

Local solutions for global challenges

A magazine about the city of the future in which ten experts outline where action needs to be taken to tackle the challenges of urban living – now and in the future.

featuring **Carlo Ratti, Jacob Bro, Gesa Ziemer, Geoff Mulgan, Tommi Laitio, Tia Kansara, Thomas Osdoba, Sílvia Casorrán Martos, Indy Johar, Sara Bertran de Lis**



Editorial

55% of the world's population lives in cities. In Latin America the figure is already around 80% and by 2050 it will be almost 70% worldwide. In our increasingly urbanized world, cities are where global concerns – climate change, poverty, housing, mobility, integration, security and safety – converge and intensify. That is why we particularly need Responsible Leadership in cities. The RISE CITIES program aims to advance global knowledge of resilient, intelligent, sustainable, and equitable cities by strengthening local ecosystems and fostering citizen participation to create citizen-centered solutions. The platform thus established will engage and connect politicians, public-sector officials, scientists, urbanists, architects, the business community, and civil society in order to identify and help implement new strategies and innovations for sustainable urban development.

This magazine is about the future of cities. We want to introduce our readers to the thoughts, plans, and actions of leading urban development thinkers, and show them how the BMW Foundation Herbert Quandt is impacting the future of cities through its RISE Cities program. In line with our claim "Local solutions for global challenges", some interviews reflect on very concrete examples and other convey insights into visionary holistic approaches. This magazine is itself an example of a "third way" – not falling back into the local and not being paralyzed by global dependencies. Innovative, inclusive solutions for cities are only brought to life by people who can manage this balancing act over a lengthy period of time.

In 2020, the BMW Foundation launched the RISE Cities program to advance Responsible Leadership in cities and global knowledge of resilient, intelligent, sustainable, and equitable

(RISE) cities. The BMW Foundation is drawing on its experience in community building and cross-sectoral exchange to connect a global platform of change agents in collaborating for the co-creation of solutions towards regenerative urban transformation. It does this by identifying urban challenges and facilitating mutual learning to support the development of innovative solutions in local ecosystems. Key to the RISE Cities program is strengthening the leadership capacities of municipal officials in mid-sized cities and fostering their ability to work with leaders from other sectors on joint projects.

Through all of these diverse activities the BMW Foundation is working to advance the Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda. The RISE Cities program is contributing to SDG 11, whose goal is to "make cities and human settlements inclusive, safe, resilient, and sustainable". Out of a conviction that a new type of leadership is needed to further the 17 SDGs, the BMW Foundation set up its Responsible Leadership Network, which inspires and empowers leaders worldwide to work toward a peaceful, just, and sustainable future.

The ten interviews in this magazine deliver insights into a wide range of issues affecting the future of cities. Throughout the magazine there is an undercurrent of the RISE Cities vision of what cities may be like in 2050+ and how the global concerns outlined above can be tackled.

Kerstin von Aretin,
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Urban dynamics

There are only about 10,000 days left till 2050. The urgency to act is best exemplified by Earth Overshoot Day. In 1972 it was December 14; in 2022 July 28.

Charles Landry

Is an author and international adviser on the future of cities best known for his book *The Creative City: A Toolkit for Urban Innovators* which became a movement to rethink the planning, development, and management of cities. He also chairs the BMW Foundation's RISE Cities Sounding Board.

Cities across the world face a dramatic and worsening crisis. A business-as-usual approach will not get us to where we need to be, as our economic order and way of life are materially expansive, socially divisive, and environmentally hostile. That is why systemic change is on many peoples' agenda. This crisis has led to a number of global agreements, in particular the UN's Sustainable Development Goals. This is the cityscape in which the RISE Cities Program operates.

Patterns of urban development are changing. It is vital to see the connections between urban cores, outlying nodes and surrounding regions, to relocalize production, especially of food, and to reconsider the location of facilities from health care to education. Hybrid working has improved many people's work-life balance and changed their relationship to space, place, and time. The return to the local is seen as a boon that boosts a sense of community. Place matters in this shifting landscape, as it provides anchorage, belonging, opportunity, connection, and ideally inspiration.

These urban trends highlight spatial planning issues: the alarming and escalating levels of inequality, with money, power, and influence concentrated on the few; the double-edged sword of development where improving areas is driven solely by market mechanisms that raise property prices and rents and gentrification changes an area's authenticity or sense of community; private interests that are shaping cities in ways that rarely lead to balanced economies and mixed communities but instead reinforce spatial segregation.

Principles and political priorities:

The collaborative placemaking concept of community-based participation in collectively reimagining and reinventing public spaces.

The 15-Minute City with the six essential functions of living, working, commerce, healthcare, education and entertainment available within a 15-minute walk or bike ride from people's homes.

The urban commons idea that allows users to have a bigger say in how resources are managed and shifts the logic away from market-driven exchange values to optimizing uses by citizens.

The circular economy concept that moves away from a linear economic model of 'take, make and waste' to one of 'repair, reuse and recycle' through business practices that restore and build rather than exploit and destroy.

The inclusion of unpaid care work in a country's GDP, as so much care work, e.g. looking after infants, the elderly and the ill, continues to be performed for no pay by families and friends.

The enhancement of peoples' potential and enablement of access, opportunity, participation, and connectivity for all through improved mobility, which allows people to advance their lives regardless of background and preferences.

A collectively created vision of where next for the digitized city in which digital sovereignty is prioritized so individuals or cities gain control over their data and digital destiny rather than letting corporations harvest their data for profit, and where open-data Civic Tech connects citizens with each other and helps them engage with government to work together for the public good.

An appreciation of a city's culture, the role cultural literacy plays as a vital skill, and how cultural resources can shape the technicalities of urban planning rather than being seen as marginal add-ons.

To address these complexities cities need to make planning more participative and involve those directly touched by planning decisions as well as multiple stakeholders from many disciplines – planners, architects, urban designers, environmentalists, historians, anthropologists, cultural specialists, and even poets. Systemic urban change is difficult but can make a real difference by reimagining parks, libraries, schools, transport, healthcare, or entire suburbs.

Transformation on this scale is a cultural project relating to values, mindsets, skills, and the choices we make as to what we are and want to be. Urban visioning should draw on concepts and movements that collectively shape a value system that represents underlying principles and political priorities.

All the above trends impact on governance. Over the past two decades, we have seen the emergence of a public-sector innovation ecosystem featuring government and intergovernmental entities, living labs, think tanks, specialist consultancies, university departments, public sector innovation networks, and much more. They all see public sector innovation as both an imperative and an opportunity for governments at every level. The rise of severe problems, such as poverty or climate collapse, requires all these stakeholders to think holistically and work together in integrated ways to find solutions.

In the complicated mosaic of decision-making authorities, governments have the overall authority to define the rules' system, but city leaders are closer to citizens than national leaders and have more legitimacy to speak for their people. Cities have a greater capacity to build consensus based on common purposes, create collective responses to shared problems, and act more nimbly. This requires a new 'contract' between cities and states within which governments must acknowledge that cities can help them achieve their wider objectives.

Healing the divides and intractable dilemmas highlighted by this overview is a pressing task. In this complex, multi-faceted scenario the BMW Foundation's RISE Cities program can serve as a platform for different decision-makers and actors to come together and orchestrate a better future. The Responsible Leadership paradigm – the BMW Foundation's mission – is critical for its success. ●



Chapter



Spatial planning & new economic models



CARLO RATTI: On Polycentric Urban-Rural Interfaces

Carlo Ratti outlines how the Covid-19 pandemic has changed cities, what makes a city resilient, and how cities can be made more sustainable – what he sees as the most pressing urban planning problem. He points out that the battle for climate change is going to be won or lost in cities and gives examples of how this challenge can be successfully met – not least through big data.

Carlo Ratti

A native of Turin, Ratti is considered one of Italy's star architects. His projects often build bridges between the digital and physical worlds. Ratti also teaches at the Massachusetts Institute of Technology (MIT).

Everybody is talking about decentralized cities right now. Do you think that's a fad or a viable urban model?

You probably mean the 15-minute city, the idea that neighborhoods should be more independent and hence decentralized. The idea was proposed by a colleague and friend of mine, Carlos Moreno at Panthéon-Sorbonne University in Paris. Now, it's being discussed all over the world. I think partly because of the pandemic, which forced us back into our neighborhoods and suddenly we all wished we could reach everything we needed within 15 minutes. Recently, there've been a couple dissenting voices. For example, Edward Glaeser, a colleague and professor at Harvard, says that the 15-minute city increases segregation. So, it's still an open question. On the one hand, you want closely knit neighborhoods with better mobility, social interaction, and sustainability. And at the same time, you don't want to create cities that are all fragmented.

What's your opinion?

To me, the 15-minute city is, generally speaking, a good idea. But we need to focus on not killing the urban dimension, which is about how cities bring us together at a scale beyond 15 minutes. We don't yet have enough clarity on how it should be implemented – in a very dogmatic way or flexibly to allow for all those interactions with the rest of the city? These conflicting priorities are what everybody will have to explore and design around in the next few years.



¹ Favelas 4D

A favela is the name given in Brazil to the often informal settlements that cluster around metropolises, forming their own dense urban environment. There is usually no urban master plan, and most favela residents build their houses and stores themselves – as is the case in Rocinha, the largest favela in Rio de Janeiro with around 100,000 inhabitants. But how do such favelas come into being? And what do the people need? To find out, the MIT Senseable City Lab is scanning the neighborhood with the help of partners and 3D laser scans. This scientific analysis quantitatively captures the favela's sophisticated building practices and urgent infrastructure needs. And it reveals the urban logic of Rocinha: Favelas 4D thus illuminates the shape and organization of Rocinha in a new way.

Are there other ways in which the pandemic has changed cities?

Most importantly, it hasn't killed cities, as everybody seemed to expect. But it has changed them. We now have more flexibility, and flexibility means we can live better. Our infrastructure can be used more flexibly. We don't all need to commute at 8 a.m. We can work from home in the morning and go to the office at 11 a.m. This rescheduling of our lives can help us to use the urban infrastructure better. Flexibility is good news for us, and for cities per se.

What makes a city resilient?

Three things: people, people, and people. How people respond and, especially, how data and collective intelligence can help people respond better, faster, and in real time. An example would be Favelas 4D, a MIT Senseable City Lab project that uses LiDAR¹ scanning technologies to obtain a comprehensive visualization of Rocinha, one of the main favelas in Rio de Janeiro. This could allow authorities to set up property records for the residents of such informal settlements, allowing their houses to be traded – perhaps via blockchain to reduce costs and bureaucracy – and reached by different urban services.

Speaking of data, the concept of the smart city that resolves issues through the collection and use of large amounts of data appears to have lost some of its appeal in recent years. What do you think about technology's influence on urban planning now?

I wouldn't start thinking about technology. I'd start thinking about opportunities. Technology is just a way of finding new solutions to old problems. The question is how we tackle some of the big urban challenges like urban segregation, climate change, or accessibility. Technology offers us a palette of solutions. The problem has been that, in the past few years, some people focused on technology first, and that is limiting and wrong. Technology is a tool, not an end in itself.

What are the most pressing urban planning problems you're currently thinking about?

The big one is clearly climate change. How do we make our cities more sustainable? Cities cover only about two percent of the surface of the planet, but account for 75 percent of all energy consumption and 80 percent of CO₂ emissions². Cities are where the battle for climate change is going to be won or lost.

How can cities be better equipped to fight that battle?

The key challenge we face today is finding new ways to better integrate the natural and the artificial world. In the past century, there was a big difference between the two and the general view was one of confrontation. The good news is that today, also thanks to technology, we're seeing new ways to integrate the two worlds. One bridge between them is sensors and artificial intelligence, which are breathing new life into the artificial world because they allow it to respond to us like a living thing. Another bridge, in the opposite direction, is that aeroponics and hydroponics can be much better embedded into a city. Technology can help us go from the artificial to the natural and vice versa to create a double convergence, which should lead to the co-evolution of these two worlds.

Can you give us a few examples where that's been achieved particularly successfully?

I'll tell you about some of the projects we're working on in my design practice. We're just completing a tower in Singapore, a 300-meter skyscraper, and the middle part is a suspended plaza that's like a giant tropical forest. The idea is that people come together in the middle of this tower and enjoy nature. We're also working on a building in Shenzhen, China, and the building's facade is a giant farm that can produce food for tens of thousands of people. We're working with the city of Helsinki on decarbonizing, creating floating





³ Decarbonizing Helsinki

CO₂-neutral by 2030: Finland's capital city has set itself this ambitious, but also difficult-to-achieve goal. A key element is the "Hot Heart" project. In simple terms, an area off the coast of Helsinki is to be transformed into an archipelago of ten heat-storing basins, each measuring 225 meters in diameter. Together, they will become a kind of giant heat battery. Energy generated by wind, water or sun will be stored as heat in the basins and fed into the city's heat distribution channels in winter. The whole system is expected to cover Helsinki's entire heating needs, estimated at 6,000 GWh, without any carbon emissions and at an estimated cost that is 10% lower than today's.

In addition to securing energy, "Hot Heart" is also interesting for Helsinki's development. The basins can be best thought of as "islands" in the harbor basin that house tropical forests and ecosystems from around the world and provide Helsinki with both additional public space and a new educational attraction. For its developers, the project could also be highly adaptable and replicated by other cities with similar climatic characteristics that are pursuing sustainable heating solutions.

KEY DATA

Year:	Up to 2030
Cost:	No details yet
Architect:	Carlo Ratti Associati
Country:	Finland

islands³ that will become thermal reservoirs that can produce food for tens of thousands of people. They will store energy when too much electricity is generated through wind and then run that energy through the district heating system in order to heat the city in a sustainable way. Those three projects all play with the boundary between the natural and the artificial. They use new ways to bring nature close to us, but also deploy artificial intelligence to make inanimate objects appear more like responsive, living beings.

Why is this idea so appealing to you?

The most pressing issues we're facing today with cities, including those related to resilience, mobility, integration and so on, come from thinking that the two dimensions are separate or even at odds with each other. If you start thinking about a single unified dimension stretching from the natural to the artificial, you will automatically solve some of those major challenges.

How would you apply that thinking to help cities tackle climate change?

What can help us is to think about a unified system in which the artificial supports the natural instead of being antagonistic to it. It's a single ecosystem. The local solutions would change from city to city. For example, this project we're doing in Helsinki is a solution for a Nordic city where heating is very important. In hot climates, photovoltaics and solar energy will play a big role in this integration. Cities close to mountains can use hydroelectric power to store energy by pumping water up when they have surplus production and allowing it to flow down when needed. We're going to see a variety of solutions relating to energy, mobility, and even citizen participation – but all of them will somehow help in this integration between the natural and the artificial.

We talk a lot about sustainable and intelligent cities. The last letter of the RISE acronym, the E for equitable, sometimes gets short shrift. How do you design cities to be more inclusive and just?

First, we should define equity in a precise way because it has many dimensions. It could be about access to services or mobility, for example. But something I'm particularly interested in is liminal ghettos⁴, which is a term I've developed with my colleague and friend Richard Sennett, who is a professor at the London School of Economics and also teaches with me at MIT. The word "ghetto" comes from Venice, and it was the place where Jewish Venetians were forced to live. So that ghetto, centuries ago, was a physical place, something you could really see. Its doors were locked at night. In the 20th century, there were other types of ghettos. They

were still physical and visible to the naked eye, mostly through the people who lived there.

4 Liminal Ghettos by Carlo Ratti and Richard Sennett

The ghetto is the best-known example of urban segregation. In many places in Europe, Jews were segregated from most of the population in ghettos for centuries because of prejudice and anti-Semitic stereotypes. But how does segregation work today? Its subtle, supposedly invisible pathways are what the Liminal Ghettos project is trying to uncover. The starting point was a big data analysis on the occasion of the Porto Design Biennale 2018 about how people in Porto move through the city after several waves of gentrification and inner-city migration. The initial results of this analysis revealed a new form of ghetto, the so-called liminal ghetto. Instead of obvious dividing lines, people separate themselves by how they talk, where they go, and who they talk to. This is a special new form of social segregation, which also divides along class lines and was revisualized and made more comprehensible in a follow-up project for the Porto Design Biennale 2021. This time, the focus was on anonymized mobile phone data from the Porto district and on the course of the COVID-19 pandemic, which could abruptly change people's mobility behavior. The results can be read as a kind of social geography that changes over time.



