EU on environmental protection); thus different indicators may have different roles during the BF regeneration process.
-

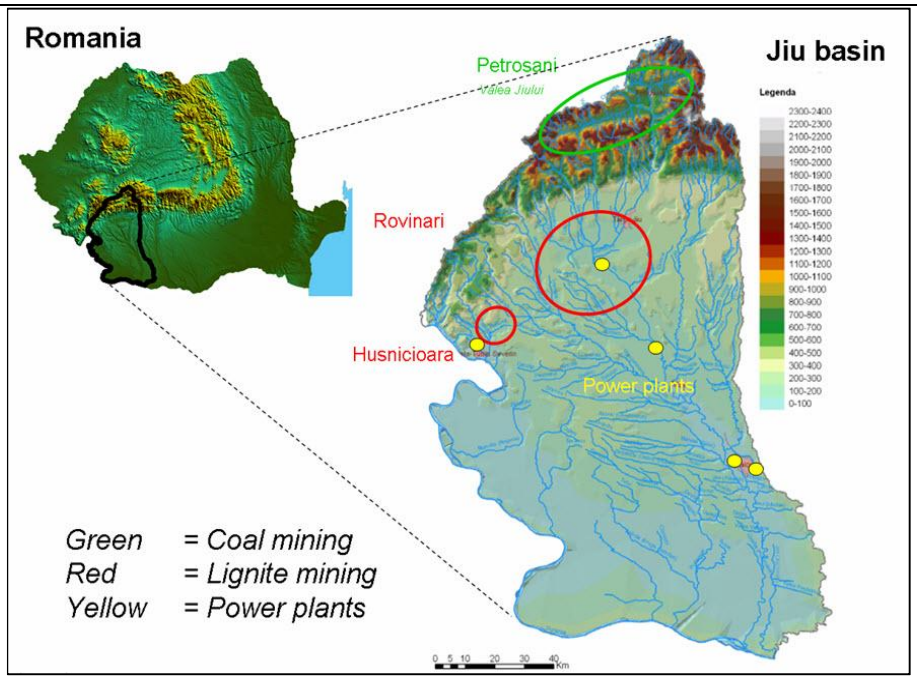
Other Hombre concepts/ideas that were particularly welcomed by local stakeholders were :

- The use of early indicators on micro-macro scale, to start thinking about regeneration opportunities in an early stage;
- Including the long term in development strategy and planning, not only to think also about future generations, but to realise that sometimes interventions can already be easily made in preparation of future development;.
- The importance of stakeholder involvement, Solec Kujawski is keen on involving the local community in spatial planning as well as in using public-private partnership structure for aiding brownfield regeneration

8. CASE 7 – CRAIOVA, JIU BASIN, Rumania

8.1 ID OF THE CASE STUDY

CASE STUDY NAME AND COUNTRY: Craiova, Romania		
LOCAL CASE STUDY CONTACT ORGANIZATION/PERSON: Elsa Limasset		
Case study ID	Case study sites in Craiova, close to the Jiu river	
	Short description of the case, i.e. location, history of the site use, environment, (soil, water, risks etc.), where is the site in the land management cycle, previous actions on the site for regeneration (if relevant) The focus of the Jiu case is on problems associated with mining and energy production. The Jiu is a large tributary of the Danube located in the south-western part of Romania. Its length is 339 km and its springs are located in the Southern Carpathians. See figure below.	



Mining started around 1957. In most cases it is open cast lignite mining. The lignite is used for energy production (20-30% of whole Romania). As a result there is a lot of fly ash production which has been stored in waste deposits sites near the major power plants. At present recycling and reuse of fly ash or other waste materials is very limited (more than 90% is stored in waste dumps). Besides fly ash there are also other environmental problems associated with mining and combustion of fossil fuels (see “Environmental problems”).

During the ruling of Nicolae Ceauşescu mining expanded, but after the revolution in 1989 activities decreased considerably due to economic recession. Subsidies from the government to the sector have decreased and a process of privatization started to attract foreign investors. The reduction in state subsidies has led to massive dismissal in the mining sector. For example, in 1991 80.000 workers were still in service for the mining companies compared to 9000 in 2006. Since 2007 Romania is a full member of the European Union and has to comply with the EU legislation on water, environment, mining and waste management. The current Romanian government wants to restructure the mining and energy sector towards a more environmentally friendly and economic sustainable future

Craiova municipality is located in Dolj county, in the Oltenia region in Southwestern Romania, at the Eastern bank of the river Jiu. The Jiu basin is one of the largest open cast mining areas of Europe, responsible for 90% of the lignite production in Romania. The lignite is used as fuel for the production of electric power and thermal energy in several power plants in the area.
The available energy powered the Industrial Revolution in Romania and has attracted several industrial activities. Mining, power production and industry currently are all related to various contamination problems and other brownfield issues. The case study site with an area of 250 ha of ash slurry deposits is contaminated with heavy metals.

Main brownfield drivers	List those factors which are the main reasons why this site is a brownfield The former heavy industrialization was followed by deindustrialization and dramatic political system changes that came with the fall of communism in 1989. An economic crisis followed and the oversized industrial enterprise was not able to face new market economy. In addition investors were reluctant to invest in Craiova city industry. The major restructuring of the mining sector in 1997 in the Jiu Basin, the damaged landscapes and the contamination issues are further elements that do not attract investors for brownfield regeneration projects.
Stakeholders involved	Local authority, water agency
Actions taken with case study	Meeting, workshop, site visit, on site work stakeholder meeting in February 2013
Tools and concepts presented / tested on case	Early Warning Indicators (for anticipating brownfield formation) tested with (historical) data of the region available from internet sources
Comments / incidences	

Documents and references related with case study	
Type of document/ Title	Content of document
HOMBRE D 2.2: Cost effective monitoring within the Circular Land Management Framework	Description of the HOMBRE land management and decision guidance framework that integrates the knowledge on the early indicators of impending Brownfield (BF) formation and the cost-effective monitoring of the different stages of the land use cycle, including the BF stage. It contains a chapter on the case study in Craiova /Jiu river and the study on data availability for early warning indicators done there.

8.2 CASE STUDY / HOMBRE COLLABORATION KEY ISSUES

8.2.1 RELEVANCE OF THE CASE FOR HOMBRE

The Jiu Basin was selected as one of the HOMBRE cases studies, as a potential test case for the various concepts and approaches to be developed within the HOMBRE project. Due to economic and organisation changes, not all of the stakeholders that initially had expressed their interest in the HOMBRE project were available for cooperation in the end. The final objective chosen for the "Jiu case" was to test the generic HOMBRE –BF- land management framework, in particular looking into indicators for BF emergence. As the framework is viewed to be specifically applicable at the municipal administrative level, the case was narrowed to the Craiova municipality.

8.2.2 SITUATION OF THE CASE STUDY BEFORE HOMBRE INVOLVEMENT

According to Poperscu & Patrascoiu (2012)[4], the BF concept has been poorly understood in Romania. Brownfields are defined as contaminated land by the Ministry of Environment and this would explain why Romania is listed as the European country with the highest density of BF sites. There are neither official Romanian government led studies on BF formation and regeneration, nor any financial or legal policy framework, let alone regulations in this domain.

A major cause of BF occurrence in Craiova municipality was the former heavy industrialisation followed by deindustrialisation and dramatic political system changes (fall of communism in 1989). The area has since experienced profound changes in its economic features. The economic crisis, the failure of oversized industrial enterprises to face new market economy and the reluctance of investors to invest in Craiova city industry has resulted in the development of some compact built areas next to areas of redundant infrastructure (Popescu & Pătrăşcoiu, 2012). The major restructuration of the mining sector in 1997 in the Jiu Basin, the damaged landscapes and the contamination issues are further elements that do not attract investors for brownfield regeneration projects.

An inventory of existing BF sites in Craiova municipality has been mapped by Popescu & Pătrăşcoiu, 2012. Three types of BF sites were revealed: derelict industrial zones, abandoned agricultural buildings and residential BFs. Ash and slag waste produced by the thermal coal power plant Craiova I, in the Isalnita industrial complex 10 km North West of Craiova, is deposited in large dumpsites along the Jiu river. Although not mapped in Figure 19, these dumpsites are also considered BFs. This waste and the presence of the nearby disused and abandoned fertiliser plant are very likely sources of contamination observed in the groundwater.

8.2.3 HOMBRE ACTIONS WITH CASE STUDY

The testing focused on identifying and quantifying some of the proposed early warning indicator of BF emergence from HOMBRE Deliverable D2.1 (Ellen & al 2013). It also aimed at assessing data availability for the relevant indicators to Craiova municipality. From a research perspective, on-going monitoring of early warning indicators for potential BF emergence may be only partially informative. Instead, the HOMBRE research focused on retrieving existing monitoring data, compiling historic trends and assessing the relevance of the studied indicators in relation to existing BF sites.

