BETTER TOGETHER

A W A R D

19

Collaborative solutions
for local climate action

Collaborative Innovation for Urban Climate Futures

Trends for the 21st Century

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Preamble

To achieve the goals of the Paris Agreement, we need more ambitious global and international efforts at all levels. Broad sections of our societies have long since been demanding a climate-friendly future, most recently the scientific sector with its urgent call in the IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels. The young generation has taken up this call and is being very vocal in its demands for swift and decisive action.

It is possible to have both a climate-friendly economy and society. All players and sectors have to play their part, beginning, of course, with political decision-makers. We are not starting from scratch. Considerable progress has been made that we can build on, especially in towns and cities and their infrastructure. Applications for a digital grid infrastructure for energy supply, intelligent transport solutions for freight and passenger transport, environmental sensors, sustainable food supply, intelligent waste management, safe drinking water supply and disaster management – there are already many well-established solutions for climate action and adaptation to climate change. Others are being developed.

The climate pioneers taking part in the Better Together Award from towns and cities all over the world are interesting examples of the variety of paths we could follow towards a greenhouse gas-neutral way of life. They show that many towns and cities have long since become "living labs" and drivers of innovation. They are developing and testing low emission economic practices and lifestyles, and resilient infrastructures and social systems. These examples should serve as models. It is crucial that towns, cities and countries use and foster the creative potential of their innovative NGOs, start-ups and SMEs.

This is why the Federal Environment Ministry supports the Better Together Award: The goal is to find innovative collaborations worldwide that are cross-sectoral and involve a range of stakeholders, that work on local climate solutions and that help towns and cities support their climate pioneers.

To achieve this, towns and cities also need regional and national governments, universities and co-operation across borders. I would like to thank all participants in the Better Together Award for their willingness to help shape the world of tomorrow. It would be a great achievement if this trend report could disseminate the submitted initiatives and lead to lasting success for all participants. This would be a substantial contribution to climate action.

Svenja Schulze

Federal Minister for the Environment, Nature Conservation and Nuclear Safety

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Preface

At Impact Hub, we believe that the power of collaboration is the key driver to finding solutions for the grand challenges of our time. And climate change is the most complex and pressing issue we, as humanity, must tackle now and in the coming century.

One thing we have learned from years of working with innovators across the globe is that it is not the idea that makes an innovative solution become a reality, but rather the ability to collaborate with a variety of stakeholders. However, engaging in collaborative innovation is extremely challenging and requires creativity, resilience and never-ending energy from all parties involved.

With the Better Together Award, we set out to find those who understand that climate change cannot be solved by one person, organisation or technology alone. And we are celebrating those who put their egos aside and dedicate their efforts to succeeding together. We are honouring their creativity, strengthening their mission and acknowledging that it is not only about having an idea. It is also about making it work. Together.

Impact cannot happen in isolation. It requires collective action for a climate future that works for all.

Nele Kapretz & Leon Reiner

Co-Founders & Managing Directors Impact Hub Berlin

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Enabling Climate Futures

In 2017, the Oxford City Council announced plans for the world's first Zero Emission Zone, which will incrementally ban all emitting vehicles between 2020 and 2035. The city joined forces with the start-up Urban Electrics and the product design consultancy Duku, to overcome the challenge of creating sufficient electric car charging facilities in a densely populated area. Together, they envisaged charging units that rise out of the ground when cars need to charge, with payment enabled by smart charging cables from the Berlin start-up Ubitricity. With the help of government innovation funding, the council

will soon start implementing the charging points with private and public partners.

Such 'collaborative innovations' are now blossoming across the globe, demonstrating how collaborations between diverse actors can drive meaningful climate innovation — and how technology and social innovations can contribute to achieving the Sustainable Development Goals (SDGs). Although local governments (or administrations) and actors like start-ups, businesses, nonprofits and NGOs may seem to work in different worlds, they often pursue common goals. Meaningful climate action can only

be created through collaboration, and the potential of partnerships between these actors is immense. Collaborative innovation matches the knowledge, networks and resources of local governments and cities with the entrepreneurial ideas and approaches of innovation ecosystems — to drive climate mitigation and adaptation.

This report aims to inspire action from all parties, by illuminating the trends that shape local climate action, identifying innovators driving this and shining light on what is needed to effectively collaborate for climate innovation at local levels.
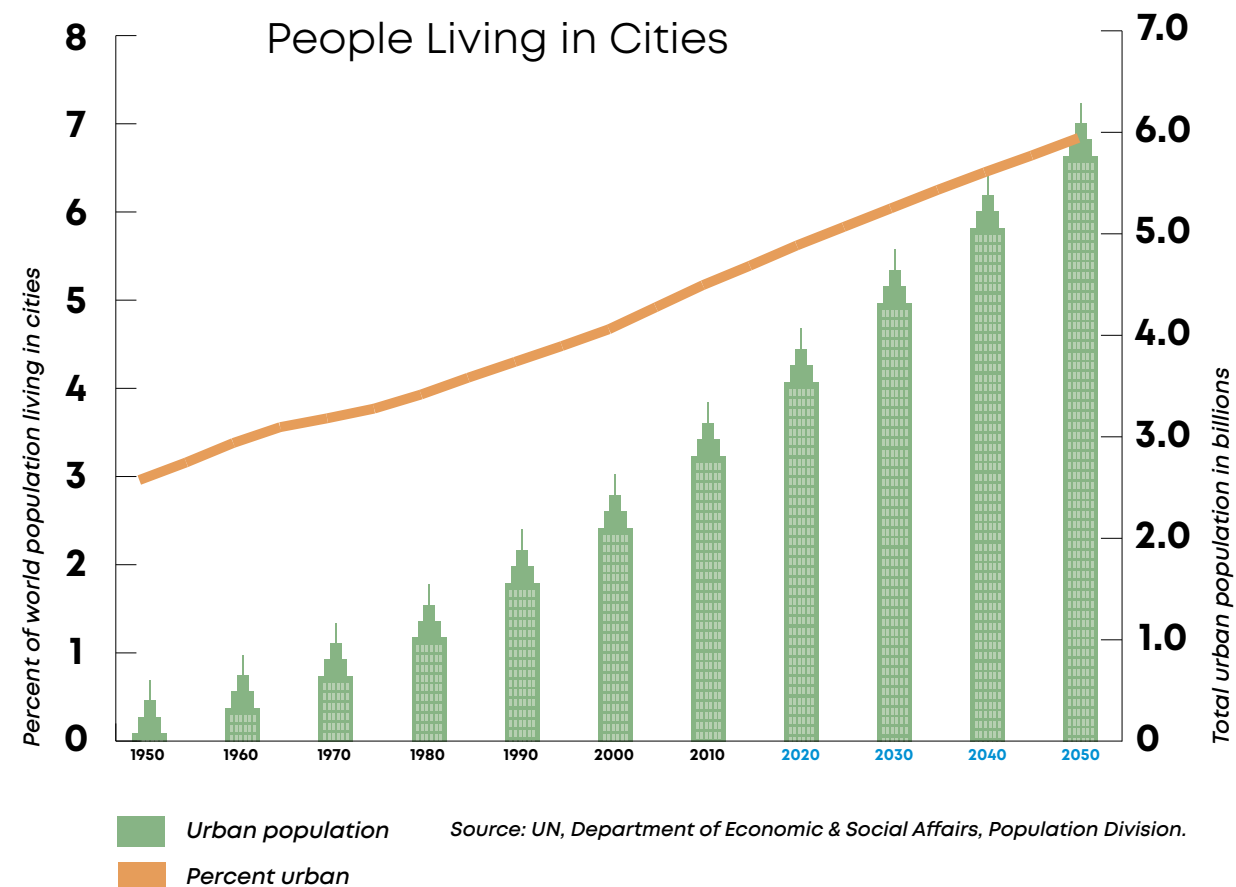
What do we mean by "Climate Innovation"?

Innovation can often be mistaken for invention (simply a new idea, product or service) and perceived as the exclusive domain of science and technological development.

This confines it to a linear and technological model that overlooks the importance of context, complexity and dynamic social interaction.

The grand challenges of our time, such as climate change, make the extreme complexity of the systems supporting our society increasingly clear. Climate innovation — the implementation of new ideas that contribute to meaningful climate mitigation or adaptation — can only be effective when factoring in this complexity.

Societal complexity implies multiple layers and multiple interactions between the economic, social, political and environmental spheres; it is not possible to affect one without affecting the others. Therefore, innovation for complex system change needs diverse and dynamic mixes of people, knowledge, conditions, resources and interactions. Innovation in the context of climate change means preparing ourselves to work with complex issues where the answers are often not known, and for which no single entity has the resources or authority to bring about the necessary change. While new technologies and digitalisation can play a vital role in climate innovation, we apply a social-technological perspective on innovation within this report.

People Living in Cities

Source: UN, Department of Economic & Social Affairs, Population Division.

Urban population

Percent urban

Local Relevance for Global Resonance

Cities matter. More than half of the global population already lives in urban areas. Every week, 1.5 million people join the global urban population. A staggering 87% of predicted urban population growth will take place in African and Asian countries, seven of which belong to the top 15 fastest growing economies in 2019. Rapidly growing megacities, expanding industries and changing consumer behaviour all over the world are placing huge demands on infrastructure, services, and above all, the climate and environment.

