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project results into case studies**

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## Summary

Seven case study sites from different regions in Europe were integrated in the HOMBRE project. HOMBRE stayed in contact with the site owners and stakeholders and organized meetings and workshops to inform the case study sites on the HOMBRE products, get their feedback and look for ways how the tools and models could possibly be used and applied at the sites.

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# 1 Scope and frame of the deliverable

This report aims to introduce to the HOMBRE case study sites and describes the actions taken to assess the HOMBRE results at the case study sites.

## 2 HOMBRE case studies

HOMBRE has several case study sites all over Europe.

The target of the involvement of these case studies is to apply the project results at the case studies and to get a feedback from the stakeholders as potential end users of the HOMBRE product.

The following case studies are involved:

- Gelsenkirchen, Germany: former coal mining area (22 ha)
- Genoa, Italy: industrial and urban area (22 ha)
- Halle/Saale, Germany: urban brownfield (3 ha)
- Markham Vale, UK: mining and urban area/brownfields (220 ha) – additional case study site in the project
- Solec Kujawski, Poland: urban and post-industrial area (80 ha)
- Terni, Italy: industrial area (10 ha)
- Turceni, Jiu, Romania: mining and rural area (250 ha)



Figure 1: Location of the HOMBRE case study sites

## 2.1 Gelsenkirchen, Germany

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. This coal mine is 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 started on land assessed of its suitability for biomass production in 2011.



Figure 2: View of parts of the area in Gelsenkirchen

The owner of the site is RAG Montan Immobilien GmbH. For the realization of the new land-use concept they work together with the municipality of Gelsenkirchen, the Ministry for the Environment and the EnergieAgenturNRW which is a regional agency dedicated to forestry and wood production in North Rhine-Westphalia.



Figure 3: Biomassepark “Hugo”

## Activities of HOMBRE

Actions undertaken include the regular updating on HOMBRE activities, yearly site visits and interviewing the project manager. Furthermore, the developer contributed to the HOMBRE workshop in Ferrara in September 2012.

The concepts of circular land management and holistic brownfield management were presented to stakeholders though they were not tested on the case. In addition the concept of landscape design within the biomass project of WP5 was presented to the RAG Montan Immobilien GmbH.

## 2.2 Genoa, Italy

Polcevera Stream valley is an important link between the eastern and the western part of the city of Genoa, in Northwestern 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 a 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 17<sup>th</sup> 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 assessing the final end use, even if 50% is already designated to green and open spaces.



Figure 4: Map of the Cornigliano area with the brownfield site (within red line). The gas tanks in the centre of the site have already been demolished. Just north of the gas tanks villa 'Bombrini' is shown. (Source: Google Maps)

## Activities of HOMBRE

HOMBRE gained a lot of information about the site and this regeneration project through articles on the project, meetings and interviews with people involved in the project. This happened in an early stage of the HOMBRE project.

The goal was

- 1) to gather information for the WP2 indicators and
- 2) to discuss the municipality needs for a tool such as the Brownfield Navigator (BFN).

Since the problems and plans for the area are very diverse and still disputed, a tool like the BFN - being able to clarify opportunities and implications of certain measurements for the area - can be very useful. Also, the problems found in this case seem exemplary for other brownfield cases in Europe, so it can serve as a good guidance case within the HOMBRE project. From the documents and data received from, and meetings with the Genoa case stakeholders, a set of indicators relevant for this case could be derived.

In a workshop that was held in May 2014 the Brownfield Navigator and the Brownfield Opportunity Matrix and stakeholder engagement process were tested and discussed with the stakeholders.



Figure 5: Introduction to the Brownfield Opportunity Matrix during the stakeholder workshop

### 2.3 Halle/Saale, Germany

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.





Figure 6: View of parts of the case study site in Halle/Salle

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.

### **Activities of HOMBRE**

HOMBRE exchanged on national and international biomass experiences and evaluated the harvesting results. A questionnaire for assessing biomass potential on the area was sent to case stakeholders.

## **2.4 Markham Vale, UK**

The case study site of Markham Vale entered the HOMBRE project in 2013.

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 have been previously developed.

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.



Figure 7: View of Markham Vale area

### **Activities of HOMBRE**

HOMBRE organised some first meetings through 2013. In September 2013 a cross cutting issue workshop of the WPs 2, 3, 4, 5, 6 was organized to review the range of HOMBRE outputs across the entire project and introduce to the HOMBRE tools and concepts.

In June-July 2014 a meeting was held to test and further develop the Brownfield Opportunity Matrix at Markham Environment Centre.

In July – September 2014 the Brownfield REMIT/RESPONSE (BR2 tool) was as well introduced and tested during several meetings with the head of Markham Employment Growth Zone. In addition HOMBRE stayed in contact with the case study site via phone/email liaison (until October 2014).

### **2.5 Solec Kujawski, Poland**

The municipality of Solec Kujawski is located in central Poland, on the southern bank of the Vistula River.

A major brownfield within Solec Kujawski that was selected as a HOMBRE case study site, is the location of a former wood preservation factory. The area is now abandoned and the aboveground infrastructure largely demolished, but soil and groundwater are still heavily polluted with creosote (containing the allied products of dry coal distillation like PAHs, BTEX, Phenols), mineral oil and PCBs, that were used as additions.



