Accelerating sustainable urban futures:

a practical guide for challenge-driven innovation in cities

Accelerating sustainable urban futures: a practical guide for challenge-driven innovation in cities

Table of contents

Introducing the guide

What is this guide for?

This publication aims to provide a structured step-by-step guide to challenge-driven innovation: an approach to foster partnerships for the achievement of the Sustainable Development Goals (SDGs).

Challenge-driven innovation is all about problem solving, cross-sectoral collaboration, and innovation implementation - in and for - cities. This is an approach to foster innovation that focuses on real challenges identified in cities and communities, and helps to expand the network of actors in the entire innovation ecosystem who can contribute to developing solutions, while unlocking potential investments and broader system change, influencing policy and promoting institutional capacities.

As highlighted in the SDG 17 partnerships guidebook, our world has limited resources – whether financial, technological, natural or human – and, as a society, we must optimize the use of such resources to deliver sustainable development for everyone's benefit. All actors must play their unique roles and utilise their unique resources, with partnerships an essential means to maximize the collective impact of available resources.

Building on the work of UN-Habitat and Challenge Works, the guide offers real-world examples, useful tips and relevant resources to applying challenge-driven innovation methods in urban context.

This guide suggests practical answers, among others, to the question of how we can collaborate across different societal sectors to deliver on the SDGs.

Moving towards partnering as the 'new normal'
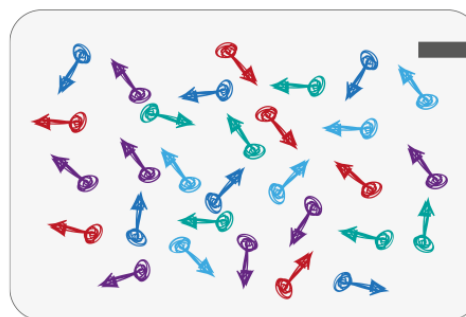
Current situation: little collaboration or coherence across business, government, civil society, academia, UN etc.
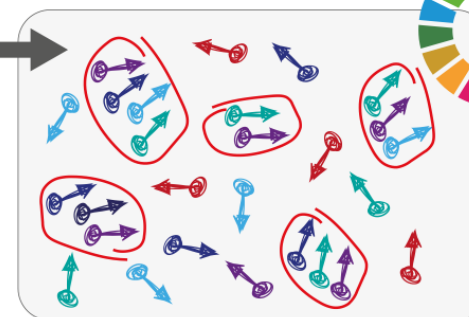
The new normal: Systematic collaboration across societal sectors wherever value can be created towards the common goal/polar star of the SDGs

The SDG Partnership Guidebook/Jane Nelson

Who is the guide for?

This guide has been developed for:

- City and local governments officials committed to innovation for sustainable urbanization
- Organizations providing technical support to cities, including UN agencies and city networks
- Funders and donors focused on sustainable urbanization
- Innovators ready to collaborate with local governments on implementing solutions.

Additionally, this guide particularly aims to inspire lower-resourced cities that can highly benefit from a practical step-by-step tool to experimenting with innovation through challenge-driven innovation initiatives.

How should you use this guide?

This guide is divided into two primary sections: a comprehensive overview of challenge-driven innovation in cities, followed by a five-step how-to guide to implement the approach in your city.

You can follow the guide through each step or jump ahead to the section that is most relevant to your needs. Relevant and practical examples, tips and resources are distributed throughout all steps of the guide. Challenge Works and UN-Habitat intend for this guide to be used as a framework for training workshops on challenge-driven innovation in cities.

The guide refers to past and present examples of challenge-driven innovation initiatives in various areas and topics related to cities and sustainable urban development. As highlighted by one of the reviewers, learning from these examples is valid, however there is a need to be more visionary as the challenges we face as a society become more and more complex. This should support us in navigating the rapid transformation of our vision of what it means to live in cities, how we choose to live and what the options are of making our cities as livable and sustainable as possible.