Nation states have not yet taken sufficient action to effectively tackle climate challenges. Urban governments, however, are starting to fill this gap, transforming mayors into climate activists.
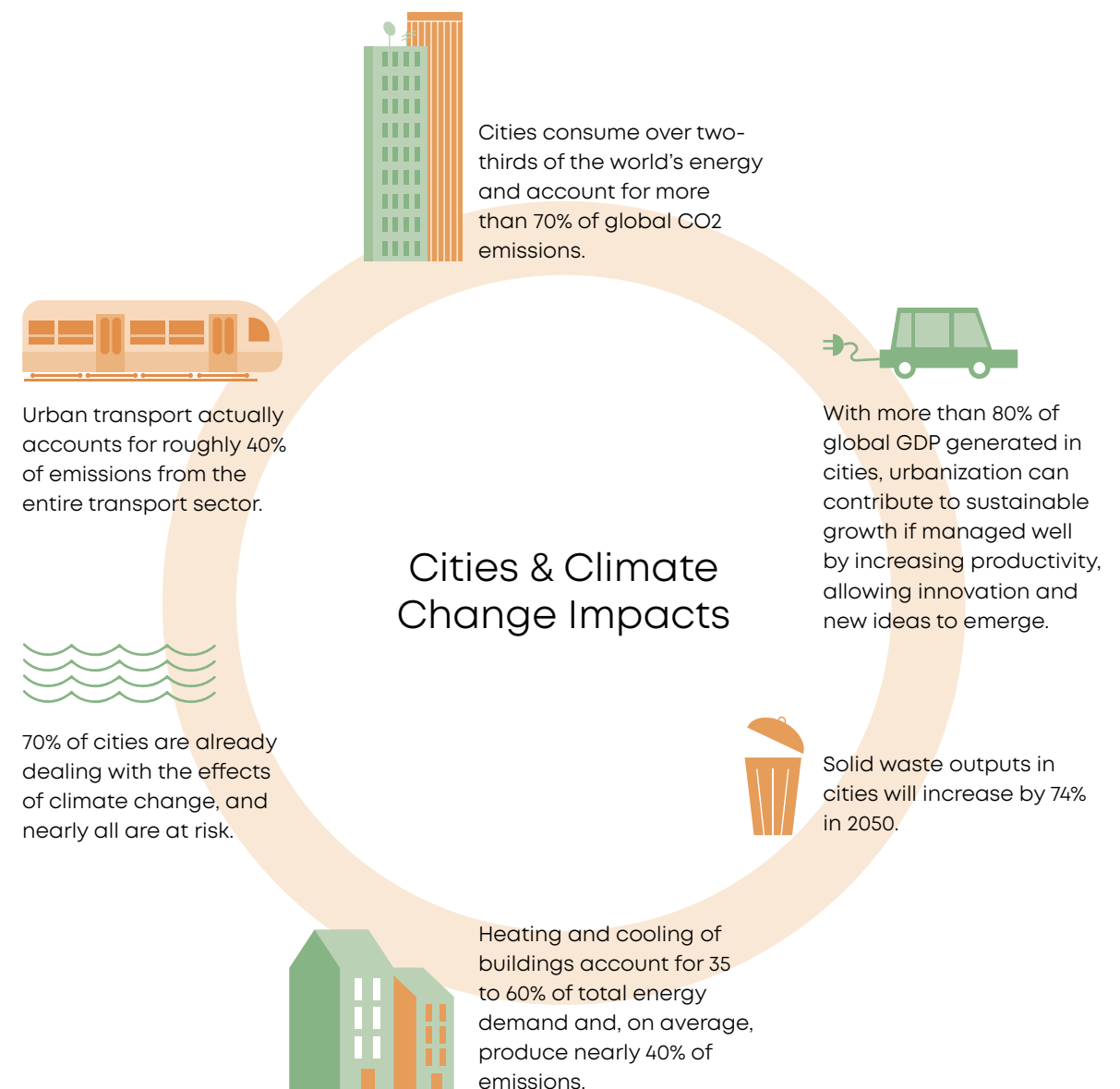
If cities become climate-friendly and climate-proofed, this already counts for more than half of the world. Hence, the city level presents tremendous opportunities for solving societal challenges through local action: Urban density allows for wide-reaching sustainable development at a local scale

through more efficient infrastructure and more sustainable patterns of production and consumption. Moreover, cities' vast socio-economic ecosystems are environments where innovative solutions to climate challenges can be tested and quickly scaled for impact.

On top of this, growing city networks also provide platforms for the exchange of lessons and best practices — for example, the C40 City Network, which represents 94 cities, 25% of global GDP and 10,000+ actions combating climate change.

Cities consume over two-thirds of the world's energy and account for more than 70% of global CO2 emissions.

Urban transport actually accounts for roughly 40% of emissions from the entire transport sector.

With more than 80% of global GDP generated in cities, urbanization can contribute to sustainable growth if managed well by increasing productivity, allowing innovation and new ideas to emerge.

Cities & Climate Change Impacts

70% of cities are already dealing with the effects of climate change, and nearly all are at risk.

Solid waste outputs in cities will increase by 74% in 2050.

Heating and cooling of buildings account for 35 to 60% of total energy demand and, on average, produce nearly 40% of emissions.

Sources: IEA, C40 Cities, UN Environment, UITP, Worldbank

5 Trends Shaping
Local Climate Action

What shapes the way we seek collaborative solutions to global climate challenges? Why is action at the local level a vital element of the global effort to address both climate impacts and the unsustainable patterns that drive climate change?

Emerging trends show that we are rethinking the way we live, work, consume and approach politics. As these trends collide, opportunities arise for innovators and cities to effectively co-create climate change mitigation and adaptation solutions.

Digitalisation: The rise of the decentralized technology

Technological change fosters bottom-up innovation. However, it also raises questions about monopolisation, inequality and ethics: The state needs to regulate.

The changing nature of organisations: From isolation to collaboration

The world has become too complex. Organisations cannot achieve everything on their own. Thus, they open up and connect with ecosystems in which complex problems are commonly resolved.

A new economic paradigm: The emergence of the circular economy

The circular economy integrates financial profits, ecological sustainability and social responsibility in equal parts. This leads to decisive shifts in economic activity and new business models pursued by a diverse set of actors.

Readiness to re-think policy: Co-creating policy

Political actors have learned from innovators, and increasingly use human-centred approaches to develop policy and public services.

Smart Cities: Physical-digital collaboration

Cities seek to improve their analogue infrastructure using digital solutions. They do this by deploying digital hardware architectures, from which different applications evolve, creating innovative and sustainable cities.

> ▶ **The success of an organisation increasingly depends on its capacity to develop and nurture participatory models of action.**

What do we mean by "ecosystem"?

Ecosystems are the collective sum of public, private and governmental stakeholders who compete and cooperate, working towards one or more common goals. Stakeholders can either share a physical location or be connected through personal or virtual networks. The presence of ecosystems suggests that much of a stakeholder's success is defined by their environment, not just by individual organisational capacities. Thus, healthier and more vibrant ecosystems are more beneficial for all stakeholders.

The changing nature of organisations:
From isolation to collaboration

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Case Study:
Knowledge Mile in Amsterdam

From Amstelplein square to the city hall, Amsterdam has established a vibrant living lab to tackle urban challenges like traffic, flooding and air pollution. This 'Knowledge Mile' provides a physical and digital platform for establishing crucial connections and creating productive partnerships, fruitful networks and creative interaction. It connects 30,000 residents, 60,000 students and almost 200 organisations — including businesses, nonprofits and local government. It creates an innovation ecosystem for collaboration on topics like circular economy, mobility or health.

Businesses and public organisations are reaching the limits of what they can achieve by operating in isolation and relying solely on in-house capacities and capabilities. Simply put, organisations need to do more with fewer resources — especially when facing complex challenges like climate change. Some futurists predict that, in 2030, the world's most successful organisations will be those harnessing swarm intelligence — bringing together the combined actions of huge numbers of individuals, organisations and initiatives to solve the world's most pressing problems. Thus, the success of an organisation increasingly depends on its capacity to develop and nurture participatory models of action.

To ignite swarm intelligence, organisations must open up and create effective interfaces between themselves and relevant ecosystems. Progressive organisations tend to have a lean structure with numerous ecosystem touchpoints and are capable of responding quickly to changes and enabling large-scale cross-boundary innovation. Many traditional organisations, however, still struggle to fully acknowledge their surrounding ecosystem as potential partners, let alone tear down the walls around them and innovate collaboratively on an equal standing.

In response to this, organisational models have emerged to build bridges with ecosystems: Platforms, for example, help organisations engage with eco-systems by matching different actors around joint interests. For example, the SDG Investments platform created in 2017 matches the ideas of innovators with impact-minded investors wanting to drive progress towards one or more specific SDGs: it acts as a hub to scale investment matchmaking for the common good. Thus, instead of an organisation creating value in a linear, isolated manner, platforms support organisations in more effectively pursuing open innovation. This is a first step towards collaborating in networked ecosystems.

