EKIPA
IMPACT
PAPER

INNOVATE2030
SUSTAINABLE CITIES & COMMUNITIES

digital.
global

digilab

giz
Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Bundesministerium für
wirtschaftliche Zusammenarbeit
und Entwicklung

# WELCOME TO THE #INNOVATE2030 PROGRAM

HOW OPEN INNOVATION HELPS CITIES, COMPANIES & COMMUNITIES TO ADDRESS CURRENT PROBLEMS AND TURNS THEM INTO SOLUTIONS FOR MORE LIVABLE, MORE SUSTAINABLE, AND MORE HEALTHY URBAN PLACES & LOCAL SURROUNDINGS.



"All the cities of the world are going to expand. We need to have a better understanding of what makes good urban habitat for home sapiens. We have an obligation to make the new places more livable, more sustainable, more healthy. We have the tools."

*Jan Gehl Hon. FAIA, Danish architect and urban design consultant; focus on improving the quality of urban life by re-orienting city design towards the pedestrian and cyclist.*

# CONTENTS

**MARTIN WIMMER,**
**CHIEF DIGITAL OFFICER (BMZ)**

## THE RISE & REDUCTION OF CO2 IN INFORMATION AND COMMUNICATION TECHNOLOGIES

We at BMZ (German Federal Ministry for Economic Cooperation and Development) believe in the great opportunity of our generation to make use of digital technologies to boost the achievement of the 2030 agenda. We believe that we must shape this great transformation cross country, cross sector and cross generational.

However, digital transformation does not automatically lead to sustainable transformations. It must come along with sustainability principles that include a human centered perspective. The "greening of digital technologies" is a critical factor for an inclusive and sustainable digital transformation. The environmental footprint of the use of digital technologies is already

significant with estimated of up to 3.9% of greenhouse gases[1]. It will rise further if not addressed properly. At the same time, scientists suggest that information and communication technologies (ICT) can reduce the global CO2 emissions by 8 - 15 %[2]. However, this potential still needs to become reality and major political and industrial efforts must be undertaken.

With innovation programs like INNOVATE2030 among others we at BMZ hope to take a first small step unleashing the potential. All solutions presented in this paper passed crucial criteria of sustainability and human centricity to guarantee alignment with the agenda 2030. Thank you for your contribution to making cities and communities more sustainable.

## BUT, WHY THE FOCUS ON CITIES & COMMUNITIES NOW?

It is as easy as this: More than half of the world's population lives in cities, and most future population growth is predicted to happen in urban areas. But the concentration of large numbers of people also means a driver of climate change: Cities are responsible for 70% of global greenhouse gas emissions, according to a new report from the United Nations Development Program (UNDP).[3] Or, to say it more drastically: cites are both a cause and a victim of climate change. Making cities more resilient and sustainable is an important goal of German Development Cooperation and it was the leitmotif of the INNOVATE2030-SDG11 Innovation Program.

Building climate-smart cities can involve a vast range of measures, depending on local needs – from transition to a circular economy, to electrified and carbon neutral mobility, the creation of green spaces for urban cooling and the adequate dealing with solid waste. The technological revolution and the use of ICT requires urban stakeholders to work together locally and globally to develop, test, share and scale successful approaches. We at BMZ are convinced that many functioning and impactful solutions already exist in our partner countries.

Many of the teams of innovators taking part in the innovation program were and still are working on game-changing innovations for digital solutions. One of the 23 teams for example presented a software solution for disaster risk management that has been proven in Honduras and Brazil. To give all cities and communities, regardless of their financial resources, access to an efficient risk, disaster warning system and management, they invented a software. The web- and mobile-based application is simply designed and freely accessible to everyone. This way, cities can not only record and better understand their risks, but together with the citizens, tailor-made measures can be implemented quickly and in a coordinated manner.

**This greeting is based on the opening speech of Mr. Wimmer at the final event of the BMZ digilab innovation program in cooperation with the Make-IT Alliance "Innovate2030: digital solutions for climate smart cities".**

[1]https://www.sciencedirect.com/science/article/pii/S2666389921001884#:~:text=Peer%2Dreviewed%20studies%20estimate%20ICT's,between%202.1%25%20and%203.9%25 [2]ibid [3]https://www.undp.org/publications/catalyzing-private-sector-investment-climate-smart-cities#modal-publication-download

## LET'S INNOVATE TOGETHER!

We are on a joint endeavor. An endeavor that is a step towards the systemic and large-scale social, environmental, and economic transformation that we are striving for. If we want to achieve this, we can only achieve it jointly: jointly with you, in collaboration with our partner countries, partner organizations and together with the private sector. Innovate together.

At BMZ we enter stronger into cooperation with the younger generation, start-ups, tech-companies, and academia. Without much left to say, I hope that Innovate2030 for many of you was just the start of a fruitful further collaboration. So, keep in mind that you can create more livable, resilient, and climate-smart cities together.

## GREETINGS EKIPA

Sustainable development concerns us all. When we first launched INNOVATE2030 almost three years ago, we could not have imagined the success and impact we now have with this innovation program around sustainable development.

**What makes INNOVATE2030 so successful?**
The thematic scope of the program is very broad; it covers economic, political, environmental, and social aspects to which the United Nation's Sustainable Development Goals (SDGs) refer. Especially when, as here with SDG11, the goal is to make cities and communities climate-smarter and more sustainable; as much of the world's population lives in cities and we all live in communities, the various areas find their interfaces, stakeholders and affected parties and people. We address the challenges to students, researchers, developers, startups - to any innovative mind that proposes solutions to tackle the biggest challenges of our time. The innovation program is fundamentally open to any industry, discipline, or sector - to all innovation-minded companies that need to solve „inhouse" problems but are also ready to contribute to a livable future for generations to come as well. These courageous people, companies and political institutions open to positive change are what make INNOVATE2030 a success! Our heartfelt thanks go to them, to our co-initiators the German Federal Ministry for Economic Cooperation and Development – BMZ and its lab for digital innovations „BMZ digilab" in collaboration with the Make-IT Alliance, and to everyone who was, is and will be involved in the development and implementation of the "matter of the heart-program".

We look forward to the upcoming editions of INNOVATE2030 and all the breakthrough ideas. Ideas and solutions that incorporate future-shaping verve, collaborative team spirit and smart technology. With our programs we truly want to contribute our part to end poverty, protect the planet, and ensure that by 2030 all people will enjoy a livable future on a healthy planet in peace and prosperity. Indeed, sustainable development concerns us all.

# 2018

**EKIPA WAS FOUNDED BY JUSTIN GEMERI, NICO HEBY AND LINH PHUNG.**

We are ekipa. We are shaping the future based on sustainable innovation and cooperation in the interest of society environment and economy.

EMPLOYEES

COMPANY HEADQUARTER FRANKFURT

**JUSTIN GEMERI & NICO HEBY**
**CEOS & FOUNDERS OF EKIPA**

# 01

# EDI TORI AL

# BRINGING FUTURE-PROOF VISIONS FOR LIVABLE CITIES & COMMUNITIES TO LIFE

We all live in communities; and most of us in cities. You are probably one of the 4.5 billion people who live in an urban area. Thus, you may be a major contributor to and sufferer of climate change in one.

Cities, be they larger or smaller, all face enormous challenges related to environmental issues, especially climate change. The growing urban population (by 2030 it will account for 60% of the world population[1]) and the accompanying problems of overpopulation, alongside urban sprawl and land sealing – which often means a dramatic loss of topsoil, or increasing slums housing, disposal of trash and sanitation issues, collapsing inner-city mobility, as well as air pollution (cities account for over 70% of global $CO_2$ emissions[2]), crime rate, inequality and exclusion, or simply the difficulty of sufficient fresh food supply, and so

on - all this creates a whole conglomerate of interwoven problems that urgently need to be unraveled and put on the path to solutions. This path must be accompanied by the need for cities and communities to become more inclusive and safer, more resilient and, above all, more sustainable!

The UN Sustainable Development Goal 11 is exactly about that[3]. The good news is:
this goal is achievable!

In our INNOVATE2030-SDG11 Innovation Program[4] we asked for game-changing digital ideas and innovative solutions to make cities and communities climate-smarter and more sustainable. We were looking for future-proof visions for a livable city. Therefore, we've partnered up with national and supra-

national political institutions, with global businesses, and leading tech labs and companies to develop seven resounding challenges to tackle the threatening problems cities and communities are confronted with today and even more in the future - if we do not act urgently.

"The magnificent 7 challenges" assemble an abundant field of innovation at the global macro-level (e.g., climate action & climate resilience) and at the local micro-level (e.g., smallholders in Africa, tourism in Ecuador). What is so smart about the solutions is that even though they relate to a local phenomenon, they can be applied elsewhere or globally. Global solutions, in turn, seek their implementation in local contexts. The phrase "Think globally, act locally" was

always present in the innovator's minds. The transdisciplinary approach to the solutions is also striking. Ecological needs and goals (e.g., become a waste-free city) are seen in a cultural context (as a tourist destination); agriculture is linked to digitalization (s. digitize rural-urban agriculture); economy and environmental protection go hand in hand (like circular economy does) and $CO_2$-neutral mobility can deliver economic added value (s. urban mobility). What we observe frequently in our challenges: technology is key, collaboration is the basis and co-creation part of the result. Open innovation helps to reduce the com-

plexity of our era, to combine global as well as local or entrepreneurial needs and innovative solution competencies, to establish transformational processes, and implement innovations for the people and their environments.

