

Buildings As Material Banks – Circularity as a Path to Resilience *The Perspective of Two Public Bodies*

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Abstract:

Sustainable and resilient cities are all about people and place.ⁱ To support people's activities, contribute to quality of life and wellbeing, we rely on buildingsⁱⁱ. The capacity to easily adapt and transform cities is essential to ensure that cities remain relevant, responding to citizens' needsⁱⁱⁱ. In addition, in the face of actual natural resource consumption far exceeding Earth's carrying capacity^{iv}, achieving sustainability and resilience demands addressing resource security and avoiding the negative impacts of extraction and resource use^v. Furthermore, in the built environment, toxic chemicals in building materials risk permanent harmful impacts^{vi}. From a waste and resource perspective, there is a need for the better management of building materials. Circularity provides a path towards sustainable and resilient cities through reusing safe building materials in a circular economy with continuous materials loops.

Brussels Environment and Ronneby Municipality are two public bodies attentive to the integration of circular economy in policy, and who make significant investments in physical infrastructure to respond to citizens' needs. They must look to the future to ensure that their investments retain value while continuing to provide places that satisfy people. Buildings that are adaptable and transformable, and in which materials and products can be harvested and reused, provide a solution to mitigate the risk of poor investments and outdated buildings that no longer add value to peoples' lives. To accomplish this, the entire building sector value chain must together find viable ways forward. While drawing inspiration from national, regional and international development goals, Brussels Environment initiated a public-private partnership that Ronneby Municipality joined alongside fourteen other European partners, resulting in the BAMB Project Consortium.

BAMB, Buildings as Material Banks, is an EU Horizon 2020 project enabling the shift to a circular building sector. Dynamically and flexibly designed buildings can be incorporated into a circular economy – where materials in buildings sustain their value and can be reused, leading to waste reduction and using fewer virgin resources. The project is developing tools that will enable the shift, focusing on two pillars: Materials Passports and Reversible Building Design. Reversible design tools will facilitate easy dismantlement and transforming buildings, while Materials Passports will provide information on product/materials' characteristics that give them value. Together, they will facilitate materials' recovery and reuse. For success, these pillars are supported by developing new business and decision-making models, and

recommendations for strong policies, standards, and incentives that provide the framework for a systemic shift. 6 pilots will demonstrate and refine these approaches.

From the perspective of two public bodies, BAMB provides an opportunity to not only construct resilient cities but also to translate sustainability goals, including the UN SDGs, into concrete action and impacts. For example, reducing materials waste in the building sector while creating safe materials loops could: substantially contribute to the better management and efficient use of natural resources, reduce the adverse environmental impact of cities and combat climate change^{vii}. These outcomes can be read as direct contributions to the realization of SDG 11, 12 and 13; while a public-private partnership like BAMB is itself a demonstration of SDG 17. Other goals the project is contributing to include SDG 3, 8, 9 and 15. Moreover, the adaptability of buildings that BAMB provides will give cities the tools for reactivity in the face of rapid change, and allow buildings to become part of more democratic and inclusive processes for shaping cities, further contributing to SDG 11. How can cities be sustainable while providing a built environment that supports the lives and wellbeing of today's citizens and those of the future? Circularity and BAMB provide a path towards resilience.

Keywords: buildings, sustainability, resilience, circular economy, reversible design, materials passports, waste, resource management

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Caroline has a Masters in Engineering Sciences – Architecture and finished her PhD in Sustainable and Reversible Design in September 2008 at the Vrije Universiteit Brussel (VUB). Between 2008 and 2014 she worked as a lecturer, researcher and project manager within the field of sustainable and affordable building design at different academic institutes (VUB, Université Libre de Bruxelles (ULB), Moi University – Kenya) and as a technical and academic expert for NGOs (amongst which the Shelter Research Unit (SRU) of the International Federation of the Red Cross). Since 2010, she has been working for Brussels Environment (IBGE-BIM) as an engineer and project manager and is involved in the development and support of technical expertise, tools and studies within the field of sustainable construction & refurbishment in the Brussels-Capital Region of Belgium.

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Molly has a Masters in Political Science – International Relations from the Université Libre de Bruxelles, as well as an Advanced Masters in Cultures and Development Studies from the Katholieke Univesiteit Leuven. She was named Laureate of the Henri La Fontaine Prize in 2010 and nominee for the 2012 Prize of the Belgian Development Cooperation for her research in international sustainable development policy. From 2009 to 2012, Molly worked as a research assistant on diverse topics, including environmental governance and negotiations. From 2011 to 2015, she worked for the United Nations Educational, Scientific, and Cultural Organization (UNESCO), where she was responsible for policy analysis and the off-site management of the CDIS cross-sectoral development indicators project. She has been working as a project manager at Brussels Environment (IBGE-BIM) since August 2015.

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