Readiness to rethink policy:
Co-creating policy

In traditional policymaking, local governments develop policies based on expert advice and the ideology of the politicians in power. Public services and infrastructure are developed in isolation through set, linear processes, and internally implemented or put out to tender. Citizens overwhelmingly play a passive role. However, some public bodies are rethinking how to develop policy for cities and states that increasingly face complex climate change issues — policy that acknowledges the complexity of our underlying social systems. To do so, they are learning from the approaches applied by innovation ecosystems, and especially start-ups. Innovators and administrations both serve people: innovators their customers, governments their citizens. So, how can cities use start-up approaches to tap into their citizens' perspectives and

innovative potential, involving them in the co-creation of climate mitigation and adaptation solutions?

Entrepreneurs must constantly innovate, and two innovation approaches that recently evolved in the start-up ecosystem are 'co-creation' and 'human-centred design'. They involve developing a service or product as a collaborative effort through experimenting and testing, instead of by analysing and planning. Ideas are shaped according to customer feedback and then developed further, retested and modified. These iterations are repeated until a product or service meets the demands of the customer — in this relationship, the customer is at the centre of the process.

Applying this to policy-making implies profound changes. Lawmakers move away from master

plans with presumed outcomes based on studies and expert opinions. Instead of implementing top-down policies that assume people's needs, they explore them. This often leads to a reversal of roles: For example, in Tunisia, start-ups moved into the role of policymakers, and vice versa, with Tunisia's 'Startup Act', which parliament adopted unanimously in April 2018. This not only fosters start-up ecosystems in cities across Tunisia but also injects innovation into public entities, influences policy-making and is widely hailed as a model for bottom-up legislative processes. The lesson is clear: to address complex challenges, local governments and cities must learn from entrepreneurial approaches — and be open to test, fail, learn, and iterate.
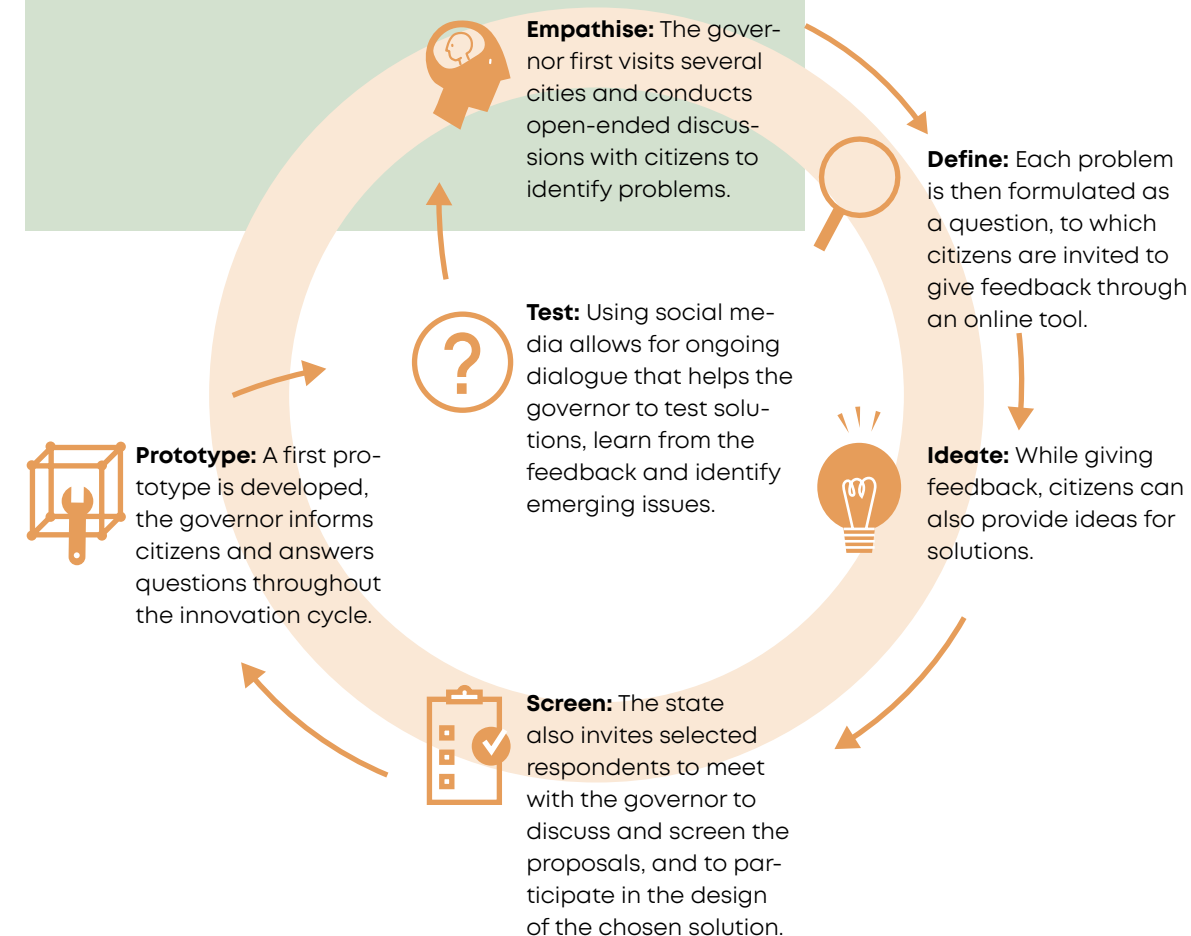
▶ **Lawmakers move away from master plans with presumed outcomes. Instead of assuming people's needs, they explore them.**

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Case Study:
Co-developing an Economic Agenda in Rio Grande do Sul

Rio Grande do Sul, a state in Brazil, uses virtual and real-world platforms to work with citizens in developing its economic agenda. Here is how it works:

Empathise: The governor first visits several cities and conducts open-ended discussions with citizens to identify problems.

Define: Each problem is then formulated as a question, to which citizens are invited to give feedback through an online tool.

Ideate: While giving feedback, citizens can also provide ideas for solutions.

Screen: The state also invites selected respondents to meet with the governor to discuss and screen the proposals, and to participate in the design of the chosen solution.

Prototype: A first prototype is developed, the governor informs citizens and answers questions throughout the innovation cycle.

Test: Using social media allows for ongoing dialogue that helps the governor to test solutions, learn from the feedback and identify emerging issues.

Digitalisation:
The rise of the decen-tralized technology

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► **Decentralised technology provides fertile ground for collaborative, climate-friendly economic systems.**

Case Study:

Smart Grids in Austin

In 2009, the city of Austin and its local utilities established the world's first city-wide smart grid, connecting 310,000 smart meters and other network components to cover its one million inhabitants and 43,000 businesses. In 2012, the Pecan Street Project, a collaboration between state agencies, established companies, start-ups, universities and citizens, launched the second generation of smart grids, decentralising the production by installing small energy sources such as solar panels and wind turbines. Smart Grid 3.0 outlines a future with advanced technology and optimised distribution based on big data — a future that will soon be within reach.

Technological developments and digitalisation accelerate the trend toward collaboration. With semiconductor and solar panel prices dropping rapidly, computing power and massive open courses available online and 3D printing readily accessible, anyone with a computer and internet access can develop new, sustainable products or services. When combined with decentralised technological architectures like the Internet of Things (IoT) or Blockchain, this allows a collaborative, climate-friendly economic system to emerge. These decentralised structures — known as collaborative commons — allow collaborative production to scale at near-zero marginal cost, challenging the power of dominant businesses.

The impact of this is already apparent in the energy sector: in-dividuals and organisations are installing solar panels en masse, producing affordable renewable energy and sharing it across a network of smart grids. They can thus circumvent the systems of energy conglomerates. Likewise, cheap IoT sensors, ubiquitous mobile phones, big data and algorithms allow us to better understand how citizens interact with city mobility, infrastructure and services — and to develop new climate mitigation and adaptation efforts that upend the unsustainable status quo.

However, with technological progress also comes risks of power centralisation, economic inequality and ethical issues — not to mention increased climate pressure. There is an urgent need to ensure that these new technologies serve both societies and our climate by enabling innovative, climate-friendly business models like sharing and circular economies. Scaling new technologies must thus become a collaborative effort, in order to help this bottom-up economic system to succeed and make the best of a diverse set of perspectives in the process.

Ensuring that the collaborative commons are beneficial requires new kinds of governmental intervention and approaches to fostering technology. The key challenge for administrations is to regulate different processes simultaneously: They must gain a deep understanding of business models and technologies, adjust organisational structures, consider people's needs, and provide long-term sustainability — all of which requires collaborative action and policies.

> **A growing number of innovators from the private sector and civil society understand social and environmental issues as an integral part of business value creation.**

A new economic paradigm:
The emergence of the circular economy

Despite the technology available to us, today's economy is still predominantly linear. We produce products, use them and throw them away, wasting finite natural resources and contributing significantly to global warming. The alternative is a circular economy, a model which aims to prevent resource waste by shifting to renewable resources, sharing assets, optimising resource use, repurposing waste, making physical goods virtual or applying new technologies like 3D printing. While a linear economy aims, at best, to minimise waste, a circular economy views waste as a new, valuable material input — recycling becomes upcycling.

