



“Circularity finally builds into the economy the nature of nature: a regenerative system. It makes recycling the very last logical option, it turns the term ‘waste’ into nonsense, because all remains ‘resource’.”

—Holger KUHLE

Quote from the article “Cities as Enablers for Circular Economy – Cities as Providers for Cooperation Across Businesses” in *Intersecting* Vol. 9 by Holger Kuhle (Deutsche Gesellschaft für Internationale Zusammenarbeit GIZ GmbH, Berlin, Germany). Image Source: Wikimedia Commons. May 8, 2021. Construction of the twin apartment high-rises at Kalvebod Brygge in Copenhagen. There will be a common base at the ground with culture, a shop and waste sorting. Photo Credit: Leif Jørgensen. [https:// commons.wikimedia.org/wiki/File:Construction\\_of\\_Kaktus\\_Towers\\_02.jpg](https://commons.wikimedia.org/wiki/File:Construction_of_Kaktus_Towers_02.jpg)



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and sustainability portfolio, where we are globally rooted and locally anchored. The claim that we have methodically incorporated the circular economy's tenets into the projects with our clients is now broadly acknowledged. Also, we are the Ellen MacArthur Foundation's global knowledge partner, focusing on the built environment and all the knowledge and tools that come with it. These resources are current, open to everyone, and published on the online platform. The Circular Buildings Toolkit,<sup>1</sup> which we introduced last year, is one of the most important tools in this context. Here we developed actions for building, structure, façade, and building services, as well as practical design solutions.

**GH:** Where in the world can we currently find the best opportunities to apply the principles of the circular economy to concrete initiatives?

**MP:** There are three main regions. We notice that the largest research pole in Europe is in the Dutch region. Denmark, Germany and Italy are also active, due to their policy backgrounds. In certain initiatives, we actively participate in circular components. We collaborate with major retailers, for instance, but we also collaborate at the municipal level, where building and demolition trash may be sorted, assessed, and put to good use. Then there are clusters in the US, particularly on the West Coast, where many of the larger tech clients are based. All of these are asset-holders and optimize their own assets in accordance with circularity principles. Other tech infrastructure, for instance data

## Achieving Circularity: Policy Instruments and Regulatory Hurdles

**Gunnar HARTMANN (GH):** Arup is a multinational services firm providing planning, engineering, architecture, design, and consulting services for all aspects of the built environment. To what extent is Arup involved with the circular economy?

**Martin PAULI (MP):** There are two pertinent factors in the context of circularity: our project portfolio and our internal-external organizational structure. We are heavily involved with the circular economy services in our climate

centers, also encompass sustainable development and we work together with them both on the project level and on crucial topics. The third region is the Australian market, where the transportation district is quite prominent. Circular economy concepts, which are increasingly becoming more prevalent in Europe, have been acknowledged as being the only way to successfully implement decarbonization initiatives.

**GH:** When it comes to what policy can do, there are two basic levels: encouraging through financial support, or setting regulatory requirements. What current instruments stand out?

**MP:** The EU taxonomy is currently, at least for us, the most efficient tax instrument. It consists of six parts: biodiversity, circular economy, water, air, pollution prevention, and climate adaptation. There are highly specific technological requirements for the construction industry. For example, how much recycled material is required for construction, or whether passports are required for building data. The ingenuity of this steering tool lies in the fact that it steers financial flows to the most environmentally friendly instruments, rather than merely laying out technical requirements for the planner. In other words, while we observe the steering effect, we also observe that it causes certain investors and developers to become more aware.

At the same time, we observe definite progressive advances

in the private sector, irrespective of the political instruments. One such area is the HafenCity quarter in Hamburg, where the rules for the competition tender specifically state how circular optimization is to be accomplished. We must always take into account both private and public sectors, as it is assumed that everything is interrelated, but the private sector, for which there are no clear criteria in the building regulations so far, is also making progress. For instance, the manufacturing sector and planners frequently ask questions like “Where is the necessity, which European norms...” etc.

The third actor is the building certifiers, who have a significant guiding impact on sustainability. The German Sustainable Building Council (DGNB), Leadership in Energy and Environmental Design (LEED), and Building Research Establishment Environmental Assessment Methodology (BREEAM) all have their own catalogs of criteria that are based on circularity ideas. The DGNB undoubtedly sets the standard in Germany, but in all honesty, this certification serves merely as a means of “reimbursement” for developers. They utilize it simply to ensure asset prices, because a building with the DGNB certificate can sell more readily than one without it. I would say DGNB has a lot of power, and they use it to speed up the development process.

**GH:** What are some of the current regulatory hurdles to implementing the circular economy?

**MP:** From a purely legal perspective, construction demolition

material is considered waste and falls under waste legislation – not under circularity measures. This is a major hurdle. As a result, the framework criteria for several highly specific policies or areas of activity need to be tightened. For instance, due to tax regulations, we cannot remove facades! This is where I think the policy framework needs to be set or action needs to be taken.

**GH:** Could you give an example of an explicit demand, where we have an exemplary case of political regulation?

**MP:** One of the first nations to scientifically study the CO2 budget up to 2050 is Denmark. Based on backtracking calculations, it can be determined that from budget X, Y amount remains for the construction industry. The results are somewhat perplexing when one considers the volume of construction output and the number of homes actually produced. This then yields a budget for each building. The results show that if construction activity remains unchanged, the budget needed to finance construction activity through 2050 will be exhausted in five years.

So, if we want to maintain the same level of construction output by 2050, we need to reduce total life carbon output by 95%. What has Denmark done? They have set very precise targets in the form of benchmarks. And these now have to be demonstrated throughout the process of getting a building permit. Why is it so ingenious? First, because it ensures climate protection. Second, because it sustains construction

production until 2050. As we know, construction production in Germany accounts for 12% of total economic output. It would be unimaginable if we were to lose this level of economic productivity in five years due to climate policy. We now have a concrete target, and it is up to the builders as to whether they can achieve it within these limits.

**GH:** The circular economy requires us to think in processes, i.e., supply chains, life cycle of building components, etc. What do you think we need to achieve circularity?

**MP:** Circularity can only be achieved through methodical digitalization. However, we need to consider digital maturity more realistically. Let's face it, even Arup does not have the BIM models available in a circular format that would allow for material passage in a subsequent session. If we don't believe today that circularity in this area depends on digitalization, then we won't have it in ten years either. In this respect, it is undoubtedly a priority area where adjustments must be made again and again to meet the needs and promote the taxonomy. We must operate with a business model where we must carry out this task on our own, because the investment power in the construction arrangement is currently unable to do so. And therein lies the question of how we should proceed.

Reference

1. Circular Buildings Toolkit ([link](#))