

04 / February 2023

Strong Cities Brief

Make recycled materials hip again

Michał Stangel, Guilberto Borongan

The construction industry is responsible for the largest flow of materials in the global economy, generating increased energy consumption and emissions. Challenges of the climate crisis and UN Sustainable Development Goals (SDGs) call for new ways of buildings development. One of the models adapted by cities calls for convert economic models from linear to circular. In contrast to the “take-make-waste” model, the Circular Economy aims to gradually decouple growth from the consumption of finite resources, based on designing out waste and pollution, keeping products and materials in use, and regenerating natural systems.

Applications can take place in various scales, e.g.:

- › Using local recycled materials (concrete, bricks, steel);
- › Re-use of building parts in construction (parts of walls, windows, construction);
- › Recycling waste materials (for urban landscaping, furniture, paving).

Individual architectural examples demonstrate the potential but may be difficult to replicate. The industrial applications, on the other hand, require extensive transportation of the materials, which are mostly concrete and paving materials. The challenge therefore is how to promote the sustainable use of construction and demolition waste materials in the building sector at the local level.

How can the challenge be tackled?

- › Promoting the use of recycled materials for non-critical structural applications;
- › Combining the use of recycled materials within the framework of existing social and environmental objectives of businesses and municipalities;
- › Producing usable intermediates;
- › Hipsterising (Upcycling of C&D waste materials) – making the re-use of construction and demolition waste materials trendy and desirable for the image of new spaces, in line with the notions of recycling, industrial spaces, etc.

Challenges and context

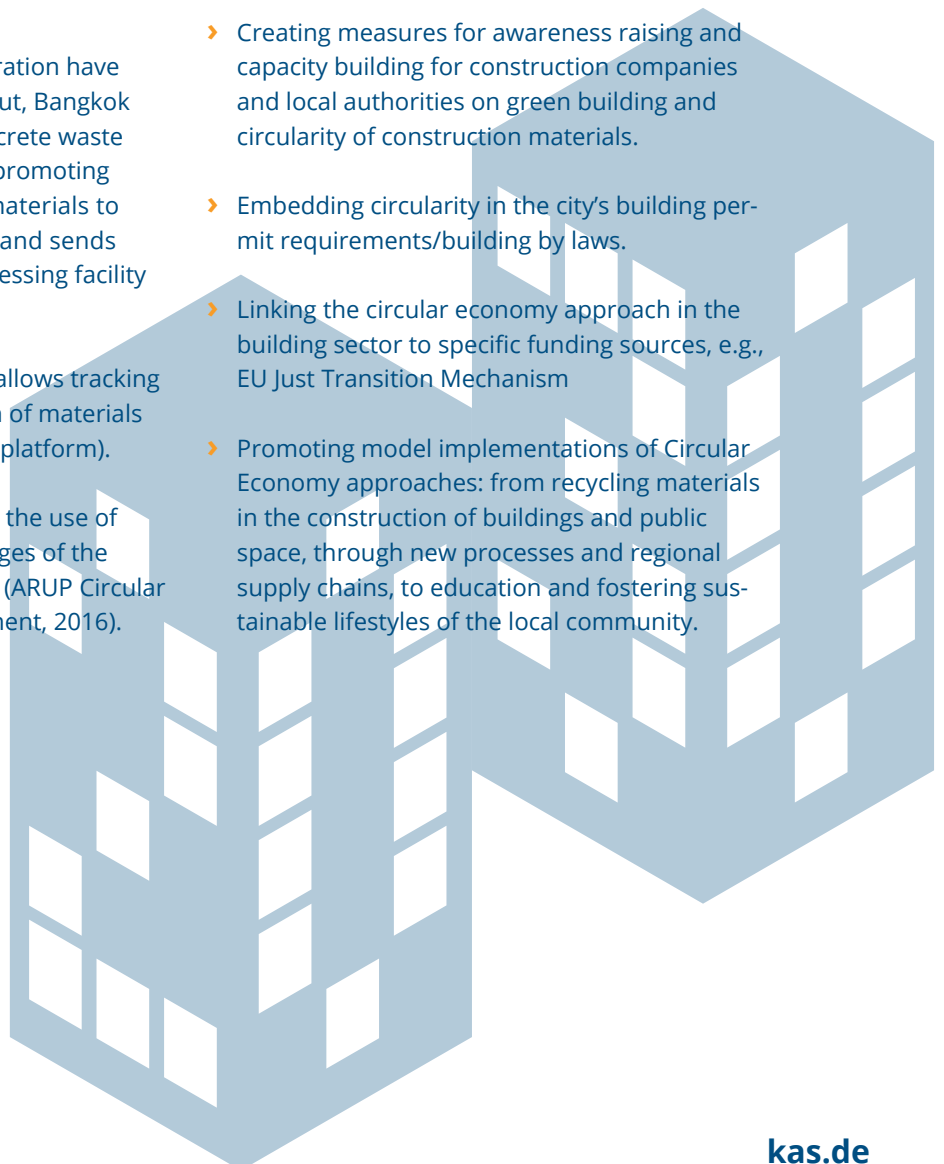
The use of recycled materials in the building industry has been implemented in several ways in recent years, but it seems that most of the applications are either individual projects or industrial applications. Some architectural examples are: Resource Rows – a multi-family housing in Copenhagen (Lendager Group, 2019), which used recycled bricks and surplus wood; Upcycle Studios – townhouses in Copenhagen (Lendager Group, 2019); or a social centre in London built with recycled materials from the Olympics held there (LYN Atelier, 2013). Industrial examples include recycled concrete (ERC-tech, www.erc-tech.eu) or pilot EU projects (SeRaMCo).

