

## CASE STUDY: PROGRAMMES

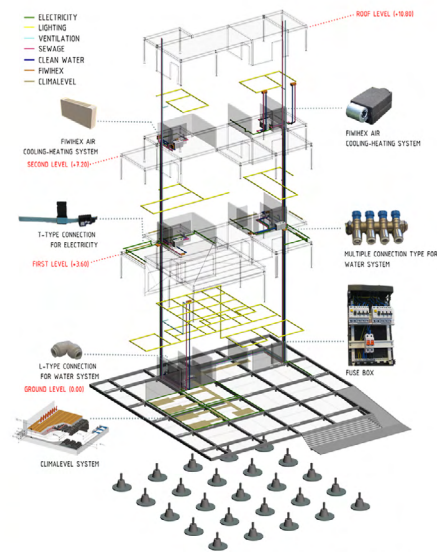
# Buildings as Material Banks (BAMB)

### SUBMITTED BY:

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### LOCATION:

16 Partners in 8 EU Countries

### PROJECT DESCRIPTION:

- This EU funded BAMB project brings 16 parties throughout Europe together for one mission – enabling a systemic shift in the building sector by creating circular solutions
- The project is developing and integrating tools that will enable the shift: materials passports and reversible building design – supported by new business models, policy propositions and management and decision-making models
- During the course of the project these new approaches will be demonstrated and refined with input from 6 pilots
- The BAMB project started in September 2015 and will progress for three and a half years as an innovation action within the EU funded Horizon 2020 programme (receiving €10 million from the programme)

### KEY DATES:

September 2015 to February 2019

**STAKEHOLDERS INVOLVED:**

- Brussels Environment (IBGE-BIM)
- Environmental Protection Encouragement Agency (EPEA Netherlands)
- Vrije Universiteit Brussels (VUB)
- Flemish Institute for Technological Research (VITO)
- Building Research Establishment (BRE)
- Zuyd University
- IBM Netherlands
- Sunda Hus i Linköping AB
- Ronneby Municipality
- Technical University of Munich
- University of Twente
- University of Minho
- Sarajevo Green Design Foundation
- Drees & Sommer
- BAM Construct UK
- Aurubis Bulgaria

**ADDITIONAL SOURCES OF INFORMATION:**

- [www.bamb2020.eu](http://www.bamb2020.eu)
- Twitter - @bamb2020
- Facebook - bamb2020

**WHICH OF THE RESOLVE FRAMEWORK ELEMENTS ARE ADDRESSED BY YOUR PROJECT?****Element 1: Loop**

Improved deconstruction and resource optimisation at end of life.

**BENEFITS:**

- Improved health and safety for demolition contractors (they will know what is in the building and how to safely deconstruct it).
- Improved source segregation and take back by suppliers back into same/similar product manufacture, thus reducing requirement for primary feedstock.
- Recovery can happen well before demolition and within a leasing approach as part of the business plan and management of the building, products, etc.

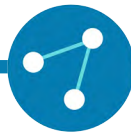
**CHALLENGES:**

- Uncertainty in associated cost and values over long periods of time – especially if trying to link to takeback schemes for specific products/materials.

- Developing the necessary links within the value chain to enable these continuous loops to be implemented; one missing link and it doesn't work.

#### **LESSONS LEARNT:**

- These challenges will be addressed throughout the BAMB project
- The *prevention approach* is crucial: i.e. a different way of designing, producing and managing materials, products, systems which will enable recovery through repairing, remanufacturing, recycling, etc. and enable the creation of continuous loops within the construction industry / across industries – contrary to a lot of circular economy project within the Built Environment right now, BAMB is not focussing on the end-of life but on a prevention / anticipation in order to eradicate waste and manage resources, materials, products, and systems.



## **Element 2: Share**

#### **REASONS:**

- A key objective of BAMB is to facilitate the reuse of materials, products and components across multiple building applications
- Greater awareness of design implications and the ability to track products, and their performance data, across each use are key to this.

#### **BENEFITS:**

- The benefits of reusing building products, e.g bricks, all the way up to entire systems, e.g. building façades, can significantly reduce environmental impact by displacing new products.
- Additional economic and social benefits are thought to be derived but these have yet to be quantified; however, since materials, products, etc. can be recovered properly their residual value is assumed to be higher than it is today.

#### **CHALLENGES:**

- Aside from the data issues, there are weaknesses in understanding and articulating the whole life costs and values across one building's life cycles, let alone several life cycles. This is very important to get right since the business benefits of 'circularity' cannot be calculated for traditional vs. alternative approaches at the moment.

#### **LESSONS LEARNT:**

- BAMB will explore several business models in more detail and also has 6 pilots built into the 3.5 year programme. These will help to inform and enhance assumptions to develop alternative costing and valuing approaches in the built environment.



## Element 3: Virtualise

### REASONS:

- BAMB's outputs will be largely digital – including a material passport database, reversible building design codes and a Building Information Modelling 'plug in'.

### BENEFITS:

- Impacts and benefits of improved 'circularity' across the building life cycle should become more transparent.
- Digitalisation is crucial in order to foster exchange of information to improve circularity within a complex sector and quickly evolving society.

### CHALLENGES:

- Obtaining robust and accurate data at input stage, maintaining and accessing this data across a long period of time i.e. the building life.

### LESSONS LEARNT:

- User requirements analysis is still ongoing and is being used to inform development of the outputs.

## Additional Information

The BAMB project is multifaceted and has the following work packages:

WP1 - Developing a blueprint for dynamic and circular buildings and materials upcycling

WP2 - Developing Materials Passports and corresponding database & platform

WP3 - Developing Reversible Building Design tools for dynamic and circular buildings

WP4 - Testing BAMB results through prototyping and pilot projects

WP5 - Facilitating future applications and exploitation of BAMB results

WP6 - Communication & dissemination

WP7 - Project management and coordination

There are many opportunities for others to get involved, primarily via the Stakeholder Network that is being set up.

During the Launch event of the Stakeholder Network six Special Interest Groups will be introduced. These groups bring together stakeholders for direct feedback and exchange of ideas focussing on:

1. Materials Passports
2. Reversible Building Design

3. Building Information Modelling (BIM)
4. Circular Building Business Models
5. Policies and Standards
6. Case Studies and Pilots



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**“The Buildings as Materials Banks (BAMB) research project brings 16 partners from 8 European countries together for one mission, to move the building industry towards a circular economy.”**

Gilli Hobbs, Project Partner, BRE