Based on the BF formation history in Craiova, the search for available historic data focused principally on economic early warning indicators. The following economic indicator categories were studied: deindustrialisation and restructuring, urban sprawl and recession. Data availability for social early warning indicators was also assessed (societal development and state of the social system categories). Although the area currently suffers from unresolved environmental problems; environmental drivers as such did not emerge as being of high priority for early warning of BF emergence.

[4] Popescu, G & Pătrăşcoiu, R 2012,′ Brownfield sites – between abandonment and redevelopment. Case study: Craiova city′, *Human Geographies – Journal of Studies and Research in Human Geography*, vol. 6, issue 1, pp. 91-97.

Overall, data availability could allow evaluating most of the proposed HOMBRE economic early warning indicators based on the available Romanian statistical data. An exception were data on – changes in - land use, for which no data source was found. However, spatial resolution may be limited. Finding relevant data at national, regional or county scales was relatively easy. Data found for Craiova municipality were sometimes less relevant and will certainly not allow zooming in on specific neighbourhoods.

For data that was available and relevant, an attempt at establishing historic trends was made. Because of resource constraints, potential relations between these historic trends and known BF formation in Craiova could not be assessed.

8.2.4 FEEDBACK FROM CASE STUDY

As already stated above, the collaboration with case stakeholders after project start has shown to be difficult to maintain. Efforts were made by HOMBRE project team to identify new stakeholders by beginning of 2013. Despite this new attempt, further exchanges between HOMBRE and the local stakeholders could not fructify. As a result of this, HOMBRE team decided to use the case as desk study and evaluate how the circular land management concept and in particular early warning indicators could perform to support zero brownfield framework.

Hence, as no stakeholders were involved in the end, this work was carried out without getting any feedback or having any collaboration with local stakeholders. Despite the absence of exchanges with stakeholders, the case study delivered several lessons for HOMBRE project team and useful feedback for the concepts and tools tested; these could be shortly summarized as follows:

- In theory, overall data availability from public open sources, would allow to test relevance of HOMBRE Early Warning Indicators against existing BFs in Craiova/Isalnita (apart from land use as no data was found)
- Despite long history of brownfield emergence in Craiova and Jiu basin, long time series of relevant indicators (i.e. starting from 1960s on wards) are necessary to perform the exercise of early recognition of brownfield emergence
- High spatial resolution of indicator data is a key condition for their use as early warning for brownfield emergence. In the frame of the case study, data were mostly found at county/regional level, they were very limited on Craiova and non-existent at urban districts level.
- Historic trends were put together but not assessed against the emergence of existing BFs

9. GENERAL CONCLUSIONS AND OUTCOMES

LESSONS LEARNED

The case studies provided a valuable test-bed for the HOMBRE tools, influenced their direction and presentation within the project and ultimately indicated directions for future development which would result in tools which could be widely utilised routinely within the brownfield regeneration community. Conversely, the tools and approaches opened new perspectives on brownfield regeneration for the stakeholders at the sites.

The tools developed: the BFN, the BOM, BR2, Bioenergy decision tree, were all found by stakeholders to give a useful perspective on the Brownfield Regeneration process. Aside from their intended purposes, all served as a discussion focus points around which stakeholders could reach a consensus, or communicate ideas and strategies, about the site.

There were several instances of stakeholders regarding tools as useful but too complex for application without input from HOMBRE partners. It was suggested by Genoa stakeholders that a BOM-lite tool should be developed to begin the process. However it may be countered that once the tools' application becomes widespread and routine, with the implementation of HOMBRE+ activities, then that expertise will be developed within planning authorities, or in the brownfield redevelopment community at large.

More pertinently, it was indicated by the DCC staff at Markham Vale that, under their procurement rules, for such an authority to justify purchasing tools such as BOM and BR2, then the tool would have to be commercially available and industry accepted/used software.

ADDED VALUE

At Markham Vale, the retrospective application of HOMBRE tools across the case studies lead to broadly similar conclusions as those already in place, the stakeholder at Markham Vale (DCC) viewed that HOMBRE added value would be in the discussion and communication of redevelopment plans in order to reach a consensus, the added value in this case would thus have been in the in the speed of approval or agreement. The tools also promote transparency in that they demand that reasons for decisions are recorded and, potentially, indicate where decisions haven't been made or have been omitted.

Similarly, in Genoa stakeholders agreed that HOMBRE's innovative tools would be of great help in early phases of regeneration planning, in particular they thought that the BFN would have been very useful when opening discussions on an earlier regeneration project potentially saving time and resources and also would have provided a wider view of the opportunities available in the area beyond the sometimes narrow focus or experiences if decision makers.

"BFN allows visualization and planning of the areas in very few steps, thus avoiding long delays." The wider, international view on options remediation and regeneration case studies highlighted by BFN were also felt to be important. Most notably, HOMBRE approaches were also felt to allow stakeholders from a variety of backgrounds and roles around the same table and would help produce a consensus.

HOMBRE tools were recognised by the case study stakeholders at the Terni site (politicians and practitioners) as a window on good and innovative practice from across Europe. It was felt that stakeholders tend to have narrow or isolated views bound to their respective domains of

competences and even if managers on the project have a broad assignment their boundary judgements can be wide but their strategy can still be conservative perhaps due to their limited experience.

In on-going sites such as Halle, the involvement of such a European research project supported municipal and wider stakeholder interest in options, biomass plantations in that case. Stakeholders stated that the collaboration with HOMBRE and sharing of new concepts and tools rose expectations served as incentive to maintain a relationship with HOMBRE beyond project's end.

The Solec Kujawski municipality adopted the Zero BF philosophy of HOMBRE it being an extension of policies they have been recently implementing. The collaboration between HOMBRE and the case study opened perspectives of practising the application of concepts, tools and technologies on the site with stakeholders. It was felt that setting a broad scope for regeneration ambitions for the area was easier for stakeholders when considering a holistic approach, i.e. not an approach exclusively focused on remediation of contaminated areas. Stakeholders felt that the link has generated "considerable effects" i.e. confidence in opinions on how to look at degraded areas and considering them as opportunities urban regeneration and sustainable land management rather than viewing them as problems. HOMBRE involvement also encouraged the municipality to mobilise financial resources to assess remediation options and redevelopment opportunities on the area. Furthermore, a direct "post-HOMBRE" effect has been noted, the local administrations now being more aware of the potential of brownfield sites and actively looking to identify the best, sustainable, regeneration opportunities. Overall it was felt that the case study showed that the circular BF management concept fitted well with this practical situation.

At Halle, HOMBRE broadened the local perspective by introducing wider European viewpoints and addressing the strategic urban importance of biomass plantations in shrinking cities. The HOMBRE concept of spatial approach to biomass production of brownfield and the decision tree highlighted importance of the project.

OUTLOOK, FUTURE, INTEREST IN HOMBRE

The HOMBRE involvement in Markham fostered opportunities for future collaboration, with the BOM seen as a useful tool for ongoing consideration of soft end-use options and BR2 was felt to contribute to the structure, communication and transparency of the options appraisal stage, particularly with decision makers, i.e. funders, regulators and other key stakeholders. Thus it was envisaged that both tools would facilitate regeneration planning on future sites. However the problem of procurement rules highlighted the need to produce commercially available, industry-recognised packages. That said DCC expressed interest in staying engaged with the HOMBRE team and further testing and development of the tools.

Stakeholders in Genoa thought application of the tools might be challenging without the support of specialist expertise from the HOMBRE project team. Hence, some stakeholders suggested development of a more accessible BOM-lite version. Interest in maintaining links with on-going HOMBRE activities was expressed.
The Municipality of Terni is already adding HOMBRE Project experiences into its approach to regeneration. Stakeholders expressed interest in updates of HOMBRE developments, particularly the Brownfield Navigator, as a means of communication and support in designing strategies for regeneration and a way of remaining up to date with practise across Europe.
SOLEC stakeholders: further collaboration with a post-HOMBRE initiative would be greatly appreciated in order to remain current with Europe-wide good practices and emerging problems.

Although the bioenergy decision tree was not used in the planning of the Halle or Gelsenkirchen sites, but the stakeholders of the former indicated their enthusiasm for its use in identifying suitable sites in future and in maintaining links with the HOMBRE partners. Stakeholders at both sites also expressed a desire to network with other similar European biomass producers and discover more about wider European practices and experiences.

Annex 1: Questionnaire on case study for feedback

1. Briefly explain why this case study was of particular relevance (interest) for HOMBRE, i.e. how did it match with HOMBRE objectives (from generic to specific)

2. Briefly summarise the situation of the case study before HOMBRE involvement

   a. Review the major barriers to BF redevelopment in the case study; for example: legal, technical, economic, political etc.

   b. Which Stakeholders were involved and what were their respective positions / expectations about site redevelopment (if pertinent, highlight major disagreements)

3. Highlight the compromises made between case stakeholders and HOMBRE – setting common objectives

4. Summarise the actions undertaken with cases (for example: workshops, meetings, site visits, other exchanges) and major contributions (outcomes) towards objectives

5. Briefly summarise feedback from stakeholders: overall level of satisfaction; perception of HOMBRE philosophy in general). Explain feedback received after specific events or be more general perceptions and summarise feedback in general after project's end)

6. From your point of view, did the collaboration with HOMBRE open new perspectives for the case study stakeholders? Did HOMBRE help driving stakeholders towards new ideas and regeneration perspectives? Did HOMBRE show new ways of addressing a problem and help overcome barriers?