This guide is a starting point for those actively seeking to engage with innovation, and opens the path for further research on the topic.
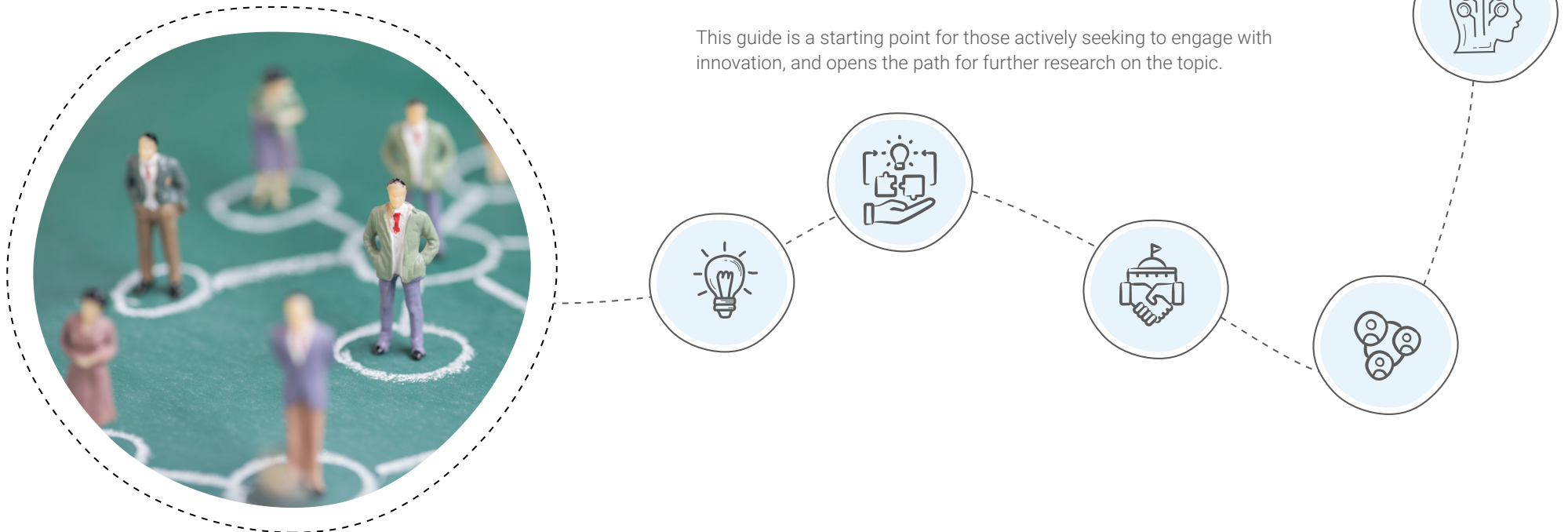
About the organizations

UN-Habitat

The United Nations Human Settlements Programme (UN-Habitat) is the United Nations programme working towards a better urban future, with a mission to promote socially and environmentally sustainable human settlements development and achieve adequate shelter for all. UN-Habitat works with partners to build inclusive, safe, resilient and sustainable cities and communities and promote urbanization as a positive transformative force for people and communities, reducing inequality, discrimination and poverty. It provides technical assistance, policy advice, knowledge and capacity building to national and local governments in over 90 countries. UN-Habitat is coordinating the implementation of the UN System-Wide Strategy on Sustainable Urban Development[1] and in close coordination with national and local governments leads the monitoring of Sustainable Development Goal 11 (SDG 11) on sustainable cities and communities and the New Urban Agenda. This guide has been developed by UN-Habitat's Innovation Unit, where the organization's flagship programme on People-Centred Smart Cities is housed.

Visit us at unhabitat.org

Challenge Works

Challenge Works is a global leader in design and delivery of open innovation challenges that mobilize diverse, innovative thinkers to solve pressing problems and unlock change. Challenge prizes are a unique approach to funding innovation, offering a series of incentives, with a final prize given to whoever can first or most effectively meet a defined goal. They are public, open competitions which lower barriers to entry to attract the broadest possible community of innovators.

By funding these challenge prizes, foundations, governments, international NGOs and corporations increase societal impact, improve outcomes for local and global communities, and catalyze policy change. In the last 10 years our challenge prizes have addressed wide-ranging issues such as climate change, employment access, inequality, global health and financial resilience

Visit us at challengeworks.org

---

1   UN System-Wide Strategy on Sustainable Urban Development: prepared by the High-Level Committee on Programmes under the leadership of UN-Habitat (See CEB/2019/4/Add.4 and CEB/2019/1/Add.5)

Abbreviations and acronyms

AI	Artificial Intelligence
CAF	Charities Aid Foundation
CSO	Civil Society Organisation
LEAP	London Economic Action Partnership
NUA	New Urban Agenda
MSMEs	Micro, Small and Medium Enterprises
OECD	Organisation for Economic Co-operation and Development
SDGs	Sustainable Development Goals
T&Cs	Terms and Conditions
SMEs	Small and Medium Enterprises
UCL	University College London
UK	United Kingdom
UN OICT	United Nations Office of Information and Community Technologies
UNITAC	United Nations Innovation & Technology Accelerator for Cities
WUF	World Urban Forum

Introduction

What is challenge-driven innovation?