The global need and attractivity of INNOVATE2030 is reflected in the overwhelming response of. The decision was hard to take, but finally, 23 teams elaborated their solutions regarding the challenges. And again interdisciplinarity: students, startups, researchers, experts, and young professionals – bright minds from all fields and backgrounds ready to scale and implement their ideas in cities and communities around the world. An amazing true innovative spirit; full of desire and the strong will to shape a sustainable and social future!

## TOGETHER, WE STAND FOR ONE GOAL:

MAKING CITIES AND COMMUNITIES CLIMATE-SMARTER AND MORE SUSTAINABLE. LET US ALL BE A MAJOR CONTRIBUTOR TO, INHABITANT IN AND ACHIEVER OF LIVABLE CITIES AND HAPPY COMMUNITIES.

We wish you many inspiring and confident moments while reading this first issue of this ekipa impact paper.

Sincerely,
Sacha Knoche,
Editor-in-Chief

# 02

## FEA-TURE STORY

A BMZ
digilab
article by
Stella Deppe

# HOW DIGITAL INNOVATION CAN REDUCE CO-2 EMISSIONS AND IMPROVE CITIZENS-ENGAGEMENT FOR MORE RESILIENT CITIES

## THE URGENT NEED TO TAKE ACTION AGAINST CLIMATE CHANGE IN CITIES

Climate change is one of the greatest global challenges of our time. The current unsustainable use of the Earth's natural resources is causing tremendous harm to people's livelihoods. Infrastructure destruction, droughts and rising sea levels are just some of them. Moreover, it has a significant negative impact on the global economy. To reach the Paris Agreement targets, digital innovations are critical to develop solutions that support all actors in society including industry, SMEs, start-ups, the public sector, cities and citizens to reduce greenhouse gas emissions and move towards a carbon neutral economy and society.

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## DIGITAL INNOVATION TO ACCELERATE CLIMATE RESILIENCE IN CITIES

The world is becoming increasingly urbanized. Since 2007, more than half of the world's population has been living in cities, and that share is projected to rise to 60 per cent by 2030[1]. Cities and metropolitan areas are powerhouses of economic growth – contributing about 80 per cent of global GDP. However, they also account for about 75 per cent of global carbon emissions and over 60 per cent of resource use[2]. Rapid urbanization is resulting in a growing number of slum dwellers, inadequate and overburdened infrastructure and services worsening air pollution and unplanned urban sprawl.

Digital innovations, be it low- or high-tech, such as artificial intelligence, Internet of Things (IoT) and blockchain provide unprecedented opportunities to address urban challenges. When applied to sectors such as energy, urban transport, construction or housing they can support the urban transition towards reaching the Sustainable Development Goals. Digital technologies can address some of the most pressing urban challenges by combining them with social-ecological innovation to scale up their impact processes. Through an open innovation program, the BMZ digilab has been able to scout such digital game-changers for more climate resilient[3] cities.

Digital technologies play a great role in making cities more resilient. E.g., smart transportation grids or traffic guidance systems help reducing CO2 emissions. Digitally regulated green facades will be the future in building design both in adapting and mitigation. Energy consumption management on a demand-base and the creation of incentives for users to time the use of electricity has already increased the efficiency of energy use in cities such as Zurich[4].

[1]https://unstats.un.org/sdgs/report/2019/goal-11/
[2]https://www.business-standard.com/article/international/cities-contribute-80-to-global-gdp-account-for-75-emissions-report-122011800346_1.html
[3]The concept of Climate Resilience comprehends adaptation and mitigation. In the context of urban development, practitioners and academia speak more often about climate adaptation than mitigation. In recent years, there has been a shift to a more integrated approach of mitigation and adaptation forming the term of resilience and low emission development when speaking about urban development and climate change (Source: https://uccrn.ei.columbia.edu/sites/default/files/content/pubs/ARC3.2-PDF-Chapter-4-Mitigation-and-Adaptation-wecompress.com_.pdf)
[4]Menendez, Monica, and Lukas Ambühl. „Implementing design and operational measures for sustainable mobility: Lessons from Zurich." Sustainability 14.2 (2022): 625.

## DIGITAL TOOLS FOR DISASTER RISK MANAGEMENT

Similarly, digital instruments play an increasing role for disaster risk management (DRM). Early warning systems, smart infrastructure, e.g., for storm water drainage, or the use of AI in trend monitoring and anomaly detection, have been developed over the last years, addressing both disaster preparedness as well as disaster response.

Cities are complex systems that are highly vulnerable to disaster risks, however not all urban areas or citizens are equally exposed to threads. Unfortunately, there is a correlation between the socio-economic realities of urban dwellers and their vulnerability, e.g., informal settlements lying in flood prone areas,

or shelters erected with less durable materials in Hurricane zones etc. Moreover, such urban dwellers are usually concentrated in the cities with the least financial and technical resources to address disaster risk and impact.

This poses two challenges: on the one hand, city governments need to pay particular attention to city resilience in already neglected areas. On the other, they must find instruments that allow them to, based on the resources they have available, take action to respond to disaster risks, and, as importantly, simultaneously engage with citizens for better preparation and response in the future.

## A DIGITAL DISASTER MANAGEMENT TOOL SUPPORTED BY BMZ DIGILAB

We want to have a closer look at one winner of an open innovation program that ended in April this year: INNOVATE2030. The program was implemented together with the Make-IT Alliance and challenge-providers from different sectors like UNFCCC, Bosch, Atos, Ministry of ICT & Innovation in Ruanda as well as the municipality of Portoviejo (an Ecuadorian city).

7 tracks led to 7 different solutions whereof one is a disaster risk management tool: ACCTION. It is a web- and mobile-based tool that allows cities and citizens to work together in preparing for, responding to and recovering from disasters and crises. Actions can be developed and implemented in a matter of weeks, with little need for external assistance. ACCTION provides a simple and structured way for people to use their own knowledge through a step-by-step process in order to:

- ■ Understand the risks the cities face, be it natural or man-made
- ■ Define concrete measures to act against these risks
- ■ Implement these actions immediately
- ■ Disseminate and collect crucial information to and from citizens

To reach these goals the tool needs to:

1. Map critical infrastructure and services, identify risk areas and calculate risk levels
2. Send and receive warnings to and from citizens
3. Coordinate immediate response and recovery

Using a low-tech approach and building upon well-established DRM frameworks, ACCTION solves both problems posed above. First, by allowing a much larger number of cities, in particular the least resour-

ced ones, to evaluate and promptly act on the risks they face, greatly minimizing the need for engaging external actors (e.g., consultancy firms) in rather resource intensive processes as currently it is the case (mitigation)[5]. Second, by promoting a much deeper level of citizen engagement, aiming at leaving no-one behind, supporting efforts in the communication with the most vulnerable communities during times of crisis[6].

The tool has been used so far in 5 countries (Ecuador, Cabo Verde, Honduras, Argentina, Brazil) with more than 100 active users and 500+ data sets inserted.

With the help of BMZ digilab's innovation programme we could not only scout this digital innovation invented by the two friends Evandro Holz from Brazil and Mariano Rossi from Argentina, founders of the German-based start-up. We could also **connect them with partners that are interested in implementing the solution in the context of development cooperation – and thus to scale their impact.** The tool will be adjusted and implemented in one other BMZ partner country with the local GIZ country structures. In order to successfully do this, BMZ digilab will be part of this journey through co-creating together with all involved stakeholders a solid scaling strategy (our Scaling Lab).

Another important aspect in scaling impact of a digital solution is partner outreach on a global scale that goes beyond German development cooperation. This happened last year as a side-event at **COP27 hosted by the UNFCCC Global Innovation Hub,** one challenge provider of the BMZ digilab innovation program, which groups municipalities as part of their network activities.

[5]As an example, ACCTION has been implemented in Brazil and Cabo Verde only via remote sessions, which reduced the need for international flights and local logistics.
[6]In Cabo Verde, for example, the implementation of the tool was led by the community association of the Safende neighbourhood, confirming that the approach taken is indeed accessible even to non-experts in DRM.

# 03

## THE PRO-GRAM

# INNOVATE2030
## INTRODUCTION & PROCESS

INNOVATE2030 is an innovation program[1] for progressive companies & enterprises to establish sustainable technologies, foster social development and ensure environmental & climate protection. With this sustainability program we contribute our part and keep pursuing our mission to scout for impactful innovations to achieve the Sustainable Development Goals (SDG) defined by the United Nations[2]. The SDGs or "Global Goals" are a collection of seventeen interlinked objectives designed to serve as a „shared blueprint for peace and prosperity for people and the planet now and into the future"[3]

The INNOVATE2030-SDG11 program was jointly initialized by the German Federal Ministry for Economic Cooperation and Development (BMZ), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and its new lab for digital innovations – BMZ digilab – in collaboration with the Make-IT Alliance. Other multilateral organizations, such as UN Climate Change, leading tech companies like Bosch Innovation Consulting or Atos as well as the administration of the city of Portoviejo, Ecuador and Kigali, Rwanda supported the program as challenge providers.

With the following digital and scalable solutions from start-ups, international research groups, students, graduates, young professionals and experts from various fields & backgrounds the urban challenges of our time are mastered and impacts for SDG 11 were achieved – globally & locally. The INNOVATE2030 innovation program supports the future-shapers & sustainability-creators of green & smart cities with master classes by renowned speakers & experts at a

digital innovation bootcamp, Lufthansa coaching and the provision of an Azure Cloud from Microsoft. The participants were continuously accompanied by the program and various measures & offers to enhance their potential and to support the development of their solutions strongly.



Six months after the launch of the program the final event took place on April 26, 2022. Seven teams, one for each challenge, stood out and were chosen as winners. Finally, three overall winners took 1st, 2nd and 3rd places for their outstanding performance & groundbreaking solutions. In addition, an award was presented for the most energetic social media activity. All 23 finalists are presented in this impact paper with their innovative results & mind-opening thoughts.