7. Following on from the earlier question, did the collaboration with HOMBRE and sharing of new concepts and tools raise expectations and motivate stakeholders to maintain a relationship with HOMBRE beyond project's end for example, in:

   a. Assessing new opportunities for brownfield regeneration in a more quantitative dimension for subsequent sites,

   b. Regular updates about further developments of HOMBRE tools and concepts (for example, through training sessions, tailored info leaflets on developments of tools etc..), - Which particular concepts or tools would stakeholders be interested in receiving information and training?

   c. other forms of interest ?

8. On which specific case issues do you think HOMBRE concepts and tools have most contributed?
ISSUE TOOL / CONCEPT

9. To what extent do you think the challenges within the issues identified above have been addressed or solved with help of HOMBRE's concepts/tools support?

10. How would you describe the benefits provided for the case through the collaboration with HOMBRE? How would you qualify the potential benefits of using HOMBRE tools and concepts in real life application?
    a. Could you identify major beneficiaries and type of benefits obtained? e.g

       Beneficiaries: land-owners, investors, nature, administration, neighbors, local communities, wider communities, local businesses etc..

       Types of benefits (value) obtained: e.g. revenue generation, major cost savings, increased natural capital, cultural capital, economic capital (tangible and intangible)

    b. How would you value the benefits obtained from using HOMBRE tools and/or collaborating with HOMBRE on the following general scale?
       i. Benefits are highly relevant, high value for beneficiaries, and reasonably achievable – Would be ready to invest substantial financial resources to obtaining expected benefits in real life project
       ii. benefits could be identified and would be welcome, however the level of achievement is unsure, investment efforts will be kept to low level in order to minimize risks
       iii. benefits are not clear / or evident, would not risk to invest financial resources into project design using HOMBRE tools

Annex 2: Complementary information on Markham Vale Case study

Acknowledgements and thanks

Peter Storey , Jaimie Bingham and the staff at the Environment Centre for their hospitality and their time, input and enthusiasm in testing the tools. Paul Maryan, https://www.linkedin.com/pub/paul-maryan/a/456/a30 for participation in exploratory discussions and the September 2013 meeting

Erika Rizzo, secondee to r3 from University of Venice. Ian Stephenson, secondee to r3 from Vertase-FLi (UK).

Complementary elements on site history and events previous to collaboration with HOMBRE

The MEGZ plans were called in for judicial review following a local residential complaint. While the eventual finding was in favour of the Council, this process, along with the impact of the 2008 financial crisis, caused major delays to the project. Hence the site is still currently in the transition phase of land management cycle. New infrastructure has been constructed; buildings have been put in place and are in use (www.markhamvale.co.uk). Development is proceeding in a phased way across a site master-plan, with some phases now complete and occupied, others in development and yet others still at a planning stage. As part of this phased development the management of the South and North Tips has come under reconsideration.

Since the completion of the judicial review the local authority formed a joint venture partnership with a development company (Henry Boot Developments Ltd) to provide the built development on the site, while the local authority developed infrastructure such as roads and for the areas of the site such as the South and North Tips that would not have built development. Infrastructure developments include roads, rail and the Chesterfield Canal basin.

"Markham Willows" could address three distinct needs with an integrated and economically robust solution:

- Coal waste sites often have no current or future purpose. They invariably impact negatively on their surrounding environs, in terms of both economy and landscape. An inexpensive and effective remedy is needed for this land use issue.
- Coal waste sites are often chemically and physically unstable. An inexpensive and effective remedy is needed for this land quality issue.
- Coal waste sites exist as the unusable residue of fossil fuel extraction. The organic content of the residue is very low in organic carbon. It is averse to being landscaped in traditional ways, hence the number of failed restoration schemes and reinvestments in repairs. An inexpensive and effective remedy is needed for this land durability issue.

Derbyshire County Council's assessment has been as follows. The Markham Willows concept integrates organic waste recycling, soil manufacture, landscaping, renewable energy crop production (planting, maintenance, harvesting, processing), stabilisation of contamination, wood burning boilers (installation, maintenance and fuel), to create a self-sufficient solution to previously intractable problems. In addition, public open space will be created, wildlife habitat will be improved and a 60

Hectare biomass plantation will contribute to CO_2 consumption. Direct employment will ensue in all aspects of the scheme, along with training and educational opportunities. Markham Willows is a unique opportunity to secure enduring economic environmental and social progress throughout the coalfield areas locally, regionally and, perhaps, nationally and internationally and simultaneously generate local employment. This adds up to an ambitious project founded on highly respected feasibility work which includes validation and evaluation models developed specially for the project. No other work exists anywhere that addresses these issues in such an integrated and comprehensive manner.

The wood heat concept was far ahead of its time in the early 2000's. The financial models indicated profitability even without the financial incentives from central government now available for renewable energy. It also foresaw the development of locally based community companies to supply the wood-heat service, and approach that is now being encouraged by government. However, the experience of biomass heat from the Markham Environment Centre, along with the complexity of setting up and administering a wood heat company, have led to a preference for a commodity sales based approach to use of biomass, which limits the revenue potential, but seems more practicable.

In the intervening period caused by the delay from the judicial review unavoidable staff changes and the ending of regional development support meant that the biomass production plans were not fully executed. Only one of three planned plantings being carried out. In addition, the multi-lateral team working with the site owner on the "Markham Willows" concept largely disbanded over the period of the judicial review and the funding opportunities they had been exploiting came to an end.

The original Markham Willows planting scheme called for soil improvement with green waste compost and sewage sludge. These would have been applied under a regulatory mechanism known as an "exemption". However, while the land management regulatory team supported the envisaged scheme, the waste management team dealing with composts could not agree a way forward in a timely way. As a consequence only sewage sludge was used for soil improvement as it had a pre-existing overarching framework exemption for use across many sites.

Access to the North Tip remains problematical, especially in light of the uncertainty in the route of the proposed HS2 high speed rail route. In addition, since the completion of the Markham Willows design in 2004, there has been substantial natural revegetation of the spoil heaps. Adjacent to the North Tip are natural habitats and protected ecosystems. Hence completion of the biomass planting and the future use of the North Tip are open questions, currently under consideration. Further investigations are planned to inform a detailed remediation strategy in support of the biomass proposal. While outline planning permission exists, detailed planning approval would be required before the site can be restored and planted with biomass crops.

Process and outcomes of BOM application on Markham Vale

The BOM aims to inspire and inform actors responsible for brownfield sites at a strategic level by demonstrating the potential value that can be derived from sift land use services from a brownfield regeneration project. The goal is to encourage redevelopment of brownfield land so that it re-enters the land-use cycle.

The BOM plots soft re-use interventions against services that an intervention for soft land uses may provide in order to demonstrate the value of applying the interventions either on their own, or in synergy with other interventions. The BOM can be applied following two possible procedures:

a. Starting from the identification of the "desired" service/s, the user can check which intervention/s are needed in order to obtain that/those service/s (blue box and line);
b. Starting from the selected intervention/s, the user can visualise which service/s that/those intervention/s may provide (orange box and line).

The table below summarises the interventions on site identified by DCC, grouped using the example interventions listed in the BOM. As part of the process of discussion with DCCs, some refinements to the BOM intervention categories took place.

Interventions at Markham Vale to mid-2014, as interpreted by DCC	
Markham Vale as a whole	Specifically on the North Tip
1. Phyto-filtration. 2. Phyto-degradation/stimulation. 3. Monitored Natural Attenuation (revegetation) 4. Source Isolation (sheet piles, cut off walls, pump and treat): pump from South Tip. 5. Breaking out/removing artificial (concrete, tarmac for e.g.) surfaces and substructures. 6. Tilling - unsealing the surface and reducing compaction. 7. Use of Organic Matter (mushroom compost/sludge/CLO etc.): sludge. 8. Passive Treatment (lagoons, wetlands, aeration weirs etc.). 9. Active Treatment (High Density Sludge Process Plant, Chemical Dosing): South Tip sludge to sewage. 10. Flood/Storage Engineering. 11. Drainage Design (Sustainable Urban Drainage Systems (SUDS) for e.g.). 12. Maintenance and improvement of water ways onsite: DCC is doing it. 13. Installing Green Bridges and Eco-ducts. 14. Creating Parks in Urban Areas. 15. Wetland Creation. 16. (re)Developing/ protecting existing natural habitat. 17. Biomass Cultivation. 18. Photo-voltaic/solar panels for power generation and heating water. 19. Landscape planning and development. 20. Leisure design, development and management. 21. Educational Facilities.	1. Source Isolation (sheet piles, cut off walls, pump and treat). 2. Tilling - unsealing the surface and reducing compaction. 3. Use of Organic Matter (mushroom compost/sludge/ etc.). 4. Passive Treatment (lagoons, wetlands, aeration weirs etc.). 5. Flood/Storage Engineering. 6. Drainage Design (Sustainable Urban Drainage Systems (SUDS) for e.g.). 7. Maintenance and improvement of water ways onsite. 8. Wetland Creation. 9. (re)Developing/ protecting existing natural habitat. 10. Biomass Cultivation. 11. Biomass for energy. 12. Landscape planning and development. 13. Leisure design, development and management: partially in place. 14. Educational Facilities: not in place. 15. Facilities, fencing, paths, paving and other small building works: not in place yet. 16. Promotion of Green/Soft Reuse: not in place yet.