The emergence of circular economies in all sectors has

great potential for mitigating climate change: A linear economy depends on short durabilities to ensure more sales and keep the economy thriving, while the circular economy focuses on long-term, sustainable use of products. For example, Amsterdam Airport does not own any light bulbs and is still well-lit because it rents them: it purchases light as a service. In such cases, companies are incentivised to design and build durable, reusable products because people pay for flexible use, not ownership.

Increasing demand for sustainable products and services has caused a shift to business models that see social and environmental issues as an integral part of business value creation.

A new entrepreneurship movement has spread across the globe as profit and non-profit sector innovators combine service delivery skills with the ability to manoeuvre in complex social and ecological environments. In networks like Impact Hub or Ashoka, thousands of innovators are blending social, ecological and economic good; such as Easy Solar, a rent-to-own solar panel start-up providing alternative sources of electricity in Ghana. In the face of climate change and urbanisation, social entrepreneurship is booming and taking the lead in the circular economy.

Climate Mitigation Potential of the Circular Economy:
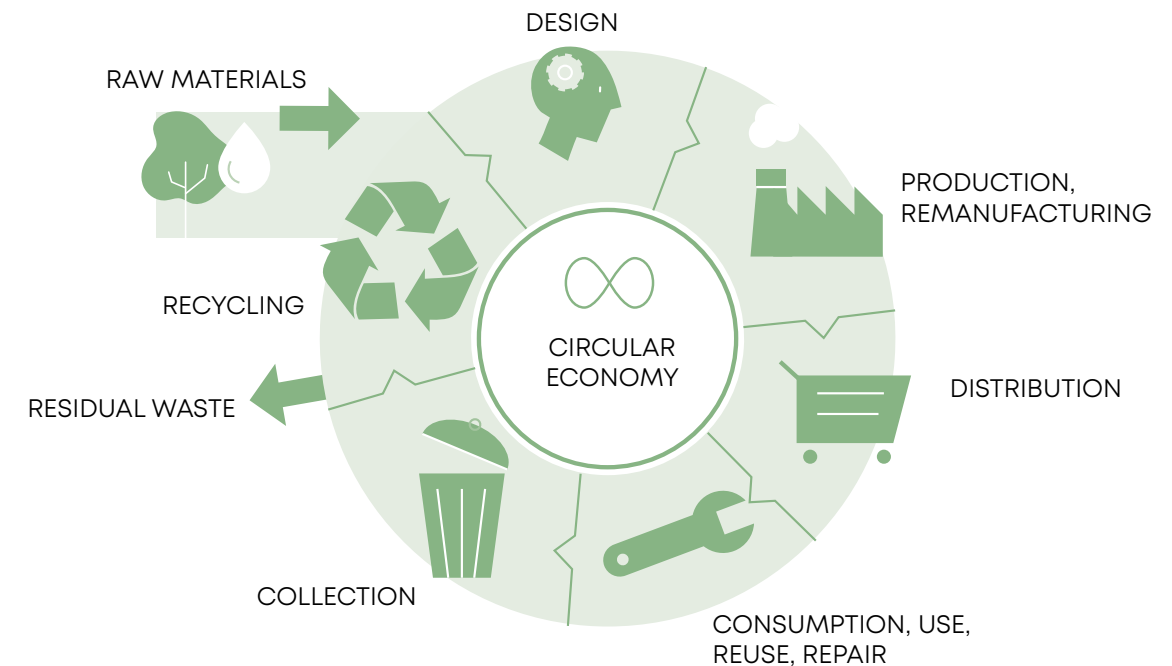
48% reduction of Carbon Dioxide emissions across mobility, food systems and built environment in Europe by 2030.

36% reduction of traffic jams in Chinese cities by 2030.

32% reduction of primary material consumption in Europe by 2030.

23% reduction of greenhouse gas emissions in India by 2030.

Source : Ellen MacArthur Foundation

Smart City:
Physical-digital collaboration

Cities are increasingly translating digital revelations into improved regulatory measures, urban planning and services. This culminates in the transition to smart cities that more efficiently and effectively provide a better quality of life for their citizens — and protect them from climate risk.

In the first step towards a smart city, collaborative commons are used to create technological infrastructure that builds on the existing, analogue infrastructure. Here, smartphones, sensors and data portals provide a broad data basis. Specific applications emerge from this as policymakers, big enterprises and start-ups translate raw data into useful tools to improve processes or provide tailor-made information. For example, renewable energy sources are connected to smart grids. Street lamps and distribution boxes are converted into electric car charging points. Waste bins are equipped with sensors and only collected if full, significantly reducing the emissions of garbage collection vehicles. Monitoring systems are connected to track pipeline damages — and to open mobility data pools, attracting entire innovation ecosystems to compete and collaborate towards the best future mobility solutions.

Attempts to create the perfect eco-city have emerged that combine these individual initiatives, from Dongtan in China to Abu Dhabi's Masdar City, Migaa near Nairobi and Songdo in South Korea. However, smart city technologies can only have an impact in mitigating and adapting to climate change if they are broadly adopted by their users — the inhabitants of a city. This requires increased use of human-centred design approaches for both product and service development. Only then can smart cities arise: as the result of convergence between the physical and virtual worlds and respectful collaborations between public and private allies.
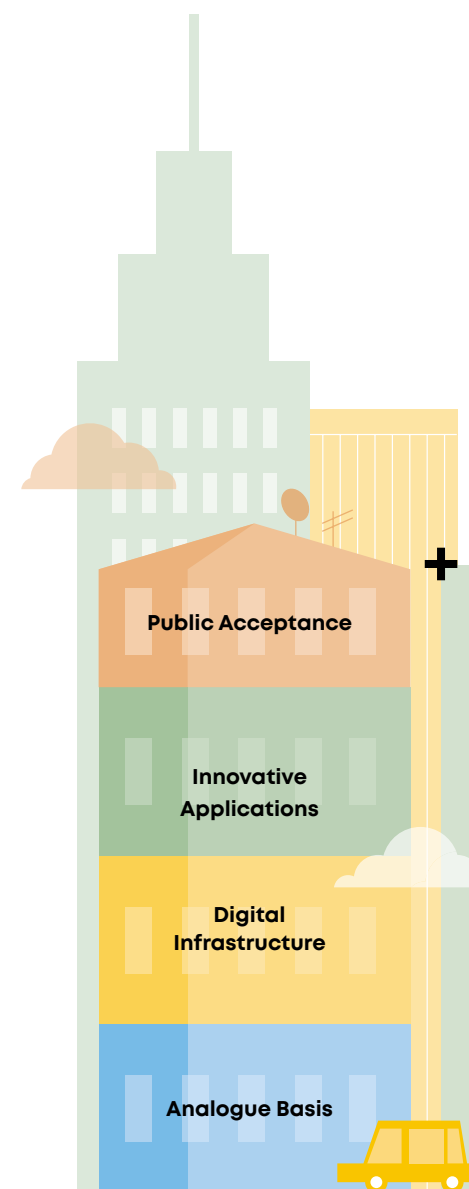
Components of Smart Cities

Case Study:
Smart City in Buenos Aires

In Buenos Aires, more than 90,000 street lights and 138,000 traffic lights (→ Analogue Basis) were renewed, connected and integrated into a data platform that included, in a second step, other data from countless sensors disseminated in the public space. Together, these provide real-time information and enable precise usage forecasts (→ Digital infrastructure). Based on this, the local government has enhanced the regulation of lighting, stationary and moving traffic, waste management and its early warning systems, achieving huge energy savings and CO_2 reductions. Local and international start-ups like 'allGreenup' and 'weSmartPark' use the data to offer digital solutions (→ Innovative applications) that citizens use to avoid needless traffic and to improve their ecological footprint (→ Public acceptance).

Collaborative Climate Solutions

Barriers to Collaborative Climate Solutions

These trends all underline the need for action, open innovation, co-creation and cross-sector collaboration; however, an array of challenges remains for potential collaborators.

Administrations and innovators often have different objectives, and control contrasting and, at best, complementary resources and skills. This can create major hurdles rooted in cultural and organisational differences, which must be identified and overcome for collaborations to be successful. These are some of the most important contrasts to be aware of:

Innovators	Local Governments
Focus on users	Focus on stakeholders
Result-oriented	Process-oriented
Testing and learning	Detailed planning
Lean organisation	Hierarchically organised
Interdisciplinary	Expert departments
Open innovation	Pre-defined solutions

These differences can lead to a vast variety of challenges. For example, the slow consensus and decision-making processes of a local government might frustrate entrepreneurial partners, while public entities often encounter difficulties or legal restrictions when leaving their well-established processes behind and trying out new ones.

But creating collaborative innovations is not the only challenging part: Scaling intimate collaborations to entire cities in a way that considers all project stakeholders is an even more demanding process. To mitigate the social and economic risks associated with scaling innovations that are naturally often imperfect — and to make the best of different perspectives — implementing innovations at scale must be a collaborative effort. This requires time, dedication and commitment from everyone involved, and above all, openness to work with unlikely allies.