Challenge-driven innovation is a method to accelerate innovation that sets an ambitious goal and incentivizes people or organizations to present or develop solutions. This approach focuses attention on a problem area, expands the network of potential problem-solvers, unlocks potential further investment, improves outcomes for problem-holders and beneficiaries, and can create positive spillover effects in the broader system, by, for example, triggering broader policy or regulatory change.

Depending on the initiative, organizations can include individuals and entrepreneurs, as well as larger entities including MSMEs, startups, universities, non-profits, private sector companies, civil society and think tanks. It can also involve government at all levels, and international or multilateral organizations.

Focusing on a problem in cities

By setting ambitious yet tangible goals, challenge-driven innovation offers a framework for cities to address critical and pressing needs such as affordable housing, emission reductions and sustainable transportation. By applying challenge-driven innovation methods, cities can direct attention to develop specific technological, financial, business and policy innovations that solve a clearly defined problem faced by society, industry, vulnerable or marginalized groups, or a city, for example.

Challenges are ideally defined together with local communities and experts, and then opened up through a public campaign to a wide audience, thereby mobilising energy towards a shared and collaboratively defined goal.
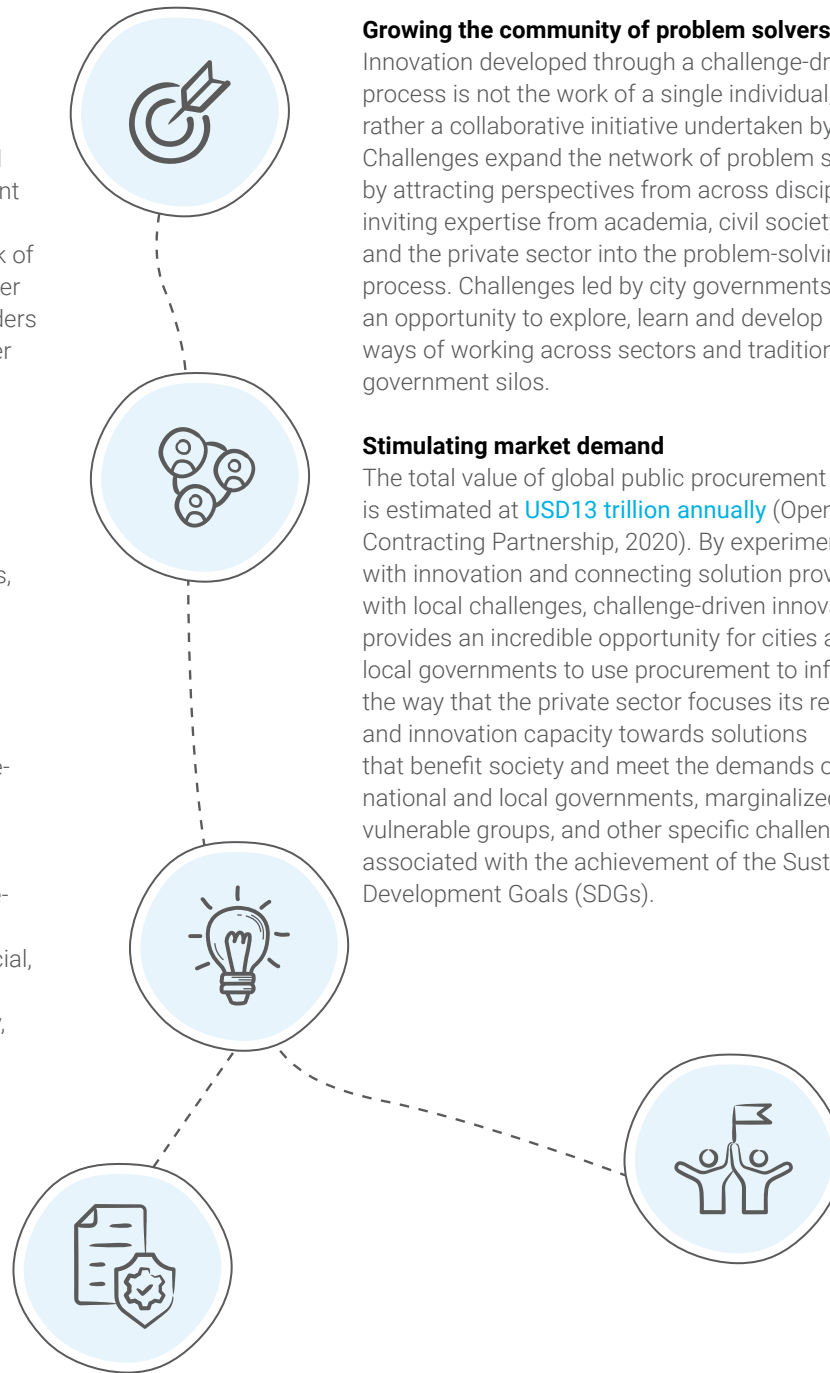
Growing the community of problem solvers