**977** FUTURE-TRANSFORMERS

**65** COUNTRIES

**237** SUBMISSIONS

**7** CHALLENGES TO MAKE CITIES & COMMUNITIES CLIMATE-SMARTER & MORE SUSTAINABLE

**23** FINALISTS

#innovation #tech4good #climatesmartcitieschallenge #smartcities

[1]https://app.ekipa.de/programs/innovate  [2]https://sdgs.un.org/goals
[3]https://www.undp.org/sustainable-development-goals

# MEET THE TEAM



Open innovation programs such as INNOVATE2030 play a big role in making our world more sustainable. Moreover, start-ups can tailor their business model to climate crisis and offer quick solutions that work out. If you can bring powerful and well-connected organizations to the table with such innovators, solutions can emerge not only to combat climate change but endure beyond it and contribute to a greener & healthier planet. It is so fulfilling and gives me a pleasant sense of great accomplishment to be working on the SDGs with such great partners and innovators.

Nico Sedovnik
Project Manager INNOVATE2030-SDG11



For me, INNOVATE2030 means that many people from the most diverse countries with the most diverse backgrounds come together to pursue one common goal: making the world more sustainable and environmentally friendly. It makes me so happy to see that everyone gets a chance to make a difference - no matter the background. INNOVATE2030 really turns my curiosity on when I can take a glimpse into the future. No doubt, I am proud to work on a project with such a huge impact!"

Lidia Welldeabzghi,
Project & Community Manager ekipa





The cool thing about INNOVATE2030 is that there is a positive impact in multiple settings: from sustainability issues that contribute to a better world, to companies whose challenges are solved, to innovators from around the world who can realize their forward-looking concepts and business foundation. The program is full of and provides you with so many great opportunities to bring truly impactful solutions to bear, which in turn has an impact on the lives of the participants as well as on ours - including those of future generations. I love it and I can highly recommend the participation in this program to others.

Marius Münkel
Business Development Manager INNOVATE2030

INNOVATE2030 - even in terms of communication, an absolutely awesome El Dorado.

Sacha Knoche
Communication Expert
& Copywriter



Climate change is one of the biggest global challenges of our time; we need to use digital innovations to develop sustainable solutions to effectively combat climate change. INNOVATE2030 is a great program and a clever platform to unite and support a wide range of stakeholders in society, including industry, start-ups, young professionals, students, the public sector, cities and citizens, to achieve a common goal: making cities and communities climate friendly. We are looking out for the most innovative solutions that could already show their impact and are supporting their roll-out in the context of international development cooperation together with our challenge hosts coming both from the public, private and development sector.

Stella Deppe,
Advisor at Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

# CO-INITIATORS, INSTI-TUTIONS & PATRONAGES

a detailed overview can be found here ---->

Without the initial and continuous support, advice and attendance of the following institutions, partners and businesses, the realization of this program would not have been possible.

**OUR FULL THANKS GO TO THEM.**
**ONLY TOGETHER CAN WE BE INNOVATIVE.**

„With INNOVATE2030 and our challenge (named "Digitize Rural-Urban Agriculture"), Atos can contribute both to the digital transformation and the sustainable development in Africa. Through this challenge we supported the development and improvement of the software and the business models of both contestants. It is a core element of all our actions to leverage digital technologies to have a positive impact both for our clients and the world as a whole. INNOVATE2030 is the perfect stage for that."

**Georg Holand, Management Consultant,**
**Atos Information Technology GmbH**

**PARTNERS ELABORATION PHASE:**

**SAP-Mentoring** (UNFCCC-teams only),
**Leaders of climate action** (teams with focus on climate change),
**Microsoft** (provision of an Azure Cloud, incl. mentoring),
**Fraunhofer Venture** (optional access to Fraunhofer Accelerator)

## CO-INITIATORS:

Federal Ministry for Economic Cooperation and Development

giz — Deutsche Gesellschaft für Internationale Zusammenarbeit (GiZ) GmbH

digilab

digital. global

Make-IT Alliance

## CHALLENGE PROVIDERS:

AtoS

BOSCH

PORTOVIEJO nace de ti

Republic of Rwanda Ministry of ICT and Innovation

United Nations Framework Convention on Climate Change

Federal Ministry for Economic Cooperation and Development

## JURY FINAL EVENT:

**Benjamin Kumpf** (OECD, Head of Innovation),
**Pontus Westerberg** (Un Habitat, Program Management Officer – Innovation & Technology),
**Thomas Treml** (Microsoft, Government Lead),
**Andrea Augsten** (BMZ digilab, Team Lead Innovation),
**Gina Lucarelli** (UNDP, Accelerator Labs Team Lead),
**Annegret Schewe** (Telekom Techboost, Startup Partner Manager)

# 04

# CHALLENGES & SOLUTIONS

# DIGITIZE RURAL -URBAN AGRICULTURE

## Atos

Confronted with climate change and food shortages, agriculture in African countries must increase its performance. Digitalization can be used to give farmers access to the formal value chain of their sector, thus structuring the entire ecosystem through the establishment of digital solutions. Collaborating with African farmers, Atos wanted to boost their productivity to contribute to sustainable development and to innovate farming in Africa.

#agritech #africanfarming #sustainableagriculture

Atos is a major IT-Group that provides digital solutions to businesses. Serving in cybersecurity, cloud and high-performance computing, it uses emerging technologies to drive innovation and transform industries in 71 countries. Atos committed itself to help design the future of the information space and decarbonized digital for its clients. The Group aims to stop emitting greenhouse gases by 2039 at the latest.

## Team AgriFriend

The team AgriFriend looked for ways to increase productivity and income of small-scale farmers in emerging economies, combining human-centered design with advanced technology. Their idea draws from a holistic bottom-up approach, increasing access to agricultural knowledge through digital training, gamification, and advanced satellite imagery technology.
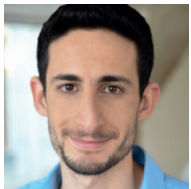
GILAS OVADIA    YOAV KEREN
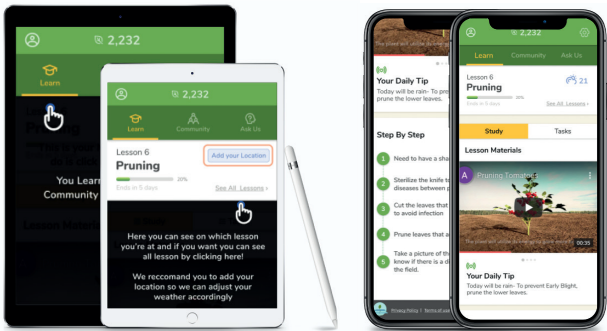
# Team CABI

**Climate change and the emergence of agricultural pests: digital solutions to Acanthoplus cricket outbreaks in Southern Africa**

In early 2021, farmers in Zambia asked for assistance in controlling the increasing Acanthoplus cricket pest. In cooperation with affected farmers, team CABI develops a digital tool to predict the occurrence of the pest, consisting of data collection, a distribution map and a management area. With their tool, CABI makes a major contribution to improving pest management.

Léna Durocher-Granger, Entomologist
Noah Phiri, Plant Pathologist
Helen Sheleni, Agricultural officer
Elizabeth Finch, Data scientist
Milimo Chiboola, Social Scientist
Belinda Luke, Biopesticide officer
William Holland, Project officer
Bethel Terefe, Gender Coordinator
Mariya Iqbal, Project officer
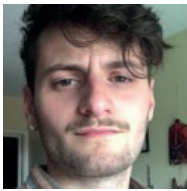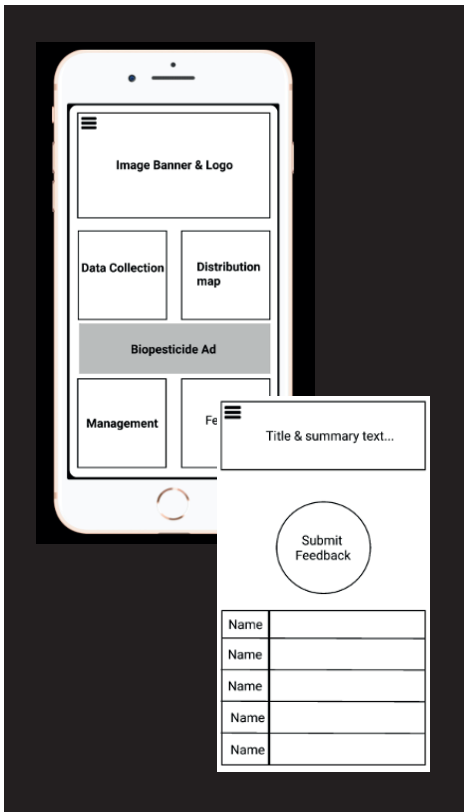
**CHALLENGE**

## CONNECTED & SUSTAINABLE URBAN MOBILITY

**PROVIDER**


BOSCH

One of the biggest challenges for climate change mitigation is to enable economic growth while at the same time reducing greenhouse gas emissions. We need to transform today's urban mobility systems in an emission-free and resource-efficient way. With its challenge, Bosch promoted the development of digital solutions that enable the transition to more connected and sustainable mobility in urban environments.

**#urbanmobility #sustainablemobility #emergingcountries**

Bosch has been a major global player in the automotive industry for many years. With the rise of digitalization and the increasing demand for sustainable transport solutions, Bosch has been at the forefront of innovating transport. Their technologies include everything from electric and autonomous vehicles to advanced driver assistance systems and smart transportation management solutions, all aimed at making transportation more efficient, safe, and sustainable.