22. Facilities, fencing, paths, paving and other small building works. 23. Visitor Facilities. 24. Promotion of Green/Soft Reuse. 25. Integration of hard & soft developments.	

Both of the scenarios considered a retrospective application as well as a scoping application. Firstly the BOM was applied in a *retrospective* way. All the services included within the Master Plan which have been achieved have been identified. Where planned services have yet to be achieved, the reasons have been collated and reported. Afterwards, a *scoping* application has been carried on to check whether additional services were desired / possible. The Table below summarises the interventions that have taken place over Markham Vale as a whole and specifically on the North Tip up to mid-2014.

With HOMBRE DCC reviewed the services envisaged from the whole site; and from the North Tip only (i.e. those in place or planned). These are grouped in the tables below using the example services listed in the BOM. As part of the process of discussion with DCCs, some refinements to the BOM service categories took place.

The North Tip services provision from soft re-uses is very similar to that of the whole of Markham Vale, which is not surprising as it is a major part of the soft re-use segment of the project accounting for 29% of the site area. However, there are some differences, shown in the North Tip table, which are italicised for emphasis. There are some specific factors affecting delivery of the services envisaged, and these are summarised further below.

As expected the BOM identified relatively few additional services and interventions that might be exploited at Markham Vale. The incremental development identified was principally crystallising concepts already being considered by DCC, rather than identifying novel opportunities that had not yet been considered. These are also summarised further below. The potential for new service development is greater for the North Tip rather than Markham Vale as a whole.

DCC foresaw the following possible applications for the BOM:

- Allowing people that do not share the same expertise to work together during the scoping phase;
- As a checklist;
- As a tool to communicate to and persuade stakeholders;
- To tell “good new stories”;
- As a decision support tool for high level assessment.

Whole area:

	Service Level 1	Service Level 2	Status	Services in Place
Services being considered	Risk Mitigation of Contaminated Land and Groundwater	Biosphere (including human health)		Human Health Protection: partially in place Protection of Ecology: in place
		Water Resources (hydrosphere)		Partially in place
	Soil Improvement	Fertility		Managing nutrient and micronutrient availability to support vegetation: in place Improving soil biological functionality: in place Improving soil condition to support desired plant/crop: in place
		Soil Structure		Improve soil resilience: in place Providing vegetative cover: in place Mitigation measures for soil erosion and landsliding: in place
	Water Resource Improvement	Water Resource Efficiency and Quality		
		Flood and Capacity Management		Retention of runoff: in place Flood mitigation: in place;
		Rehabilitation of water		
	Provision of Green Infrastructure	Enhancing Ecosystem Services		Protection of habitat and biodiversity (where existing and for protected sites): in place Developing new habitat and increasing biodiversity: in place
		Enhancing Local Environment		Improve urban soundscapes and air quality: in place Limiting visual intrusion by landscaping (buildings, transport links etc): in place
	Mitigation of Human Induced Climate Change (global warming)	Renewable Energy Generation		Solar plant on the rooftop of the Environmental Center Biomass trial plantation - under reconsideration
		Renewable material generation		Re-use of recylates on site for biomass plantation (sewage sludge)
		Greenhouse Gas Mitigation		Potential form re-use of energy, (sequetsration and offsetting not explored)
	Socio-Economic Benefits	Amenity		Open Space: in place Leisure: in place Education: in place Improved health and wellbeing: partially in place Access (footpaths, cycle routes): partially in place Tourism: hotel planned Community Centre: in place View-points: partially in place Framing Built Developments: partially in place Grazing: in place
		Economic Assets		Job Generation: partially in place Land value recovery over time: in place Area value uplift: in place Interim land management: in place

Key: status: deep green = significant service supply; light green = partial service supply; white = no service supply

North Tip only:

	Service Level 1	Service Level 2	Status	Services in Place
Services being considered	Risk Mitigation of Contaminated Land and Groundwater	Biosphere (including human health)		Human Health Protection: *incomplete* Protection of Ecology: in place
		Water Resources (hydrosphere)		Partially in place
	Soil Improvement	Fertility		Managing nutrient and micronutrient availability to support vegetation: in place Improving soil biological functionality: in place Improving soil condition to support desired plant/crop: in place
		Soil Structure		Improve soil resilience: in place Providing vegetative cover: in place Mitigation measures for soil erosion and landsliding: in place
	Water Resource Improvement	Water Resource Efficiency and Quality		
		Flood and Capacity Management		Retention of runoff: *partially in place* Flood mitigation: *partially in place*
		Rehabilitation of water		
	Provision of Green Infrastructure	Enhancing Ecosystem Services		Protection of habitat and biodiversity (where existing and for protected sites): in place Developing new habitat and increasing biodiversity: in place
		Enhancing Local Environment		Improve urban soundscapes and air quality: in place Limiting visual intrusion by landscaping (buildings, transport links etc): in place
	Mitigation of Human Induced Climate Change (global warming)	Renewable Energy Generation		Solar plant on the rooftop of the Environmental Center Biomass trial plantation - under reconsideration
		Renewable material generation		Re-use of recylates on site for biomass plantation (sewage sludge)
		Greenhouse Gas Mitigation		Potential form re-use of energy, (sequetsration and offsetting not explored)
	Socio-Economic Benefits	Amenity		Open Space: *not in place* Leisure: *not in place* Education: *not in place* Improved health and wellbeing: *not in place* Access (footpaths, cycle routes): *not in place but imminent* Tourism: hotel planned Community Centre: in place View-points: partially in place Framing Built Developments: partially in place Grazing: in place
		Economic Assets		~~*Job Generation*~~ Land value recovery over time: in place Area value uplift: in place Interim land management: in place

Note some differences to the whole site situation are italicised.

Diversions from envisaged service provision from Markham Vale as a whole, and their causes

Service planned and not in place	Reason
Groundwater Treatment and Protection	For much of the site this has not been an issue due to the underlying geology. However over recent years the reduction of mining activities, particularly the pumping of water from mine workings, has led to ground water levels rising. The implications of this may need to be considered in long term. Clarification is required of the Coal Authority management responsibilities.
Energy for on-site use – "big plant" –	If referring to solar/wind power plants, they have been considered but have not been developed because of landscape issues (i.e. negative in relation with the view point from the nearby Bolsover Castle, which is a major visitor attraction in the region). Referring only to solar power plants (in other areas beside the Environmental Centre roof top), they have been considered for the North Tip but have not been developed yet due to issues including visual intrusion from nearby viewpoints and the potential that they could cause reflections problems to drivers on the M1 motorway. Solar panels are incorporated into the design of some of the new build industrial buildings.
Re-use of organics	The production of biomass on the North Tip was seen as an opportunity for the beneficial re-use of locally produced compost or digestate. In 2004, sewage sludge was used to support the biomass planting. No further planting has taken place.

Diversions from envisaged service provision from Markham Vale as a whole, and their causes

Service planned and not in place	Reason
Human Health Protection	Linked with remediation. Remediation has not yet taken place because the North Tip is formally in phase 2 site investigation, Risk management will likely include a combination of remediation and monitoring activities. Works have not taken place due to project phasing; a reclamation strategy has been written. The extending of the time scale of the whole project due to the economic down-turn has also contributed to this work not being completed to date. Works will be undertaken in 2015.
Mitigation measures for soil erosion and landsliding	There is only a small area of the North Tip that is not well vegetated as it never received a soil cover. The erosion of these exposed shale's at the surface will be dealt with as part of the mitigation strategy in 2015.
Energy for off-site use	The total of 14.5 hectares of willow short rotation coppice (SRC) that is growing on the North Tip is almost ready for its first commercial harvest.
Open Space	The North Tip was intended to be the main commercially productive part of the green space within MEGZ and as such its use as a public open space was not the main driver behind its remediation. However opportunities continue to be discussed as to how the tip could be used and developing part of it to be utilised as public open space (POS) or access through-routes POS might be practicable and desirable especially if it could be linked with the landscape management of the remediated tip.
Leisure	It was always intended to provide a footpath link across the tip and this will be undertaken once the remediation works have been completed as per the proposed strategy.
Education	As per the open space above.