Innovation developed through a challenge-driven process is not the work of a single individual, but rather a collaborative initiative undertaken by many. Challenges expand the network of problem solvers by attracting perspectives from across disciplines, inviting expertise from academia, civil society and the private sector into the problem-solving process. Challenges led by city governments offer an opportunity to explore, learn and develop new ways of working across sectors and traditional government silos.

Stimulating market demand

The total value of global public procurement is estimated at USD13 trillion annually (Open Contracting Partnership, 2020). By experimenting with innovation and connecting solution providers with local challenges, challenge-driven innovation provides an incredible opportunity for cities and local governments to use procurement to influence the way that the private sector focuses its resources and innovation capacity towards solutions that benefit society and meet the demands of national and local governments, marginalized and vulnerable groups, and other specific challenges associated with the achievement of the Sustainable Development Goals (SDGs).

Challenge-driven innovation, as an approach to foster innovative solutions and partnerships between public and private sector, stimulates market demand for innovation that addresses real problems, establishing a partnership-enabling ecosystem, where local innovation can meet local needs, or benefit from international partners expertise and resources, if these are not available locally.

In cities, challenge-driven innovation initiatives present an opportunity for local governments to advance public efforts towards sustainable development, and lead and coordinate investment directed to innovative solutions that benefit their communities. Challenge initiatives can support cities implement policies and strategic plans and deliver services.

Generating spillovers, legacies and lessons

Challenge-driven innovation works to both solve specific problems, and to spark larger systemic change. For example, while working with challenge-driven innovation, cities may leverage the learning to develop new procurement mechanisms, pilot innovative governance frameworks to steer public-private partnerships around public interest, experiment with new public engagement models and tools, and build capacity and skills within the organization.

Accounting for externalities that can impact the challenge and the system in unforeseen or unintended ways is equally important. This can include selecting solutions that provide holistic value; solutions that take into consideration wider sustainability - environmental, financial viability as well as social impact in order to contribute lasting impact that can continue post-challenge prize.

Challenge-driven innovation and mission-oriented innovation

Challenge-driven innovation can also be aligned to mission-oriented innovation. Missions are concrete and pragmatic steps towards achieving grand challenges. The SDGs are an example of global grand challenges, with missions setting "clear objectives that can only be achieved by a portfolio of projects and supportive policy interventions" (Mazzucato & Dibb, 2019).

The authors of this guide propose challenge-driven innovation as a localized intervention, one part of a portfolio of projects and activities that configures mission-oriented innovation. Challenge initiatives run by local governments or other organizations hold space

for experimenting, with cross-sector collaboration, and piloting participatory processes. It further allows exploration of different procurement, finance, and dynamic capabilities - all of which are key elements of missions, and help to demonstrate value for scale, as governments increasingly set missions to tackle grand challenges, such as green affordable housing, carbon-neutrality, or poverty.

Challenge-driven innovation is an approach that can be most successful when aligned to government missions or established policy goals.

Explore! 🔍

- Missions: a beginner's guide
- Mission Economy: A Moonshot Guide to Changing Capitalism
- Mission-oriented Innovation - a handbook from Vinnova
- Mission-Oriented Policy Hub - UCL Institute for Innovation and Public Policy
- OECD Mission Action Lab

Instruments of challenge-driven innovation

Open innovation recognizes that an organization can increase its innovation potential by inviting in outside perspectives and expertise. Challenge prizes and challenge funds are approaches to challenge-driven innovation.

Challenge-driven innovation

A tool to drive partnerships and innovative solutions that focus on urban problems, identified through participatory processes and implemented with multi-level stakeholders governance. Unlike traditional procurement, which follows predefined specifications and rigid processes, challenge-driven innovation promotes the emergence of diverse and novel solutions by focusing on solving specific problems, rather than prescribing what the solution should look like.