**SOLUTION**

## Team GreenLights

For better observation of urban traffic, GreenLights thought about new possibilities coming with software-controlled cameras. An AI-based software analyzes and evaluates the data collected by these cameras to guide the flow of traffic better and more efficiently. GreenLights innovation is a big step towards a sustainable traffic management.

## Team DASHFACTORY

**WINNER-SOLUTION**

**Digitalizing cycling traffic to digitalize infrastructure planning**

The team Dashfactory follows the idea to digitize cycling traffic with various applications and devices. Dashcams with distance measurement, GPS, Gyroscope or daytime running lights among other devices make cycling safer. With an innovative, fast and scalable platform Dashfactory digitizes cycling and enables digital infrastructure planning, also bringing new insights into cities and science.
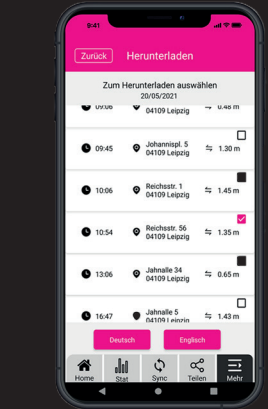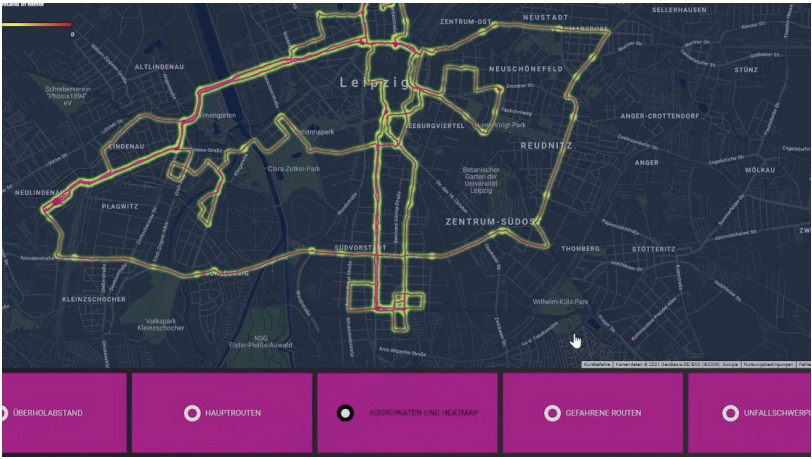
## CHALLENGE

# URBAN
# GREEN
# RECOVERY

## PROVIDER

Republic of Rwanda
**Ministry of ICT
and Innovation**

Urbanization and climate change are well-known challenges in terms of social and sustainability issues - even more so for developing countries facing massive urban growth. The state of Rwanda wants to build its capital Kigali as a blueprint for sustainable and green cities. Climate-friendly and revolutionary innovations for green urban development were needed.

**#innovateRwanda #sustainablecities
#urbaninfrastructure**

The Ministry of ICT and Innovation, and the City of Kigali anticipate and strive for a world where resources are equally available to all, service delivery is conducted to the most convenient level for citizens, livable and quality environments for all. When it comes to a digital and sustainable future their most important value is inclusion for all as they want to ensure that their developments do not deepen poverty or existing gaps.

## SOLUTION

# Team
# Ecolution

The team's core activity is to create a detachable garden called „Green Tiles" that can be easily attached to the roofs of local informal settlements. The design is cost-effective and can be adopted universally, with a soil composition that reduces the weight needed to be carried by the rooftop. The business model addresses climate-related disasters, water scarcity, and environmental health, with a focus on tackling the lack of clean water in suburban districts by collecting water from the gardens and filtering it for non-consumption purposes.

# Team RefresherBoxx

## WINNER-SOLUTION

The six-person team identified the significant amount of water and detergent used globally for laundry and the negative impact this has on the environment. So, they created the RefresherBoxx, which can refresh clothing without requiring a full wash, saving valuable resources, reducing waste and most important: it saves a huge amount of water! Additionally, the RefresherBoxx is gentle on materials and can be used on various items that cannot be washed traditionally, such as shoes, sports equipment, and smart textiles.



**RefresherBoxx**
The scent of Innovation

CHALLENGE

# BUILDING A SMART AND WASTE FREE DESTINATION

PROVIDER

**PORTOVIEJO** nace de ti

How can we build a smart and waste-free touristic destination that accelerates economic, social and sustainable development? But to foster positive change we need to develop or apply technology-driven innovations. That is why the local government of Portoviejo (Ecuador) looked with their challenge for ideas to build its city as a blueprint for a sustainable and smart destination.

**#innovateecuador #sustainabledevelopment #smarttourism**

Portoviejo aims to develop as the best city to live in Ecuador, but also to become the first intelligent tourist destination in the country. To promote sustainable tourism they want to balance economic growth with environmental sustainability. Following ethical principles, sustainable tourism is culturally respectful and environmentally sound while at the same time it is economically productive.

SOLUTION

## Team Ecua-girls virtually

The team Ecua-girls focused their research on a sustainable solution for coffee tourism in Ecuador. With an app that provides a map of farmlands, introductory videos of farmers, and the opportunity to purchase fresh coffee beans directly from sustainable farms in Ecuador, they aimed to promote sustainability by offering discounts for buying fresh coffee beans instead of capsules. The interface is user-designed and close collaboration with farmers is ensured.
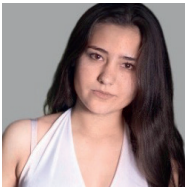
Diana,
Market research

Soyoung,
Design & Marketing

Prapti,
Technology &
Operations

Juliette,
Finance &
Marketing

# Team Multiverz

WINNER-SOLUTION

Multiverz aimed to promote smart tourism in Portoviejo while addressing climate change with their development of a futuristic solution centered around climate art and virtual tourism, with a virtual gallery, virtual spaces, and a platform for NFTs and smart contracts. Multiverz commissioned an architect to design and build the „Museum of Climate Art" in Portoviejo virtually. They secured creative submissions, an agreement with ClimArt, and plan to raise funds. Their innovation lies in incentivizing participation and combining climate awareness with virtual tourism.

Randeep

Vinny

Yamin

Brinda

Pedro

Martha

**multiverz**
INFINITE POSSIBILITIES
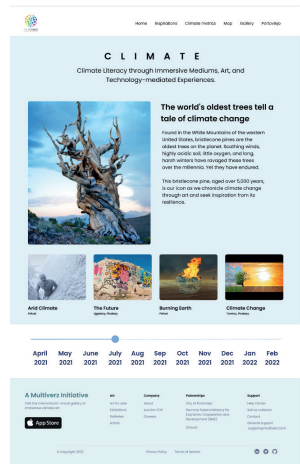
**PROVIDER**

UNFCCC: UNFCCC stands for United Nations Framework Convention on Climate Change. Its secretariat (UN Climate Change) is the United Nations entity tasked with supporting the global response to the threat of climate change. The Convention has near universal membership (197 Parties) and is the parent treaty of the 2015 Paris Agreement. The UNFCCC is also the parent treaty of the 1997 Kyoto Protocol.

European Commission: The European Commission plays an active role in developing the EU's overall strategy and in designing and implementing EU policies. Along with the other main EU institutions, the European Commission develops the overall strategy and political direction of the EU. It defines concrete actions on a yearly basis through an annual work program.

The following challenges are all from this provider





**CHALLENGE**

## DIGITAL 4 CLIMATE - THE MOVE TOWARDS A CIRCULAR ECONOMY

The needed transition to a full circular economy requires a complete overhaul of existing processes and structures from businesses to citizens. How can digital solutions accelerate this transition towards circularity? Together with the European Commission and the UNFCCC, the teams of this challenge helped to build a sustainable future.

**#digital4climate #circulareconomy #co2neutrality**

**SOLUTION**

## Team Takatari

Takatari provides a software solution to help recyclers and waste collection centers track waste batches from source to recycled product, allowing them to become more efficient by providing real-time data insights. This data is used to qualify them for the Plastic Waste Reduction Program from Verra, earning them an extra ~$300/ton collected. Takatari redistributes shares of the Plastic Credit to informal waste pickers to pay a living wage and access financial services.



**SOLUTION**

## Team Humara

Humara developed FastPlant. FastPlant is a software tool that automates and optimizes engineering for waste and recycling plants, performs simulations for different waste characterizations, provides key metrics, and monitors recovery margins. Users can download deliverables in one click. It's the first tool in the market for design and control of waste and recycling facilities.
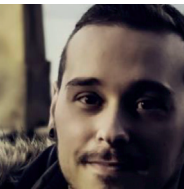
## SOLUTION

# Team Qubix



Qubix Robotics is a Malawian startup using waste to produce Covid-19 PPE for rural communities. They aim to recycle 10-25 tons of plastics weekly, accelerating auto mobility and industrialization with smart factories. They nurture climate technology experts to create solutions for clean energy, recycling, and climate action. By recycling plastic for 3D printing, they reduce importation from China and create value in the waste supply chain.

Sanga Kanthema, C.T.O & Product Architect

Dumisani Kaliati, Production Manager

Florence Gulule, Head of HR and Partners

Aime Francis Product Inspector & Artist

Chisomo Kanthema CFO & Waste Management specialist

## SOLUTION

# Team FixFirst

FixFirst is a Berlin-based startup that digitizes and simplifies circular services with their self-developed software platform, starting with repair and maintenance in the electronics sector. The solution connects circular service performers and operators, fostering partnerships to make circular services more accessible and attractive. The goal is to extend the life of over 1 billion products and help save at least 100 million tons of CO2 by 2030.