In what way are liminal ghettos different?

They're much less visible, and that's made the situation in cities more insidious. You can't see them with the naked eye, but they're still there. We still have a lot of fragmentation and many fault lines in our cities. And new technologies, in particular big data analytics, can help us see them. We've been looking at mobility data and communication data to ascertain some of these ghettos and understand where the invisible fault lines are and how we can bridge them. So the first step towards inclusivity is to analyze a city better in order to understand the problems. Then we can try out solutions.

So this would be an example of where technology can help find new solutions to old problems?

Well, it's a case where technology can help us understand a city, which is the beginning of planning. The great geographer and anarchist Élisée Reclus, who lived over a hundred years ago, said that in order to plan, you need to first survey and understand. Big data can change our understanding of a city so that we can then find solutions. There'll be different solutions to different problems in different cities. But the lens of big data is like an augmenting electronic eye that can help us to better see certain issues so we can fix them with design solutions. ●



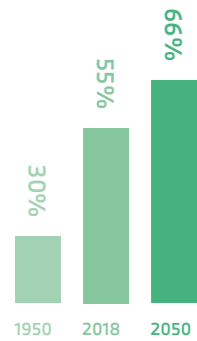
JACOB BRO: On the Regenerative and Distributed Economy

Jacob Bro's venture capital company 2150 invests in technologies with the potential to make cities more sustainable. Jacob explains why gigacorns are important, outlines new technologies to decarbonize global concrete production, a massive CO₂ emitter, shows how biodiversity analytics can help make cities more sustainable, and testifies to a significant paradigm shift occurring in the venture capital industry.

i Jacob Bro

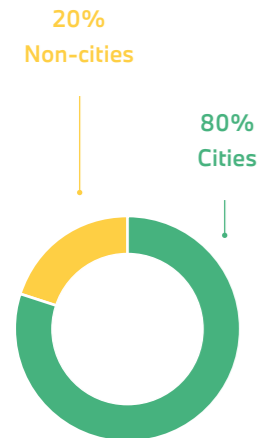
The tech operator is a partner and co-founder of venture capital fund 2150. Previously, Jacob Bro advised startups, private equity investors, and large internet and marketplace companies.

1 Urban facts



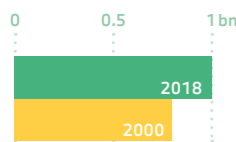
More megacities

By 2050, about two-thirds of the world's population will live in cities.



More economy

Large shares of the global value are generated in cities.



More informal settlements

Cities sometimes grow faster than the public sector can build the infrastructure – and as a result, more people have to live in slums.

What is a gigacorn?

Everyone is talking about unicorns, companies that are valued at over a billion dollars. Gigacorns are our way of changing the narrative around what constitutes an outlier company with impact. It takes into account not just financial success, but also the biggest possible impact in terms of the carbon economy. And for us, that's a company that has the potential to mitigate one gigaton or a billion tons of CO₂ emissions a year. The worldwide global CO₂ equivalents emissions amount to around 50 gigatons per year, so if you prevent the emission of one gigaton, reduce emissions by one gigaton or even absorb one gigaton, that's a very big number. Right now, gigacorns are mythical creatures. But we've identified a few companies that may grow to become one.

Can you tell us an example of a fledgling gigacorn?

Take Biomason: instead of burning fossil fuels to bake limestone for cement production, which also releases a huge amount of process emissions that cannot be avoided by using a clean fuel, Biomason uses bacteria in a reactor to create cement through an organic process which is close to becoming completely carbon-neutral. If that technology were to scale, it has the potential to impact up to the eight percent of global carbon emissions the global concrete and cement industry is responsible for today.

By how much are you aiming to reduce CO₂ emissions?

An amazing outcome for us would be to impact a few gigatons of CO₂ per year a decade from now. We're looking for companies with that kind of potential. If you want to invest to help the climate, you have to be quite ambitious because small amounts of carbon here and there won't do much. We believe that to have a fundamental and broad impact across some of these very polluting industries, you need to also be financially very successful because otherwise those companies would be too small to matter.

What is the biggest obstacle to making cities carbon-neutral?

We've been looking a lot at the built environment, which of course is a core ingredient of cities. In order to accommodate the continued urbanization we're going to see, the world needs two billion more homes by the end of the 21 century¹. All those people will also need infrastructure, roads, hospitals, schools, offices, transport, and energy. The way this is done today is incredibly damaging to the environment. Almost 40 percent of carbon emissions are caused by constructing buildings and providing them with energy.

Almost 40 percent of all global emissions?

Actually, it's 39 percent – and the biggest part of the problem. So, to build and maintain cities sustainably, we need a completely different set of technologies. It starts with building materials. We've invested in a couple of companies that can change the footprint of concrete. Concrete will still be necessary in the future because you cannot build entire cities with timber. And if concrete were to become not just carbon-neutral but carbon-negative, it could become one of the world's largest carbon sinks.

Is there a technology for enabling concrete to absorb CO₂?

There are companies working towards that by synthesizing stone, limestone, gravel, or cement from CO₂. The science exists, but the economics are not quite there yet. You could take the flue gas from a power plant or a cement factory, and you could then feed it into a process that turns the carbon into stone again and then pour that into the concrete, which has a lot of not just cement, but a much bigger volume of filling material – sand and gravel – which is mixed with water, cement and some additives to create a block of concrete. And if that sand and gravel came from a regenerative recycling process, you could offset all of the CO₂ emitted in the production process and sink huge amounts of CO₂ into every cubic ton of concrete.

What other problems are you looking at?

When you look at cities, you see so many fascinating but unexplored pockets of opportunity for creating impact, circularity, and also commercial business. We try to stack rank the problems out there and search for technology solutions to the biggest ones². We've made an investment in a company called Aeroseal that uses flying aerosols of a material not unlike chewing gum to seal from the inside all the leaking cracks in the ventilation systems and building envelopes of commercial and residential buildings. In the U.S., air leaks are considered to be the largest single source of energy loss in buildings. This is why it's one of the companies we think has a realistic path towards true gigacorn impact. But we've also wandered into other areas of the economy, like standardized carbon accounting to create transparency on the corporate carbon footprints across the economy. What's more, we recently invested in a biodiversity analytics company.

How would biodiversity analytics make cities more sustainable?

When you build infrastructure, you displace nature. And when you do that, you should recreate the balance and make sure that the overall biodiversity volume does not deteriorate. This is not just an

2 Investments for a better future

The venture capital fund 2150 focuses on technology companies that want to rethink urban space. Here are two of them:



Aeroseal

HVAC is the term used by industry insiders to describe heating, ventilation and air conditioning systems, heavily used equipment that can leak and then consume even more energy. But Aeroseal wants to fix such leaky equipment – and equip entire building envelopes with gum-like material combined with AI and IoT. The hope is that up to 1.4 percent of global CO₂ emissions could be saved in this way.



UrbanFootprint

This startup from Berkley, CA, USA claims to be the world's first urban intelligence platform with comprehensive urban, climate, and community resilience data. Institutions can thus analyze their carbon footprints, evaluate the impact of climate change, and assess existing conditions and land use down to the parcel level.

**Biodiversity**

When you build infrastructure, you displace nature. So you need to recreate the balance and prevent any decline in the net biodiversity volume.

aspiration, but an obligation in many places. In Italy, for example, a law has just been introduced into the constitution that you are not allowed to deteriorate the environment. But the way this is measured today is very unreliable because it is done manually: people literally count butterflies and salamanders. So we have invested in a company that collects environmental DNA samples. These immutable eDNA samples taken from water and air contain traces of DNA from all the species in the local environment and are then processed to obtain a much broader and more representative read of the actual biodiversity at a fraction of the cost.

Venture capital, as part of the start-up culture, used to promise to make the world a better place. Recently, the big venture capital firms seem to be more interested in making money as quickly as possible through addictive consumer technologies or exploitative business models. Do you think venture capitalism's profit motive is standing in the way of doing good?

The short answer is no. Having a positive impact on the environment and society and generating a positive financial outcome have always overlapped. We've just not cared about the negative externalities. Now we've put a price on carbon emissions, that's different. At 2150, we're convinced that markets and society are increasingly demanding products and services from companies with a positive net impact. Of course, it's not a straight curve. But when we see through the volatility, not least in the financial markets, we're observing a long-term, sustainable trend where profit and impact converge. And I think that through sustainability investing, venture capital is coming back to what it has always done – taking a risk on truly transformative technologies that have historically been the source of change for many industries.

Many companies working on transformative technologies still face funding gaps. Is this lack of financing slowing down the development of a regenerative economy?

Innovation and entrepreneurship are about combining ideas, people and capital to solve problems, and there are always funding gaps in the market for innovation and experimentation. Venture capital will usually find the gaps where there is the right balance between opportunity and risk. But certain things will not work on a market basis. That's why we continue to need the proactive entrepreneurial state that provides the funding where private capital cannot yet achieve returns. Research grants, incentives, and other government funding have preceded and cooperated with private finance to enable transformative technologies from space travel to the internet and solar power. The good news is that sovereign



Sustainable cities They need a completely new set of technologies.



³ Less CO₂

With the help of green steel, carmaker BMW also wants to permanently reduce its CO₂ emissions.

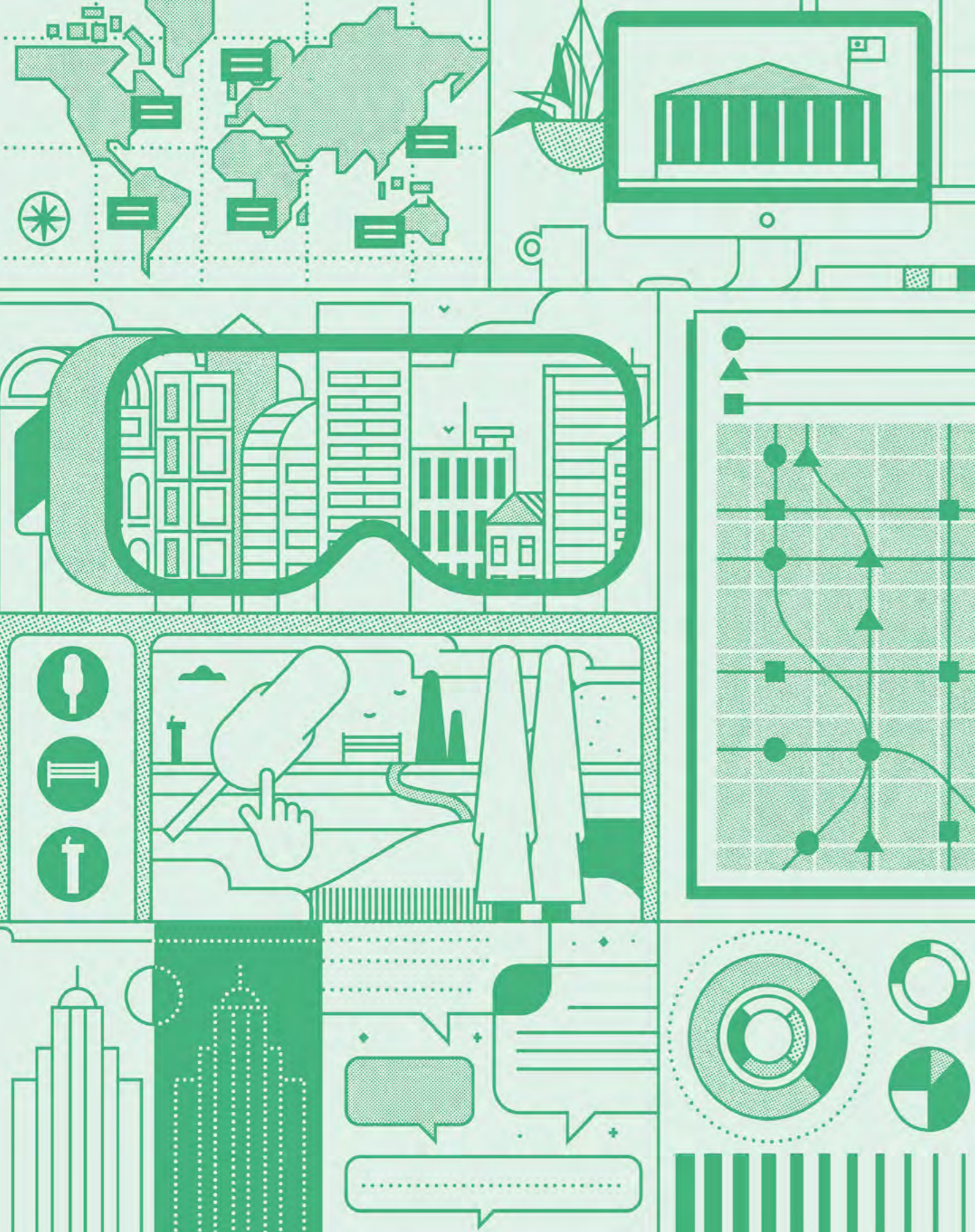
wealth institutions as well as capital markets increasingly see opportunities in financing the debt and infrastructure side of the new sustainable economy. You need gigafactories for batteries. You need green steel³, which is something BMW has invested in. We're seeing a paradigm shift happen. I think we've just gotten used to venture capital being an easy solution to create consumer businesses out of very little. We have to remind ourselves what it really takes to get all those different types of resources to entrepreneurs.

What makes you so sure there is a paradigm shift in investing and entrepreneurship?

When I got started in my career, I worked at an impact incubator in Copenhagen. The problem back then was that it was really difficult to raise money for things that were not easily commercially viable. That also meant there were a lot of motivated people around, but they wouldn't usually stick around for very long because they needed to get a life and a career at some point. Now that I've come back to for-profit impact investing, what I see is that there's no shortage of innovative ideas and better technologies, and increasingly the capital is there too, because a lot of people believe that the next trillion-dollar companies are going to come out of this new paradigm. Besides, there's so much talent – not just because sustainability is en vogue, but because it is intrinsically motivating for humans to solve the biggest problems society faces. So now, all of a sudden, the markets are starting to mature, the regulatory environment is moving in the right direction, and talent and capital are coming together to solve those problems. This is a very exciting time.

Is this new economy still trying to disrupt the old one?

It depends. You can't just disrupt the concrete and cement industry from outside in view of the incredible capital intensity of this and other sectors that are deeply embedded in local markets and have often taken them captive. You more likely need to collaborate and help them transition through external innovation that may be disruptive to parts of the legacy production system but will still rely on the existing supply chain, for example. Venture capital can help bring innovation and entrepreneurship to industries that have seen very little of both in a long time. They are not often the world's most sexiest industries. But if you look at the innovation and entrepreneurship happening in this space, all of a sudden, novel cement is one of the most exciting things on the planet. Just two years ago, when we made our first investment in this field, few seemed to care! ●



Chapter



Culture & governance



GESA ZIEMER: On Digital Ecological Identity

Gesa sees the immersiveness of metaverse technology as its key benefit: 3D route simulation models are enhancing urban planning; digital twins are enabling constructive collaboration between cities; and ordinary citizens are profiting from metaverse technologies, e.g. in co-designing city facilities. However, she points out that democratically run cities need to set up their own metaverse platforms to be independent of the privately owned metaverse and no data standardization rules for the metaverse have yet been established.

i Gesa Ziemer

Is Director of the CityScienceLab at HafenCity University Hamburg. She researches into the digital city, new forms of collaboration, and public spaces. In 2020, she was a Humboldt Fellow at Harvard Kennedy School, Cambridge, USA; now, she is Academic Director of the UNITAC Technology and Innovation Lab for the United Nations and a member of the Accreditation Committee of the German Science Council.



1 The metaverse

The idea behind the metaverse is actually not new. In 1992, the term was first used in a science fiction novel for a virtual reality in which people travel as avatars. In this sense, early online role-playing games like “World of Warcraft” and simulations such as “Second Life” are a kind of precursor to today’s idea of the metaverse. However, this goes one step further in that it represents an alternative to the analog world and the conventional internet. People would not only dive into the metaverse for their leisure time, but also work in it, offer services, and trade. One of the best-known supporters of the metaverse idea is Marc Zuckerberg, who renamed the Facebook parent company Meta in 2021 for this reason.

