

From utopia to the future

Urban development for tomorrow

From a bird's eye view, it looks like a giant, colorful mandala. But upon closer inspection, the striking structure reveals itself to be an island group like a coral reef – tilled and greened. Four-story buildings with bamboo lattice facades and photovoltaic roofs, palm trees, small bamboo forests and other exotic plants make up the scenery of the lagoon. Of particular note are the footpaths free of cars, urban plant beds, cafés and numerous water sports enthusiasts. This is Bjarke Ingels' design for "Oceanix City," the floating city. This utopia is his urban answer for regions threatened by extreme weather conditions and rising sea levels, one of the many challenges in urban development.

Heat waves, strong rains and floods aren't just common in tropical or subtropical regions. They are becoming more frequent at every latitude. There are also cold snaps, dry weather conditions, water shortages and forest fires to contend with. Climate change is having a negative effect on living and working conditions worldwide. Another highly topical challenge is the extreme growth of cities around the world. Of the 7.9 billion people making up the world's population, an estimated 4.5 billion live in cities. The United Nations assume that by 2030 this number will reach 5.2 billion, and by 2050 as much as a third of all people. Space is getting tight. Prices are skyrocketing and air quality is getting worse. "We find ourselves in the middle of a massive urbanization process that's about more than just retrofitting our existing cities. We need to create new cities. In the next 30 years, a billion people will need to be accommodated in cities. This means that we need to build a metropolis of three million people every month for 30 years," explains Vicente Guallart, Catalan architect, city planner and visionary. Ingels' floating city acts as a blueprint for coping with this development. In his smallest model, the design grants living space for up to 10,000 people. Because of its modular construction, this city structure can be expanded at will to create numerous new living spaces for millions of people.

Utopia is booming

Utopias have always been an important instrument for promoting city development. Famous examples are the "Ville Contemporaine" (1922) by Le Corbusier, Frank Lloyd Wright's "Broadacre City" (1930) and Paolo Soleri's "Arcosanti" (1970). Soleri already combined architectural approaches with ecological ones, as was done in the recently created Masdar City (2008). Ulrich Maly, former Lord Mayor of Nürnberg and long-time President of the Deutscher Städtetag (Association of German Cities), summarizes what these utopias can achieve: "If

you only plan what is possible, you're going to fall short. There's no objective without vision. If there are practical constraints or external influences that mean the goal can't be achieved fully or at all, that's a different matter. But I need to know what I want. I believe that identity is created by a common development utopia. That is why every single urban development concept, no matter how concrete it is, is always a grain of utopia. You have to know how people react, you need a story for your city. And people need to be able to follow this story."

From a vision to the goal

So, first comes the vision, then the goal. The most well-known goals in the world are the "Sustainable Development Goals (SDG)," 17 goals determined in the Agenda 2030 by representatives of the United Nations in 2015. They aim to have a positive effect on socially, economically and ecologically sustainable (urban) development. Ingels, for example, based his floating city on these. Many cities and municipalities around the world claim to adhere to the SDGs and are working on their own strategies for sustainable development.

Smart cities

One very popular strategy, for example, is the "smart city." There is no clear definition of what makes a city smart. Roughly speaking, the cities should offer innovative solutions. In addition to technical and digital aspects, public participation is becoming more and more important. That's because the role of the citizen has made the process of city development more open, participatory, networked and flexible in the last 40 years. Munich, for example, is on its way to becoming smart. Supported by the EU's Horizon 2020 program, in their "Smarter Together" project, representatives from the city developed strategies, concepts and measures that they have seen through to implementation and evaluation over the past few years. As part of the program, they exchanged with partners in Vienna and Lyon, as well as players from politics, business, science and the public. Its contents concerned mobility, energy and smart data. In terms of mobility, the focus was on expanding more environmentally friendly and networked shared mobility offerings, as was promoting bicycle travel and integrated mobility concepts. Other cities are also grappling with smart mobility, like Paris, for example. With its "Plan Vélo" project, the French capital developed strategies and approaches for free choice of means of transport, accessibility and charging options. These approaches are appreciated by the automotive industry, because the electric mobility market is exploding, as it is considered a key technology for CO₂ neutrality. So it's no wonder that Toyota is planning an entirely new city – Woven City – which draws on the expertise of Ingels' BIG office. The car manufacturer isn't building a floating city, but rather a kind of living city laboratory in which digital and sustainable infrastructures are tested.

Smart grids and self-supporters of the city

Digitalization makes this type of infrastructure possible - something Munich utilized as part of its “Smarter Together” project. It developed a “Smart Data Platform,” the foundation for collecting and assessing city data. This information creates a virtual image of the city – the “Digital Twin,” which makes it possible to carry out risk analyses, tests, simulations and assessments that supply important information on the likes of air quality. Smart infrastructure is also becoming increasingly important for energy supply. “Smart grids,” intelligently structured electricity networks, optimize electricity supply. This applies to low voltage networks in particular (high voltage networks are already as intelligent as possible), which feed back the growing proportion of decentrally generated electricity, for example from renewable generators, into the distribution grids, and should also keep the grid stable. This impacts the building sector because today many buildings and city accommodations are already valuable for producing, storing and supplying energy. The trend is on the rise. This enables cities to supply themselves with energy in the medium to long term. A goal worth striving for, says Vicente Guallart, who is thinking further ahead when it comes to self-sufficiency in cities. Likewise, agriculture could return to the metropolis.

Responsibility in the construction industry

Self-sufficiency in terms of energy or food was also incorporated into the design of the floating city. It shows that mastering all of these urban development challenges is hardly conceivable without the construction sector. It is one of the economy’s most resource-intensive sectors and responsible for a quarter of all CO₂ emissions worldwide. In addition to the climate crisis and the urbanization process, social change and the crisis of species diversity and biodiversity are making it increasingly clear that dealing with the non-renewable resource soil is systemically relevant. New solutions are needed to establish building as a sustainability-focused circular economy across its lifecycle: from design and manufacture to consumption, repair, reuse and recycling, to public procurement processes.

Summary

Urban planners, architects as well as public and private builders are responsible for reacting to all these challenges with strategies, concepts and measures for settlements, cities and municipalities. They know the planning options for action as well as the legal requirements and framework conditions. And they have the know-how to be able to realize or improve efficient and livable cities – with regard to all spatial scales and their identity, their story, their narrative.