**Sebastian**
CEO & Co-Founder

**Saqib**
CTO & Co-Founder

**Anka**
Partnerships Manager

**+9**
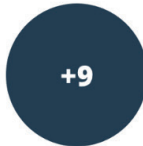
**Full team**
Tech, Product, Design working remotely

## WINNER-SOLUTION

# Team BANANA PACKAGING

Deforestation and plastic pollution are significant issues. To address these, the BANANA PACKAGING TEAM develops a digital platform. It aims to provide necessary data to different actors in the sector to reduce waste dumping in nature. Additionally, the platform offers farmers the opportunity to digitize their harvest monitoring, enabling them to optimize the use and collection of organic waste, contributing to the production of organic packaging.



**PRA**
Product Related to Agricultural Sector
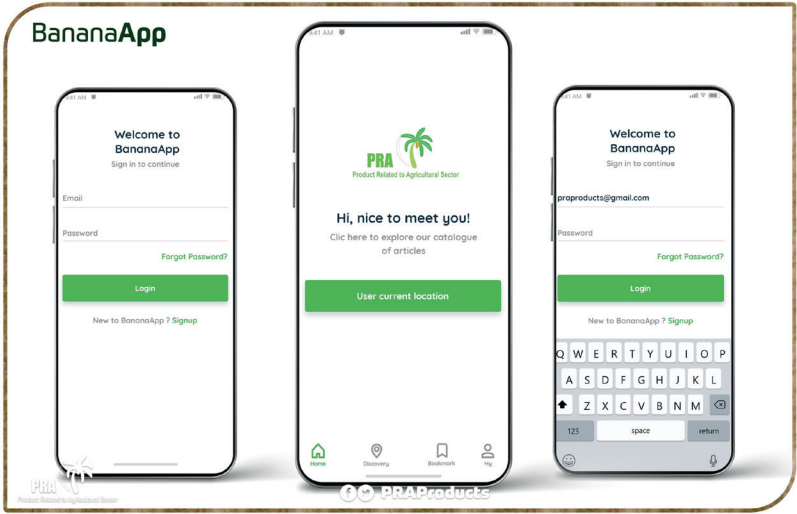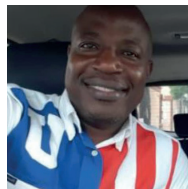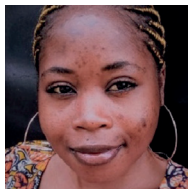
**CHALLENGE**

# DIGITAL 4 CLIMATE - ENHANCING CLIMATE RESILIENCE

**PROVIDER**



How can digital solutions improve the resilience of cities and local communities to climate change? How can we enhance climate resilience for example by promoting data- and community-based decision-making, risk warning systems, or risk management? With their Digital4Climate – Enhancing Climate Resilience Challenge the European Commission and the UNFCCC tried to find an answer to these questions.

#digital4climate #climatechange #resilience

**SOLUTION**

## Team L.A.M.E

L.A.M.E. has developed CoRAAL 1.0, a computational system that monitors and adapts to contexts affected by sea-level rise. They identify and localize vital resources and analyze the risk of depletion of those resources. Advanced computational tools are used to visualize changes in the environment in real-time. Data is compiled over time to develop adaptation protocols classified into four categories. CoRAAL 1.0 works in two phases: data gathering and execution.



Laukik Lad
Mumbai, India

Aqeel Sourjah
Colombo,
Sri Lanka

Matvey Genne
Moscow,
Russia

Elena Petruzz
Trieste, Italy
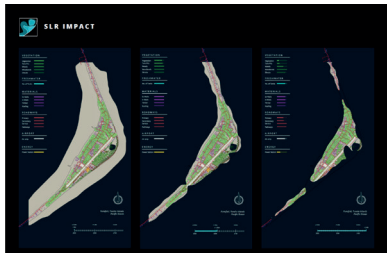
**SOLUTION**

## Team Skilltree

Skilltree transfers game development technology to urban planning to create affordable, interactive 3D digital models for citizen participation. The software ecosystem, Skillpolis, generates digital twins of cities and allows for diverse data sets to link city administrations, stakeholders, and citizens to improve data-driven decision-making. With a focus on sustainability and better quality of life, Skilltree aims to democratize the digitization of cities with a visualization and communication platform accessible to all.



Prof. Dr. Linda Breitlauch
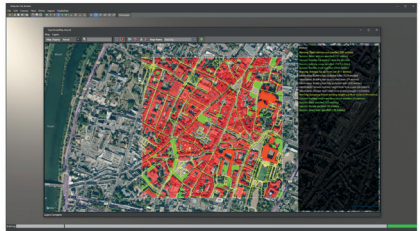
Prof. Dr. Christof Rezk-Salama

Michael Jadischke

Frédéric Joedicke, M.A.

Annika Walter, M.A.

**skilltree**
games · technology · transfer
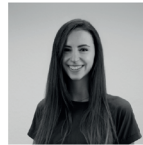
**SOLUTION**

## Team Act Studio

Act Studio offers the SDG Tag Tool, an online self-assessment and visual communication tool used by organizations to map their actions to the Sustainable Development Goals. The tool disrupts traditional sustainability reporting processes, saves time and money, and offers scalable annual licenses. The tool is currently targeted at the Irish market, but the business model is globally scalable, and the team is planning to expand marketing and sales globally.

SOLUTION

# Team Project 2.0

2.0 aims to transform the waste industry by designing systems that extend the lifespan of products and materials and reduce waste at its source. Its core activity is providing recycling services via a digital platform that connects households, businesses, and government organizations with smart bin locations and recyclers. The platform also offers waste management training, education and uses data-driven approaches to optimize waste management practices.
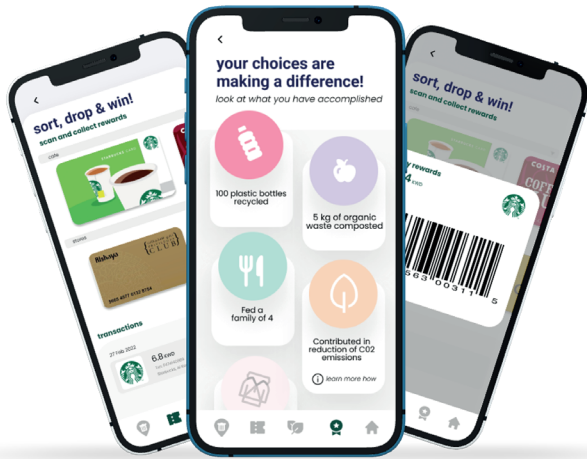
Shaikha Sabti

Dalal Al Ostad

Taiba Pattan



TWO POINT OH

# Team CLURB

WINNER-SOLUTION

Team CIUrb recognized that many cities lack the proper tools for disaster warning. That is why they created ACCTION - Disaster Risk Management Made Simple, a web- and mobile-based platform that simplifies the process of disaster risk management, allowing even the least resourced communities to act in an efficient and collaborative manner. ACCTION can map vulnerable areas and critical infrastructure, evaluate risk levels, and define procedures to alert citizens and respond to disasters.

Evandro

Mariano

Eliana
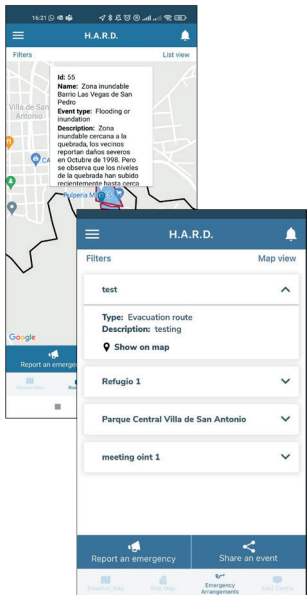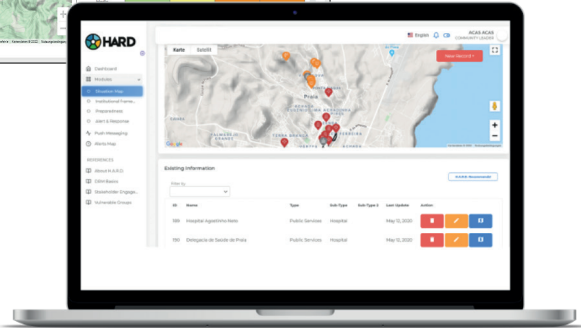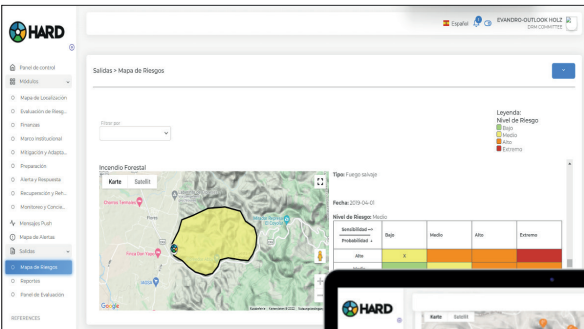
**CHALLENGE**

# DIGITAL 4 CLIMATE - TRANSFORMATIVE CLIMATE ACTIONS

**PROVIDER**



European Commission

United Nations Framework Convention on Climate Change

How can we transform business models and consumption behaviors towards sustainability and carbon-neutrality? How can we use digital innovations for greening the digital sector? The third challenge of the European Commission and the UNFCCC searched for innovations to reach the climate goals set in the Paris Agreement and SDG11 – Sustainable Cities and Communities.

**#digital4climate #greentransformation #co2neutrality**

**SOLUTION**

# Team Huniflex



HUNIFLEX

Huniflex provides movable prefabricated houses with on-demand value and big data integration to tackle the problem of unhealthy living, slow technology adoption, and inflexibility in housing. The solution is to downsize the house, separate it from the land, and integrate it with data and an app. Huniflex also offers a Huniflex Hotel, user-centered design, diversification of business model, and a Huniflex Super App with digital and FinTech services.

