Overall value is a function of three factors: (1) direct financial returns (costs vs. financial benefits); (2) wider effects which are nonetheless economically tangible (such as improving local property values, or impacts such as impacts on infrastructure); and (3) wider effects which cannot be readily valued in economic terms - intangibles (such as effects on a landscape, or community acceptance) – which nonetheless affect the value of a project's "goodwill". Goodwill can have an important bearing on project implementation and outcome, for example in terms of how easily it can meet planning requirements and how attractive it is for use; as well as having significant commercial and organisational importance, for example via reputational risks and benefits. Improving overall value should be a key part of project scoping and design, identifying opportunities for synergies and additional project services.

A holistic approach to understanding project sustainability increases the chances of identifying these opportunities. A concept of "sustainability linkages" can be used to relate project services and project wider effects and facilitate this design and evaluation of designs, guiding stakeholders in decision making all along the life cycle of regeneration projects and land use.

For the time remaining, HOMBRE investigations will (1) develop these concepts into a decision framework or tool building also on outputs from several other projects; (2) develop further the concept and viability of bio-energy clusters with worked examples and (3) refine knowledge on "operating windows" of two low input "gentle remediation" technologies: 1) use of modified charcoal and 2) organic matter recycling.

WHAT NEXT?

- For the upcoming months special focus will be on the elaboration of an overarching approach that will synthesized and integrated all findings of the different work packages of HOMBRE in a "Holistic framework for zero brownfield perspective" providing guidelines and a policy brief on more efficient brownfield regeneration.
- Within a CEN[1] Workshop a shared glossary of terms for dealing with brownfield regeneration will be worked out to ease dissemination of project results and mutual understanding with related communities, e.g. spatial planners.

1 CEN: European Committee for Standardization

PROJECT REFERENCES

Contract number: 265097
Theme: FP7 ENV.2010.3.1.5-2: Environmental technologies for brownfield regeneration
Duration: 12/2010 to 11/2014

CONSORTIUM

ACCIONA Infraestructuras
Spain *(www.acciona.es)*
BRGM – Bureau de Recherches Géologiques et Minières
France *(www.brgm.fr)*
DECHEMA e.V. – Society for Chemical Engineering and Biotechnology
Germany *(www.dechema.de)*
Deltares
The Netherlands *(www.deltares.nl)*
Geo-Logik
Poland *(www.geo-logik.pl)*
PN Studio
Italy *(www.pnstudio.net)*
Projektgruppe Stadt + Entwicklung
Germany *(www.projektstadt.de)*
r3 environmental technology ltd.
UK *(www.r3environmental.com)*
Tecnalia
Spain *(www.tecnalia.com)*
TNO – Netherlands Organisation for Applied Scientific Research
The Netherlands *(www.tno.nl)*
University of Nottingham
UK *(www.nottingham.ac.uk)*
University of Rome "Tor Vegata"
Italy *(www.uniroma2.it)*
University of Science and Technology in Cracow
Poland *(www.agh.edu.pl/en)*
University of Wageningen
The Netherlands *(www.wur.nl)*

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HOMBRE

Holistic Management of Brownfield Regeneration

SEVENTH FRAMEWORK PROGRAMME

Co-funded as a Collaborative Project within the 7th Framework Programme of the European Commission.

www.zerobrownfields.eu

BACKGROUND AND OBJECTIVES OF HOMBRE

Preventing sites from becoming brownfields and regenerating existing brownfields is important to tackle urban sprawl and ensure a more sustainable built environment. Thus HOMBRE seeks to minimise the costs and maximise the benefits from the (re-) use of brownfields. HOMBRE aims to create a paradigm shift in sustainable brownfield land management practice to “Zero Brownfields” where brownfields become areas of opportunity that deliver useful services for society, economy and the environment, instead of derelict areas that are considered useless. Within the project, HOMBRE will look for strategies and technologies that will facilitate the integrated assessment of brownfield regeneration options within local and regional development, and that highlight brownfield site potential through available resources and opportunities for local and regional stakeholders.

There are several European case studies in HOMBRE located in Italy, Germany, Romania, UK and Poland. HOMBRE aims to check the practicability of the results gained in the different work packages at the case studies and learn from their experiences.

With an overarching approach all findings of the different work packages of HOMBRE will be synthesized and integrated in a holistic framework for zero brownfield perspective.

