

## Green Architecture - Building a Sustainable Future



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Built environment has an immense impact on sustainability - the biggest impact is on land use, second in materials, along with many other factors such as waste deposit, fresh water resources and greenhouse gas emissions. We discussed the challenges and potentials of green, sustainable buildings with Zsombor Barta, David Cook and Iván Jiménez Acosta.

Zsombor Barta, President of the Hungary Green Building Council (HuGBC), gave us an overview of the environmental impact of buildings and the recent tendencies surrounding built environments, with the insight of what is happening in Hungary and in Central Europe. The large-scale impact of urbanization is expected to become even more amplified as rapid urbanization spills over to the rest of the world. Today 55% of the global population lives in cities, which is expected to rise to 68% in 2050. This amounts to 2.5 billion more people living in cities than today - naturally, the living environment for the people in the city is increasingly important. Population is expected to grow and material use per capita is predicted to grow even more. In Hungary, data shows that despite the population decreasing, the built surface is increasing - and this is representative for many EU countries. In 2020, the anthropogenic mass was bigger than the natural mass for the first time; for example, buildings and

infrastructure weighed 1100 gigaton, while trees and shrubs weighed 900 gigaton - of this, concrete attributes to over 33%.

Hungary has successfully adopted the international green certification system that enables a systemic framework which can guide you towards a more sustainable design, construction and operation. Currently, the UK-born BREEAM is leading the market, followed by US's LEED which is also present internationally and also relatively common in central Europe, and there is Germany's DGNB which is not so popular yet in the Central European Area. Other certifications include Edge, WELL and GRESB. Another important thing to note is the EU taxonomy, an important regulatory framework introduced by the EU last year. This will have a huge impact on the real estate sector, Zsombor points out, and that the projects that tick more EU Taxonomy boxes in sustainability get better financed. Real estate sector and the construction industry can directly influence 9 out of the 17 Sustainable Development Goals (SDGs). While the industry produces problems, there is a huge positive potential of what architecture can do.

David Cook, founding partner at haascook-zemmerich STUDIO 2050 in Stuttgart introduced the architectural approaches that should be taken towards a CO2 neutral society.

Various components need to be taken into account: we have been pursuing efficiency for too long in all products and architecture, but instead effectiveness is much more important. The technological advancements cannot be ignored but there is much to be learned from the architecture of the past. When we talk about the built environment, the existing built environment should be taken into account and look at cities especially in West Europe as resources, to reuse wherever possible. A building cannot be considered separately from its immediate environment, and we must consider nature as our ally and not as our enemy.

The process of sustainability in the architectural context is very complicated. In addition to that, each occupant has a very different way of living and using the space, also affected by one's mood, leading to different energy consumption and operation. The CO2 balance, not only in the operational energy demands in a building but also in terms of construction, operation and eventual demolition should be considered. Architects are encouraged by the lobbyists to use high degrees of insulation, but according to David, half of these are unnecessary, and they have a large amount of CO2 footprint in its production. While it is easy to source a material, it is difficult to know all the information about its production and transportation to site. More natural and locally produced materials should be used. STUDIO 2050 applies technology as an additional element instead of embedding it into the architecture, because they are often quickly outdated

and should be easily taken out to be replaced. Constructing a building is complicated enough; to take all of these sustainability impacts into account in the design process is very time consuming and half of it cannot be done real time. The big challenge is to calculate the effect of design decisions during the designing process, not retrospectively. A constant process of re-evaluation and commitment towards sustainable goals should be applied, all the while creating spaces that are cherished and used extensively.

Iván Jiménez Acosta, Associate Head of Technology and Innovation at haascookzemmrich STUDIO 2050, pointed out that technology has somehow been disconnected from the core elements of sustainability, going in the opposite direction from nature. Architects should reconsider the visually striking forms and technologies embedded in buildings, whether they are a necessity or simply a decor. When used in the right manner, however, technology can be very effective in analyzing the best ways for thermal control and CO2 mitigation. 3D printing is also one of the best ways to approach sustainable architecture.

We have reached a point where the way we live, and how we interact with our living environment need to be thoroughly reexamined. How could we reuse the existing built environments and bring it into a circular economy? How can we further work with nature? Is the space effective, instead of efficient? Sustainable architecture is making positive strides forward, but still needs tools to accelerate the movement.



Relevant websites:

<https://www.haascookzemmrich.com/en/>

<https://www.hugbc.hu/english?lang=en>

<https://madaster.de/>

<https://www.dgnb.de/en/>