Muhammad Arif Abdurrahman, Founder & Chief Executive Officer

Safira Yumna Salsabila, Co-founder & Chief Operation Officer

Dimas Fauzi Nurmuttaqin, Co-founder & Chief Product Officer

Firda Inten Rasyidah, Chief Finance Officer

**SOLUTION**

# Team Capomaso

Capomaso's core activity is developing a digital framework for supply chain players to reduce unnecessary and empty movements of vehicles in road transport and barges for inland navigation. The framework enables companies to share information about their empty trips, free capacity, route, and time windows for vehicle route planning, reducing transportation costs, traffic jams and emissions.
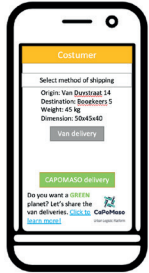
Masoud Dadkhah

Iliya Hakani

Pouyan S. Moghaddam

**SOLUTION**

# Team KasanaShare

KasanaShare uses data analytics and AI to ensure effective resource distribution and community-centric development. It is a renewable energy sharing platform in Uganda that provides households and small businesses with affordable solar PV systems and IoT technology. It enables real estate owners to become prosumers, sharing their excess energy with their community for extra income.

Aaron Masuba
Chairperson & Team Lead

Godwin Ojara
Electrical Engineer & Team Co-Lead

Rushi Shah
Snr. Software Engineer

Sheila Nabuduwa
Sustainability Lead & Finance Apprentice

Stephen Ssemwaka
Biodiversity Lead & Climate Coach

Geomon Joshy
Electronic Test Engineer

Praise Cadribo
Electrical Engineering Apprentice

Catherine Namboga
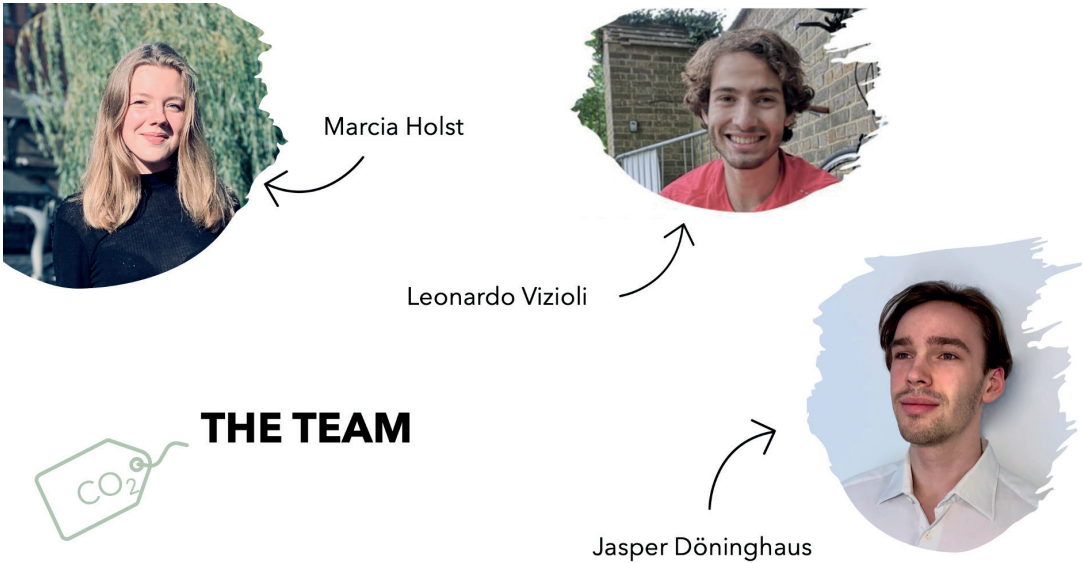Telecom Engineering Apprentice

Allan Wafula
ICT & Software Apprentice

Roland K. Bukenya
ICT & Software Apprentice

KasanaShare
An ICT enabled peer-wise energy sharing and exchange platform

SOLUTION

## Team CarbonTag

CarbonTag calculates CO2 emissions of food industry and communicates them through a color label, creating demand for low-emission products and providing companies with information to reduce emissions. The carbon label is based on academic research and follows greenhouse gas accounting standards. The tool is applicable to any product or service and can be integrated with existing payment systems.

Marcia Holst

Leonardo Vizioli

**THE TEAM**

Jasper Döninghaus



**Alnatura Hafer Drink Barista mit Soja 1 L**
= 393 g $CO_2$e*/Produkt

**= 393 g $CO_2$e*/kg**

* entspricht dem ermittelten Emissions-Fußabdruck dieses Produkts inkl. Verpackung von der Landwirtschaft bis zum Alnatura Super Natur Markt.

## Team Zentur.io

WINNER-SOLUTION

Michael Detke

Alexander Stoll

Zentur.io uses IoT and AI to develop energy management software that optimizes heat networks. The cloud-based monitoring software calculates customers' current and future heating costs based on consumption data. With their innovation Zentur.io offers a software-as-a-service solution that generates a digital twin of heat networks, combines fossil fuels and renewables, and predicts heat demand and cost development.

**ZENTUR·IO**

# 3

## OVERALL
## WINNERS

THREE TEAMS AND THEIR SOLUTIONS
CONVINCED THE JURY BEYOND ALL
EXPECTATIONS, THEY WERE ABLE TO
TAKE THE OVERALL WINNER'S PLACES:

# TEAM CIUrb

**3**

CarbonTag calculates CO2 emissions of food industry and communicates them through a color label, creating demand for low-emission products and providing companies with information to reduce emissions. The carbon label is based on academic research and follows greenhouse gas accounting standards. The tool is applicable to any product or service and can be integrated with existing payment systems.

## THE PROBLEM

Every city around the globe works daily to minimize the impact of disasters and other issues they face, using whatever resources they have at hand. However, with an average of 1 disaster per day, only as few as 4% of cities count on disaster warning systems. If such systems were in place, it is estimated that USD 3-16 billion per year in losses could be avoided – let alone the number of lives and livelihoods. Within their engagement with city officials and communities, CIUrb revealed that although they have a good understanding of the impact of disasters in their cities and what kind of actions are required, they lack the proper tools to act. This happens either because the available tools are not fit-for-purpose (e.g., social media), or because tools are too expensive and unnecessarily complex.

So, they wanted to provide a tool that is easy, flexible, and cheap, whilst being technically sound and fit for the purpose. The solution must be a tool, cities can use with the knowledge they collectively hold, and which provides a concrete manner to take action against disasters in a quick and effective way.

## THE SOLUTION

ACCTION, a web- and mobile-based platform that democratizes disaster risk management, leaving no-one and no place behind when it comes to taking action against disasters. It does so by simplifying the process of preparing to, responding to and recovering from disasters, allowing even the least resourced cities and communities to act in an efficient and collaborative manner in a matter of weeks and with very limited external support. With ACCTION cities can map vulnerable areas and critical infrastructure; evaluate the risk level the city faces for different events such as flooding and landslides; and define and deploy procedures to alert citizens and respond to disasters when they strike. The tool innovates by incorporating the flexibility and user friendliness of tools such as social media, combined with simplified technical robustness of more complex frameworks and tools on disaster risk management.

ACCTION's first version was launched in 2019 (known as H.A.R.D) and has already been applied in some of the most challenging environments worldwide.

## COOPERATION WITHIN THE PROGRAM

The cooperation with UNFCCC, SAP and Fraunhofer Institute was mostly structured around the technological advancement of the tool, but always with a business development perspective in mind. Different options were initially considered – use of data mining, citizen science and data science, blockchain – along with their pros and cons, as well as the feasibility and relevance of their implementation. These conversations provided CIUrb with a much clearer way on how to move forward strategically, combining technical and business development.

### DO YOU WANT TO KNOW MORE ABOUT CIUrb?

Are you curious about their foundation story and how they follow their mission on a global scale? Did you know CIUrb presented ACCION at the 27th Conference of the United Nations Convention on Climate Change in 2022 – COP27?

Evandro    Mariano    Eliana

## OUTLOOK

In ten years, ACCTION will evolve to the point where virtually every city around the planet will be able to buy it and use the same way they do it with MS Office or similar software.

*"The Innovation Challenge was a great opportunity to get out of our technical bubble and exchange with experts in a variety of fields. In the end, it was not so much of a competition, but rather an opportunity to explore synergies with amazing people looking at achieving the same goals as us".*
*Evandro*

*"It was clear to me since the beginning that the Challenge was a platform for us to exchange with like-minded people, who are all in a similar mission to promote global impact. This has not only provided us with more energy to keep on going but even more confidence that lots can change for the better in the near future!"*
*Mariano*

**READ CIUrb's FULL SUCCESS STORY HERE**

CLURB

# TEAM DASHFACTORY

**2**

The DASHFACTORY team consists of 13 people from 5 nations. To make cycling safer and more attractive, the founding team around Lelia König and Sandro Beck, former professional cyclists, combined their professional focus with their sporting passion. Together with another 11 cyclists the team includes all relevant competences from the areas of software development, iOS & Android app development, firmware development, as well as hardware and embedded software engineering, to make a significant, innovative contribution to improving bicycle safety with DASHBIKE and DASHTRACK.

## THE PROBLEM

Serious accidents in the team's circle of friends pushed them to improve the safety of cyclists. The increasing numbers of cyclists led to a massive overload of the existing bicycle infrastructure, which is reflected in correspondingly rising accident figures. The cities and urban living spaces also suffer from a lack of parking space and traffic congestion, suffocating under the burden of traffic jams, noise, poor air quality and quality of life. To create effective improvements, cities lack data on cycling and micro mobility.