Innovation challenges

The project of offering prizes and/or funds for innovation for a challenge.

Challenge funds

Challenge funds allocate resources for a specific mission or policy priority through individual calls that can be run as separate competitions. They often target measurable outcomes and include various methods (e..g., grants, impact investing).

Challenge prizes

Challenge prizes incentivize and reward action. They are open to whoever can first or most effectively solve a problem, encouraging innovation from a broader pool of participants.

Explore!

- Fostering innovation in low and middle-income countries through challenge funds and challenge prizes – lessons for development cooperation (OECD, 2024).
- Funding Innovation: A Practice Guide (Nesta, 2018).
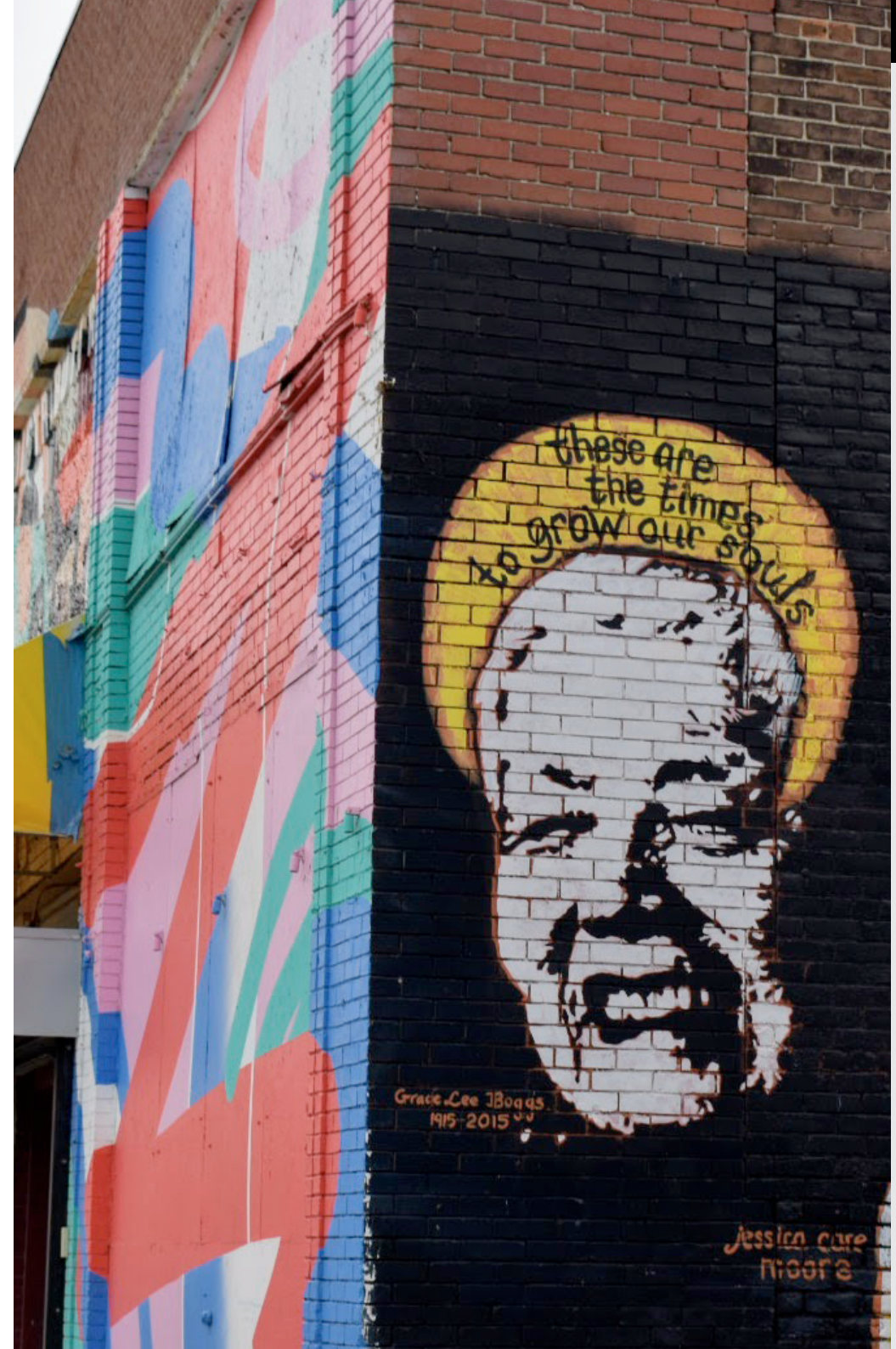
A brief history of innovation challenges

Challenge prizes across the ages

Challenge prizes are one of the oldest types of open innovation mechanisms deployed by governments to generate new solutions and ideas. Every day, we witness transformative innovations that have been brought to life through the impact of challenge prizes (Challenge Works, 2022). These can include social innovation, non-technical and digital innovation, for instance.