Support Mechanisms for Collaborative Climate Solutions

The complex challenges of climate change will not be solved solely by governments and administrations, regardless of whether they are found at local, national or international levels. Local and regional public organisations, in particular, will need to explore new paths forged by cross-sector innovators, ignite diverse sparks of collaborative innovation and foster the implementation and scaling of locally-relevant climate solutions.

Public organisations can engage with external actors via support mechanisms such as:

+ **Re-thinking procurement:** By adjusting and designing leaner procurement processes and setting incentives for start-ups to participate in these, local governments can purchase and subsequently integrate existing innovations. To source the most innovative solution, they must refrain from calling for tenders for pre-defined solutions and instead state their challenges and allow for experimentation and learning throughout the product development or service delivery process. In doing so, local governments become early adopters of innovations, helping innovators to scale customised solutions to pressing issues.

+ **Co-creating a product or service:** Rather than purchasing an existing product or service, co-creating refers to the joint development of these, fostering the emergence of ideas through open conversation. The resulting products and services can be implemented in partnership, either by the local government or the innovator. In either case, both parties benefit from joint organisational development, co-branding or co-distribution.

+ **Investing in start-ups and entrepreneurs:** Governmental entities already invest in innovations by promoting science or providing tax incentives. Local governments can create further value by letting innovators work with the tangible and intangible resources that make up a city, by gathering key actors, providing community space, infrastructure, data and networks, or even establishing innovation hubs. Professionally-managed interfaces or platforms are needed to match the needs and demands of start-ups with a city's resources.

The Mindset for Collaborative Climate Action

▶ **Understand, focus, measure:** Cities need to identify their target communities, understand the climate impacts relevant to them, and identify what they need to achieve.

▶ **Start with people, not technology:** An early focus on technology makes it difficult to identify the best solution. Instead, start with empathy to understand what people feel.

▶ **Organisations don't innovate; people do:** Studies suggest that only 30% of people have entrepreneurial traits. Organisations taking collaborative innovation seriously should invest in identifying these people and fostering thriving innovators — and then help them connect with innovation ecosystems.

▶ **Seek unlikely allies:** Most collaborative innovation begins outside of innovation programmes. Interactive platforms for engaging with innovators and civil society can help match them with the local government agencies that need their ideas and can support with implementation.

▶ **Pave a path to collaboration:** Establishing an innovation partnership first requires finding out how each partner works and clarifying the process, expectations, obligations, ownership of the innovation, and governance design.

▶ **Provide a safe space to innovate, and simply start:** Innovations do not follow a linear process as they move from ideas to fully operational and scalable solutions. Governmental entities must thus set aside financial and operational resources for experimenting. Developing an innovation or adapting one to the requirements of a city requires iterating, mistakes, lots of learning and the ability to pivot. Welcome change.

▶ **It's not a sprint; it's a marathon:** Successfully developing an innovative product or service is only the beginning of a city-innovator partnership. Scaling the impact of innovations is the real challenge and takes time.

The Butterfly Effect: Collaborating for Complexity

US researchers have calculated that the extinction of bees could lead to crop failures in 80% of all plants, which in turn could result in 1.42 million additional deaths per year. The idea that small players or events can have non-linear impacts on complex systems was coined 'the butterfly effect', reasoning that a flap of a butterfly's wings cannot alone cause a typhoon but that it could potentially help shape the starting conditions for one. Hence, the butterfly effect has become a metaphor for seemingly small actions that alter the course of history.

This concept also further illustrates the importance of collaborating in complex settings. Economic, social, political and environmental spheres are inextricably linked in ways we do not and cannot completely understand; changes in one will affect the others. Where local governments traditionally lack innovation capacity, bottom-up creativity and user input — and innovators lack the resources to implement their solutions — collaborative action offers a way to combine their complementary capabilities to address complexities.

We cannot know in advance which innovative collaborations, like the metaphorical butterflies, will have a transformative effect with their local climate adaptation and mitigation solutions. But to ensure that our societies have every possible chance of addressing climate change, we must foster partnerships between a vast, vibrant array of actors at the local level — and scale the most successful of these local solutions around the world.

BETTER TOGETHER
A W A R D
Collaborative solutions
for local climate action

An Award that Highlights the Value of Collaborations

The Better Together Award 2019 is a global search for collaborative innovations solving local climate challenges — and an accelerator giving them the international visibility, support and connections to take their local action global. Run on behalf of the BMU*, implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and facilitated by Impact Hub Berlin, the award highlights the value of collaborations between start-ups, SMEs or NGOs and local governments that jointly implement innovative solutions for effective climate mitigation and adaptation.

*German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)

www.bettertogetheraward.org

BETTER TOGETHER

PARTNER 1

• Start-up
• SME
• NGO
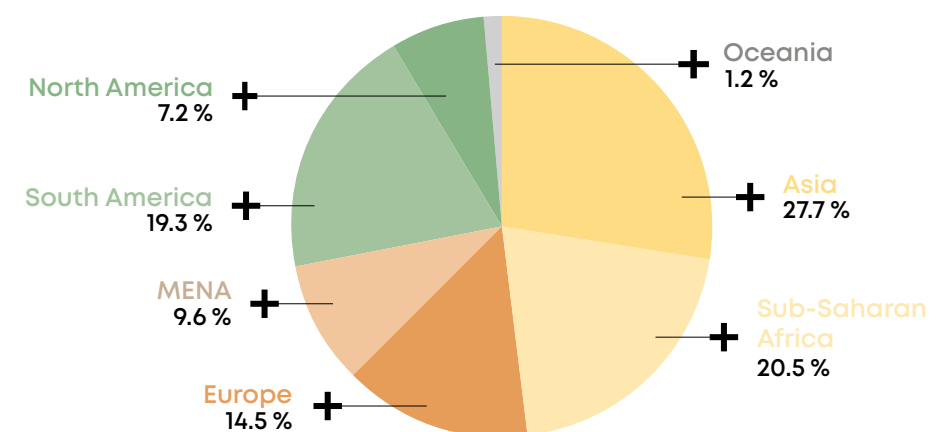
Local
government &
administrations

PARTNER 2
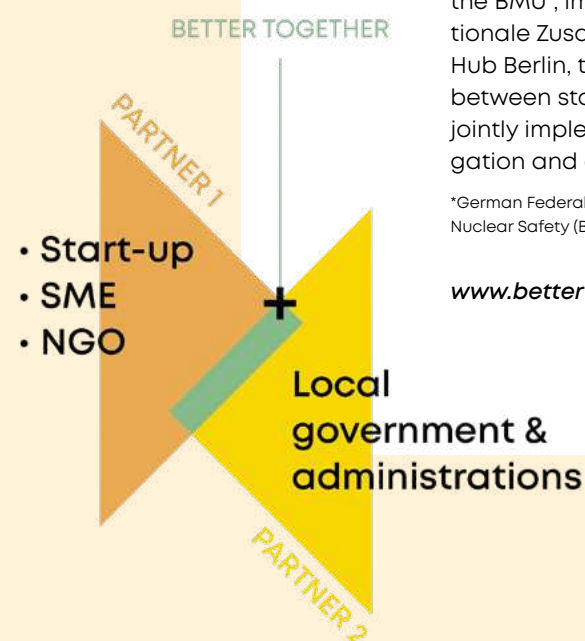
Enablers of Better Climate Futures

The number of locally-led innovations and collaborations focused on climate change and sustainability has surged in recent years and presents an opportunity to greatly accelerate the transition to a low-carbon society. Local 'architects' of change are seeking unlikely allies in transitioning to cities that challenge climate change, not create it.

More than 80 collaborations from 41 countries applied for the Better Together Award programme. The top climate challenges which applicants collaborated to develop innovative solutions to were better waste management (23%) and renewable energy use (14%). Developing solutions to increase energy efficiency in our daily lives was another important

topic for these local-level collaborations.

In the next pages, five finalists and the five winners of the Better Together Award give a taste of the collaborative innovation that has the power to solve pressing climate change mitigation and adaptation challenges across the globe.

North America
7.2 %

South America
19.3 %

MENA
9.6 %

Europe
14.5 %

Oceania
1.2 %

Asia
27.7 %

Sub-Saharan Africa
20.5 %

Regional distribution of Better Together Award applicants

© Carbonlites

Waste in, energy out

The municipal body responsible for Bangalore's infrastructural assets gave Carbon Masters land and 85% of the starting capital for their next plant — and began daily deliveries of 10 tonnes of food waste. The fertiliser produced from this organic waste is sold to local farmers, and the biogas is consumed by nearby households and businesses. Every day, this station prevents the emission of 5 tons of methane and 1.2 tons of CO_2, while producing 400 kg of biogas and 1 tonne of fertiliser.