## COOPERATION WITHIN THE PROGRAM

The cooperation was very exciting and valuable. Both in view of the strategic, long-term development and regarding concrete, short-term further developments. In meetings they were able to identify common synergies and plan to deepen these in further discussions.
Product and solution have met great interest at BOSCH! From DASHFACTORY's experience with other business partners, they believe in the joint positive impact they can achieve in cooperation with other great players and the team is looking forward to the time ahead.

## OUTLOOK

In 2032, the solution (including all further versions with 5G-technology, Bike-to-X-communication, AI road condition infrastructure survey) will be an established and decisive enabler for cities to implement a targeted, efficient and effective improvement of urban mobility. DASHFAC-

TORY's contribution to a connected, sustainable, attractive mobility will shape the modern cityscape with functionally accessible urban living spaces for citizens.

## THE SOLUTION

DASHFACTORY's solution consists of a hardware product and an urban data platform to digitize bicycle traffic and make it safer immediately and in the long term. The special Dashcam „DASHBIKE" already has a large community. Thanks to this consumer product and their partnerships as well as their own distribution channels, DASHFACTORY can achieve the required Europe-wide distribution and usage very quickly. This validated amount of data provides valuable insights to improve the infrastructure together with cities and urban planners.

DASHBIKE and DASHTRACK improve the safety and visibility of cyclists immediately and contributes to a data-based improvement of the infrastructure together with cities and thus enables up to
• 29% less traffic fatalities
• 50% less traffic jam
• 92% less CO2
• 12x more parking and traffic space and up to
• 90% more cost effective road condition survey and digitalizing of traffic infrastructure.

DASHBIKE is the first legally compliant dashcam for cyclists with distance measurement, daytime running lights and many other sensors. With distribution & cooperation partners, they will achieve a fast, Europe-wide distribution. Moreover, this technology can be adapted to other means of transport, e.g., motorbikes and e-scooters. With DASHTRACK a unique data platform is given to digitize cycling across Europe and in combination with DASHBIKE to make cycling safer. DASHTRACK records all relevant (cycling) traffic data of cyclists, including processing and analysis. This data can be implemented in the local urban data platforms of the cities and be displayed as heatmaps, dashboards, etc. In cooperation with the transport professorship, valid data can be used to provide cities with concrete recommendations for action to jointly improve the cycling infrastructure effectively, sustainably & efficiently. The data also offer completely new insights for science.

*„If you have the motivation to create positive added value to make the world a better place, ekipa is a great way to pursue this vision with like-minded partners."*

**LATEST NEWS:**

**DASHFACTORY ENTERS THE ASIAN MARKET.**
Last year DASHFACTORY went on a two-week market exploration trip organized by International Startup Campus. Team member Thuy Nguyen and Maximilian Pröpper were representing #Dashfactory in this valuable and insightful opportunity. They are proud to be one of the six German start-ups to pilot initial steps in the Asian market and contribute their solution for a more sustainable development of urban mobility and urban infrastructure. Open to all possible collaboration and cooperation opportunities with the network achieved in Vietnam, the team is forward-looking! Thanks to #SEPT and Universität Leipzig for supporting the trip to Vietnam!

# TEAM BANANA PACKAGING

**1**

BANANA PACKAGING TEAM consists of Armelle Sidje, founder of PRA (Product Related to Agricultural sector). She has skills in farming-agricultural transformation and in leadership- entrepreneurship-environment. The development and optimization of the process of transforming waste into bio-packaging is her passionate mission.

Philippe Bebine studied automation; he focuses on the development of automated solutions for the improvement and/or optimization of production conditions.
Flore Ekomo is not only a strong woman with skills in agricultural processing, but she is also up to entrepreneurship and likes to see how other young people from different countries find solution in their innovation-communities.

Joel Bousni is co-founder of PRA & JOEL ELECTRO-NICS. He oversees security & operational safety.
Eric Gagoum is entrepreneurship skills advisor; he is also founder & CEO of LCI (La Centrale Informatique). He has a lot of experience in success and failure and of many companies he owned.

Japhet Sekenya is a competition and fundraising advisor. Long experience in operating social inclusive businesses with direct impact to people in poor communities, backed by scientific background from the University of Dar es Salaam (Molecular biologist & Biotechnologist), Social Entrepreneurship background from the University of Cambridge, and agricultural value chain additional models' expertise from the Green Bioscience Institute of the Seoul National University. Japhet Sekenya received a wide range of recognition and awards.

## THE PROBLEM

The biggest problem we encounter in the manufacturing of packaging from banana tree trunk waste and other organic waste in general, has led the team to rethink their approach to raising awareness about the danger of abandoning waste in nature for the environment.

Due to the abusive use of wood in the manufacture of various products, they observe a strong increase in the felling of trees which causes an imbalance in the ecosystem. Each year, Cameroon produces 600,000 tons of plastic waste, causing loss of 200,000 hectares of its plant cover and 30% of livestock die from ingestion of this waste. Cameroon is among Africa-Caribbean-Pacific's largest banana producer (annual production of 4,000,000 tones and production of 108,000 tons of carbon)!

## THE SOLUTION

All these problems brought them to the idea of a digital platform (website and application) that will allow the BANANA PACKAGING TEAM to provide the different actors of the sector (farmers, waste sellers, waste buyers) with the necessary data to facilitate access and the reduction of waste dumping in nature. At the same time, they offer farmers the possibility to digitalize the monitoring of their harvest, which will allow them to optimize the use and/or collection of organic waste, and thus contribute to a better reuse of this waste to produce organic packaging.

The first step was to create an application; in the African market there wasn't such a solution as the model for creating bio-organic packaging from banana trunks is new. The team collected data from farmers, waste pickers and waste buyers. At the same time, they were working on the design of the application to make it simple and efficient to use. Putting the first version of the application online for the test phase with a minimum of data and options (registration on the platform, presentation of one's needs and/or products, connecting customers) was the beginning. After the validation of this step, they introduced specific functionalities according to the profiles.

Another plan is to increase the production packaging capacity in Cameroon – due to high demand as the Cameroonian packaging market is a 290 million Euros business market![1]

*„INNOVATE2030 is a way to gain more skills in pitch, to extend the network, and to find finance to move your company on another level in technology side. I appreciate the network – we are really moving, from the beginning, where we were and where we are now, this is an amazing journey - let us move together!*
*Armelle Sidje*

## OUTLOOK

The future development of BANANA PACKAGING TEAM's solution will make it possible, in about ten years to measure the carbon impact of the recyclability of waste and/or during industrial manufacturing using standard indicators. This will allow and motivate different actors to work in the protection of the environment. On the other hand, to contribute to rural development in agricultural areas, with transformation of organic waste into biogas which could serve as a new source of energy!

For a global deployment, 4 pilot projects in agricultural areas are needed, followed by a good marketing campaign to raise awareness of digital solutions for recycling and manufacturing organic packaging. Difficulties are more in technical deployment in best possibility of storage and conservation of organic waste and wastepaper.

[1]https://pdf.usaid.gov/pdf_docs/Pnadl296.pdf

# SOCIAL MEDIA AWARD



We recognize the power of social media in increasing visibility and engagement. That's why we gave a Social Media Award to participants of INNOVATE2030 SDG11.

To be eligible for the award, participants should post on social media platforms such as LinkedIn, Twitter, Instagram and Facebook during the elaboration phase to share content about their team and/or process, keeping their followers informed and engaged. In this way, they not only increase their visibility and engagement with the event, but also demonstrate their expertise and creativity in using social media.
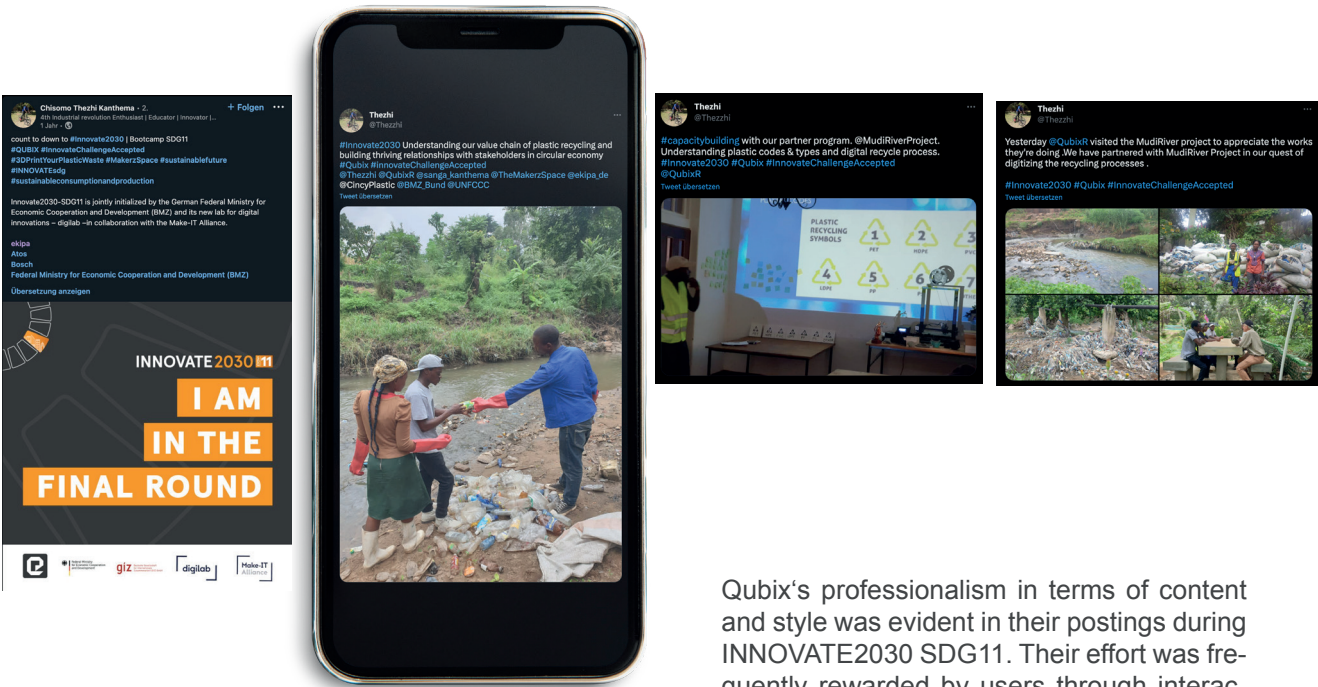


The Social Media Award was recently awarded at the final pitch event, and we are proud of our winner Team Qubix. Qubix demonstrated exceptional skill in using social media to showcase their team and their process during the elaboration phase. Their well-thought-out and entertaining postings on LinkedIn, Twitter and Facebook channels proved to be the best among all the participants.