Navigating at sea (Longitude Prize 1714–1765): Accurately determining one's longitude while at sea posed a persistent problem for sailors navigating the globe, resulting in frequent shipwrecks and substantial losses. In response, the British Parliament established the Longitude Prize in 1714, offering GBP 20,000 (equivalent to about GBP 1.5 million today) for a reliable method to determine longitude at sea. Over a decade later, clockmaker John Harrison achieved a breakthrough with his invention of the chronometer, a pioneering device that continues to shape modern navigation.

Child labour (The Society of Arts chimney sweeping prize 1802): This prize was established by the Society for the Encouragement of Arts, Manufactures, and Commerce to address the perilous conditions faced by child chimney sweeps. It incentivized the creation of safer methods for chimney cleaning, aiming to replace hazardous child labor with innovative mechanical solutions in 19th-century England's industrial landscape.

Solo transatlantic flight (Orteig Prize 1919–1927): Between 1919 and 1927, Raymond Orteig, a French immigrant turned successful hotelier in the US, offered a USD 25,000 prize (equivalent to USD 246,000 today) for the first aviator to complete a non-stop flight across the Atlantic. In 1927, Charles Lindbergh achieved this historic feat in his custom-built aircraft 'Spirit of St. Louis', sparking an economic boom in aviation.

Space tourism (Ansari XPRIZE 1996–2004): The Ansari XPRIZE awarded USD 10 million to the first private spacecraft, SpaceShipOne, to reach suborbital space twice within two weeks. It significantly advanced space tourism and demonstrated the potential for private-sector space travel.

1700 — **1800** — **1900** —

2000

Driverless cars (DARPA Grand Challenge 2003-2007): The DARPA Grand Challenge was a series of challenges aimed at advancing autonomous vehicle technology. Funded by the Defense Advanced Research Projects Agency (DARPA), it spurred significant progress in driverless car development, ultimately paving the way for modern autonomous vehicles.

2020 ← **2010** ←

Assistive technology (Mobility Unlimited Challenge 2018-2020): The Mobility Unlimited Challenge, funded by Toyota Mobility Foundation, was a USD 4 million prize to change the daily lives of people with lower-limb paralysis through innovative personal mobility devices incorporating intelligent systems. The final prize of USD 1 million helped bring the Phoenix Ai Ultralight wheelchair to market.

Social innovation (European Social Innovation Competitions, 2013-2024): The European Social Innovation Competition inspires social innovators across Europe, employing a proven methodology for supporting early-stage ideas and facilitating a network of radical innovators shaping our society for the better. Each year the Competition addresses a different issue facing Europe, from circular economy to green skills to equality and more.

Antimicrobial resistance (Longitude Prize on AMR 2014-2024): The Longitude Prize on Antimicrobial Resistance, designed and delivered by Nesta, awarded GBP 8 million to the winning team, who developed a novel point-of-care diagnostic test that rapidly and accurately identifies the presence of a bacterial infection and the right antibiotic to treat it.

Explore!

- Challenge Prizes: A Practice Guide
- History of the Longitude Prize
- Scaling up Innovations in LMICs: Lessons from the Afri-Plastics Challenge
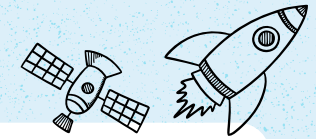
Challenge-driven innovation for cities

SDG 11 & innovation challenges

"We have reached a critical point in understanding that cities can be the source of solutions to, rather than the cause of, the challenges that our world is facing today."
-New Urban Agenda

By 2050, 68 per cent of the world's population, approximately 2.2 billion people, will live in cities (UN-Habitat, 2022).[2] This rapid urbanization and unprecedented transformation to an urban world can significantly exacerbate existing inequalities in access to infrastructure, green spaces, homes and services, and further burden the natural environment, if not addressed adequately at policy and local action levels. The United Nations' Sustainable Development Goal 11 on *Sustainable Cities and Communities* focuses on creating sustainable cities and human settlements that are safe, inclusive and resilient. SDG 11 critically targets issues such as housing, transportation, economic opportunity, basic services, green spaces, climate adaptation and urban resilience. The complexity of these urban issues, especially in the face of climate change and the rise of digital technologies, requires new and innovative approaches to identifying, developing, implementing, and maintaining solutions.