2 Connected Urban Twins

How can digitization help to make the cities of the future better and closer to their citizens? That’s what the Connected Urban Twins project is trying to find out. The cities of Hamburg, Leipzig and Munich are jointly developing data-driven Digital Twins for the period up to 2025 – on the one hand, to record themselves virtually for urban planning purposes, and on the other, to jointly set standards that could in turn be applied to other cities. The CityScienceLab at HafenCity University Hamburg is leading the research activities in the project, working closely with the Technical University of Munich and the Center for Scalable Data Analytics and Artificial Intelligence in Dresden and Leipzig.

There’s a lot of hype around the metaverse right now – or at least there are people and companies with a commercial interest in creating hype. Do you think it’s a fad or will we really be living in virtual cities rather than real ones?

I think we’ll be living in both worlds – one virtual, one analog. We’ll still have a physical body and a physical life. But I find the current discussion around [the metaverse](#)¹ interesting because in city research, we’ve already been doing a lot of research about those technologies and they are about to be implemented in practice right now. City planners are starting to understand the potential of virtual reality and augmented reality for designing and collaboratively planning cities. The metaverse idea also bases on blockchain and it is interesting to ask what kind of processes in city planning could be put into chains and how we can decentralize processes.

How is metaverse technology being used in city planning?

What makes the metaverse interesting is its immersiveness. Having tools that create an immersive understanding of our world – for example, how a space looks when you move through it – is completely different from doing city planning with a map. Generations of city planners have worked with 2D maps. But a lot of questions in city planning that are connected to sensing or perceiving the city in different ways cannot be shown on a map. All those immersive tools from the gaming industry that are currently going into the metaverse as well as research are extremely interesting for us because they allow us to perceive the city in different ways. They also allow us to step into different roles and learn to understand different perspectives. For example, when you do mobility planning and want to decide where autonomous cars will drive in the city, it’s completely different when you simulate routes in a 3D model than when you look at them on a map.

Are urban planners and city officials walking through a virtual city with VR goggles to see what their designs look and feel like?

Not quite, but we’re getting there. There’s a lot of money for smart city development in Germany right now and [digital twin technology](#) is developing so fast.² A digital twin is a virtual model of a city that is generated from a lot of data and designed in 3D. That means that if you want to build or change something in the city, you can first simulate it in the virtual world. As you can imagine, it’s very complicated to create a twin from a city because a city is a highly complex system. But nevertheless we’re doing it. And this is why the metaverse is becoming more and more important for city researchers because in the metaverse, we often have playful and transmedia approaches to space-related topics.

Do you play around with a digital twin to see if certain policies or infrastructure would work, or whether they’d have unintended consequences?

Yes. You can first play around with the city in the virtual world and then make it reality, if it makes sense. That’s the idea. But of course, the metaverse is also part of the capitalist system. I’m less interested in buying land or investing my money in the metaverse than I am in the technologies that are used and which I could also use for the twin. Of course, I could imagine that those city twins exist in the metaverse, so that we won’t need a separate platform. But we can only do that if the metaverse works with frameworks that we like and want to have there. So, if companies shape the metaverse only to collect our community data and don’t give data back to an open urban data platform, we shouldn’t run the twin in the metaverse platform.

What frameworks would make sense to you?

In cities, we work a lot with open data. Those democratically run cities that don’t yet have open data management platforms are currently trying to set them up; this is the general base of an urban twin. A lot of European cities also have transparency laws now. They want to make data accessible to everyone. And if the metaverse works with other rules and regulations – if data is privately owned and not accessible – then it doesn’t make any sense for a city like Hamburg to join the metaverse. They will do it on their own platform or share one with other cities. And this is actually what we’re doing at the moment. We’re setting up a twin for Hamburg and cooperating closely with Munich and Leipzig, and we’re doing it on our own platform. But we look to the metaverse for inspiration. How is immersiveness created? How do they work with images? How do they work with sound and other gaming elements like movement?

If Hamburg uses its own platform, will it be able to communicate with other cities?

That’s a crucial point. Twin technology makes it possible for cities to work together for the first time. That’s why we call our twin Connected Urban Twin. We’re sharing data and tools with Munich and Leipzig, and we’ll then extend the connection to other cities. We’re discussing open data standards so that we can exchange data between cities. If Helsinki has the same standard as Hamburg, we can work with Helsinki, too – across borders in Europe should be our vision. For a long time, everyone was reinventing the wheel in the digitization of cities. Now, we can finally start working with other cities.

**The metaverse in urban planning**

Simulating routes in a 3D model is much more effective than looking at 2D plans. VR goggles can help urban planners to see and feel what their designs will look like.

Who's setting those standards?

That's a big discussion topic and it's highly political. I'd say the EU should set the standards, not individual countries. But the EU is a democratic system and everything requires a lot of discussion. In our case, we have a master portal that has already been used by a lot of other German cities. Our twin technologies work as a plug-in to this portal. We are discussing open data standards like CityGML or DIN specifications. Every country wants something different. An autocratic country like China can simply set the standard and everyone has to follow it. This is our weak point at the moment: while we're still engaged in discussions, the Chinese and other Asian countries just set the standard. And if they set standards and then transfer them to Europe, we will be completely dependent on them and will have to buy their technologies. That would be a disaster for us. We are slow. Take the debate around Gaia-X, the cloud system that European countries and companies want to set up for data storage so that other countries don't have access to our data. It's so slow! The project started years ago and it's so slow going. Ultimately, that's bad for us. We're losing time.

You've explained how important AR and VR technologies are for city planning. But are they any use for ordinary citizens, too?

Yes, absolutely. Ordinary citizens can, for example, design a neighborhood park together. They can say, we want to have trees, park benches, and a playground. We do that constantly at CityScienceLab. We always organize citizen engagement processes where a lot of people have access to data. It's important that we create good data stories and visualize data in a way that's easy to understand and accessible. I always say that every tool in our lab should be understandable within five minutes for absolutely everyone, including kids and old people.

Can you give me an example?

Care mobility during the pandemic. A lot of people did unpaid care work, looking after their parents, kids, or friends. Yet we didn't have any maps of their routes. How did they move through our city? So, we built a storytelling tool called FairCare Verkehr. People came to our lab and drew the daily routes they took to care for others³ on a touch table. We then created maps and in the next step showed the data to municipal authorities like mobility or social departments to point out that many people in the world are doing care work and we don't know how they're moving through the cities. That's interesting for cities because they can then shape their transport system differently, for example by moving bus stops elsewhere or removing barriers like high curbs at sidewalks for wheelchair users.

20

³ Twenty insights

In an initial experiment on mobility and care work, the CityScienceLab at HafenCity University Hamburg worked with people who, for example, provide unpaid care for family members to record their everyday journeys.

But isn't there already a lot of data about mobility?

Cities usually map private car movements, logistic data, or existing public transportation. But we have less data about pedestrian flows or bicycle traffic. That kind of data is very weak in cities. We focused on care mobility to show that someone who has three kids also takes care of their parents and has a part-time job. They ride their bike and take the subway, walk to places, and also use car-sharing. This is important for a city to know because, for example, the shared-bike stations may be in the wrong places or where we would need cargo bikes. But you can only figure this out if you have maps that show how people really do move around a city. And that kind of data just doesn't exist much in mobility planning.

How do you organize the collaborative planning of a park?

We have a tool in our lab called PaKOMM (Participation – Collaborative – Multimedia). When you enter the virtual world, you usually put on goggles and act more or less by yourself. In this project we foster collaboration because you can design the area together by placing trees and furniture, and talk about the routes and width of paths. This really is a neighborhood project. All the neighbors come in and work together, and then we document the results. Then we give the various possible scenarios to the city planners and say, look, the park's neighbors would like it to be like this. Can you do that? It's extremely simple. I mean, there's a lot of tech development behind it, but it's a very easy way of including people.

Do they need to wear VR goggles to plan the park?

Access to the metaverse is still an issue. It's something we have to work on. At the moment, if you want to move around in the virtual world, you need those goggles – and they still cost several hundred euros a pair. So the question for the future is where we will have metaverse access points in an analog city. Advertising screens could be access points. Hamburg is setting up a house of digitalization where citizens can access digital tools. Helsinki has the Oodi Library. People we work with in Botswana are setting up technology hubs throughout the country for people to access digital tools. I think there should be many possibilities to enter the virtual world for just an hour or two – to meet friends, or whatever.

Are there any risks or downsides to using virtual worlds parallel to our real one?

When you work with a lot of data, there is always the risk of manipulation. The risk is even higher when you work with immersive technologies. In the CityScienceLab we mainly work with open data to prove where the data comes from. So I think data transparency

is very important. We always explain to people what kind of data we use and what the missing links are to make sure people at least understand where the data comes from. To quote Michael Batty, an expert in twin modeling in our field, "All models are wrong but some are useful." This quote shows that we also have to tell people the limits of every model. Besides, we know that virtual worlds are addictive. When you dive into them, you tend to forget everything around you. So the risk of manipulation is even higher. In city planning we can design worlds that cannot be built in reality, for example, because they won't work statically. This is why I prefer augmented reality, which makes a lot more sense for city planning. You have a real layer and put a virtual layer on top of it. That way, you connect to history and to real space so it's not completely fictional. Besides, you can easily work in AR with a mobile device. You don't need to sit at home wearing your goggles. ●



GEOFF MULGAN: On Citizen-Driven Governance

Sir Geoff Mulgan, Professor of Collective Intelligence, Public Policy and Social Innovation at University College London, outlines the best models for involving citizens in city governance to complement representative democracy. Gathering collective evidence, he says, is key to effective citizen involvement. He brings examples of where evidence is made easier to use for decision-makers and is critical of the oldest means of involving citizens in decision-making – referenda.

i Geoff Mulgan

Social entrepreneur, advisor to the British government, author: Sir Geoff Mulgan has worked in various fields of civil society, politics, technology, and science. In 2020, he became Professor of Collective Intelligence, Public Policy and Social Innovation at University College London. He also works with Demos Helsinki and the New Institute in Hamburg.

What do you think about experiments with direct democracy in cities?

For many years, there's been interest in complementing representative democracy – elected councillors, mayors or members of parliament – with more direct engagement of citizens in decision-making. A lot has been learned about how to do that, but also its limits. For example, it doesn't work for topics that need very specialized knowledge. It doesn't work for very moral questions – or at least it requires longer processes of debate, as with Ireland's citizen assembly on abortion. And it doesn't work for topics people don't care about very much.

What does it work well for?

For decisions about the allocation of money, for example, or about public spaces. There've been lots of examples of how you can involve citizens more directly in decisions, and often the quality of the decision goes up as a result. But this should not be seen as a panacea. It's not very sensible to try to do everything by direct democracy or referendum.

What would be a better way of involving citizens?

My main interest in city governance is actually a broader idea: how do you mobilize the collective intelligence of the people to make decisions? Some of that will come from citizens with relevant specialist knowledge. One of the issues I work on in relation to "net zero" is how a city can mobilize data, e.g. on electricity usage, and knowledge, e.g. on how to do retrofitting, in order to develop strategies for the reduction of carbon emissions in energy and transport.

What different models are there for involving citizens in governance?

In the collective intelligence frame there is expertise, citizens' expressions of opinions and desires, and mobilization of data and knowledge. The future city will become skilled at harnessing all these different kinds of knowledge. Regarding the first category, expertise, let's say a city needs to design a super block or rethink care for the elderly. In the past, it might have just depended on its municipal officials, or maybe a university professor, to design a plan. Now there are many ways in which you can create platforms to share the problem and tap into potential solutions – by creating working groups of citizens, experts, and officials to develop alternatives. Dozens of cities around the world are doing this now.

For example?

This is essentially an open approach to intelligence. It's unlikely

that the best solution to any problem will sit within the bureaucracy sphere alone. The simplest alternatives use platforms to post different tasks and problems, and then elicit solutions. These work best with quite a lot of parallel processes to improve the quality of proposals – helping the innovators to understand the available evidence, or other innovations around the world. Even then, the initial solutions tend not to be very well developed, so you help the people who've come up with the most promising ideas to work with the city to turn them into viable options. The sources of ideas could be commercial firms, start-ups, NGOs or community groups. The use of data for transport would be a good example. How do you make transport seamless? In London and New York, they've been doing that for 15 years. They open up a data set and then let software engineers and start-ups come up with ways of using it – for example to use the data to improve options for people with disabilities. This has become fairly normal in some cities.

That's on an expertise level. What would be an example of cities allowing citizens to express their opinions?

The participatory budgeting projects in cities like Reykjavik, Paris or Madrid. These cities put a certain amount of money a year into a fund and citizens can make proposals¹ on how it should be spent – and then the money is allocated according to their proposals. I think it's €100 million in Paris, of which €30 million goes to children to make proposals and make decisions through their schools. That's the more expressive side.

And an example for mobilizing data?

A "net zero" example would be electricity data. All the data in a building is owned by the electricity company. It's not open, not shared, and can't be used for cutting carbon emissions. We have to open up that data and pool it. The vision is a city that is good at organizing intelligence of any kind to help it solve its problems.

Are governments now more skillful at engaging their citizens?

You know #WirVsVirus, the open society innovation project the BMW Foundation was involved in at the start of the pandemic, or Estonia's 'Hack the Crisis'. These things used to be just hackathons, but have become much more sophisticated. 15 years ago, a city would say: "Hey, here's a hackathon, come and help us with ideas." Now, they realize it has to be much more structured and managed if it is to have any impact. Only five years ago, the German government didn't use any of those methods. It was completely traditional in that sense.

¹ Participation

60%

Ideas from citizens for citizens

Over half the residents of Iceland's capital have already used the Better Reykjavik platform.

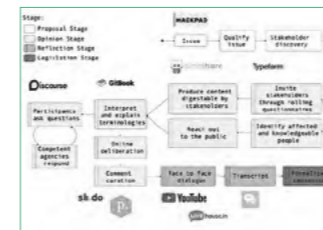
40,000 involved

High demand

Although the City of Paris did not have much time to promote the new possibility to vote on proposals put forward by the City Council in 2014, interest in the project was high – and so was participation.



Digital participation Mobilizing collective intelligence in cities



² vTaiwan

The idea was actually born out of necessity. In 2014 the Taiwanese government came under massive pressure because of a controversial trade agreement with China. The government's answer was to encourage more citizen participation through digitization. The vTaiwan process was largely shaped by a civil society movement called g0v. According to Nesta, the British innovation agency for social good which Geoff Mulgan chaired as Chief Executive until 2019, the process was designed "to facilitate constructive conversations and consensus-building between diverse opinion groups". To that end, it set up several phases that each project had to go through, for example an initial "objective" phase for crowdsourcing facts and evidence, and a "reflective" phase to help build consensus. Finally, key stakeholders are invited to a live-streamed, in-person meeting to develop specific recommendations.

Where do you see room for improvement?

Another thing I work on is how to make evidence easy to use for decision-makers. What does the world know about a question like improving a population's mental health or cutting homelessness? Cities are sometimes bad at organizing evidence, so they often invent their own solutions, completely unaware that another city tried exactly the same thing five or ten years before – and it worked or didn't work. You need to organize evidence globally in very systematic ways, because that's much more efficient than everyone making it up for themselves. Most of Europe doesn't do this. But this approach to evidence is becoming quite strong in some other parts of the world. There are big programs in Canada and the U.S., and China has always been very systematic on this, too.

Is East Asia better at citizen consultation than the West?

I wouldn't say East Asia is generally better, though Taiwan has probably gone furthest using a collective intelligence method for how the government as a whole is run. That's because it's run by young people with a digital background. If your top bureaucrats are 55 or 60 years old and don't really understand digital, these things don't happen. But if you put 25- or 30-year-olds in charge, then it's much easier, and Taiwan is an example of that, as was Estonia.

What exactly does Taiwan do?

There's a thing called vTaiwan², an online version of parliament which mobilizes the expertise, knowledge, and views of citizens before parliament makes a decision. So you get lots of input, lots of commentaries on a topic. Elected representatives can ignore that input, but it's transparent, so if they do, they need to have a pretty good reason.

The oldest means of involving citizens in decision-making, at least in Europe, are referenda. What do you think of them?

All the movements I've described are essentially a response to the weaknesses of referenda, which are binary, one-off decisions. Instead, these processes try to make citizen decision-making more deliberative, more thoughtful, and involving conversation and learning. None of the places mentioned use referenda. They are a 19th-century model that is very inefficient for tapping intelligence.