Three is better than two

Carbonlites fits perfectly into the municipality's strategy to reduce landfilled waste and to instead process this waste locally. But the initial partnership would not have been possible without the help and facilitation of the influential residents association, which mobilises efforts to clean up the borough and improve its waste management.

winner

Carbonlites

Biogas stations that eat up organic waste

India suffers from illegal dumping and overfilled, mismanaged landfills; leading to mess, chemical leaching and greenhouse gas emissions. The extend is so severe that the renowned 'Garden City' of Bangalore is today known as "Garbage City". Kevin Houston and Somnath Narayan founded the 'Carbon Masters' CO_2 mitigation consultancy after meeting at the University of Edinburgh, but when Somnath's visa expired they needed an idea linked to his home country, India. They set about prototyping a biogas and biofertiliser producing station for a temple in Bangalore, installing it in a refurbished shipping container. When the local 'Residents Welfare Association' spotted their solution — and smelled... nothing — the new project, 'Carbonlites', took off.

© Carbonlites

© eTrash2cash

Spread the word on waste — and what it's worth

RMSB used town hall meetings, TV and radio to promote a new collaboration with the start-up "eTrash2Cash" to around 200,000 citizens. The start-up's app and e-payment solution offers a chance to turn plastic, paper, metals, food, glass and other trash into cash, and primarily focuses on women with low incomes. Collectors can take trash to 20+ 'recycling kiosks' all around Kano, where the waste is sorted, processed and recycled into reusable products for use by the same community. In return, collectors earn 5-6 US dollars per month, which they can also opt to put towards health insurance — a first for many.

Providing equipment and raising awareness

The programme has collected more than 100 tons of trash since 2016, of which 93% has been recycled (e.g. into compost for smallholder farmers or raw material pellets for new plastic products), resulting in collector payouts totalling €14,000. Furthermore, RMSB provides financial assistance for the purchase of plastic recycling equipment, in addition to grassroots education on environmental sustainability and climate change for low-income communities.

winner

eTrash2Cash

Earn money in exchange for useful resources

Trash means trouble to the "Refuse Management & Sanitation Board" (RMSB) of Kano, Nigeria: The city generates around 10,000 tons of rubbish every day, but not even a third of it is properly reused, recycled or disposed of. The rest is often illegally burned and releases hefty amounts of methane and other greenhouse gases, as well as pollutants that pose health risks to the city's inhabitants. This needed to change.

© eTrash2cash
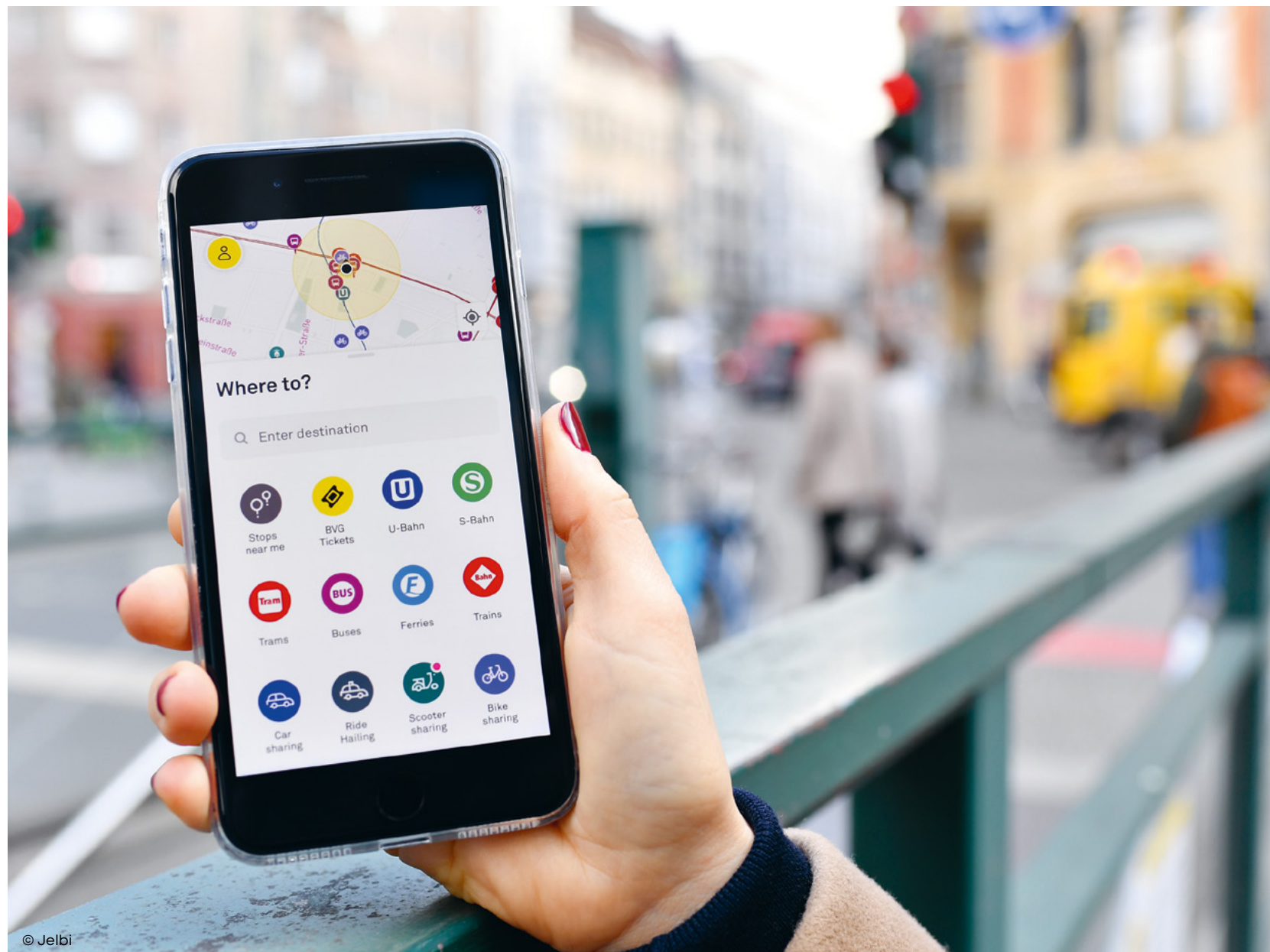
© Jelbi

Partners
» Berliner Verkehrsbetriebe -
  BVG (Public transportation agency)
» Trafi (Start-up)

Location
» Berlin, Germany

Website
» www.jelbi.de

From Jakarta to Berlin

'Jelbi' is a service that will soon be launched by Berlin's public transportation agency, the BVG. It merges mobility options such as public transport, shared vehicles and on-demand services in one app, allowing for seamless travel across the city and easy payment. Trafi, the Lithuanian start-up that provides the white label technology, has a proven track record in cities such as Jakarta, where car use significantly dropped and bus transport rose by 20% after it introduced a similar application. The Berlin collaboration will mark the first time that a European city of this size provides a deeply integrated mobility network, with more than 25 different public and private transportation partners combined in one platform.

Dynamic pricing and better planning

The collaboration shows how competitors can team up across entire city mobility ecosystems, to together provide the best user service and decrease environmental impacts. In the future, Jelbi could introduce dynamic pricing — e.g. paying a lower fee for commuting outside of rush hours. And the data collected can help city planners to spot mobility patterns and even use these to help prevent traffic jams or introduce new bike lanes.
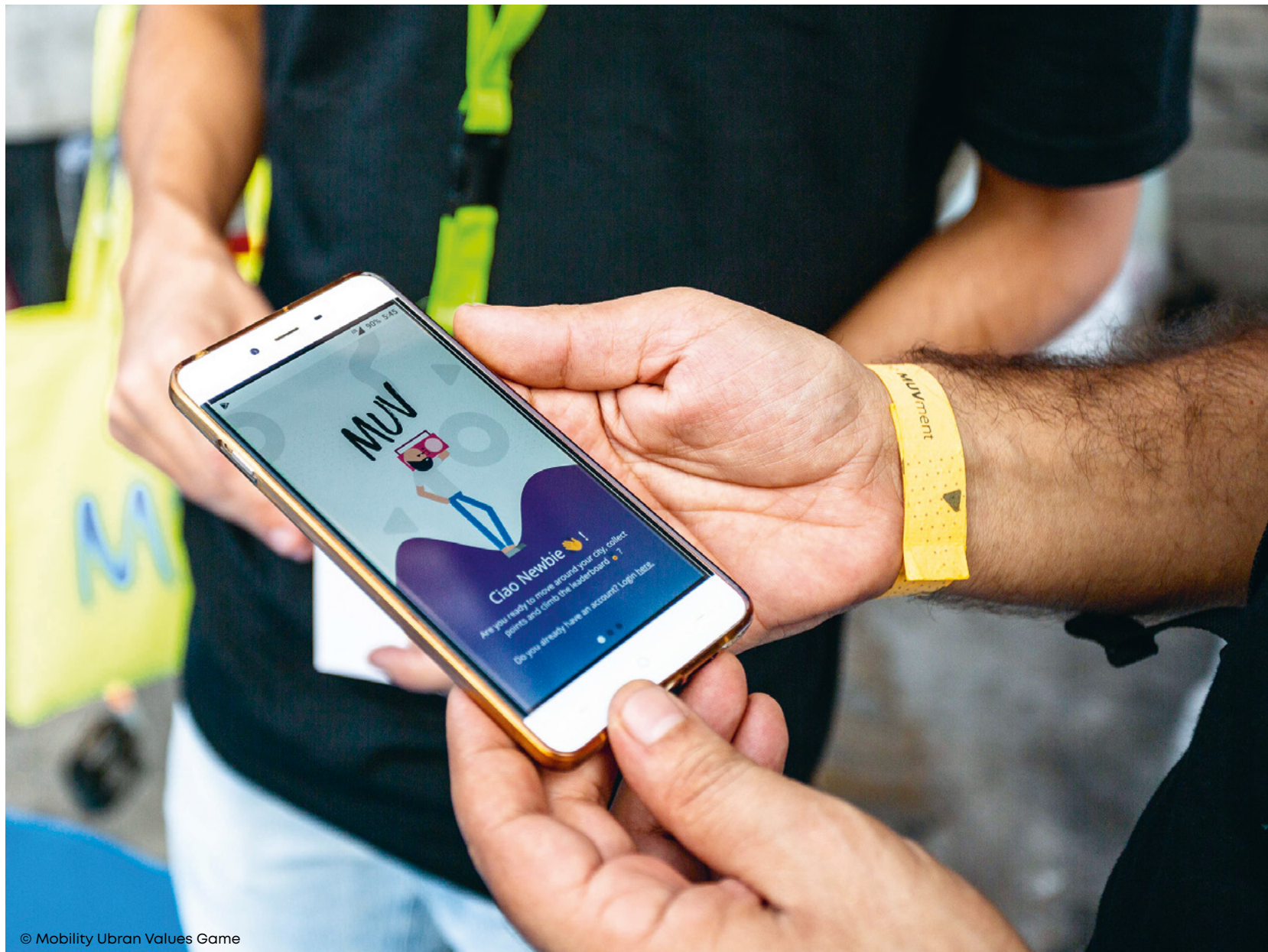
winner