Improved health and wellbeing	As per leisure above.
Access (footpaths, cycle routes)	As per leisure above.
Job Generation	The generating of job opportunities is one of the main objectives of the wider MEGZ scheme, however, currently there seems to be little opportunity for the North Tip to specifically generate a job opportunity. Its management will be undertaken as part of the wider site management.
Land value recovery over time	Linked with remediation. Remediation has not taken place yet because the North Tip is in phase 2, Phase 2 will be undertaken in 2015.
Area value uplift	On-going as an integral part of the wider MEGZ scheme.
Re-use of organics	The production of biomass on the North Tip was seen as an opportunity for the beneficial re-use of locally produced compost or digestate. In 2004, sewage sludge was used to support the biomass planting. No further planting has taken place, but future use of organics may be considered for further planting phases.

"New" Service Opportunities Resulting from the OM Review	
Markham Vale as a whole	North Tip specifically
Enhanced Groundwater Recharge – DCC are looking at mine water heat recovery – if groundwater levels increase then pumping costs will be lower resulting in lower energy production costs. (maybe, it could also represent a problem) for water treatment by DCC and also the Environment Agency and the Coal Authority..	*Surface Water Treatment* (Acid Mine Drainage for e.g.) and protection *from* several possible interventions *Tourism from* these interventions: Educational Facilities AND Visitor Facilities. *It was concluded that the North Tip represents an area where new opportunities can be identified, and new interventions could take place. Further research could assist in achieving these opportunities.*

Annex 3: Complementary information on GENOA Case study

Stakeholders involved in case study

Genoa Municipality:
Marco Doria, Mayor of Genoa
Stefano Bernini, Vice-Mayor and City Planning Councillor
Giorgio Guerello, Town Council President
Valeria Garotta, Environment and Parks Councillor
Pierpaolo Grignani, Public Servant

Medio Ponente Borough:
Giuseppe Spatola, President
Ferruccio Bommara, Environment Councilor
Paola Rossi, Public servant
Paolo Collu, Coordinator working Group
Roberto Ferrara, AGESCI GE 56
Cristina Pozzi, Association "Per Cornigliano"
Maura Gandolfo, Cornigliano Philarmonic, President
Mauro de Salvo, Association of Lucani of Genoa
Fabrizio Cartabianca, President Pro Loco
Domenico Turco, Pro Loco
Riccardo Ottonelli, newspaper "Il Corniglianese" and Circolo ARCI "Rizzolio"
Agostino Razzore, newspaper "Il Corniglianese"
Giovanni Bisso, Association Nazionale Alpini

Società per Cornigliano Spa
Enrico Da Molo, Director Società per Cornigliano Spa

1st Stakeholder Workshop Genoa

(28 May 2014, Genoa, Italy)
Venue: Incubatore BIC Liguria, via Greto di Cornigliano 6r
FILSE 2° piano, sala congressi

Participants:

HOMBRE:

Linda Maring	Deltares
Victor Beumer	Deltares
Francesca Neonato	PN Studio
Francesco Tomasinelli	PN Studio
Rocio Barros	Acciona

STAKEHOLDERS:

Genoa Municipality:

Marco Doria	Mayor of Genoa
Stefano Bernini	Vice-Mayor and City Planning Councillor
Giorgio Guerello	Town Council President
Valeria Garotta	Environment and Parks Councillor
Pierpaolo Grignani	Public Servant

Medio Ponente Borough:

Giuseppe Spatola	President
Ferruccio Bommara	Environment Councilor
Paola Rossi	Public servant
Paolo Collu	Coordinator working Group

Enrico Da Molo	Società per Corniglina Spa, Director
Cristina Pozzi	Association "Per Cornigliano"
Maura Gandolfo	Cornigliano Philarmonic, President
Mauro de Salvo	Association of Lucani of Genoa
Fabrizio Cartabianca	Pro Loco, Presidente
Domenico Turco	Pro Loco
Riccardo Ottonelli	"Il Corniglianese" newspaper and Circolo ARCI "Rizzolio"
Agostino Razzore	"Il Corniglianese" newspaper
Giovanni Bisso	Associazione Nazionale Alpini
Roberto Ferrara	AGESCI GE 56

A total of 19 stakeholders attended the workshop. 6 stakeholders participated on the working session to test the Brownfield navigator (BFN) and the Opportunity Matrix (OP).

The workshop was in Italian and presentation and discussions were translated during the meeting.

The stakeholders were prepared beforehand so they had already a certain level of knowledge about the project and tools.

Agenda:

Wednesday 28th May:

09:15	Workshop registration
09:30-10.30	Welcome from the Mayor of Genoa, Valeria Garotta, Environment and Parks Councillor, Giuseppe Spatola, Medio Ponente Borough President, and presentation of the Working Group (stakeholders)
10:30-12:30	Plenary presentations to introduce Hombre project Overview of HOMBRE project (Francesca Neonato) Brownfield Navigator (Linda Maring) Opportunity Matrix (Victor Beumer)
13:30-14:00	Fieldtrip to Campi Shopping and Business Center (Brownfield redeveloped)
14:00-16:00	Working session in groups to test/go through BFN and OM simultaneously
16.15-17:15	Plenary feedback/Discussion
17:30	Closing

Minutes:

Wednesday 28th May

- Welcome

Francesca Neonato opened the workshop and thanked the attendance of all stakeholders.

Marco Doria, Mayor of Genoa explained that the city of Genoa is under transformation with the aim of recovering industrial areas. He was very interested in the HOMBRE content and he considered that Brownfield Navigator (BFN) is a useful tool for decision making from the sustainability point of view.

Valeria Garotta, Environment and Parks Councillor, considered that BFN is an innovative tool for BF regeneration from the economic and environmental point of view. She thanked HOMBRE project for the unique opportunity of testing the BFN in the city of Genoa.

Giuseppe Spatola, President of the municipality of Cornigliano, explained that Cornigliano area has been transformed and the HOMBRE project is completely related with the activities performed by the working group of Cornigliano. The working group, local stakeholders and "BF manager" of the municipality presented their work.

Ferruccio Bommara, Borough Environment Councilor and previous coordinator of the "Cornigliano working group", explained the evolution of the area. Cornigliano was an industrial area. After a strong intervention of the local communities, in particular "Women of Cornigliano" the asked a better environment, in 1999 the industrial activity it was stopped, and in 2005 the factory was demolished and it was decided to regenerated the area. In 2007 "Cornigliano working group" was created in order to look for different regeneration alternatives.

- HOMBRE Project Overview
  Francesca Neonato, PN Studio

Francesca presented the HOMBRE project. She explained the aim of the project and some examples of BF regeneration (Balearic Islands: hotels and Residential and was regenerated by tourism). She introduced the BFN, as a methodological tool to support decision making for the regeneration of derelict areas. BFN gives scenarios not final solutions. BFN is organized in 3 steps: prevent the BF, make the transition and evaluate the change. Together with the BFN, the opportunity matrix is a tool that describes the possible interventions to different services for BF regeneration.

Francesca explained that the aim of the workshop is to get feedback from the stakeholders about the BFN and OM, both tools are still being developed.

- Brownfield Navigator
  Linda Maring, Deltares

Linda presented the BF Navigator to the stakeholders. It is possible to store the information and decisions, discuss with stakeholders different alternatives and different techniques for BF regeneration. She explained the land use cycle, early warming indicators (environmental, economic and social indicators), planning phase, and check the performance phase (different scenarios and check if we have got what we expected). The BFN includes different items and tools: eg map and sketch functionality, example database, regulation check list and a library with information.

One person asked if it is necessary to verify the access. Linda explained that everybody can use the BFN with their own session, it is only necessary create a session and password and it can be saved online. Also data can be downloaded offline and removed of the online session.

Pierpaolo Grignani asked if it is possible to use the tool for improve or regenerate a green area (agriculture) that is not a BF but is underused. Linda explained that HOMBRE project does not focus on agriculture areas, but on industrial areas (urban context), however, it can be used and extended for other topics.

- Opportunity Matrix
  Victor Beumer, Deltares

Victor presented the opportunity matrix. Opportunity matrix (OM) is a tool that allows stakeholders to examine soft re-use possibilities in the regeneration. OM is focused in soft-end uses and he presented some examples: wetlands, biomass production, soil remediation, etc… These examples have additional benefits, such as CO_2 fixation, temperature control…OM consists of a matrix with services at one side and interventions at the other. Interventions are the techniques to get the services. OM may change depending on the needs.

- Discussion

Ferruccio Bommara and Paolo Collu said that the HOMBRE project and tools presented shows clear improvements for decision making and it would have been very useful to have had this tool 7 years ago when they started with the regeneration of Cornigliano area. They would have saved time.

The general opinion is that the idea of the tools is clear but to them put into practice and how to use the tool is probably complicated.

OM data sources: The matrix is generated with examples, (North-West) European experience.

Future of HOMBRE project: 2014 is the final year of the project. Linda explained that there are some ideas for the future of HOMBRE (HOMBRE+). Deltares will host the BFN. Within the HOMBRE context the first BFN development will be finished and then the idea is to find other projects, stakeholder's interest and update the BFN. Possibility of adapting the tool for more specific situations and countries. Now it is quite generic.

- Testing the BFN

The ambitions and societal demands were defined by the "working group of Cornigliano". It was interesting that stakeholders used the service guide that Victor made to inventory their ambitions and we recorded them with the vision-ambition tool in the BFN. It was handy for stakeholders to have a list with services for inspiration and it would be possible to make the service list broader (not only for soft reuse) with some examples and couple it to the tool in the BFN. Service guide used during the workshop is presented in Table 1.