Yet people in Switzerland, for example, are apparently very happy about being able to have their say in referenda.

It's a paradox. People quite like to be involved in decisions. They like some autonomy. But on the other hand, they don't like spending lots of time on decisions. But in Switzerland it's part of the culture.

What does that mean for gathering collective intelligence? It seems to be quite time-consuming.

It is. That's why you only do it with the people who care or have specialized knowledge. It's not as if 100 percent of citizens would spend their weekends online, making decisions. 30-40 years ago, people thought that was the future of democracy, but that's not plausible as most people have better things to do with their time.

If only some people take part in decisions, could that lead to a democratic deficit by skewing the outcome towards them?

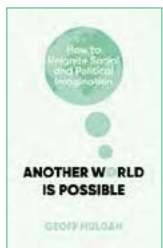
Yes, that can happen. That's why I personally favor hybrids, where you still have elected representatives making the final decisions. Another approach would be that of Decidim, a Barcelona-based platform for citizen consultation and participatory budgeting. They made a big effort to do both offline and online engagement, mainly so that the outcome would be more balanced in terms of age and class. Purely online consultations tend to appeal to a certain kind of demographic and can be quite distorted. That's been one of the lessons of the last 10-20 years: don't fixate on online consultation because you may get two percent of the public taking part and they may not represent the rest. That's not democratic in spirit.

Do you see the advantage of these new models mainly in better outcomes through more expertise, or in a population that is happier because it gets to influence those outcomes?

Both. Obviously, you want the best knowledge to guide your decisions. But we're in an era where people want to have some expression of control and power. That's the essence of democracy. For many years, it's been clear that 19th-century representative democracy, where you give all the power to someone you vote for, doesn't really work in making people feel empowered. In the 21st century, when almost every other field of life – shopping, travel, relationships – has been transformed by the internet, it's obvious that democracy needs the same.

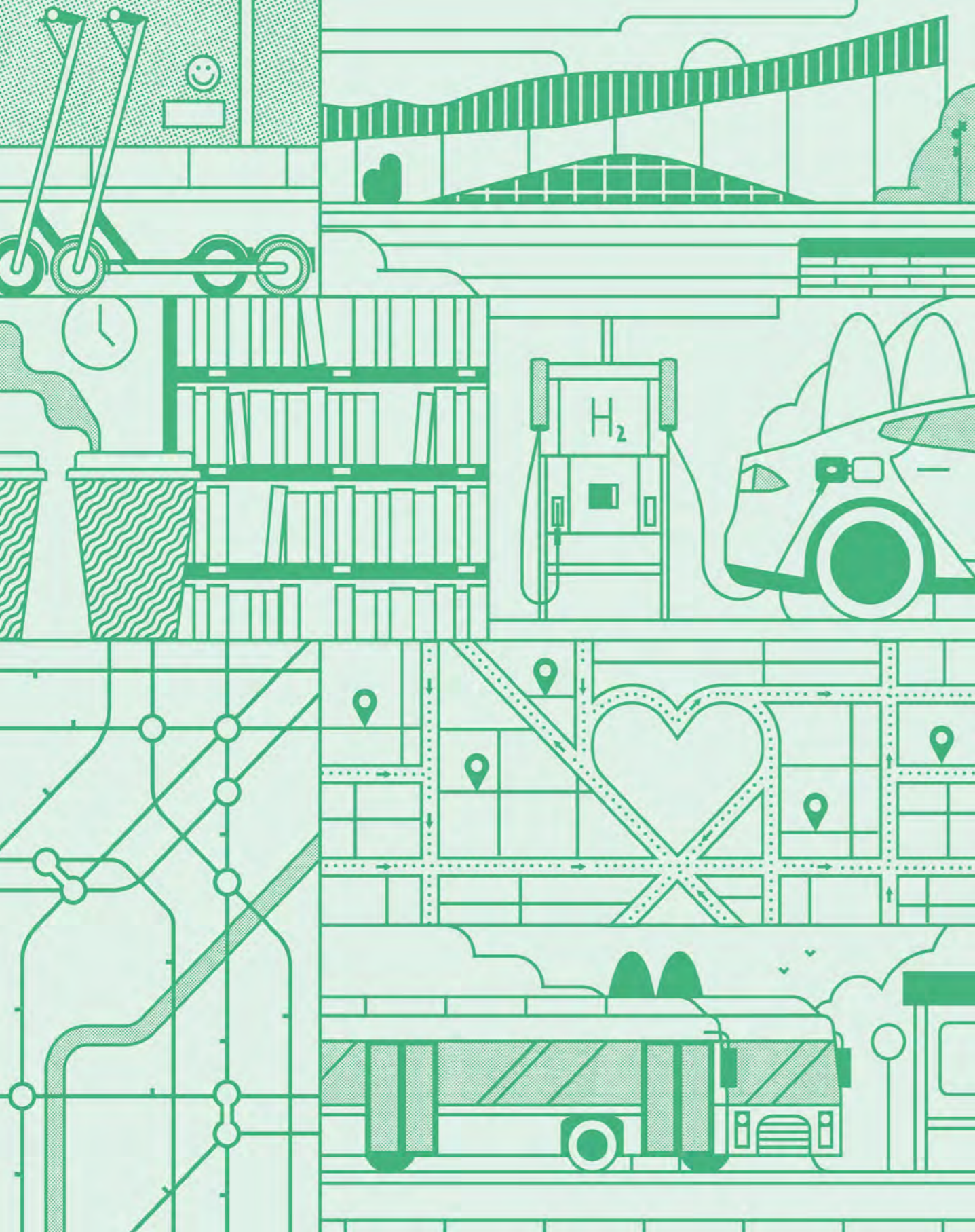
Is there an area where these models should be used but aren't?

Hardly any of these things are being applied to climate change and cities – partly because environment teams don't really talk to digital teams, neither in cities nor in national governments. Anyone thinking about cities should ask how they can get the right intelligence to make their decisions: some would come from science, some from data, some from their own citizens. Orchestrating that is one of the key skills of governance now.³ ●



³ **Visions for tomorrow**

Geoff Mulgan is author of several books; the most recent is "Another World Is Possible: How to Reignite Social and Political Imagination."



Chapter

3

Mobility & public services



TOMMI LAITIO: On Universal Access to Life-Supporting Systems

Tommi Laitio describes how Finnish libraries serve as an exemplary life-supporting system, e.g. through allowing people to share space and resources in a non-hostile way to everyone's benefit. He believes that if people feel a city is genuinely interested in their lives and lets them be seen and heard, its services do not have to be perfect. Efficiently delivering services is not enough; you need a social contract as a foundation, he says. To make a city work, people need to feel they are seen as complete persons and have lots of relationships and experiences across racial and class lines. The relational dimension, he believes, is vital in designing public spaces and services. To reach the vulnerable people who need public services most, you need numbers, storytelling, and moral urgency.

i Tommi Laitio

Is a member of the Mayor of Helsinki's Executive Team and has been in charge of Helsinki's culture, library, sports and youth services since 2016. Tommi is also a member of Finland's UNESCO Commission, Chair of the Board of the Finnish Institute in London, and has been a Bloomberg Public Innovation Fellow at Johns Hopkins University since January 2022



¹ The Oodi Library

Year:	2018
Area:	17,250 m ²
Total Cost:	€98 million
Media:	100.000

Oodi is perhaps more than a public library; it is a visitable manifesto for books and the knowledge society. In any case, this library in Helsinki is considered to be a model of successful architecture in and for public space. The idea of building a city library on the site where the Finnish Parliament is now located was first proposed in 1998. The Oodi site, opposite Eduskuntatalo, was chosen to symbolize the relationship between government and citizens, and to recall the mission of the Finnish Library Act, which states that libraries should promote lifelong learning, active citizenship, democracy, and freedom of expression. This is also the reason why books only take up about a third of the interior space. The remaining space includes a café, restaurant, cinema, audio-visual recording studios, and a makerspace.

Helsinki's Oodi Library¹, which opened in 2018, was very expensive to build and is costly to run, but it's also quite spectacular and hugely popular. What does the library mean to Helsinki's residents?

Finland has been investing in libraries for a long time and libraries really capture the way Finnish society works. Finland gained its independence as a very small and poor country in 1917 with the idea that you have to invest in every single person and can't afford to lose anyone. Through education and knowledge, the country has been able to reach high levels of democracy, work-life balance, and equality. So, it's fairly natural that this project became the main symbol of the centennial celebrations for the country. Now, when residents of Helsinki have visitors, they take them to the library to say: "This is who we are. When we are at our best, this is what we are able to do." I think the return on this €98 million investment is good when we look at what it has done for the city and its people.

Does that mean the main purpose of Finnish libraries is education?

I would differentiate between education and learning, which can be more informal. Libraries have this phenomenal feature that they treat people as unique and responsible – as in, we allow you to take home something that belongs to us, and we trust that you'll bring it back. And libraries regard everyone as curious. They don't tell you what you should be reading or doing. There's an abundant offering and the idea is that this abundance creates better civic environments. We have sewing machines, tools, and 3D printers at the library. It presents a very open and welcoming opportunity for people to learn new things. Willingness and capability to learn are fundamental aspects of living in a democracy.

When you say libraries are good civic environments, do you mean they're good for democracy?

Libraries should be careful not to misrepresent their contribution to democracy. The two main contributions libraries make are opening new worlds and allowing people to share space in a non-hostile way. They should not be reduced to the Jürgen Habermas idea that we come together in a public arena to deliberate the future of our democracy. That's not the only reason why people go to a library. People go to the thousands of events in a library, but also to get a book, charge their phone, meet a friend for coffee, or just see other people. There are people who come to the library every day to read a newspaper. They're not necessarily looking for interaction, but it's really essential for them to be in a space with other people and be recognized as a complete person. That diversity of uses is

really fundamental to understanding their contribution to society. They create a physical experience of what it means to live in a democracy. We can share space and resources with other people, and we all benefit from it.²

² A giant and an old idea

170 million

A giant idea
The British Library in London is said to be the library with the world's largest stock of media units.

3rd century B.C.

An old idea
The most famous library in the antique world was in Alexandria and probably founded by Ptolemy I Soter.

You mentioned that Finland decided early on that it couldn't afford to lose anyone. What does that mean for the country's approach to public services beyond libraries?

The Finnish understanding of freedom is that we free people from certain anxieties and struggles to give them more bandwidth to do the things that matter to them. If you know that the buses are on time, that your kids are safe in school, that it's okay to walk to work, and that the government is run without corruption, you don't have to worry about these things. We know that if people have to constantly worry – "I hope I don't get sick", "I hope my washing machine doesn't break down" – it takes so much energy and mental space away from them. And pushes people into a scarcity mindset where they think they're fighting others for resources. An American professor who moved to Helsinki once said: "This is a place of small miracles. Things are easy." That's the Finnish approach, and it's not dramatic.

Can you give us an example?

A couple of years ago, Helsinki started a test. Rather than families having to apply for a place at a kindergarten and doing all the research, we automatically offered them a place. We know who has a child. We know where the kindergartens are. We know how many free places there are, and we combine that data with transport data and where people live. The parents now get a text message from the city saying, "We can offer your child a place at this kindergarten; answer 'yes' to accept it." That takes a lot of the worry away. It doesn't mean that the government tells you where your child has to go. You can still make a different choice. But we make it easier for you. That's the Nordic model.

You're currently in the U.S., which has a very different approach to public services from Finland. Do you think there's anything other countries can learn from the Nordic model?

Every city can learn from every other city – and I try very hard to avoid going to other cities and telling them the Nordic countries are perfect and they should be more like us. The best way is to be curious about the lives of the residents of that particular community. Cities should really focus on understanding people's experiences and creating solutions to things that matter to their residents. What works well in the Nordic system is that the notion of well-being is

**Oodi Library, Helsinki**

As a symbol of Finland's centennial celebrations and the country's values, the Oodi Library has had a transformative impact on Helsinki and given citizens a sense of belonging and sharing.



1

1 **The Beinecke Library** in Connecticut inspires lifelong learning and builds community.

2 **Stuttgart Municipal Library** is considered to be one of the world's most beautiful "temples of books".

2



3 **The Bloomberg Center**

A technology center between the city's waters, the Bloomberg Center on New York's Roosevelt Island is a fascinating building featuring high tech and sustainability for daily use. The facade was optimized so as to maximize daylight and minimize thermal bridging. The building hosts Cornell Tech, the Cornell University campus for technology, economics, law, and design. For this reason, the design focuses on support for and interdisciplinary communication among the students. For example, an open galleria extending throughout the length of the building serves as a place for informal collaboration.

quite broad. It's not enough for people to stay alive and have a job. There has to be meaning in your life. Also, the Nordic system is very efficient. But I think it could learn from many other places about how to work better with the private sector, philanthropists, and residents in delivering well-being. This element of learning from other cities is the main reason why I think programs like RISE are important. You really need to see places and meet people to understand their realities beyond PowerPoints and one-off examples.

Do you think delivering public services at a city level is different from doing it at a national one?

A wonderful thing about cities is that you can't escape people and their real lives. Cities can't just produce policy recommendations – they have to deliver. You have to make sure that schools open every day, the trash is collected, and the libraries have books on the shelves. The other wonderful thing about them is that it's much easier to adopt a local identity than a national one. You can be a Berliner or New Yorker from day one. That's why people are attracted to cities. The magic starts happening at the local level. When people feel that a city is genuinely interested in their lives – not just asking for ideas and recommendations, but actually wanting to understand their lives and seeing them as persons – a city's services don't have to be perfect.

How can a city show that level of interest?

The innovation teams in cities the Bloomberg Philanthropies³ and we at the Bloomberg Center for Public Innovation at Johns Hopkins support put months and months of work into talking to residents and reframing problems in a way that resonates with people before they jump into solving the problems. That's when the magic happens. Because problems often look very different during the first meeting at City Hall than they do in people's lives. And by talking to people, cities can recognize that their citizens have competencies and want to contribute to other people's lives. They want respect. No one wants to take on the role of the victim. People want to be seen and heard. I think that's why the Oodi Library has had such an impact in Helsinki. Building a symbol of our values in the city center has been transformative for Helsinki. Arts and culture, parks and libraries – they're a very small part of the city's budget. But they are ways of symbolizing who we are as a community and creating a sense of belonging. This, in turn, builds support for the other services.

How does it do that?

By creating a feeling that we can live with others, that others aren't

out to harm us. And when you have that experience, you're also more supportive of the redistribution of resources and taking care of the weakest in society. The Nordic model shows that when you have a lot of joint experiences across social classes, people are more supportive of the social contract. People feel it's in their personal interest to take care of everyone in society. The fundamentals of how to make a city work are, first, make people feel they are seen as complete persons and second, make sure they have lots of relationships and experiences across racial and class lines. Then you can build efficient service delivery on top of that.

Speaking of class differences, how do you make sure you deliver public services in an equitable way and reach the people who need them most?

You need numbers, storytelling, and moral urgency. You need data in order to understand who is using your services and who isn't. You then link that data to human experiences and enrich it with people's real stories. In my experience, the magic starts happening when civil servants and local politicians become personally committed to fixing problems that have been redefined from a citizens' point of view. Then it becomes a moral question. I've seen local leaders say time and again: "We cannot be failing our people like this." But when we design public spaces and public services, we should also think more about how we build a relational aspect into them so we don't isolate the underserved or underprivileged communities from the rest of society.

Why is that so important?

Because I don't think efficient service delivery is enough. You need a social contract as a foundation. So you need people across social classes to feel they belong to the same society. If we create universal experiences that work especially well for the most vulnerable in our communities, we're reflecting their right to belong to society rather than isolating certain groups and providing them with assistance. These universal experiences make people feel they are respected as complete persons. And that's why it's really essential that we build that relational aspect into parks, libraries, the design of our streets, and our housing policy. That way, we make sure that there are ways that people can share space and share resources with others. After all, it's in our own interest to make sure that everyone feels safe and respected in our society. ●



TIA KANSARA: On Interconnected Multi-Modal Mobility

Tia Kansara looks at mobility issues through a net positive lens: Does a solution put more into society and the environment than it takes out? To make the most effective use of technology, cities need to understand their citizens' needs better and instead of inventing more modes of transportation, perhaps focus on improving existing technologies. She is convinced that cities could better inform their citizens about mobility options and use soft measures to influence people's mobility habits. Curitiba in Brazil, she says, is a good example of positive changes in such behavior patterns.