Jelbi

Reducing car traffic with seamless metropolitan mobility

They take up space, form disorderly queues, smell bad and often carry only one person: cars. Many alternatives are available, especially in large cities like Berlin, Germany — from (e-)bikes to car-sharing and regular public transport. The main reason people still opt to drive seems to be the (perceived) convenience of personal cars, but this individual choice leads to stress, poor air quality, increased CO_2 emissions and decreased city liveability.

© Jelbi

© Mobility Ubran Values Game

Partners
» Municipality of Palermo
» PUSH (NGO)

Location
» Palermo, Italy

Website
» www.muv2020.eu

From behavioural change to policy change

The mobile app tracks users' daily routes and assigns points for sustainable behaviours across 31 indicators, encouraging them to participate in city-wide challenges. During the testing phase in Palermo, Italy, the first 2000 users reduced their carbon footprint by an average of 54%. The data gathered via the app and sensing stations around town will be used to allow policymakers to enhance planning processes and let civic hackers build new services. With this user-centred approach, city planning follows citizens' habits, not the other way around.
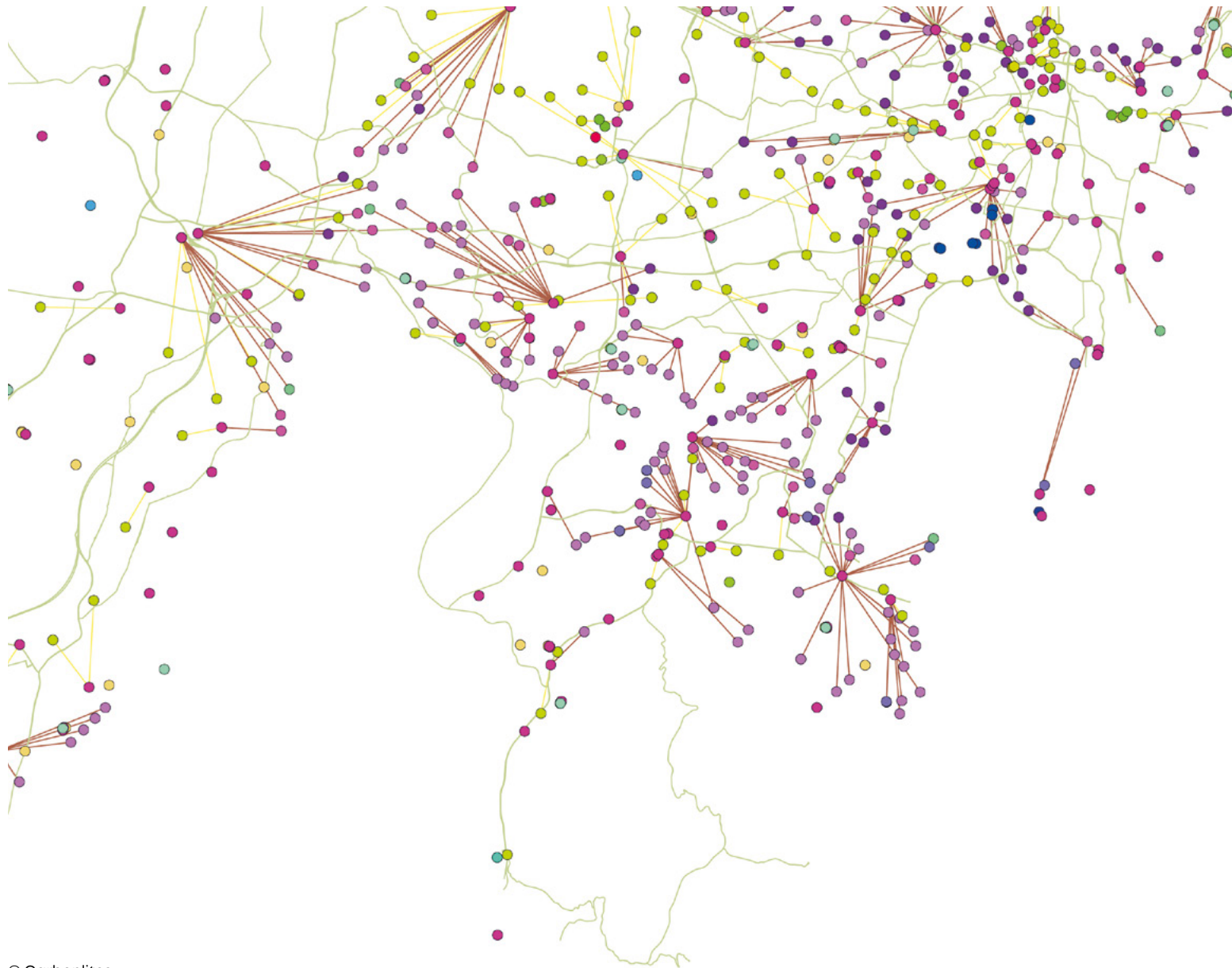
MUVing Europe

MUV is the result of a collaboration between the municipality of Palermo and the social innovation lab PUSH, and both partners coordinate local activities such as co-creation workshops and design sessions with citizens and stakeholders. After receiving 'Horizon 2020' European research and innovation funding, five more pilot projects have been established — in Amsterdam, Barcelona, Fundao, Ghent and Helsinki. Together, these will provide mobility data and insights from diverse areas of the EU.

winner

Mobility Urban Values Game

Moving towards city planning based on citizen data

Redesigning our cities for greener traffic, renewable energy or improved energy efficiency is undoubtedly an important climate mitigation investment — but such changes are often cost-intensive and may be less inefficient than other alternatives. The "Mobility Urban Values Game" (MUV) takes a different approach: changing citizens' habits through a gamified mobile phone application that mixes digital and physical experiences, and promotes a shift towards more sustainable and healthy mobility choices.

© Mobility Ubran Values Game

PUSH.

© Carbonlites

Mapping cross dependency : Coloured dots represent types of assets (eg: roads, substations, trainlines, pumpstations).
Coloured lines represent cross dependent relationships

winner

XDI Sydney

Mapping climate future down to single asset risks

Imagine playing a city-builder computer game that forecasts climate reality. You want to put a power station near the beach? Oh no — it will be flooded by sea level rise in 2050. Should I build train lines through the hills? Better not, by 2080 there will be regular wildfires. But there is no need for games: Sydney already models this based on serious science and big data.

## Crossing boundaries and opening data

The platform created by the XDI Cross Dependency Initiative combines data sets with extensive climate models, to calculate the climate change and extreme weather risks that city assets will face. From pipes to train stations, the XDI platform lists 100 different city assets and is capable of integrating asset cross-dependencies and critical services such as power, water and communications into its analysis. But the platform is heavily data-dependent, which is where the New South Wales Office of Environment and Heritage comes into play. The State government department brought local government and State agencies and infrastructure providers together to pool funding for the project and to open their data up to XDI, despite some parties being competitors. The City of Sydney and Northern Beaches Councils (in the Sydney region) were foundation partners.