Qubix's professionalism in terms of content and style was evident in their postings during INNOVATE2030 SDG11. Their effort was frequently rewarded by users through interactions, likes, and comments, which is a testament to their ability to effectively engage their audience.

But Qubix did more than just post engaging content. They took their followers on a journey of understanding their plastic recycling value chain, and building thriving relationships with circular economy stakeholders. Qubix's commitment to sustainability was evident through their efforts to source the first batch of plastic waste from the community.

# 05

## AP
## PEN
## DIX

# RESEARCHLIST

This reference list contains selected literature and articles to the current state of research concerning the innovation program INNOVATE2030-SDG11. The focus lies on goal 11 to make cities & communities climate smarter and more sustainable.

Acciaro, M., Vanelslander, T., Sys, C., Ferrari, C., Roumboutsos, A., Giuliano, G., ... & Kapros, S. (2014). Environmental sustainability in seaports: a framework for successful innovation. Maritime Policy & Management, 41(5), 480-500.

Alp, O., Tan, T., & Udenio, M. (2022). Transitioning to sustainable freight transportation by integrating fleet replacement and charging infras tructure decisions. Omega, 109, 102595.

Behnam, S., Cagliano, R., & Grijalvo, M. (2018). How should firms reconcile their open innovation capabilities for incorpora ting external actors in innovations aimed at sustainable development? Journal of Cleaner Production, 170, 950-965.

Barbero, S., Nohra, C. G., & Campagnaro, C. (2022). Systemic solutions for the holistic well-being of cities. Processes, results and reflections. AGATHÓN| International Journal of Architecture, Art and Design, 11, 50-61.

Bendul, J. C., Rosca, E., & Pivovarova, D. (2017). Sustainable supply chain models for base of the pyramid. Journal of Cleaner Production, 162, S107-S120.

Bergmann, M., Mützel, S., Primpke, S., Tekman, M. B., Trachsel, J., & Gerdts, G. (2019). White and wonderful? Microplas tics prevail in snow from the Alps to the Arctic. Science advances, 5(8), eaax1157.

Bogers, M., Chesbrough, H., & Moedas, C. (2018). Open innovation: Research, practices, and policies. California manage ment review, 60(2), 5-16.

Bogers, M., Chesbrough, H., & Strand, R. (2020). Sustainable open innovation to address a grand challenge: Lessons from Carlsberg and the Green Fiber Bottle. British Food Journal, 122(5), 1505-1517.

Chesbrough, H., Lettl, C., & Ritter, T. (2018). Value creation and value capture in open innovation. Journal of Product Inno vation Management, 35(6), 930-938.

Costa, J., & Matias, J. C. (2020). Open innovation 4.0 as an enhancer of sustainable innovation ecosystems. Sustainabili ty, 12(19), 8112.

Curley, M., & Salmelin, B. (2017). Open innovation 2.0: the new mode of digital innovation for prosperity and sustainability. Springer.

Del Cerro Velazquez, F., & Lozano Rivas, F. (2020). Education for sustainable development in STEM (technical drawing): Learning approach and method for SDG 11 in classrooms. Sustainability, 12(7), 2706.

Dietz, A., Hund, A., & Wagner, H. T. (2022). The Role of Digital Technology in Sustainability: A Literature Review.

Errichiello, L., & Micera, R. (2018). Leveraging smart open innovation for achieving cultural sustainability: Learning from a new city museum project. Sustainability, 10(6), 1964.

Geibler, J. V., Piwowar, J., & Greven, A. (2019). The SDG-check: Guiding open innovation towards sustainable development goals.

Hagmann, D., Ho, E. H., & Loewenstein, G. (2019). Nudging out support for a carbon tax. Nature Climate Change, 9(6), 484-489.

Hunter, M. R., Gillespie, B. W., & Chen, S. Y. P. (2019). Urban nature experiences reduce stress in the context of daily life based on salivary biomarkers. Frontiers in psychology, 722.

Kazemargi, N., Tavoletti, E., Appolloni, A., & Cerruti, C. (2022). Managing open innovation within supply networks in mature industries. European Journal of Innovation Management.

Kennedy, S., Whiteman, G., & van den Ende, J. (2017). Radical innovation for sustainability: The power of strategy and open innovation. Long Range Planning, 50(6), 712-725.

Koch, F., & Krellenberg, K. (2018). How to contextualize SDG 11? Looking at indicators for sustainable urban development in Germany. ISPRS International Journal of Geo-Information, 7(12), 464.

Kopackova, H., & Komarkova, J. (2020). Participatory technologies in smart cities: What citizens want and how to ask them. Telematics and Informatics, 47, 101325.

Long, T. B., & Blok, V. (2018). Integrating the management of socio-ethical factors into industry innovation: towards a con cept of Open Innovation 2.0. International food and agribusiness management review, 21(4), 463-486.

Lopes, C. M., Scavarda, A., Hofmeister, L. F., Thomé, A. M. T., & Vaccaro, G. L. R. (2017). An analysis of the interplay between organizational sustainability, knowledge management, and open innovation. Journal of cleaner produc tion, 142, 476-488.

MacDonald, A., Clarke, A., Huang, L., Roseland, M., & Seitanidi, M. M. (2018). Multi-stakeholder partnerships (SDG# 17) as a means of achieving sustainable communities and cities (SDG# 11). Handbook of sustainability science and research, 193-209.

Mahajan, R., & Bandyopadhyay, K. R. (2021). Women entrepreneurship and sustainable development: select case studies from the sustainable energy sector. Journal of Enterprising Communities: People and Places in the Global Econo my.

McGahan, A. M., Bogers, M. L., Chesbrough, H., & Holgersson, M. (2021). Tackling societal challenges with open innova tion. California Management Review, 63(2), 49-61.

Megahed, N. A., & Abdel-Kader, R. F. (2022). Smart Cities after COVID-19: Building a conceptual framework through a multidisciplinary perspective. Scientific African, 17, e01374.

Nitivattananon, V., & Srinonil, S. (2019). Enhancing coastal areas governance for sustainable tourism in the context of urba nization and climate change in eastern Thailand. Advances in Climate Change Research, 10(1), 47-58.

Olsson, P., Galaz, V., & Boonstra, W. J. (2014). Sustainability transformations: a resilience perspective. Ecology and Socie ty, 19(4).

Paskaleva, K. A. (2011). The smart city: A nexus for open innovation?. Intelligent Buildings International, 3(3), 153-171.

Pontieri, P., Mennini, F. S., Magni, D., Fiano, F., Scuotto, V., Papa, A., ... & Del Giudice, L. (2022). Sustainable open innova tion for the agri-food system: Sorghum as healthy food to deal with environmental challenges. British Food Jour nal, 124(9), 2649-2672.

Saur-Amaral, I., & Amaral, P. (2010). Contract innovation organisations in action: Doing collaborative new product develop ment outside the firm. International Journal of Technology Intelligence and Planning, 6(1), 42-62.

Shuradze, G., Bogodistov, Y., & Wagner, H. T. (2018). The role of marketing-enabled data analytics capability and organisa tional agility for innovation: Empirical evidence from German firms. International Journal of Innovation Manage ment, 22(04), 1850037.

Wecht, C. H., Cesinger, B., Vallaster, C., & Aleksic, N. (2021). Refocusing innovation management activities on sustainable circular business models-a framework and pathway for further research. In ISPIM Conference Proceedings (pp. 1-16). The International Society for Professional Innovation Management (ISPIM).

Zekan, B., Weismayer, C., Gunter, U., Schuh, B., & Sedlacek, S. (2022). Regional sustainability and tourism carrying capa cities. Journal of Cleaner Production, 339, 130624.

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As a leading open innovation incubator, we bring together people, industries and organizations across all boundaries. We are united by a common goal: to encourage positive change through sustainable, future-oriented innovations. This is what drives us.

We inspire, enable and fast-track people and organizations from all backgrounds and fields as they develop solutions that address the complex challenges of our era. We build bridges between science, economy, politics and society. We unite the dynamism of startups, researchers and students with the capacity of established organizations. On our innovation platform and in our programs, we help interdisciplinary and pioneering projects that tap into an innovative spirit to flourish. Only together, we generate genuine added value.

We are ekipa. We are shaping the future based on sustainable innovation and co-operation, in the interest of society, environment and economy.

**LET'S INNOVATE TOGETHER.**