Tia Kansara

Is an expert on sustainable design. She advises policymakers, companies and individuals on how to adapt to climate change and build smarter cities that have local wisdom and global expertise. Since 2009 she has been Director at Kansara Hackney which she co-founded together with the architect Rod Hackney.



Mobility Smart city transport apps could offer alternative, more eco-friendly routes from A to B, e.g. from King's Cross station in London.

We're constantly inventing new forms of urban mobility. But do we actually need innovation, or could the solution just be to focus on walking and cycling, things we've known for a very long time are the most sustainable and equitable modes of transportation?

There's a really beautiful project in Vienna that showcased the experience of women moving around the city. They followed women from a variety of backgrounds to understand how they saw the city from their own perspective. Whilst following these women, they took photos of the issues they faced – a woman in a wheelchair, for example, who had trouble at a curb, someone with a pram trying to get onto a bus, an elderly woman unable to rest with a painful hip, a girl walking down a dark street. The photo study was able to highlight pockets of the city that didn't cater to them. The project was a caricature of how cities are not responding to the needs of their citizens. The photos spoke words politicians had never heard. How is a wheelchair user supposed to use a bus when the pavement doesn't reach the door? We are at the precipice of understanding and appreciating where technology can meet people's needs. It's quite something designing a city tailored to a particular citizenry.

So should cities focus on understanding how to improve existing technologies?

Correct. And innovation should focus on managing what [Konstantinos Doxiadis](#)¹, the late Greek urban philosopher, called the heart of the city. How much of the body of the urban environment is fed by one heart? When a city sprawls beyond the scope of one heart or is stressing the heart, it needs to use shunt vessels. There are times in London when it feels like a mob has descended into King's Cross station. The station staff manage it well, but what if citizens were given alternatives? Hey, says the city app, there's an alternative to get from A to B in the same price range, and have a more net positive impact on the environment.

Like Google Maps but instead of "car, bike, public transport", are the options "healthiest, cheapest, most sustainable" and so on?

Yes. What helps the most is behavioral anchoring. So from a behavioral economics perspective, putting an idea in the mind of society to say this is the healthiest option, this is the most environmentally friendly one, and this has the best price whilst comparing the alternatives brings the anchor of caring for one's health or the planet into the decision-making process. Imagine an app that searches through all of the alternative permutations and gives me the answer quicker than a station staff member or Google Maps, whilst also giving me healthier brownie points for taking the wiser option! This

¹ Konstantinos Doxiadis

The Greek star architect, who was born in Asenovgrad, Bulgaria, in 1913, is considered to be a mastermind of modern urban planning. He is best known as the architect of Islamabad. The new capital of Pakistan was built according to his plans in the 1960s. The city was divided into several sectors, each of which is self-contained and self-supporting with respect to everyday life. Doxiadis later taught at Oxford and Dublin and is also seen as one of the fathers of ekistics, the science of human settlements. He died in Athens in 1975.

increases my confidence in a city. Because ultimately I am a client, a customer of a city. Cities are becoming smarter but making us less smart, as we feel less connected to the city in question.

Mobility often just comes down to habits – and if politicians want to change the modes of transport people use, they need to change those habits. How do you do that?

I think it's a highly subjective business. If you want people to care, you have to move something from the objective to the personal. And it's a long way from a subjective and emotional experience to something that is objective and logical. We go through a series of stages when we're making our decisions. Our social behaviors change according to the environment we're in. And it takes a couple of stages for something to become a habit. Which behaviors do you favor and why? And is it even appropriate for the heavy hand of government or society to tell you that this is the way it should be? If you give me three options, then those three options need to be beneficial for me too – not just in the long term. It may be good for society that everybody starts walking but I may have health issues, so are you going to help me? In other words, there are soft and hard measures governments can take. Cities can test measures to see what shifts behaviors. Where can the nudges and softer methodologies encourage people to walk that extra mile? And where is the urban language that directs them more subtly? Perhaps saying "Hey, look, it's only ten minutes to get to where you want to go, how about an alternative?"

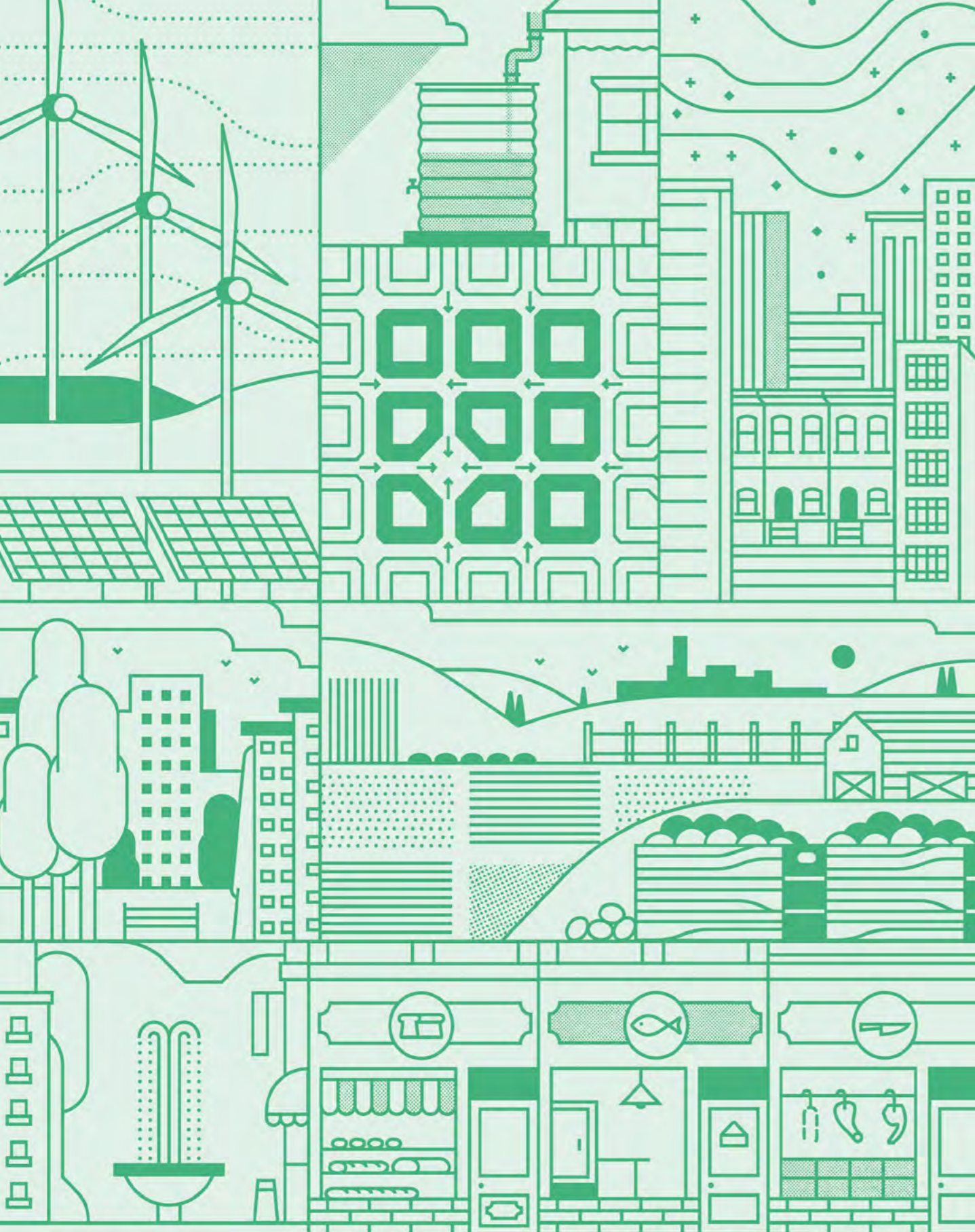
People traditionally use less shared transport and more wasteful options once their income rises. How do you uncouple social status from, say, car use?

Some prestige mobility depends on how much privacy a person requires. You're not going to see King Charles cycle down the road, though I'd be really impressed if he did! [Curitiba in Brazil](#)² is a good example of this uncoupling process. It's a city with a huge level of social inequality that used to have one of the highest rates of car ownership in Brazil. Yet, they managed to introduce a bus-based rapid transit system that everybody uses, rich and poor, because it's fast, reliable, and convenient. As a result, car traffic has decreased. People living in favelas that rubbish collectors have trouble reaching can now collect bags of rubbish and exchange them for bus tickets. In this way, Curitiba has managed to change how the city's residents see themselves. ●



² **The Curitiba revolution**

Curitiba near São Paulo in Brazil is seen as a model of urban planning worldwide. In the 1960s, the city's population grew rapidly, and with that came the question of how the city should cope with this growth. At first, they considered redesigning Curitiba along the lines of the capital Brasília, with widened avenues that would accommodate masses of cars. Eventually, however, they decided to go for a radically different concept, the Rede Integrada de Transporte, a bus rapid transit system. The idea was to develop a system that would offer as many functional advantages to buses as possible – like elsewhere for trams. The system has been regularly extended, e.g. with tube-like bus stops that shield those waiting from street noise and stench. Thanks to dedicated lanes and tight bus schedules, the buses now carry more than 2 million passengers a day.



Chapter

4

Built environment & public spaces



THOMAS OSDOBA: Eco-Habitat and Just Housing

Thomas Osdoba wants a broader definition of sustainability – away from a narrow environmental definition to one that includes social and economic dimensions. He cites green buildings as a good example of how looking at them from a purely environmental perspective has tended to ignore the broader mental and physical health benefits they bring their inhabitants. As for housing, he calls for a more critical discussion on the social, economic, and wellbeing dimensions of “good housing” and makes a compelling case for spending more on citizens’ wellbeing.

i Thomas Osdoba

Is a social entrepreneur with a record of innovative progress to advance sustainability, and building and managing organizations and communities. He serves as a senior advisor to cities as part of Climate-KIC, Europe’s top innovation community on sustainability and climate change. For ten years, Tom led a management consultancy focused on sustainability strategies, social enterprise, and new business development. He has worked with several cities and local governments.

1 European Green Capital 2021: Lahti

Going green does not happen overnight, as the example of the Finnish city of Lahti shows. It was not until 1976 that the municipal authorities stopped discharging wastewater into Lake Vesijärvi. In the 1980s, the first of many ecological projects was started to improve the environmental conditions in and around the lake. Over time, more and more measures and initiatives were added. Farmers joined together to form circular economy networks, for example, and a carbon-neutral symphony orchestra was founded. In 2019, Lahti stopped using coal. By 2025, the city wants to be completely carbon-neutral – ten years before the target set by the Finnish Government Program and 25 years before the EU.

What is the most sustainable city in the world right now?

It's a good question because it makes you decide what you think sustainable means. There are a number of cities that are very ecologically advanced – [Lahti in Finland](#)¹ or Umea in Sweden, for example. They're smaller cities. Very large cities face more challenges in being sustainable because they have a correspondingly larger ecological footprint for core needs such as food, energy, and materials. Smaller cities with a population between 50,000 and 250,000 have a better opportunity to provide for their needs within a bioregional context and create less ecological stress from a planetary perspective. That's a simple and clear way to look at it.

Would you prefer a different definition of sustainability?

For me, sustainability goes beyond the environmental dimension to incorporate social and economic ones as well. The rise of sustainability amongst cities has been driven by the environmental movement, not by social justice and economic equity. Over the past 15 years, leaders in sustainable cities have been reckoning with what it means to be sustainable when considering social, economic, and ecological perspectives. In a way, this more integrated view circles back to a long-established concept of the three-legged stool. This discussion is ongoing and has not, by any measure, been fully resolved yet. At the city level, in particular, issues of accessibility, inclusiveness, and economic equity are deepening considerations relating to policy, engagement and empowerment, and fundamental business models.

What has been the effect of that narrow focus on environmental sustainability?

A good example would be green buildings, which started to emerge as an initiative 25 years ago. That movement was predominantly driven by architects and, subsequently, engineers who wanted to conserve water and use fewer and less-toxic materials. It really took off because a certain category of building owners, who were largely from the public or institutional sectors or non-profits, decided they could justify spending a little bit more upfront for a better building. Ultimately, the design community got good at it and green buildings started to mainstream into commercial real estate. But that happened in a way that was almost completely divorced from broader economic considerations at a city level, and it had zero connection to questions of how we help the most disadvantaged – at least directly speaking.

What do you mean?

After a while, this kind of thinking was applied to social housing. It

took a long time for that sector to make a compelling case that the most important benefits of a green building aren't ecological, but concern the impact the building has on the health of the people who live in it. If you have better air quality because of more ventilation and you use fewer toxic materials, you'll have fewer respiratory issues associated with the building, for example.

Were those benefits neglected because it's hard to make an economic case for them?

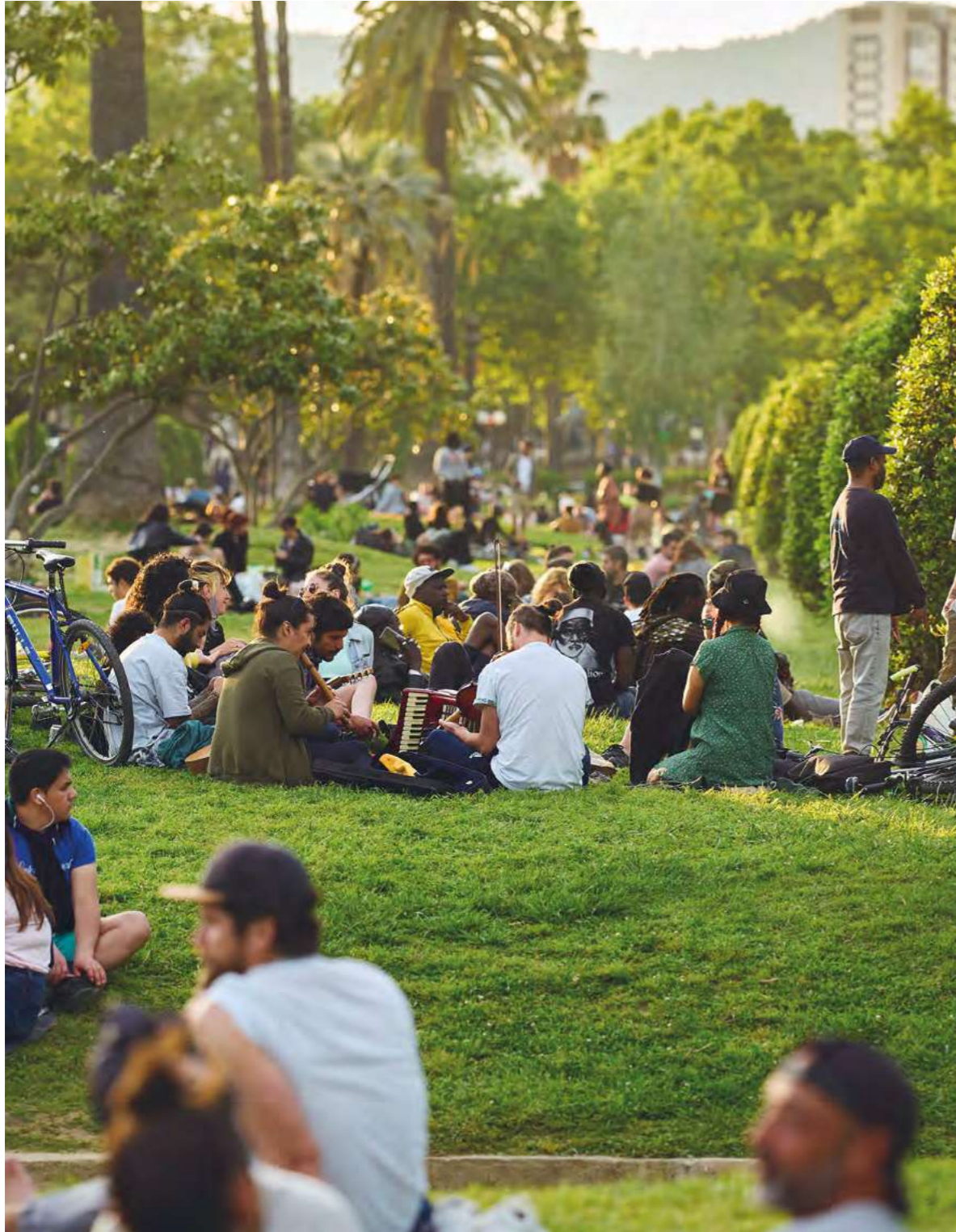
I remember the first time I heard the CEO or CFO of a company describe green buildings. He said that there are three numbers he cared about when people talked to him about a sustainable building: one, ten and 100. One was what he spent on utilities. Ten was what he spent on the cost of the building itself, including leases and mortgages. And 100 was what he spent on people. The initial argument for green buildings was to spend a little bit more than ten on the building to reduce your utilities bill by a tiny bit. The CFO couldn't care less. But when the research started to show that in terms of employee absenteeism, sickness and productivity, the benefits of being in a better building were three to six percent, all of a sudden that 100 you spend on people is giving you 103 or 106 worth of value.