The most important social challenge for the working group is Human well-being and health, better quality of life and second is tourist attraction (foreign and local) and they are not interested in increasing the land price that means more expensive homes. According to this, different ambitions were defined (Figure 1). It was a little bit difficult to match the ambitions defined from the service guide to specific social challenges in the vision-ambition tool.

Following the service guide the ambitions are described as follow:

Table 1: Services guide

What are you looking for?		More detailed ambitions
Society and economy		
Ambition: A liveability improvement in the area. Ambition: Economic development of the area.	Group: Socio-Economic Benefits	I want to create open space. I want to create recreation possibilities. I want to create educational elements. I want to attract tourists. I want to improve health and well-being for the neighbourhood. I want to generate jobs. I want to increase the land and area value.
Sustainability		
Ambition: Compensation of global warming. Ambition: Sustainable energy production.	Group: Mitigation of Human Induced Climate Change (global warming)	I want to produce sustainable energy for the Brownfield and/or it surroundings. I want to produce bio-fuel, gas, or plastics. I want to grow or breed something while re-using organics. I want to sequester carbon. I want to decrease greenhouse gas emissions.
Nature & Green elements		
Ambition: Green elements for people or ecosystem. Ambition: Nature and liveability for the living environment.	Group: Provision of Green Infrastructure	I want to protect existing habitat and biodiversity. I want to develop habitat and increase biodiversity. I want to improve air quality. I want to decrease noise. I want 'green' looks in building environment. I want to cope with flooding, heating, and water shortage effects.

Water management		
Ambition: To optimise water quantity (too much, too little water). Ambition: An efficient water re-use.	Group: Water Resource Improvement	I want to recharge the groundwater or store water at the surface. I want to protect from flooding or decline runoff. I want to re-use waste water.
Productive Soil		
Ambition: To improve the soil quality for 'soft use'?	Group: Soil Improvement	I want to improve nutrient dynamics, biological activity or soil conditions to grow certain crops/vegetation. I want to improve soil resilience, provide vegetation cover or prevent soil erosion.
Clean environment		
Ambition: A cleaner environment for people and ecosystem.	Group: Risk Mitigation of Contaminated Land and Groundwater	I want to protect the human environment and ecology from pollution in soil and groundwater. I want to protect surface water and groundwater from pollution.

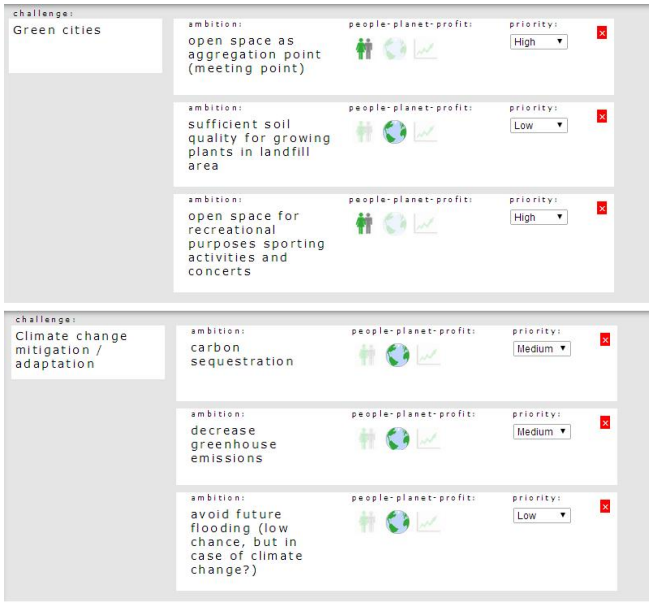
- Society and economy:
  - To create open space for recreational purposes and sports
  - More structures for education and culture
  - To attract tourists.
  - To improve health and well-being for the neighbourhood.
  - To connect the area with the sea and river.

- Sustainability
  - To sequester carbon.
  - To decrease greenhouse gas emissions.

- Nature & Green elements
  - Open spaces for recreational purposes.
  - Decrease the noise
  - Increase biodiversity
  - Air quality
- Water
  - To avoid flooding because the river is very close (it could be an important problem in case of climate change)
  - Recharge ground water and use for leisure

- Soil
  - Part of the area was landfill→ possible agricultural use in this area
  - Not any industrial activity in the are

Taking into account the priority of the ambitions, human well-being and health is the priority. There were no ambitions defined on sustainable food production, resources efficiency and energy production. However, they are interested in avoiding contaminated areas now and for the future. The connectivity of the area with the sea had high priority. They are more interested in a social improvements than economic change.



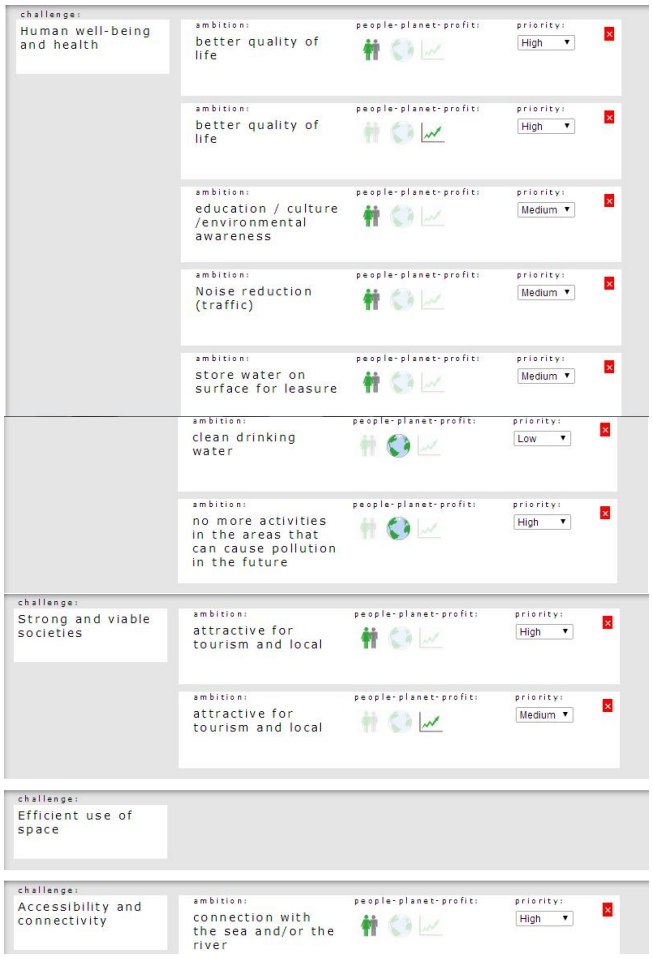


Figure 1. Ambitions and social demand

The ambitions were related with the services defined in the Opportunity Matrix and the interventions connected. The colors and icons in the OM were explained by the HOMBRE team, but remained quite confusing. Some ambitions cannot be assessed with the OM at the moment (e.g. connectivity of the area with the sea), probably because of the focus on soft reuse.

Map and Sketching. The ambitions and proposals where designed in the map (Figure 2): Sport area and green area for concerts. Sport center, path way, bike lane, decrease the noise with a green area close to the railway, water ponds.

Suggestion came to be able to calculate the area with the BFN (it is not possible (yet)).