Figure 8: View of the case study site in Solec Kujawski

The brownfield is located close to the city centre, in between a housing estate (high-rise blocks, school, shops etc.), a railway line and a city forest with local touristic attraction named Jura Park . The intended re-use of the area focusses on commercial and recreational activities. Remediation of the area is currently going on with co-financing from the European Regional Development Fund.

### Activities of HOMBRE

In April and June 2013, two workshops were organised jointly between the HOMBRE project and Solec Kujawski municipality. 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.

The objectives June workshop that was a cross cutting issue workshop of WP2, 3 and 4 were to present the approach taken by Solec Kujawski to address its brownfield issues and disseminate the HOMBRE concepts and approaches (mainly Early Warning Indicators, HOMBRE Zero Brownfield Framework) to a wider audience.

In September 2014 another workshop was held in Solec Kujawski to discuss and get a feedback on the key considerations for technology trains that were developed in WP4.

## 2.6 Terni, Italy

Terni is located in central Italy, north-east of Rome. The city is located in the province of Terni, in the region of Umbria. The nature around Terni attracts tourism and the nearby waterfalls „Cascade 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 Village of Papigno, near Terni, has a rich industrial history and locates the industrial brownfield of Terni - Papigno.

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. As a result of industrial use in history, parts of the soil and groundwater are contaminated.



Figure 9: View of the area in Papigno/Terni

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.

### Activities of HOMBRE

During a site visit in February 2012 HOMBRE introduced the stakeholders to the circular land management concept and the holistic approach for Brownfield regeneration and exchange with the participants on the situation of the site.

## 2.7 Turceni / Craiova municipality – Jiu Basin, Romania

Craiova municipality is located in Dolj county, in the Oltenia region in 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.

A major cause of brownfield occurrence in Craiova municipality was the former heavy industrialisation followed by deindustrialisation and dramatic political system changes (fall of communism in 1989).

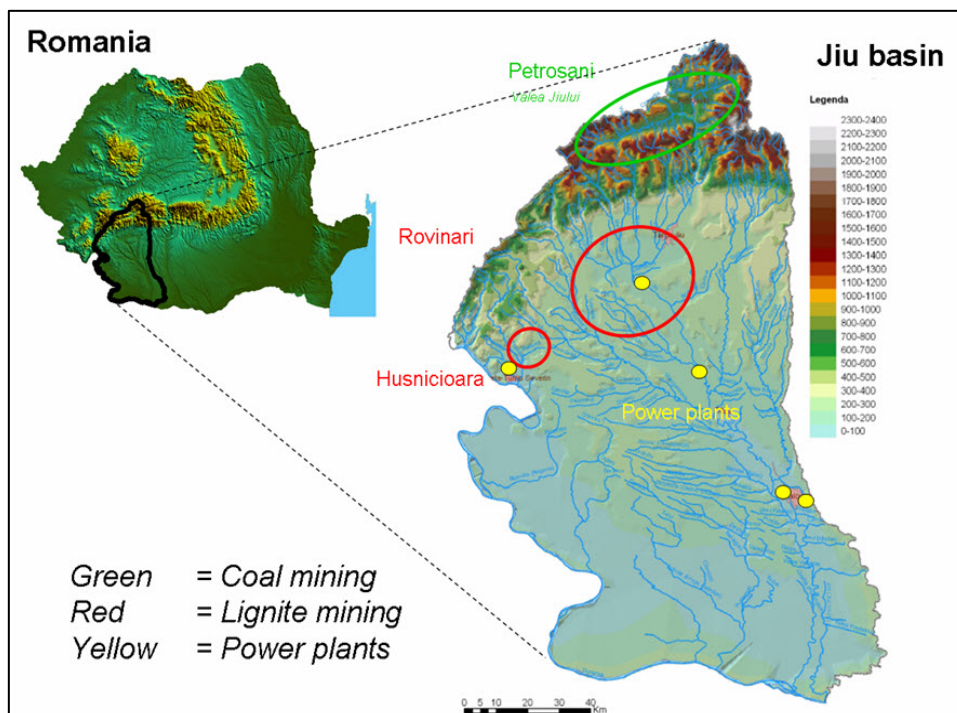


Figure 10: Location of the area in Romania

### Activities of HOMBRE

The Craiova municipality 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. 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.

A meeting with local stakeholders was organized in February 2013 and afterwards the Early Warning Indicators (for anticipating brownfield formation) were tested with (historical) data of

the region available from internet sources. Many data sources could easily be found on the internet, which allowed downloading of statistical data for free and occasionally the visualisation of data trends over several decades (e.g. Eurostat). This exercise resulted in listing metadata for the relevant indicators (where available: source of information, available times series, and scale, etc.) and establishing trends.

### **3 Concluding remarks**

The case studies located in different regions in Europe with different historical backgrounds and present challenges helped the HOMBRE project to get a feedback from real cases on the products developed in the HOMBRE project.

The tools and concepts of HOMBRE were of interest for the case study sites and led to new ideas and approaches at some of the case study sites.

More details on the interaction between HOMBRE and the case study sites and conclusions that could be drawn both for HOMBRE and the case study sites are reported in D6.3