That's the economic case for better office buildings. What about housing?

The same argument needs to be made at the policy level. Better buildings benefit everybody. You're promoting better health by having better buildings, and the amount of money we spend on healthcare is far higher than what we would spend on making buildings healthier. Can the healthcare system invest in better buildings and better infrastructure? What if governments took five percent of the total cost of healthcare and made experimental investments to make sure those who place the most demands on the healthcare system lived in better environments and were less isolated?

How should cities think about better housing?

We tend to take for granted that the existing housing is the housing we should have, as opposed to thinking more critically about the social and economic dimensions. A lot of individuals, whether they own their home or rent it, don't have the option to move. They end up spending a long time in a place that isn't designed for them to thrive. Maybe they're isolated, which has its own cascading negative effects. Maybe they're living near a place where the air quality is not so good and have respiratory problems. Maybe they're de-



Green spaces in cities brings physical and mental benefits.

pendent on a car, which fuels obesity and furthers financial stress because you have to pay for the cost of owning a car. All of those things interconnect. Given the way cities look at land use and development, they are struggling to comprehend and deal with that in a more thoughtful way.

What if people don't want to move?

We can change the narrative to one that invites people to think about how to thrive, especially as they grow older and their needs increase. We have decent data about factors that contribute to wellness and wellbeing as we age. People talk about aging in place, but aging in place in a bad house or bad neighborhood isn't necessarily a good thing. You can immediately see this becomes a more complex conversation. We will need to work collaboratively with our citizens on building such a narrative. We will have to work to reconsider questions of how we are using our land and what constitutes an active, vibrant, and healthy community.

Do you think cities have enough data to make decisions about what constitutes good or bad housing?

Our ability to gather and collect data is quite profound. For example, there are technologies that can do real-time air-quality monitoring at a very precise locational level. However, our ability as cities to understand and use that data to make better decisions is somewhat limited. And there are two areas where we're short of data. At an economic level, we often only look at the immediate implications. What's the cost of bad air quality at a neighborhood level? What we don't do well enough is connect the activities that are contributing to air quality to broader economic activities in the region. Is the air quality bad because we've got industries that allow us to be a wealthy city? Or is the air quality bad because we've got polluting legacy companies that really don't contribute a lot to our economy? Could they be cleaned up? Could they be relocated? We don't make the connections that would allow us to think about how we're using the precious, limited land we have. City leaders can learn a lot about these questions by listening to community members who have been at the forefront of environmental justice discussions for decades. In many cases, these community leaders help to gather the data and frame the arguments.

What's the other area where we're short of data?

That concerns the mental health aspects of how people experience their environment. This is hard data to collect because it's quite intrusive and necessarily includes qualitative factors. But that doesn't mean we shouldn't try. The initial conclusions about

access to green space in cities are pretty compelling – not just from a physical but also from a mental health perspective. Yet we don't have good, comprehensive data to inform better action, much less to mobilize the kinds of investments to turn plazas, urban centers, and even streets into at least partially green space.

² Green space

190 t

Green air

The plants in Hasenheide Park in Berlin save many tonnes of CO₂ a year simply by being able to grow in the middle of the city.

300 m

Green cities

A rule of thumb says nobody should live further than a few hundred metres from a green space.

But there are already lots of arguments in favor of green space².

There are. Green spaces reduce the effects of urban heat islands, contribute to better health and, in turn, reduce the demand on the energy system for cooling in summer, which is probably the most expensive energy in the entire built environment. Green space also manages rainwater and could manage greywater, the water from sinks and showers. There are a lot of ecological benefits, but they are usually not big enough to justify the investment to change our infrastructure. Mental health could be a much more compelling argument. If people are thriving and doing better, you spend less on healthcare. And happy people are happy with their government. Unhappy people are not.

Does the case for overall social wellbeing always have to be an economic one?

There's an argument that it costs more, but it's worth it. Voters don't just vote on narrow financial factors. As a society, we can make a compelling case for spending more because it's better. I would say Scandinavia has made that case at a high level. It is expensive to do things better for people and make the built environment more sustainable. But the quality of life in Scandinavia is consistently rated as the highest in the world. So, one could argue the investment is worth it.

How can cities that can't spend that much make their citizens' lives better?

I lived in France for three years, so we can consider experiences there. In many cities and towns across France, while elderly people are able to age in place, they are often isolated and live in old buildings without air conditioning or good ventilation. When it gets very hot in France, this situation can contribute to high numbers of deaths. Now, of course, this situation also exists in cities all over the world, and some cities are starting to address that issue. Another example would be children being able to walk or cycle to school without having to go by car or confront traffic. While there are cities that are great at that, I still do not see enough progress among the rest. They're just starting to address this issue, but if they could manage to move faster, people would be happier and thrive in their communities. Finally, air quality is a big issue in cities.

20 or so years ago in France, the policies implemented sought to reduce fuel consumption by emphasizing the efficiency benefits of diesel engines. Diesel contributes more to local air pollution, so that shift boosted efficiency but worsened air quality. Even in the leading cities, we could move more forcefully³ to address air pollution from private internal combustion vehicles. Any city could make a compelling case for taking money from parking fees and gas taxes and putting it into a revolving loan fund that would provide zero-percent financing for people to switch from a polluting two-stroke scooter to an electric motor scooter, as one example. We're incentivizing voluntary switches to cleaner vehicles, but the progress is not fast enough.

³ Crit'Air vignette

In order to get a grip in particular with the problem of particulate matter, in recent years more and more French cities have designated environmental zones. Anyone who wants to drive in these zones needs an environmental sticker, the Crit'Air vignette. In very simplified terms, this sticker is only issued to vehicles registered for the first time after 31 December 1996 – because they are often equipped with newer catalytic converters. However, exceptions are possible, e.g. for vintage cars. By the beginning of 2025, there will be fixed environmental zones in all large areas with more than 150,000 inhabitants. This affects about 40 cities, including Metz, Bordeaux and Nantes.



You've been working for a long time on making cities more sustainable. If there's one thing you'd wish to see tackled, what would it be?

I'd have to choose between two things: One would be to figure out our relationship to where we live and work, and how dependent we are on mobility systems. We need to fix that. For two years during

the pandemic, many of us lived and worked, to some extent, in 15-minute cities. Do we have to simply go back to how things were? Do we constantly have to move around? That's tied not just to cars. It's tied to how land is used – commercial areas in one place, housing in another. While it's true that we have many mixed-use neighborhoods, there is still more segregation than we can sustain. We should rethink the city around a more holistic spatial dimension.

What's the second thing you'd wish for?

It's about food – where food comes from, how good it is, how we experience it in a city. Even the best cities are full of fast-food restaurants. How we experience food in cities is so divorced from what the production of food entails. There's a real need to confront that at a fundamental level.

How could you sustainably feed a city?

There's an ecological understanding of the concept of bioregions. Different places have the ability to produce different things. We've gotten so specialized and over-scaled in production that if you're a region that's good at growing potatoes, you're growing potatoes for everyone. You can make a narrow economic argument for that, but that's a terrible way to feed a city because you're crowding out everything else. We need highly diverse food production as close to a city as possible, with limits on the scale of individual businesses that are producing food. Food is not a commodity, and before the 1960s, we didn't treat it as such. It should be a bioregional system for nourishing the people who live there. ●

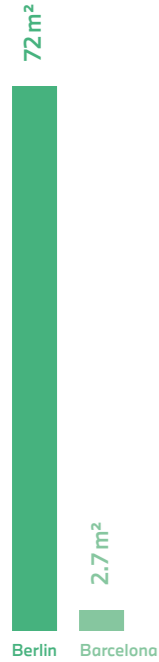


SÍLVIA CASORRÁN MARTOS: Inclusive Common Eco-Spaces

Sílvia Casorrán Martos believes public space is where all citizens should feel safe, complete, and part of the city. She outlines how Barcelona's Super Blocks have created a stronger feeling of identity, put a public square or green space close to people's homes, enabled socializing while shopping, provided benches for the elderly to sit on and chat, and reduced overall levels of car traffic. And she does not shy away from public space issues such as noisy night-time revelers and the gentrification of the nicer areas of a city.

i Sílvia Casorrán Martos

The environmental scientist has been Deputy Chief Architect of Barcelona City Council since 2021. She advocates the expansion of public transport, cycling, and walking in cities. Previously, Sílvia was responsible for the Metropolitan Bicycle Office in Barcelona (Oficina Metropolitana de la Bicicleta).



¹ Every city is different

While Berlin, for example, is more spread out, Barcelona's densely built-up urban area leaves hardly any space for greenery – 2.7 m² per inhabitant in Barcelona, 72 m² in Berlin.

What do you think is the purpose of public space?

Public space is the space for all citizens, where they should feel safe, complete, and part of the city. And it's meant not only for moving, but also for enjoyment. It's a place to hang out. When cars arrived in the last century, they really pushed citizens away from the center of the streets to the sidewalks, and they lost this feeling of being citizens. They became pedestrians. What we are trying to do is give people back this space and the feeling of being a complete citizen, not just a person moving from A to B. So we need more livable areas with more greenery to make people feel comfortable in public space.

Is turning streets into green public space more urgent in Barcelona because it has fewer parks than other European cities?¹

I think this isn't just a priority in Barcelona, but in all cities. We need to create high-quality public space near citizens. Our objective with the new Super Block we're building in Eixample in the center of Barcelona is that each citizen has either a public square or a green space within 200 meters of their home. During the 20th century, all cities underwent the same transformation with public space being given over to cars. So all cities now have to work to undo this.

People tend to focus on different public space benefits, e.g. health and mental health. But public space is also a key democratic forum. What do you see as its most important function?

I think that particularly in southern European cities where temperatures and population density are high, public space provides refreshment. We haven't got the typical northern European houses with their own garden. So we need public space to be resilient, non-polluting, quiet and green because this impacts mental health. But every city needs more high-quality public space because it's a place to meet. If everyone is sitting in their own garden, there's no social life. Having the chance to meet people in the street is really good for not feeling lonely. However, that requires a mixture of ground-floor uses. If you're in a city where there are no retail outlets at street level, it's more difficult to meet your neighbors.

Do you mean cafés and restaurants?

Cafés, restaurants, shops, bakeries, butchers. I was once part of a project in Sweden where we discussed how they wanted a more mixed city at street level. They hadn't originally planned for this and later realized retail outlets were necessary for an alive and livable city – for a higher quality of life. So, in the end, you have to work not just on public space but also on the ground floors of buildings.

I'd never thought about retail outlets having such an important social function. I guess it's because we often think that public spaces should be relaxing and calm, like a park.

You go to a park when you've got at least one or two hours of free time. But it's much easier and more common to socialize while you're shopping. You meet people in the street and you stop and talk. And if you've got a bench, maybe you sit down for a while and chat with your neighbor. In Barcelona it's perfectly normal for old people to use public spaces. But that's because there are benches. Part of my family is from the Netherlands, and old people there are generally inside their homes – partly because there's no bakery nearby and no benches to sit on. So they're not likely to meet their neighbors in the street. A simple bench can make all the difference for an old person to use a public space or not.

Elderly people use a public space very differently from children. When you design new public spaces, how do you make sure you're keeping everyone's interests in mind?

When we design a new Super Block, we take into account the local facilities. There may be a school, old people's home, or health clinic. We also take into account the needs of the people who live there and have a long participatory process to involve them. There's a steering committee formed by the residents and local shop owners but may also include school administrators or health clinic staff. We work with them to define what kind of activities and furniture they want in the streets. But sometimes we face problems. Some neighbors told us recently they didn't want any benches in their street in the new Super Block.

How come?

Because they wanted to avoid having young people drinking in the street. Of course, young people will drink wherever they are – and don't need a bench to sit on. But if you don't have any benches, all you achieve is that old people won't use the public space. So we need to be really careful and clear about what our objectives are. Take the picnic tables in the Super Block. They're nicely used during the day, but sometimes at night, people will stay there until late, drinking and shouting. Then the neighbors will complain. So the city has to be careful about what furniture we put there and what uses we're promoting because things can go wrong.

How do you resolve those conflicts?

We resolve them one by one. It's not that we've got a magic solution. In the case of the Super Block in Poblenou², for instance, if it gets too noisy at night, the neighbors call the police and that's

2 Super Block in Poblenou

Too much traffic, too little green space, high levels of air pollution – many cities are familiar with these problems. To do something about them, the City of Barcelona decided in 2015 to build a total of 503 so-called Super Blocks. The simplest way to think of them is as separate, small neighborhoods that are closed off from the outside and keep the traffic outside as much as possible, while offering space for development and greenery on the inside. The first Super Block from this new concept was built in the Poblenou district in 2017. Nine blocks of approximately 400 by 400 meters each were grouped into one unit here. Streets and parking spaces found new uses and the four large intersections became squares. In addition, the municipal administration equipped this Super Block with trees, benches, children's playground facilities, gymnastic equipment, picnic tables, and other elements.

that. In the second Super Block in Sant Antoni, we decided to put the tables in areas further away from the residents. It depends on each case. But we shouldn't stop improving public space because of unwanted consequences. We need to use other tools.

Much of what you're doing in Barcelona is reappropriating public space – taking it away from one group and giving it to another. That inevitably causes conflicts that many cities are struggling with. How do you deal with that?

We know what the most efficient way to move is, and we make space for that. Of course, these policies affect the 15 percent of the population who move by car and motorbike. But we're just changing the conditions. We're not forbidding anything. In the end, a city is very flexible. But if you build highways that allow people to live farther away from a city, people will move away to where they can have a bigger house with a garden, and then drive to the city. Depending on how easy you make things, people will make certain choices. When we created infrastructure for cars, what followed was urban sprawl. Now we're undoing that. A city needs to go back to its citizens, who are mainly pedestrians and users of public transport. And it needs to protect the most vulnerable and those who will never own a car: migrants, children, the elderly, many women. They're the majority.

In Germany, defenders of cars often argue that it's actually the people who depend on cars who can't afford to live in the city, i.e. are the most vulnerable and need protection.

When we look at the data from Barcelona, we see that there are more cars in areas where people are richer. Besides, to own a car is really expensive. So we don't consider a person to be poor if they can afford a car and pay for all its costs. They may not be rich, but poor people are going to work by bike, by public transport, or on foot. They don't own a car.

There's a school of thought among urban and traffic planners that says if you cut traffic in one area, you simply force it to go elsewhere. What's your experience with that?

There are scientific studies that really support what we call the evaporation of traffic. People will change the way they move.

Has this happened in Barcelona?