Examples

- › Used construction and demolition waste materials for pavement materials mix and paver blocks. The private sector's eco-design innovation initiatives of C&D waste in Thailand, e.g., recycled plastic road (asphalt concrete mixture that used about three metric tons of plastic waste) located in Grand Bangkok Boulevard, Amata Industrial Estate, and a road in Rayong Industrial Estate by Siam Cement Group and DOW.
- › Making construction and demolition waste materials available in the market / waste exchange centre (e.g., Rotor Deconstruction, rotordc.com).
- › Bangkok Metropolitan Administration have facilities for C&D wastes at On-nut, Bangkok operating free of charge for concrete waste recycling. BMA involvement for promoting sustainable use of C&D waste materials to promote to contractors in BMA and sends their waste to the recycling processing facility at On-nut.
- › Madaster platform – a tool that allows tracking of the consumption and location of materials for future reuse (madaster.com/platform).
- › Identifying various strategies for the use of recycled materials at various stages of the development and various scales (ARUP Circular Economy and the Built Environment, 2016).

Policy recommendations

- › Formulating policy instruments on incentives and disincentives for construction companies in urban settings, e.g., exemptions and incentives for better uptake and maintaining competitiveness, as well as fines on littering in the promotion of C&D recycling and circularity. Urging practitioners to commit using construction and demolition waste materials in selected applications.
- › Drawing up a handbook on the possible uses of construction and demolition waste materials (“hip handbook” – to make people want to use them).
- › Creating measures for awareness raising and capacity building for construction companies and local authorities on green building and circularity of construction materials.
- › Embedding circularity in the city's building permit requirements/building by laws.
- › Linking the circular economy approach in the building sector to specific funding sources, e.g., EU Just Transition Mechanism
- › Promoting model implementations of Circular Economy approaches: from recycling materials in the construction of buildings and public space, through new processes and regional supply chains, to education and fostering sustainable lifestyles of the local community.



Konrad-Adenauer-Stiftung e. V.

Lukas Lingenthal

Mobility, Urban and Rural Development
Analysis and Consulting

Lukas.Lingenthal@kas.de

Guilberto Borongan is director at the Asian Institute of Technology, Regional Resource Centre for Asia and the Pacific (AIT RRC.AP) in Thailand. He has over 20 years of experience on various resource scales in waste and resource management, and 3Rs (reduce, reuse, and recycle) in Southeast and East Asian countries.

Michal Stangel is an urbanist and professor at the Faculty of Architecture at the Silesian University of Technology and former vice-dean for research. He is especially interested in urban design, master planning, urban regeneration, and public spaces.



The text of this publication is published under a Creative Commons license: "Creative Commons Attribution-Share Alike 4.0 international" (CC BY-SA 4.0), <https://creativecommons.org/licenses/by-sa/4.0/legalcode>.)

This publication of the Konrad-Adenauer-Stiftung e. V. is solely intended for information purposes. It may not be used by political parties or by election campaigners or supporters for the purpose of election advertising.