Challenge-driven innovation can foster collaboration and new partnerships in line with the SDGs by directing resources and investment towards achieving inclusive and sustainable outcomes for our most pressing urban challenges.

Cities are places where transformative solutions to the world's most pressing problems can have far reaching impact. The New Urban Agenda (NUA), endorsed by the United Nations' General Assembly in 2016, reinforces the correlation between urbanization and achieving the SDGs. The NUA seeks to leverage innovation to embrace diversity, develop inclusive urban economies, promote environmental sustainability, facilitate citizen-centric governance, and produce a better living environment for all. Embracing the participatory and collaborative spirit of the SDGs and the NUA, challenge-driven innovation provides a pathway for governments, civil society organizations, the private sector and academia to coalesce towards a shared vision for sustainable urbanization. .

Cities are engines of creativity, innovation and economic activity, contributing much to regional and national GDPs. They are hotspots of opportunities, often hosting academic institutions, research and development[3] (R&D) centres, businesses, incubators and accelerators. This convergence of expertise and entrepreneurship offers the ideal diversity and wide-ranging problem-solving capabilities that challenges seek to convene.

Explore!
- New Urban Agenda
- World Cities Report 2022
- World Cities Report 2024

3   Research and development (R&D), also known as experiment and design, is a systematic process of innovative activities undertaken by corporations or governments to develop new products, services, or processes, or refine or improve existing ones.

UN-Habitat's history with innovation challenges

Beginning with the Dubai International Best Practices Award for Sustainable Development in 1995, UN-Habitat has long used incentives and competitions to engage with stakeholders and identify successful solutions to urban challenges. UN-Habitat's challenge-driven innovation initiatives offer cities and local governments the opportunity to foster public participation in problem solving and decision making, pilot and test new solutions, collaborate with academia, civil society and the private sector to address societal and environmental challenges in urban contexts. Following extensive research from 2017 to 2019 on the potential for challenge-driven innovation to drive sustainable urbanization in emerging economies, UN-Habitat has seeks to advance human rights and social inclusion using innovation challenges.

Climate Smart Cities Challenge: Since 2020, UN-Habitat and Viable Cities, together with Challenge Works and the cities of Bogotá, Colombia; Bristol, United Kingdom; Curitiba, Brazil; and Makindye Ssabagabo, Uganda, ran the Climate Smart Cities Challenge to transform systems related to housing, waste management, freight transportation and reduce their impact on the climate. Each winning team in the four cities was awarded up to USD 100,000 to plan a system demonstrator for their solution.

Innovate Kenya Counties Challenge: In 2016-17, UN-Habitat partnered with Ericsson AB, Kenya's Ministry of Development and Planning, Strathmore University and Akirachix to identify digital innovations to strengthen youth participation in local governance. Funded by Omidyar Network, SIDA, UK AID and USAID, Innovate Kenya Counties Challenge was won by Ushahidi, Sauti Yetu and Map Kibera Trust, and their solutions were piloted in select counties in Kenya.

Mindanao Youth Innovation Hackathon: In 2019, UN-Habitat, UNIDO and Red Wizard Events Technology brought together students from across Mindanao to generate innovative ideas for the rehabilitation of Marawi, a city that had been experiencing water, sanitation and waste problems following a humanitarian conflict that ended in 2017. Five students won the top prize for their mobile application that used applied and experiential learning approaches to instill knowledge and good practices in community waste management.

Future Cities Challenge: In 2020, UN-Habitat partnered with Fondation Botnar to launch the Future Cities Challenge, to engage and encourage young people to imagine a 'new normal' in their cities. Five champions around the world won USD 1000 in credits to take online courses.

Plastics 3R Hacks: In 2021, UN-Habitat Philippines partnered with Red Wizard Events Technology, Healthy Oceans and Clean Cities Initiative on a nationwide virtual hackathon to harness solutions to marine plastic pollution in the Philippines. The Government of Japan funded hackathon brought together over 200 students, with the ultimate top two winning teams receiving PHP 50,000 and PHP 20,000 in cash prizes along with special prizes from the hackathon sponsors.