Yes. After you've made changes, the first days are always a mess. But then people find new routes or stop using their car. When we established the Super Block in Sant Antoni in 2018, traffic inside the block decreased by 80 percent. Outside of it, it increased by

1



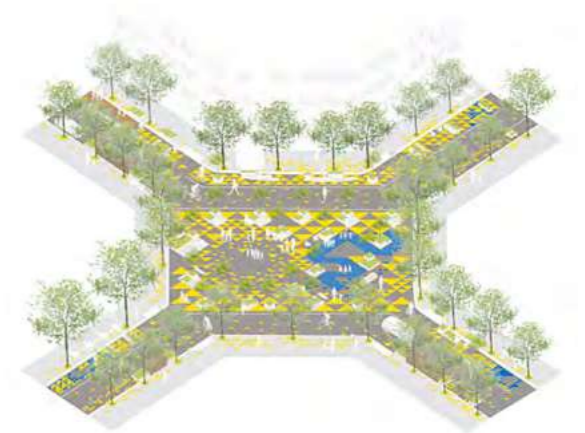
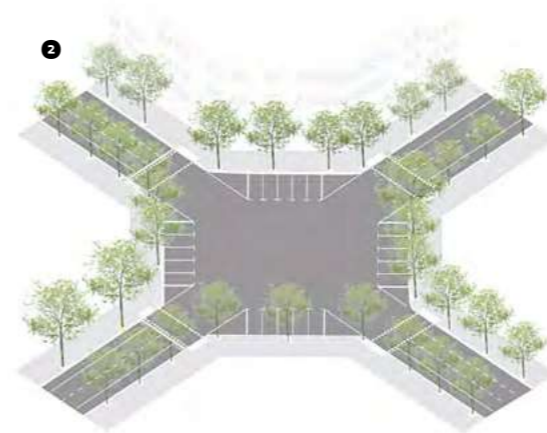
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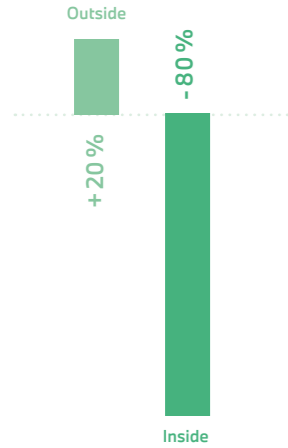
Super Blocks in Barcelona are enhancing the quality of life in a bustling metropolis.

2

Before and after – how Super Blocks create public space at the expense of traffic.

2





³ New routes with less traffic

"People will change the way they move," Sílvia Casorrán Martos says about the opening of the Sant Antoni Super Block.

20 percent³. So there was an initial overall decrease of 15 percent, but by 2021, traffic had dropped another 21 percent, including in the streets that saw a rise in traffic at first. Today, car ownership in the neighborhood has decreased by 9 percent. Our data also shows that 70 percent of the traffic inside the city comes from surrounding municipalities that have metro access. They do have alternatives.

Once you make an area nicer, house prices will inevitably go up. How do you deal with gentrification when you plan new public space?

You need to use different tools to avoid gentrification. What we cannot do is not improve cities and leave public space in a bad state so as to avoid house prices going up. Instead, we need to regulate house prices. For example, the Catalan government is trying to implement a maximum rent cap on housing. We also need to build much more public housing. Besides, we should improve not only a few streets but the whole of a city – all public space should be of high quality.

What would your ideal public space look like?

I want public space where everyone feels safe. I'm talking especially about gender urbanism because what is very clear is that cities were designed in the last century by men who moved around by car and didn't understand the needs of children or the elderly. They only saw a city with their own eyes. And what the BMW Foundation is trying to do with RISE – designing resilient, intelligent, sustainable, and equitable cities – is what we are trying to do, too, namely looking at a city through everyone's eyes and putting the focus on the most vulnerable. I want public space where my daughter feels safe, and where there can be social trust so the neighbors feel attached to the place. For me, the best thing would be that people identify with public space and consider it their own.

Because that creates safety?

It creates safety and community. If it's theirs, people want to protect public space and take care of it. When you feel the place is yours, it's part of your home. We want you to feel as safe in public space as in your home. And if this space is created together with neighbors and the neighbors choose what they want it to look like, this feeling of identity, of being at home, is much easier to achieve. ●



Chapter

5

Climate change & environmental sustainability



INDY JOHAR: On Habitat Environmental Management

Indy Johar believes climate change is a symptom of structural failure and broken relationships with ourselves, other people, our planet, and the future. Globalization cannot be undone because of our deeply ingrained interdependence as a planetary civilization. The answer cannot be sustainability localism, though cities need to make their supply chains more viable, sustainable, and systemically circular. A transition to full sustainability demands a fundamentally different way of thinking – whether it be in micro-autonomous logistics, reforesting of cities, or transforming cities' food systems. For such a radical transition we need new models of societal decision-making.

i Indy Johar

The architect is co-founder of the 00 project and of several social ventures and research projects as well. He recently founded Dark Matter, a field lab focused on building the institutional infrastructures for radical civil societies, cities, regions, and communities. Johar has taught and lectured at various institutions, including TU Berlin, University College London, Princeton, and Harvard.

Cities cover just a tiny fraction of the world's surface, yet consume a vast majority of its resources and spew out waste. Does that mean the relationship between cities and the natural environment is purely exploitative?

First of all, I think it's important not to see cities as distinct from nature. Humans are part of nature, and what we make is thereby part of nature. We shouldn't create a psychological schism. Secondly, we must absolutely recognize that humans have been treating nature as a resource. Our relationship to nature is fundamentally poisonous to the system. For me, climate change is a symptom of a structural failure that has to do with our broken relationships with ourselves, our planet, each other, and the future. We've been given the world as custodians and treat it as owners – and we've failed to recognize how fundamentally interrelated we are with life. One of the big illusions stuck deep in our minds is that if you put a plastic suit around a human being and put them into space, somehow they can exist. We can't. All sorts of damage and regression occur to human beings when we become isolated from our ecological context. We're much more embedded in this planet than we'd like to believe. And I think understanding that is really critical in order to move forward.

Many cities are making efforts to become net-zero. At the same time, the deforestation of the Amazon is actually accelerating and coal-fired power plants are still being built worldwide¹. What do you make of these uneven developments?

This is an issue of domain. Cities exist as legal institutions. They understand the risks – and now they're starting to think deeply about how to manage them. But we have to recognize that we're part of a planetary civilization. The problem with the Amazon is that, yes, it's completely legitimate for somebody who can barely afford to make a living to look at the resources around them and chop them down. But the fact is, we all survive on the Amazon. It's not just a resource for the locals. It's a regenerative resource for the whole planet. Yet we choose not to look at our planetary responsibilities and relationships. I think a paradigm debate is happening, and what's emerging is sustainability localism: let's be local, let's produce and consume locally. But that willfully ignores our planetary interdependence.

So you think we cannot undo globalization?

Just look at the microchip on which we're having this conversation. It's part of a planetary resource cycle. It's taken billions of human beings to get to the microchip. Your food nutrition cycle is almost certainly part of a planetary cycle. Some of that we can localize

¹ Climate facts

3,988 m²

More lost
In the first half of 2022, more Amazon rainforest was cleared than at any time since data began to be recorded.

60%

Less diversity
China still largely relies on coal-fired power to meet its electricity needs.

and bio-regionalize, definitely. But only a small part. And we can't do it alone. If, for example, the UK decides on transition, it won't actually save us. The reality is we're in an age where the massive systemic inequality we're going to see as a result of these crises isn't going to allow one nation or one city to make this transition and everyone else to fail. As soon as that happens, we're going to see mass conflict. So one of the big challenges we're facing is that we have to do it cosmo-locally – transition both locally and at a planetary scale. That simultaneity is really critical. We have to recognize how deeply ingrained we are as a planetary civilization. The idea that we can return to a 15th-century past where medicines will be produced locally is very unlikely.

What does that mean for governance? After all, under the current international system, people in the UK have very little influence over what happens in the Amazon.

That is the real 21st-century problem. We have to find a planetary solution. And the big crisis we're facing is we don't have the orchestration mechanisms. The fact is that it is equally important for Europe to make the transition as it is for South America – because if Europe does and the Amazon is destroyed, Europe's transition will mean virtually nothing. And that planetary-scale transition requires us to look at our planetary-scale capacities. It's not about world government. It's about our ability to manage common resources.

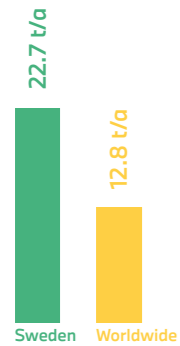
If localism isn't the answer, how can cities become sustainable?

Cities can look at their supply chains, their metabolic systems. What matters and materials are going into a city, and where are they sourced from? When you start to look at a city through the lens of metabolic flow, you can make resource flows less vulnerable. The goal should be making those resources viable, sustainable, and circular at a systemic level. Because the reality is we won't be able to cut our dependency on those resources. So if we're dependent on potassium coming from Chile, how do we make sure that it's sustainable, viable, and circular? That's the type of deep transition we're going to have to make.

A metabolism also involves excretion. What should cities do about waste?

There should be no waste. Look, our economy is going to have to massively transform if we want to live on this planet in any meaningful way. The first step is that we're going to have to make most of our materials fully circular. That's going to require significant amounts of energy. The second step is making some of our

² What matters



Matter matters
The average Swede consumed a lot more matter than the global average in 2016.

42%
Built environment



Cities matter
In the UK, buildings, infrastructure and transport contribute nearly half of CO₂ emissions.

materials biological. And the third part is, we're going to have to massively reduce our material base. An average Swede consumes 22.7 tonnes of matter a year². We'll have to cut that. We'll also have to make parts of our economy much more durable and focus on immaterial and non-material goods. All these things are going to have to happen simultaneously to enable this transition. So when I say zero waste, I think that is exactly the goal. We need to start building systems where what is perceived as waste becomes a resource for the next part of the cycle.

You mentioned earlier that you see climate change as a symptom of our broken relationship with the natural environment. Do you think private ownership is what broke that relationship?

It's definitely part of a systemic problem. But I want to be nuanced about this. I don't think it's helpful to take private ownership and agglomerate it into large-scale institutions, because single monolithic systems are unable to deal with the complexity and particularity of a location. So the first thing we have to think about is how we distribute and decentralize stewardship as much as possible. The second thing is the question of who is responsible for a piece of land and its destruction. Does the owner just have the rights of extraction or does ownership extend to the responsibilities of preservation? And the third dimension for me is building self-owning systems. How do we start to think about a world where humans aren't in dominion, but ownership is intrinsic in the thing itself?

Are there examples of self-ownership?

In New Zealand, rivers have effectively been made self-owning systems. They have the right to sue for damages. They exist as a legal person. A river has the capacity to preserve and enhance itself. Now, this isn't new. Corporations are exactly that – systems to which there's a legal constituent body, which is about preserving the corporation. The big thing here is that these are trusts as opposed to equity ownership models for nature-based systems. I think that's the beginning of a journey. At the same time, in technology you're seeing a whole new wave of thinking about autonomous cars. Do autonomous cars need ownership or can they be self-sovereign?

At Dark Matter Labs you've created a framework for the self-sovereignty of trees.

Yes, and also for the self-sovereignty of a house. The current problem is that if you own a house, you extract equity from it and you sell it by uplifting its equity. We have house price inflation as a result of ownership. And the other problem is, if you don't own it

³ Dark Matter Labs

Dark Matter describes itself as a “not-for-profit collaborating with communities to reshape and rebuild their institutions, instruments, and infrastructures.” Here are two of their city projects.



Sandbox Innovation for Civic Experimentation (since 2020)

On the one hand, cities are the first to encounter many problems; on the other hand, smart solutions must be built on civic legitimacy and through joint action by multiple stakeholders. Along with tech enterprises and local citizens, Dark Matter is developing new frameworks through combining technology and civic innovation.



Linen Quarter BID (since 2021)

How do entire neighborhoods become carbon-free? In collaboration with Linen Quarter Business, Dark Matter is working to identify opportunities to support the transition to circular neighborhoods in Belfast, Northern Ireland.



Whanganui River New Zealand was the first country in the world to make a river a legal entity.

and pay rent, you end up building somebody else's equity. And currently that's driving inflation. What happens when you start to think about it in a different way? The model of self-ownership builds a different idea of assets that is not about optimizing extraction. Of course, it requires new financial models, new contractual governance models, new relationships with things, which is really critical. And this builds on work that is rooted in both indigenous thinking and historic forms of ownership thinking.

Becoming fully sustainable is a huge challenge with many components. How do you break it down?

We need to think about the challenge in a fundamentally different way. We have to imagine this as like being after a world war. It's a transition of an equivalent scale. First, we're going to have to go from electric vehicles to electric bikes because we simply cannot afford cars and trucks in our cities. Second, we're going to have to transform our energy sources to a combination of deep thermal energy, micro-nuclear energy, and renewables, at least for the next 30-40 years. We're nowhere close to the scale of energy transition we need to make. Third, we're going to have to fully electrify cities. Fourth, we're going to have to shift our logistics infrastructure to micro-autonomous logistics when that becomes available. Micro-autonomous logistics will become really useful for the distribution of goods because you no longer have to factor in the cost of a human in those logistics chains – and the cost of a human is why we have large trucks.

What would those vehicles look like?

Probably three-wheeled bikes that can autonomously navigate the city and deliver goods. That's the only way we can reduce the human cost of logistics and thereby reduce its size, which is really critical in terms of road maintenance. That will also reduce our requirements for roads, which means that we can reforest cities, which is fundamental to dealing with heat and flooding. I would imagine half of a road being turned into linear forests.

Energy, logistics... what next?

Then we have to transform our cities' food systems. We're almost certainly going to move towards vat-grown foods combined with mass-scale aquaponics to be able to build the nutrition cycle. On top of that, we'll almost certainly have to rewild the food system to get the necessary nutrition density. And we're going to have to change the cost of food. Currently, our food systems are priced according to how much I am willing to pay as opposed to the societal costs they generate, which is a massive liability. Then we're

going to have to retrofit our housing to reduce air, light and sound pollution, and energy consumption.

Cities are struggling to set up new bike lanes. How are we supposed to make such massive changes?

We have to stop imagining that small experiments are going to solve our problems. We're talking about infrastructure-scale responses. And the key question that everything rests on is how we as societies make decisions in democracies. We don't have the frameworks right now to make decisions on this scale. We'll need to build new models of societal decision-making in order to look after not only the present, but also the future. ●



SARA BERTRAN DE LIS: On Multi-Level Risk Assessment

As one of the people responsible for the Johns Hopkins Covid-19 dashboard, Sara Bertran de Lis explains why resilient cities now need to have a data reporting infrastructure in place before a crisis hits – and know exactly what kind of data to track. She outlines how city officials are being taught to work with data, where resistance is encountered, and how diversity, equity and inclusion is becoming a priority in data collection, especially in U.S. cities.

Sara Bertran de Lis

Is Director of Analytics at Johns Hopkins University Center for Government Excellence and was involved in the creation of the Covid-19 dashboard. In one of her previous positions she worked as a data scientist.

As one of the people responsible for the Johns Hopkins Covid-19 dashboard that was used worldwide by public health officials, journalists and citizens, what did you learn about using data to improve urban resilience?

What we did with the Coronavirus Resource Center was to grab lots of publicly available data and put it together in a way that could be useful not only for policymakers, but also for the general public, epidemiologists, and the media. Making it useful for all these different audiences was a challenge because the levels of expertise and understanding of the data are very different. We had to translate the data and add context so it wouldn't be misinterpreted. Now, when it comes to cities, one of the lessons learned was that you have to put in place a reporting infrastructure before you actually need to use it, because you're not going to be able to set it up once you're in the middle of a crisis. Its time will come, because we now go through crises every few years – if it's not climate change, it's a pandemic or an economic crisis.

1 Climate equations



More intensity

When hurricanes hit land in the 1960s, they usually lost half their power after a day. Nowadays, they remain more severe due to climate change.

**+ 1 ha
=
- 1°C**

Less heat

A rule of thumb says that 1 hectare of parkland lowers the temperature in a city by 1° C.

How did you solve the problem of making the data useful for different audiences?

I'll give you an example. One of the metrics we were tracking was how many people were tested and how many positives there were among the total number of tests. The concept is not so complicated, but it actually has a lot of implications. If the number of positives is very small, it might mean that there aren't a lot of cases, but it might also mean that you're not testing the right people. So it became a measure of how good your testing strategy was. Epidemiologists care about these little caveats, but the layperson doesn't. What they want to know is how many positives there are where they live and if they need to wear a mask outside or not. So we had to come up with a way of presenting the numbers that was informative for epidemiologists, but not too distracting for the public. We decided to have different layers of complexity and allowed users to dig deeper by clicking on numbers.

You said cities need to have data collection systems in place before a crisis hits. What are the issues where data collection would be particularly relevant?