WORK PERFORMED SO FAR

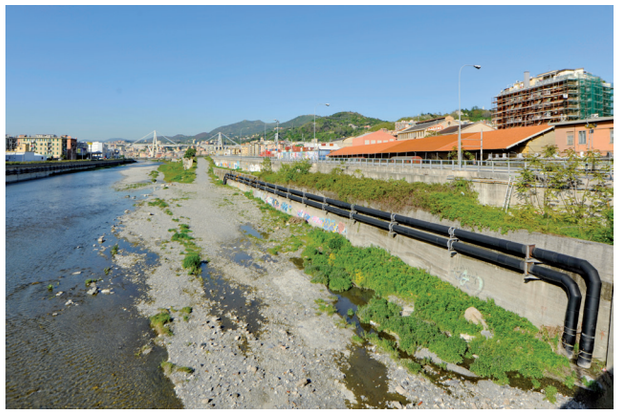
First steps were taken to come to a strategy and vision for brownfield regeneration, a **roadmap for the zero brownfield perspective**. A set of early indicators (economic, social and environmental) and monitoring approaches has been elaborated that should help to better understand why, how, where and when brownfields are formed in order to avoid the genesis of new brownfields and to come to a faster and cheaper regeneration of brownfields with less environmental impact.

The **Brownfield Navigator (BFN)** is a map-based online instrument that aims to support and guide stakeholders to identify in an early stage how a particular brownfield site can successfully be regenerated, i.e. by choosing the best regeneration strategies, technologies and approaches: Furthermore the BFN aims to show synergies between services and the opportunities they create at different stages of the land use cycle.

The BFN combines decision support frameworks with a geographical information system (GIS) and is targeted in decision making at the level of area planning, managing a portfolio of sites, or project planning. So far a first set up for the BFN was developed that contains a map and sketching functionalities. The focus of the BFN will be on early indicators, synergies, success criteria and assessment of success and visualization.

The proposed five steps of the BFN with their corresponding tools start with the identification of one or more brownfields (step “Identification”), to developing a vision on the brownfield (step “Scoping”) and exploring opportunities for development (step “Opportunities”) and finalizing with an assessment of the feasibility of development, until evaluation and monitoring of the success of the solution for the brownfield regeneration by the testing against defined success criteria for sustainable redevelopment of brownfields (step “Evaluation & Monitoring”).

Technology Trains: More cost-effective, more timely, and more sustainable and thus optimized regeneration of brownfields is achieved through the development of specific technology combinations (“technology train concept”). The idea is to close cycles for energy, water, soil and materials and thus to reduce costs, generate returns on investments and minimize the impact on the environment.



View on parts of the Polcevera site in Genoa/Italy – one of HOMBRE’s case studies (Photo: Francesco Tomasinelli, PN Studio)

So far three technology trains (energy/water, soil/building materials and soil/water) were defined and their feasibility was analysed by desk-study. In order to demonstrate the synergy of combining (at least) 2 topic fields (e.g. energy and water), three technology trains are elaborated in the laboratory and explored how these new, innovative technology trains can fit into the framework of (any) brownfield regeneration project. The combinations that are tested on lab-scale are the following:

Energy/water: Combination of Aquifer Thermal Energy Storage (ATES) with groundwater remediation (in situ chlorinated ethane (PCE) degradation).

Soil/building materials: Stabilization of soils and other materials using carbonation. Here the aim is to develop an understanding on critical parameters, both process based as materials based. Besides this work, a concept is elaborated in which stabilization of soil is combined with enhancement of the structural capacity of soil.

Soil/water: A new sustainable concept for in situ grouting at brownfield sites was developed, that provides combined potential for the creation of foundations as well as removal of volatile contaminants for groundwater. „Ecogrout“ as this technology is named, is based on the coupled reactions of CO_2 degassing and the precipitation of calcite (stalagmites/stalactites) that occur naturally in caves.

Brownfield soft re-use: HOMBRE is assessing the opportunities of innovative strategies, techniques and appraisal methods to improve the value of brownfield regeneration into “soft re-use” (i.e. non sealed land-uses) on an interim or long term basis. The project focuses on two principle classes of soft re-uses: 1) open space (i.e. land used for the provision of public amenities like urban parks and 2) land for biomass and bio-energy production.

A draft valuation approach for brownfield regeneration into soft re-use has been developed. The approach considers services and sustainability provided by regeneration options as overarching principles for value creation. This suggests that the case for investment is based on the design of “project services”, such as risk management or biomass production. However, determining overall value requires an understanding of wider project effects.