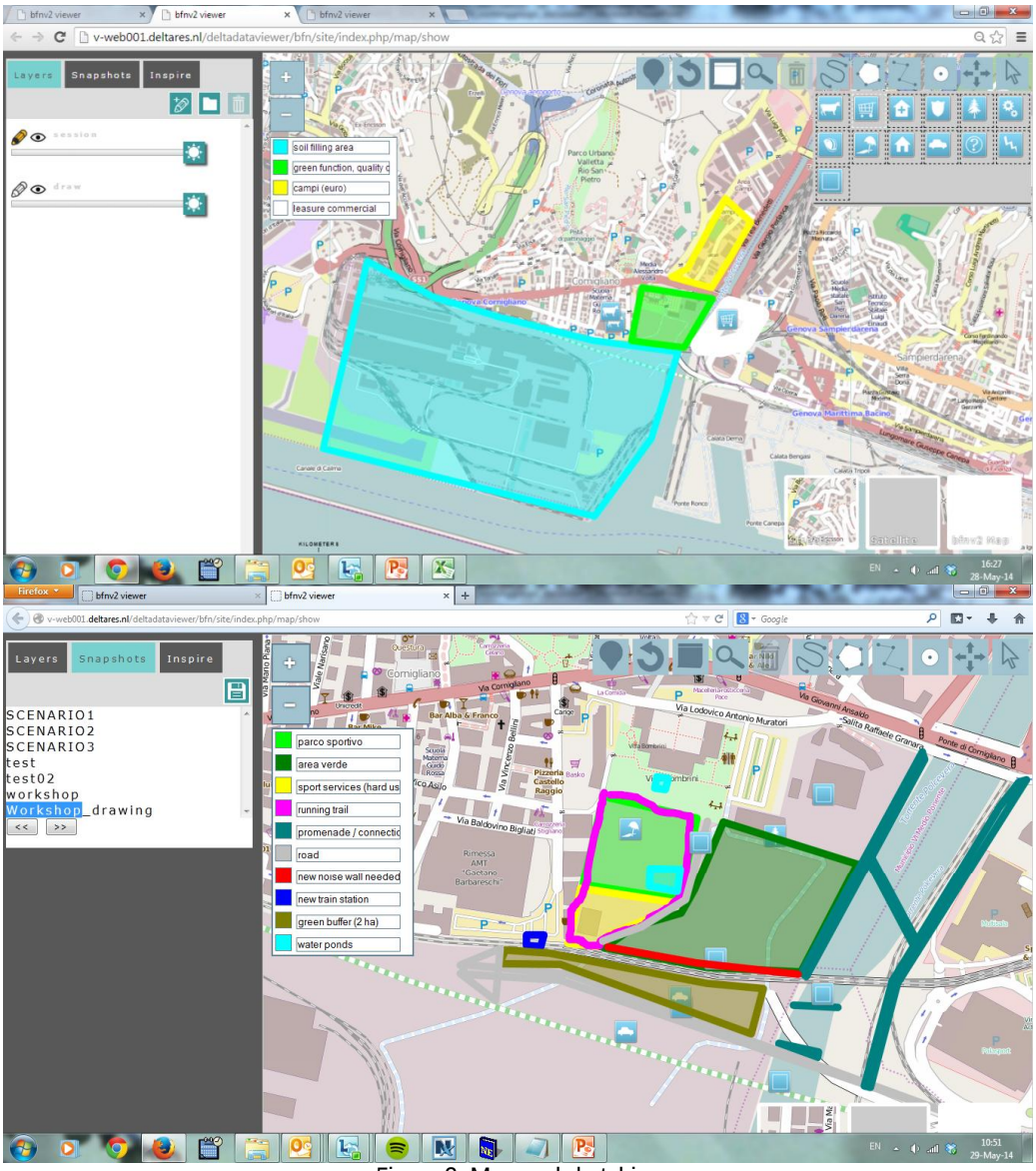


Figure 2. Map and sketching

The Biomass Flowchart was also tested for a green area (Figure 3).

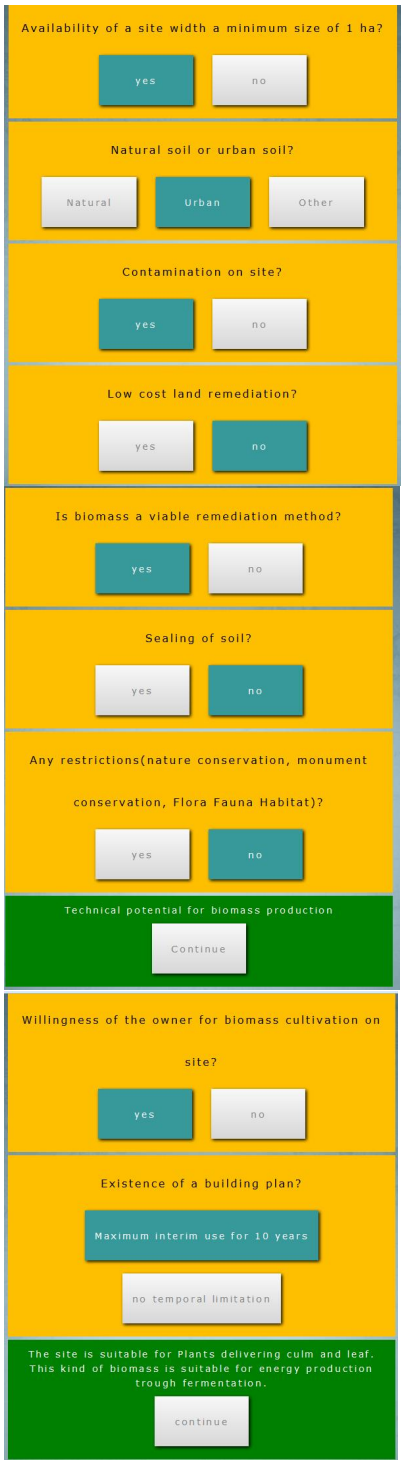


Figure 3. Green use flowchart

- Feedback and final comments from the Stakeholders

The coordinator of Cornigliano Working Group (Borough Participation Group) had expected a more 'technic' tool, hard to understand and use. On the contrary he is pleased because 90% was easily understood about BFN and OM. He expected a better resolution in drawing, or something 'more tangible', probably with a touch screen it would be more involving (Note: it is possible to use it on a touch screen e.g. tablet / design table). For example, if the sketch produced during the workshop

would be showed to the Mayor, it wouldn't be understood or appreciated. (Note from Francesca: (on esthetics): it is an innovative tool, primarily to be used to support the process to come to designs together with stakeholders. Not a tool with the objective to make attractive looking designs for presentation.) Anyway he thinks that example library, in particular regeneration cases of success, are very useful in this case, to give a suggestion of which kind of interventions are needed and the potential results.

Mr. Ferruccio Bommara suggests to integrate to BFN maintenance costs of different land use deriving from interventions indicated by OM: maintenance costs of a park, or of a green buffer, etc..(note: this will not be realized within the HOMBRE project, perhaps possibility for HOMBRE+, country specific).

BF Navigator

- Easier to use than expected, explanation was clear and helped to better understand the BFN.
- Question on sessions: sessions for others accessible? Own password, own session, you can download all your information to own computer and upload it again when sensible info you don't want online.
- They suggested improving the aesthetics of the final product to present to the politicians. Aesthetics of end result: expectation management. BFN is a discussion tool not meant for presentation. Make artist impression for presentation. Nicer presentation can help in discussion.
- BFN is different than what people are used to. Push to face with other stakeholders from the beginning is not so common. BFN makes exchange easier between different kinds of people. OM is example is meant for expert, made by experts but does not work with stakeholders in this form. Make every part of BFN very easy to handle. As a synthesis. Nice to look at, good to comprehend. First sight appealing, and then you can go to a more detailed version. Go deeper. Fits by bottom up solutions. BFN possibility for democratic tool.
- Example library very important
- Using interactive design table is better than beaming it with a moderator. More active involvement / use.
- Check reality of the map. (the map was not completely right location of roads)
- They suggest a rendering function, 3D pictures, and animations to improve the image in order to impress politicians.
- Wish to add Costs: maintenance costs/cost for different for land uses (country specific). Modular tool, this can be implemented later on in custom made versions of BFN. Eg make a list with what kind of costs you can expect instead of giving actual costs
- Calculate area dimensions of drawings / Present some parameters in drawing?

Opportunity matrix

- Less rows and columns. Too much information for one screen. Works for desk study not when it is used for a group on a beamer (does not fit 1 screen).
- It would be useful to make a simplified version for stakeholders. First inventory and then go on with detailed info.
- Names of the cells description must be easier: ISICS/HLOW. Even other simpler names (opportunity windows) is too difficult
- Too many colours and icons in the matrix.
- Rewrite first few sheets in presentation: expectation management
- It takes too much time to explain the OM to the public (motivated and beforehand informed public)
- Links should work
- More region related information:

    - Split up the O.M. in climate regions
    - Split up for urban rural coastal areas
- Connectivity is not addressed in the OM (connection to water/sea. Add in green infrastructure part)

<u>Green use tool</u>

- Rename Green use tool to biomass tool.
- Make possibility to save biomass flowchart and edit it.
- Change “stop”.

- Pictures






Annex 3: Complementary information on Solec Case study

1st Stakeholder Workshop at Solec-Kujawski, Poland (April 2013)

On 8-9th April 2013 HOMBRE organised its first stakeholder workshop for the Solec Kujawski case study in Poland. This involved representatives of the municipality of Solec Kujawski and members of the HOMBRE project. The aim of the meeting was to exchange ideas and information about the case study site and to make the representatives of Solec Kujawski more familiar with the outputs HOMBRE is producing. Its goals were to see where HOMBRE might be able to provide methodological support for the redevelopment of the case study brownfield site and to begin preparation of a second stakeholder workshop scheduled for 6-7th June 2013 for a larger group of regional stakeholders.

Pauline van Gaans from Deltares introduced to the HOMBRE project and the "zero brownfield" concept. The philosophy of "Zero brownfields" aims to avoid the emergence of brownfields or accelerate their regeneration once they have formed. Pauline van Gaans described strategies for avoiding the evolution of brownfields by improving the monitoring and assessment of different "early indicators" during the phase when the land is being used. "Service indicators" help to assess if a completed management step/action was successful. HOMBRE's "Brownfield Navigator" provides a map-based online instrument to support stakeholders in navigate towards successful brownfield regeneration. HOMBRE pays special attention to exploiting possible synergies during the regeneration and re-use of brownfield sites.