I'd say most of the crises will be related either to the economy or climate change. Hurricanes are happening more and more often in the U.S. and the Caribbean and they will become even more severe so cities in coastal areas need to have plans for tracking them. Cities can also track heat spots because that has a lot to do with how they manage green spaces, which can lower the temperature of a whole city¹.

How should cities decide what kind of data to track?

The environment is constantly providing you with data. That can be overwhelming. Sensors are an investment, so it's very important to study in advance exactly what information is going to be relevant. Cities need to create KPIs. First, they need to decide what questions they want to answer; second, what kind of data they need to answer those questions; and finally, they need to gather this data. We've seen cities that randomly started collecting data and then got to a point where they realized the data they were collecting was actually not useful for answering their questions.

Tell me about one.

I know a city that had issues with recycling. The contamination levels in the waste that could be recycled were going up and that was very expensive for the city. So they decided to track their garbage with sensors. But rather than tracking contamination every time they collected a trash bin, they did it at the end of the route. They ended up knowing the aggregated number of how many tons of recycled trash were contaminated, but they didn't know exactly where the contaminated trash was created. You need this extra granularity because cities struggle with their available resources. They asked us to help them solve their problem, and the proposed solution was outreach to teach people how to recycle. But the city didn't have enough resources to do city-wide outreach, and they hadn't collected the data in a way that could tell them what neighborhoods to focus on.

Johns Hopkins also teaches civil servants how to work with data. In a nutshell, what do you tell them?

We teach them that working with data requires several steps. The first step is to have a data governance plan in place. That's about data policies: who has access, where are you going to store it, what kind of privacy concerns are you going to consider, what is the proposed data inventory? The second step is to start the data collection process. We always assume that the city is trying to tackle a particular problem. They usually know that there is a problem, but sometimes they don't know exactly what it is – and because cities usually already have some basic data, they can use this first batch to try to understand the issue. Once you've done that, you can set up more data collection points to get more details. Then you take the third step, which is performance management: city officials set goals, build policies to reach them, and use data to validate whether they're doing it right or not. You can also use data to better target interventions and to know if you're applying policies in an equitable way. That's very important when we speak about

resilience because you need the city to be inclusive and equitable. Challenges don't usually affect everybody in the same way, and given the fact that resources are limited, data is very useful to target vulnerable populations.

You mentioned using data to validate policies. Does that include tracking unintended consequences, which all policies have?

Yes. You also have to plan for unintended consequences in advance. You need to put in place a strategy to be able to gather data about what you think are going to be the downstream effects. Let's take the example of the Super Blocks in Barcelona. Building these low-traffic islands in the middle of the city might increase traffic in the surrounding streets. So it's not only about measuring the air quality in the middle of the island, but also seeing whether what you're reducing in one area is actually increasing in another².

² RISE City Lab Munich

Cities will be the first to find answers to the question of how we want to live in the future. Without local solutions, it is impossible to tackle global problems. In October 2021, the BMW Foundation Herbert Quandt therefore invited committed actors involved in various ways in sustainable urban planning to a two-day conference in Munich. The aim was to jointly illuminate the political, social, scientific, and artistic dimensions of urban development at a national and international level. Following the example of the Super Blocks in Barcelona, the RISE City Lab Munich is also bringing together citizens and decision-makers in a multi-month process to share their approaches on how to make their city more resilient, intelligent, sustainable, and equitable.



Are city officials generally open to using data?

We do encounter pushback sometimes. Depending on past experiences, they might feel that using data to improve processes is



New Orleans One example of a city composed of different communities with differing needs.

going to highlight deficiencies in their teams. Also, in performance management plans, using KPIs and data to validate progress might become competitive and judgmental between departments: if you haven't made progress in your KPIs, you're going to be blamed. For this reason, it's very important to frame the use of data as a tool to support daily operations, rather than present it as the basis of all decisions.

You advise many different cities. Do they all come to you with similar problems?

There are two different kinds of cities that work with data. Big capital cities are very advanced in their use of data to tackle problems. For example, they plan infrastructure maintenance based on models that tell them when things are going to break. Mid-sized cities, on the other hand, barely use data. They often don't even employ a data analyst. We tend to work more with those mid-sized cities. And of the cohort of 22 cities across the Americas we will be working with in 2023, the top priorities are the economy, public safety, DEI, and infrastructure.

Is diversity, equity and inclusion one of their top concerns?

We've noticed in recent years that, especially in the U.S., people are starting to think of the city not as a whole, but as composed of different communities. Those communities have differing needs. In terms of data, that means it's not enough to collect data for the city as a whole. You need to start collecting demographic and income data. [The housing crisis](#)³, for example, may not be affecting everyone in the same way, but only certain neighborhoods or only young people. Knowing exactly who's going through what and targeting policies – that's what diversity, equity and inclusion is about.

Do you think mid-sized cities don't use data because it's too complicated?

Many people think that data is complicated, but actually, once you have the data and the data is good, analyzing it and providing answers is not complicated. In our experience of working with cities, it's way more complicated to get investment from city officials into the value of using data and convincing everybody to share resources between departments. These political issues are a lot more complicated than gathering data, which is an engineering problem. Of course, cities may struggle to hire people with the right skillset. But essentially, it's a matter of setting up some systems and starting to work with the data. And that's not as complicated as getting heads of department to talk to each other. ●

³ Nowhere to live

3,800,000

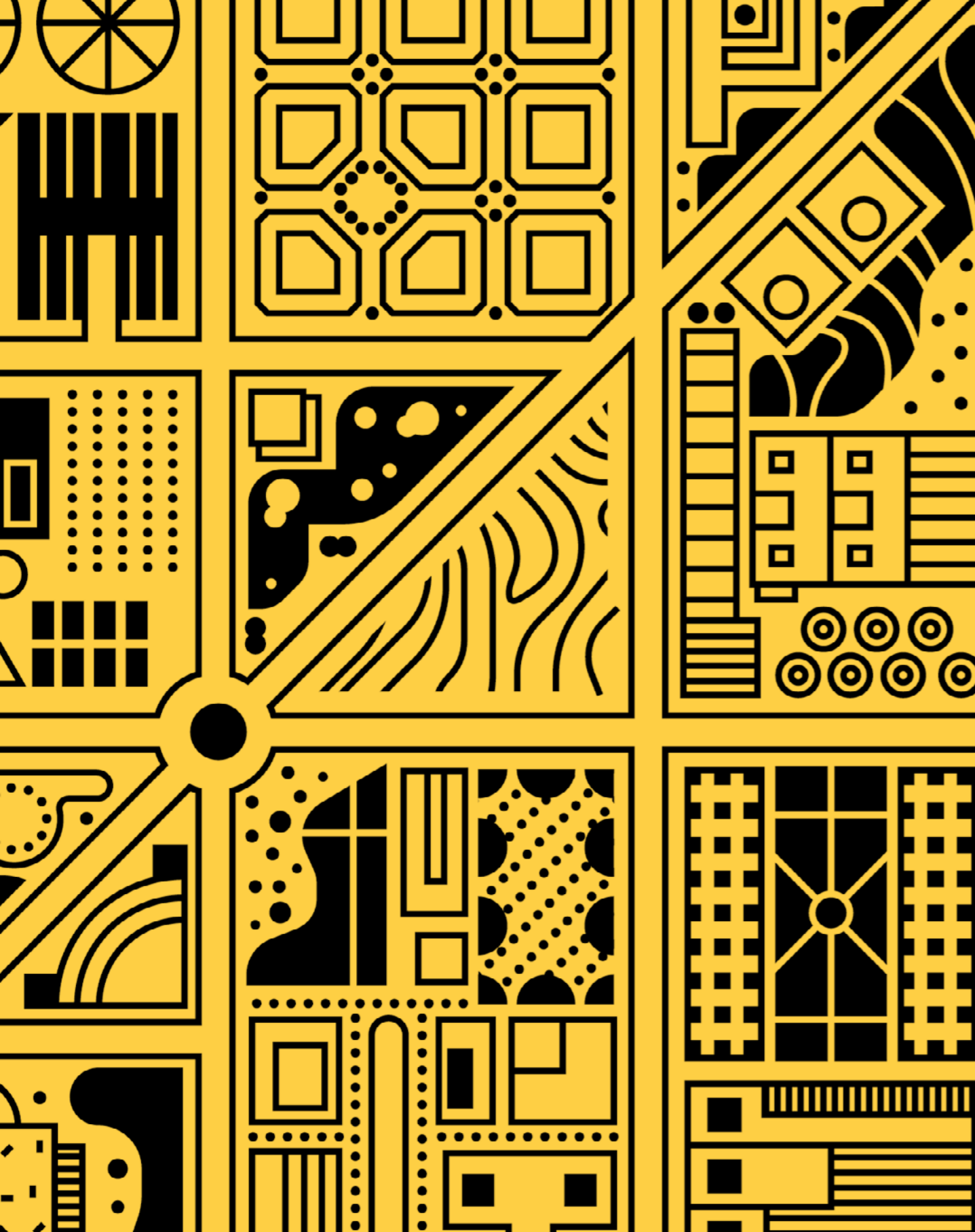
Housing shortage

Like many cities around the world, U.S. metropolitan areas lack housing units.

+100%

Housing crisis

According to the think tank Up For Growth, the number of housing units missing in the U.S. doubled from 2012 to 2019.



Chapter



Responsible leadership & city stakeholders

A Better Future Starts in Cities

A better future for both human beings and our planet demands meaningful leadership and collaboration practices that start in the places where most of us live – cities. To this end, we need a conscious, shared purpose and innovative action from committed citizens.

That is why the BMW Foundation launched the RISE Cities Fellowship for cities and innovative organizations to accelerate projects and initiatives that inspire new forms of cross-sectoral collaboration and responsible leadership in cities.

RISE Cities Fellowship

RISE Cities Fellowship is a hybrid program with a group of 22 leaders from 11 European cities working in tandems to develop ideas and solutions for their cities through immersive sessions, masterclasses, online coaching and mentoring by outstanding urban experts and members of the BMW Foundation Responsible Leaders Network.

The 22 RISE Cities Fellows in this program are representatives of initiatives and projects that demonstrate new ways of public-private or public-civic collaboration and leadership. The project tandems are made up of one public-sector intrapreneur and one public-private or public-civic stakeholder who work together on one project. The RISE Cities Fellows were chosen for their openness and willingness to co-create and learn from others.

Project criteria

The following criteria were applied in choosing the 22 Fellows and their inspiring initiatives from across Europe:

- Involving a city government intrapreneur and at least one external partner (e.g. startup/business, NGO, academia, etc.)
- Being a scalable solution that could serve as a blueprint for other European cities
- Relating to process innovation potentially supported by tech and/or urban data
- Creating a measurable impact for the community and having a measurable equitable outcome
- Serving at least one of the four RISE dimensions and open to considering all of them

Coaching and Mentoring

A key feature of the RISE Cities Fellowship program is the coaching and mentoring the 11 tandems will receive as they develop ideas and solutions for their cities. The coaching and mentoring will be divided up into four threads:

Thread I:

Responsible Leadership

This thread will inspire, encourage, and strengthen the Fellows as drivers of urban transformation and help them to have the vision, stamina, and tenacity to steer such change within a system still built on old paradigms.

Thread II:

Impact Measurement

This thread focuses on assessing the impact of the Fellows' projects. Each tandem will be provided with an individual approach to measure impact and develop the goals and drivers to support their project.

Thread III:

System Thinking

This thread will provide the Fellows with the language to describe the complex urban challenges they are seeking to address and equip them with an emerging set of practices to apply throughout the Fellowship and beyond.

Thread IV:

Becoming an Engagement Champion

This thread will specifically dive into building the narrative for inclusive, vibrant communities around the Fellows' projects and explore the different participative means that will enable the Fellows to connect a community to their project and stayed tuned with that community.

RISE Cities Fellowships – New Forms of Cross-Sector Collaboration and Leadership in Cities



These 11 inspiring initiatives were chosen as running projects that fulfilled the selection criteria listed on p. 110. Their impact on the RISE future visions listed to the right is detailed in the brief project descriptions opposite.

RISE FUTURE VISIONS IMPACTED	
●	Spatial Planning & Sustainable Economic Development
◇	Culture & Governance
▶	Mobility & Public Services
○	Built Environment & Public Spaces
■	Environmental Health & Climate Action

1 Valencia 360° (Valencia, ESP)

RISE FUTURE VISIONS IMPACTED	● ◇ ▶ ○ ■
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This research-by-design project involves five teams of designers providing their view of the future of the city in utopian and dystopian scenarios. Valencia 360° is adopting art and design to confront municipalities with the spatial implications of political agendas for sustainable urban development.

2 Cornerstone Measures (Västerås, SWE)

RISE FUTURE VISIONS IMPACTED	◇
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By taking the 'Beyond GDP' movement from the realm of think-tanks and academia into cafes, offices, playgrounds, and bus queues worldwide – places it has not yet gained traction in – this project aims to shift policymakers' attention to advancing what alternative indicators of GDP measure.

3 VePa Mobility Hubs (Berlin, DEU)

RISE FUTURE VISIONS IMPACTED	● ◇ ▶ ○ ■
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To promote a radically new form of parking, this project wants to build a rotary parking system with 12 mobility platforms providing enough space for all kinds of mobility: shared cars, scooters, cargo bikes, etc. These space-efficient mobility hubs will have a vastly improved CO₂ footprint.

4 Livable Exeter (Exeter, UK)

RISE FUTURE VISIONS IMPACTED	● ◇ ○ ■
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While aiming to build up to 12,000 new homes in 20 years, this project has environmental sustainability and culture at its heart. By understanding and defining what culture's role in spatial planning and place-making is, Livable Exeter will enable an ecology-culture mix and address urban decline.

5 From Sky to Table (Lisbon, PRT)

RISE FUTURE VISIONS IMPACTED	● ◇ ○ ■
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Through exploring the potential of vertical horticulture systems in a city, this project seeks to promote the environmental and socio-economic sustainability of underprivileged neighborhoods or communities through self-sustainability in food for local consumption.

6 JUSTNature (Gzira, MLT)

RISE FUTURE VISIONS IMPACTED	◇ ○ ■
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This project aims to drive a just transition toward low-carbon cities through micro-greening measures in homes, pollution-monitoring citizen-science sensors, a co-created community garden and a learning-based innovation space to boost community building and mitigate the impacts of gentrification.

7 Digital Twins (Hamburg, DEU)

RISE FUTURE VISIONS IMPACTED	● ◇ ○ ■
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By piloting cross-sector data integration and technological interoperability, this project will evaluate the possibilities for connecting the new technology of digital urban twins with the ecosystems of private actors (start-ups, SMEs, etc.) to address the question of how cities can tackle urban challenges.

8 Urban-Rural Hub of Transylvania (Cluj, ROU)

RISE FUTURE VISIONS IMPACTED	● ■
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By fighting depopulation and brain drain, diminishing discrepancies in the economic development of urban and rural areas in Cluj County and integrating diversified and transformational socio-economic development initiatives, this project is bundling key sustainable aspects of our living environment.

9 BlockChain for the City (Mińsk Mazowiecki, POL)

RISE FUTURE VISIONS IMPACTED	◇ ▶
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BlockChain is a tool that responds to the needs of humans in their interaction with all the physical and virtual elements of urban life. It will be used to manage access to fenced-off areas (buildings, parking lots, etc.) managed by municipal or private entities and to improve waste management.

10 LJ Works (London, UK)

RISE FUTURE VISIONS IMPACTED	◇ ○ ■
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This project provides space for local people to work, create, and thrive at a site that includes a community farm, community kitchen, coffee roastery that supports and trains the homeless, and various affordable workspaces for local residents. A space to try out new ideas and launch businesses.

11 AdaptCascais Fund (Cascais, PRT)

RISE FUTURE VISIONS IMPACTED	◇ ▶ ○ ■
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By sharing funds and guidance, this highly replicable city support model aims to elevate the collaborative potential of organizations to impact local sustainable development, particularly in climate action. The Fund is available to urban stakeholders regardless of their scope or size.

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HURST Publishing, Andrei Ianovskii/Unsplash
Kuvio, Roman Kugge, Claudia Leisinger,
Guilherme Mendes, MIT Senseable City Lab,
Angela Pfeiffer, Thomaz/Flickr

Illustrations

Studio Muti – Cape Town

Concept & Realization

Nansen & Piccard PartGes, Munich

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