

What Goes Around Comes Around: Better Cities through a Circular Economy



De Ceuvel. Source: Metabolic

“Imagine a circular city where you have all of your wastes that are getting collected and reprocessed into valuable materials... within the city itself. All the buildings are designed for disassembly and recovery so you’re putting less pressure on mining and hinterland needs.

You’ve dramatically reduced the need for shipping and created new, smaller logistic cycles which need a different kind of management. It’s the kind of environment that we should want to live in.”

With its numerous green and blue spaces, Singapore is well known as a city in a garden. But can its urban life and the economy be further improved by taking inspiration from natural systems?

This was the prospect raised by Eva Gladek, founder and CEO of Metabolic, a consultancy specialising in circular cities and sustainability. In her recent CLC lecture in September 2018, she made a case for how circular economy principles can make cities more efficient, sustainable and liveable.



De Ceuvel was transformed from a polluted industrial site into a neighbourhood equipped a circular economy – salvaged houseboats have wastewater treatment, composting, bio-digestion, a struvite reactor and greenhouse facilities. Source: Metabolic

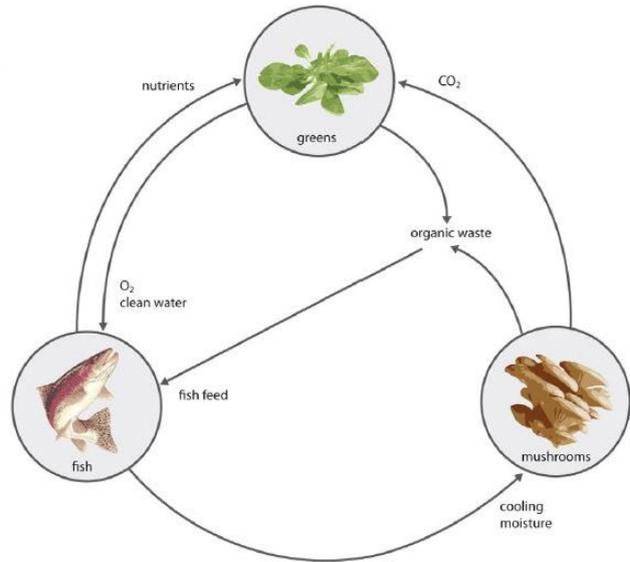
Today, cities spend a huge amount of energy, time and money on extracting resources from the environment to make products that are eventually thrown away. A circular economy means preserving the material, technical and knowledge inputs within products and establishing pathways for maintenance, reuse and adaptation to other uses.

“The circular economy is about creating extended, infinite cycles of value, just like a natural system does,” said Gladek.

An example Metabolic has developed in Amsterdam is De Ceuvel, a formerly polluted industrial site. Gladek and her team transformed this 5,000 m² site by salvaging houseboats to adapt into buildings, and including wastewater treatment, composting, bio-digestion, a struvite reactor and greenhouse facilities. Its success led the Dutch city to request scaling up strategies for larger neighbourhoods, such as Buiksloterham.

“One of the reasons (why) the circular economy is becoming so popular, especially in Europe, is that this represents a huge pathway for saving a lot of money,” explained Gladek. “That is because all of that value is not getting destroyed, but getting retained and cycled through the system.”

According to management consultancy McKinsey, adopting a circular economy approach would save Europe up to US\$630 billion per year. In another example cited by Gladek, it was calculated that comprehensive plastics



Cascading positive impacts can be reaped by shifting from monoculture (single-crop agriculture) towards symbiotic agriculture systems when the input and output of different crops support one another. Source: Metabolic

recycling system in the city of Charlotte in the United States could save it more than 900,000 barrels of oil annually, as well as create an industry with US\$35 million in revenue and more than 1,300 jobs.

More than just saving the environment and money, Metabolic defines the circular economy via seven pillars. This includes maintaining materials at their highest value of use, basing energy on renewables, the proper maintenance of water sources, supporting biodiversity, preserving human culture and society, preserving human health and wellbeing, as well as using resources in ways that generate multiple forms of value.

In addition to circular economy principles, Gladek says a structured, strategic approach towards interventions can result in cascading positive impacts too. For instance, shifting from monoculture (single-crop agriculture) towards symbiotic agriculture systems where different crops are grown such that their input and output support one another. Mushrooms grown on coffee grounds may produce carbon dioxide for plants, which also receive other nutrients from fish. Similarly, black soldier flies can consume municipal organic waste, with their larvae being turned into animal feed or protein pastes.

“It’s more than just thinking: how do we close and fix all the resource cycles, but (also) about how do we create new integrated, symbiotic solutions,” said Gladek.

For highly developed cities like Singapore, she suggested turning towards more sustainable, resilient methods of construction. Buildings can be designed to be easily deconstructed and reused so as to close the cycle on building materials, reduce the pressure on landfills and create a lot more value. For instance, the Dutch have come up with this idea of “material



Eva Gladek shared several notable case studies to illustrate applications of sustainable urban systems.
Source: Centre for Liveable Cities



The lecture attracted a vast range of audience keen to learn about the circular economy. Source: Centre for Liveable Cities

“passports” where they see their buildings as a “resource bank”, and track the different materials in them in digital databases. Such practices can enable the growth of new industries that extract scarce materials through up-cycling used products. In this way, countries can become resource brokers even though they have no access to natural resources.

With the emergence of climate change and its many impacts on our world today, there is a pressing case for cities to adopt a circular economy to tackle the root cause of over-consumption.

“There’s no reason why anyone should... say well, no, we actually want to be living in polluted, messy and wasteful environments,” said Gladek. “I think it’s just about making this vision really clear and building these business cases step by step, so we can all collectively move there.”

About the Speakers



PANELLIST

Eva Gladek

Founder and CEO of Metabolic

Eva Gladek is the founder and CEO of Metabolic, a leading consulting and venture building company that uses systems thinking to tackle critical sustainability challenges. She is an expert in technical environmental management techniques and has developed leading frameworks for systems thinking and the circular economy. She is consistently listed among the top influencers in sustainability in the Netherlands, a country recognized as leading the transition to the circular economy.



MODERATOR

Jessica Cheam

Managing Editor Eco-Business

Adjunct Research Associate

Centre for Liveable Cities

Ms Jessica Cheam is the Managing Editor of Eco-Business, an award-winning journalist, TV presenter, director, producer, and a social entrepreneur. She has more than a decade of experience in journalism with a particular expertise in sustainable development. She has been awarded numerous accolades in the field, including the Earth Journalism Awards at the UN climate change meeting in Copenhagen in 2009 and the Young Journalist of the Year by Singapore Press Holdings in 2010.

About the CLC

The Centre for Liveable Cities was set up in 2008 by the Ministry of National Development and the Ministry of the Environment and Water Resources, based on a strategic blueprint developed by Singapore's Inter-Ministerial Committee on Sustainable Development. Guided by its mission to distil, create and share knowledge on liveable and sustainable cities, the Centre's work spans four main areas - Research, Capability Development, Knowledge Platforms and Advisory. The CLC Lecture Series is a platform for urban experts to share their knowledge with other practitioners. For more information, please visit us at <http://www.clc.gov.sg>