The mayor of Solec Kujawski, Teresa Substyk, gave an introduction to Solec Kujawski. This is a small town with an increasing population of approximately 16.000 inhabitants. The local authority wishes to develop the town in a sustainable way. In order to strengthen the economy of the area infrastructure is being developed to attract especially young companies.

Figure 1: Introduction to the situation in Solec Kujawski, given by the mayor, Teresa Substyk

The municipality already organises local consultations on the development of the areas in close cooperation with affected stakeholders as "bottom-up planning". One example for the good cooperation between the authority and the inhabitants was the development of a former military area into a radio broadcasting facility. Here the municipality provided good information services and thus was able to convince the majority of the inhabitants on the benefits of this project supporting a vote in favour of this development.

Discussions focused on the planned future use of the brownfield site of the former wood impregnation plant, and its linkage to Solec Kujawski's spatial planning for the period 2012-2020. Historically the area has always been known for sport and recreation, being surrounded by large forests. Thus the municipal development strategy follows the two approaches to strengthen: 1. the industrial/commercial activities (e.g. by tax benefits) and 2. Providing sport and recreation services at a national and international level.

A range of HOMBRE concepts were tested. The case study aims and site situation were placed in a land cycle concept (see figure 2) and the participants exchanged on the future use plans for the Solec Kujawski case site.

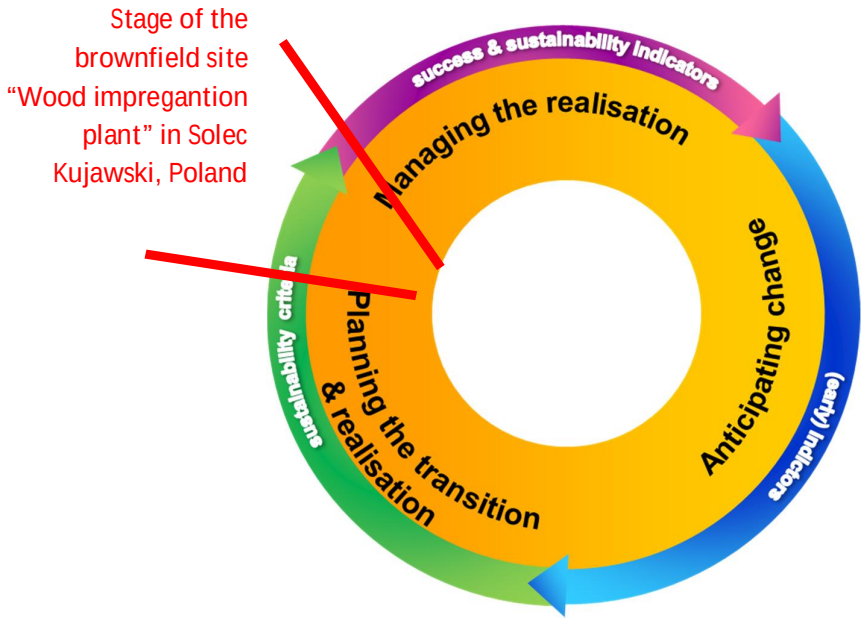


Figure 2: Stage of the HOMBRE case study site "Former wood preservation plant" of Solec Kujawski in the land management cycle. The blue, green and purple parts of the cycle are management tools that could be used to forecast and assess changes in the land use.

2nd Stakeholder Workshop in Solec-Kujawski, Poland (June 2013)

Approximately 30 participants joined the 2nd stakeholder workshop that was held in Solec Kujawski, Poland on 6-7th June 2013.
The workshop was organized as a joint event of the EU FP7 project HOMBRE and the municipality of Solec Kujawski, with participation of the EU FP7 project TIMBRE and regional stakeholders. The target of the event was to exchange on the management of the regeneration of brownfields by discussing possible policy options and technical solutions, pointing at the local and regional benefit and barriers.

After the welcome by Barbara Białkowska (vice mayor of Solec Kujawski) and an introduction to the city of Solec Kujawski, its historical and present situation, the participants got an overview on the different brownfields in and around the city. The municipality is very active in advancing the remediation of contaminated brownfields and trying to find new solutions for the abandoned areas in order to make the city attractive for its inhabitants. A good example is the "Jura Park", a theme park built in parts of the town park with approximately ½ million visitors per year. In order to attract new investors an industrial park was founded – here the industries can make use of the benefits of the Solec Kujawski's location between two big cities Bydgoszcz and Torun, close to a big road and Wisla river.

After a general introduction to the problem of urban sprawl Grzegorz Malina (University of Science and Technology in Cracow) gave an overview on the background and targets of the HOMBRE project, its framework and tools (such as the "Brownfield Navigator" and the monitoring and assessment of "early indicators"). Inspirations how synergies can be used during the regeneration process are developed within the research and work on "technology trains", which aim to provide a solution to a problem and at the same time offer added value/services.

In the following, the participants exchanged on the situation in Solec Kujawski and on ways how to apply outcomes/products of HOMBRE at their brownfields. The discussion also addressed financial issues, which are always important for regeneration projects, but of course should not be the only driver for actions related to soil.

Grzegorz Boron (Municipality of Bydgoszcz) introduced to some brownfields in the region and from all over Poland and showed how some of them were successfully redeveloped, e.g. the "Exploseum" in Bydgoszcz, a former nitroglycerine plant that is now used as a museum.
He also reported on the experiences from the EU project "COBRAMAN" where a database was developed as well as materials for courses to train brownfield managers.

In the afternoon the workshop participants went on a field trip to the former and current brownfields in and around Solec Kujawski (see figure 3) and got a better idea on what is currently under development there and which redevelopments already have been accomplished successfully.

The second day of the workshop started with an introduction to the TIMBRE project given by Janusz Krupanek (IETU). Targets of TIMBRE are to support the redevelopment of brownfields and especially the transformation of megasites with complex environmental and social problems.
Afterwards Nicolas Fatin –Rouge (Université de Franche-Comté) presented the results of the in-situ soil flushing tests with re-used fluids for the remediation of creosote-contaminated soil that were run within the TIMBRE project for 5 weeks on the former wood preservation site in Solec Kujawski.

SOLEC KUJAWSKI

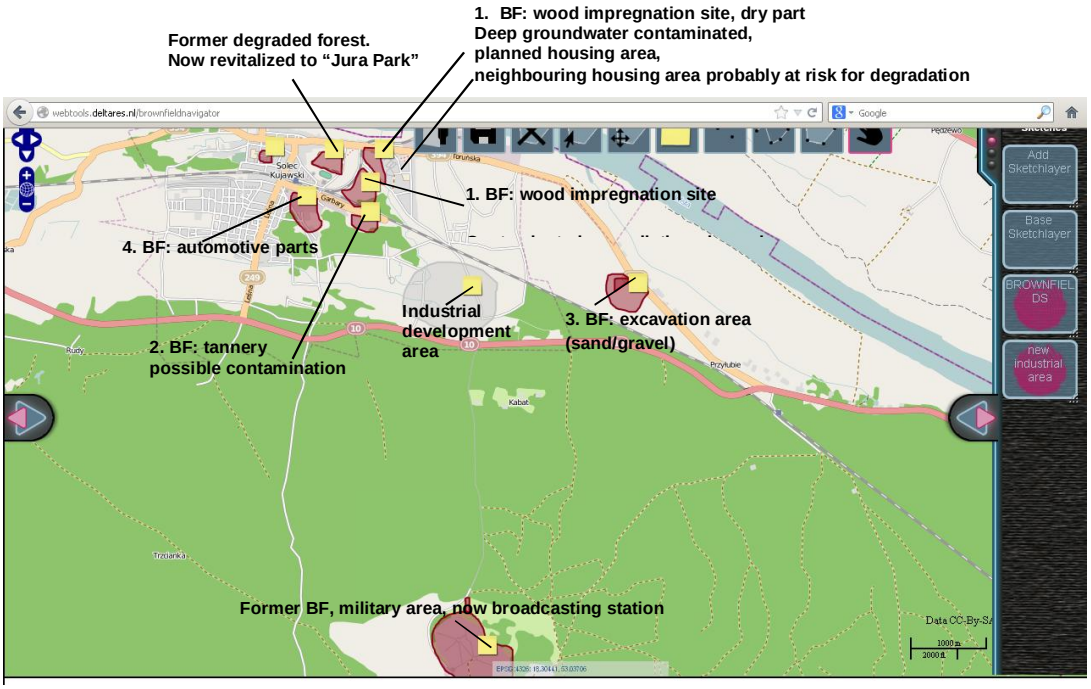


Figure 3: Location of the different current and former brownfield (BF) sites in Solec Kujawski (shown on the HOMBRE Brownfield Navigator)

The idea of the world café discussion that followed was to think of new ideas and points of view for Solec Kujawski to be used in the spatial planning for 2013 – 2020 (Figure 4). In small groups the participants exchanged lively on the question "what are useful environmental, economic and social indicators that point towards brownfield emergence?"
In a second round the participants discussed on pros and cons of possible scenarios for future developments in Solec Kujawski taking into account social, environmental and economic issues.

Figure 4: During the "world café" discussions (Photo: DECHEMA e.V.)