Invest right today to avoid future risks

XDI clarifies vague climate scenarios by creating business cases and cost analyses for the infrastructure decisions that are made today. In the wider Sydney area, extreme weather and climate change cause millions and millions of Australian dollars in damages across all sectors every year. The future is clear: If we do not act now, we stand to lose... a lot.
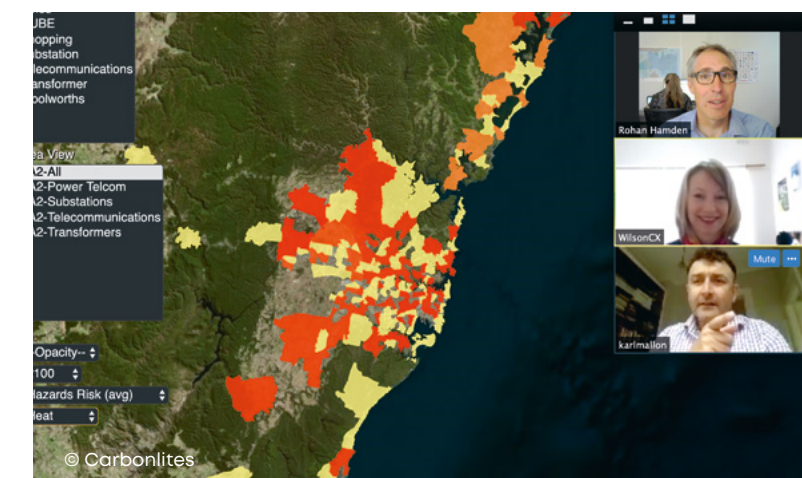
© Airly

Airly

Keep calm and breathe on — with air sensors

Welcome to Opole, Poland — an important industrial area where air pollution exceeds tolerable levels 60 days a year. The town's poor air quality is partially caused by industrial chimneys but another cause is found much closer to home: Outdated coal furnaces are a regular means of household heating in the town.

Partners
» Urzad Miasta w Opole (Municipality)
» Airly (Start-up)

Location
» Sydney, Australia

Website
» www.xdi.systems

Mapping the fresh zones, reducing the smoke

Chimneys, traffic and other private and public sources of pollution all partially cause Opole's smog zones. To detect these, Opole Municipality partnered with the start-up Airly to install more than 30 air sensors that collect, process and interpret data in real time — with the pollution data made public in an online map. Citizens can plan around it, and public transport even becomes free when the smog is at its worst. City officials have also dismantled more than 480 old coal furnaces and tile stoves, based on the worst smog zones.

Towards a national change of mind

Last spring, Opole started a programme to move towards healthy air through clean energy and heating. Awareness of pollution issues is rising across Poland, where Airly sensors inform citizens in more than 100 cities — and this winter, Airly plans to release an overview of "the state of air" across Poland, to illuminate the cause and effects of pollution patterns.

© Climate Smart Food Security

Finalist

Climate Smart Food Security

Aquaponics for water-scarce communities

Rikalize Reinecke's childhood dream to become a marine biologist took an unexpected turn: Using her knowledge of fish, food and the climate, the South African high schooler instead founded La Pieus Aqua Ltd. The company designs and implements aquaponic systems that combine fish farming (aquaculture) with plant cultivation (hydroponics), creating symbiotic environments where bacteria and excretions from fish serve as nutrients for the plants.

Partners
» Sol Plaatjie Municipality
» La Pieus Aqua (SME)

Location
» Pretoria, South Africa

Website
» www.feedingafrica
unlimited.org

Social need meets sustainable business

When the Sol Plaatjie Municipality began using the government's 'Cooperative Grant Fund', which helps small groups of low-income earners run their own business, they found that Rikalize's aquaponics units were the perfect business fit. The solar-powered units require little fresh water (important, given local water shortages) and provide around eight fish and 150 plants per month, enough to feed 4-6 people and even have some left over to sell.

Circular and circulated

La Pieus Aqua and the Sol Plaatjie Municipality's collaboration is known as the Climate Smart Food Security project and provides free access to aquaponics units to empower people who fall outside of regular education and job markets. But the units are not only given to communities in need — they are often strategically placed next to schools and clinics to educate the community about healthy nutrition and "climate-smart food security".

© Sanshodan

Sanshodan

Regulated e-waste recycling for everyone

The 'Sanshodan: e-Waste Exchange' (EWX) is a start-up co-created in Hyderabad, India by the regional Telangana government and an NGO — The Global Institute for Circular Economy and SDGs. Together, they built an online platform allowing anyone to sell their used electric devices online, and have these picked up and delivered to authorised recyclers. It addresses a critical environmental problem: In India, more than 90% of electronic or electrical waste is improperly disposed of, releasing large amounts of CO_2 and toxic pollutants.

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Partners
» State Government
  of Telangana
» Global Institute for Circular
  Economy and SDGs (NGO)

Location
» Pretoria, South Africa

Website
» www.e-wasteexchange.com

Preventing waste with awareness
The NGO developed EWX's circular model for upcycling and recycling electronics, while the state introduced policy aimed at helping citizens and original equipment manufacturers to directly channel their e-waste to authorised, competent recyclers. Today, Sanshodan also provides training and advisory services, and, with the government, has completed an awareness and education programme reaching a population larger than that of the EU.

Scaling to Abu Dhabi and Austria
EWX shows how cities can combine analogue infrastructure with new digital solutions — and now aims to deploy its citizen platform in 20 Indian cities and its circular economy model to 15 companies by 2020. They will also start in Austria this year and have joined a scaling program in Abu Dhabi.

© Sinbasura

Sinbasura

Peru's certificate for stopping food waste

Peru is a country that is mad about great food, and its top chefs are absolute celebrities. Making people aware that food waste is a social and ecological problem — and turning chefs into ambassadors for this cause — is the strategy of the Peruvian collaboration 'Sinbasura'.

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Partners
» Department for Environmental
  Education and Citizenship of
  the Ministry of Environment
  Peru
» Sinba (Start-up)

Location
» Lima, Peru

Website
» www.sinba.pe

Co-developed process innovation
Sinbasura instigator Pipo Reiser knew how important restaurants are in the Peruvian culture, but he and his team could not find a certificate guaranteeing that a restaurant has low-waste or even zero-waste food preparation practices. In collaboration with the Department for Environmental Education and Citizenship, Pipo's start-up 'Sinba' created its own certification: The 'Sinbasura Zero Waste Certification' was launched in 2018, as part of the Ministry of the Environment's 'Clean Peru' programme, compiling 23 simple certification criteria that can be applied to any kind of business.

Five-star marketing and training for the solution
Today, the ministry has a nation-wide marketing strategy in which renowned cooks of Peru's capital, Lima, serve as 'purpose ambassadors' to promote Sinbasura. Meanwhile, Sinba focuses on training chefs to improve both their organic and non-organic waste management.

© Swachhata

Swachhata

A massively distributed citizen app to "clean India"

15 million users spread across 3200 cities: 'Swachhata', a collaboration between the Indian Ministry of Urban Affairs and a renowned NGO is focused on the bigger picture. Their service allows citizens to lodge public cleanliness complaints using their mobiles: Take a photo, choose a category, send it and track when the task is completed. Many programmes have failed to tackle India's waste problem, but this app and online platform is becoming a national success story.

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Partners
 » Ministry of Housing and Urban Affairs (Indian government)
 » Janaagraha Centre for Citizenship and Democracy (NGO)

Location
 » 3200 cities in India

Website
 » www.swachh.city

All state levels on the same page
Since 2001, the Janaagraha Centre for Citizenship and Democracy's mission has included city governance reforms and civic participation. This NGO provides the technology behind Swachhata and the ministry takes charge of engaging cities and their local utility providers — who, in turn, address the complaints submitted by citizens.

State regulation harmonised with citizen usability
More than 10,000 municipal engineers have been trained to use the app, and more than four million illegal rubbish dumps have been cleared in its first 18 months. Swachhata's next goal: reaching 100% service coverage in all of India's cities.

Special Mentions

While these two applicants just missed out on reaching the finals of the Better Together Award, their collaborative climate solutions nevertheless have great potential for impact.


Smart energy
Using blockchain as a real-time digital notary stamp, 'FlexiDAO' enables consumers to select their renewable energy provider and track how, when and where it is produced. Its technology helps energy retailers match the origin of renewable energy production with consumption in real-time, connecting local energy networks all the way down to the rooftop solar level. The start-up collaborates with Bayernwerk Regio Energie to enable renewable energy tracking and saving, is already compliant with energy regulations, is commercially viable, collaborates with energy retailers in Spain, Poland and Germany, and aims to partner with local municipalities in the future.

Collaboration data for climate adaptation
'AylluDamos' is an early warning and emergency help system for the high-risk flood area of Trujillo in Peru. It combines the latest data from meteorological stations with a mobile app that citizens can use to find their family members and report incidents to the municipality. Stemming from a municipality-led design process including citizens, local innovation ecosystems and the tech SME Marcelino Carretero Obando, AylluDamos also offers town officials a platform to manage disaster relief much more efficiently, thanks to the real-time data supplied by citizens.
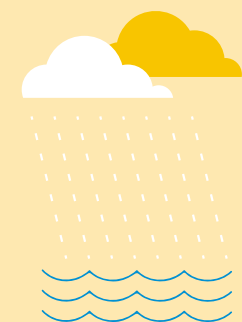
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➕ **Climate Innovation Insights:** *https://www.climate-kic.org/uki/insights*

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Better together