2016 → **2019** → **2020** → **2021**

2024 ← **2022**

Water as Leverage City Champion Challenge: Launched in 2024 by the Water as Leverage Multilevel Climate Action Programme, the challenge embraces an integrated approach to tackle the impacts of climate change on city water systems and communities, addressing critical issues such as flooding, drought, and pollution. Additionally, it aimed to highlight innovative, city-led solutions that promote equitable, sustainable, and resilient urban environments, inspiring others with their water resilience initiatives. Four winning initiatives were selected by a jury composed of experts from various sectors, representing a wide spectrum of knowledge in water resilience, urban development, climate adaptation, and community engagement.

Katowice Energy Innovation Challenge: In 2022, UN-Habitat and the city of Katowice launched the Katowice Energy Innovation Challenge, inviting companies to develop digital information and communication technologies to encourage the transition to clean and renewable energy systems. Three winning start-ups were awarded the opportunity to present their work at the 11th World Urban Forum and participate in a 10-day acceleration programme at Katowice's Municipal Accelerator Rawa.Ink.

Explore!

- Young innovators hack solutions to marine plastic litter
- Young people design their cities through #futurecitieschallenge
- Mindanao youth hack green solutions for Marawi rehabilitation
- Innovate counties challenge: Giving a voice to marginalised Kenyan youths
- UN-Habitat announces winners of the Katowice Energy Innovation Challenge
- Climate Smart Cities Challenge

Challenge-driven innovation & people-centred smart cities

The UN Habitat Strategic Plan (2020-2025), endorsed by Member States, calls for turning "smart city plans and the use of frontier technologies in urban planning, design and regeneration into people-centred opportunities, rather than technology-led endeavours".

As pointed out in the strategic plan, moving from technology-led to people-centred is crucial to ensure that sustainability, inclusion, and human rights are at the core of maximizing opportunities presented by smart cities. In this sense, the authors of this guide present challenge-driven innovation as a strong tool to advance efforts towards building more people-centred smart cities. This guide offers insights into influencing partnerships, especially with the private sector, to develop solutions based on real needs or real challenges.

As cities have become testbeds for new solutions and technologies, there is growing concern about a lack of oversight, transparency, and potential human rights violations in smart city frameworks.

Many "smart city" initiatives have fallen short on sustainability and inclusion and technology has been applied uncritically, based on supply rather than demand, with growing trends towards surveillance, private ownership of digital public goods and infrastructure, and the perpetuation of discrimination through automated decision-making powered by artificial intelligence. Smart cities and supporting innovative technologies like AI can have a tremendous positive impact on people's lives, but only when **people are at the center of the development process**.

Aligning to its strategic plan, UN-Habitat launched its flagship programme on people-centred smart cities in 2020. The programme aims to show how digital technologies and data in cities can be an inclusive force for good, if implemented with a firm commitment to improving people's lives and building city systems that truly serve their communities.

In 2023, Member States of the United Nations, through the Resolution HSP/HA.2/Res.1 requested UN-Habitat to develop International Guidelines on People-Centred Smart Cities. The guidelines, once adopted by the UN Member States, will be launched in mid-2025.

The United Nations Innovation & Technology Accelerator for Cities (UNITAC), is referred as a crucial platform for the implementation of the international guidelines. UNITAC is a partnership between HafenCity University (HCU), in Hamburg, and the UN Office for ICT (UN-OICT), established in 2021. The Accelerator develops solutions to accelerate the achievement of the Sustainable Development Goals, using data and digital technologies, and innovation methodologies such as challenge-driven innovation.

It is important to note that this guide is not only about digital innovation, but also about social and non-technical innovation. The guide is, however, strongly applicable to the context of digital development, where technology aims to address a real problem faced by people living in cities.

Explore!

- UN-Habitat's People-Centred Smart Cities Flagship Programme
- UNITAC - United Nations Innovation Technology Accelerator for Cities
- Mainstreaming human rights in the digital transformation of cities
- Human rights in the digital era: learnings on local governance from pilots in Europe
- Managing smart city governance
- Global assessment of responsible AI in cities
- AI in cities: risks, applications and governance

When and why you should run a challenge with or in cities

Determine if challenge-driven innovation is the right approach

Before starting a challenge, it is crucial to define the goals and determine if challenge-driven innovation is the right approach.

If there are existing challenges or barriers within a field or community that demand innovative solutions or a fresh market approach, and if the exact solution is uncertain or multiple approaches are viable, an innovation challenge can serve as a catalyst to develop new practical, effective, and participatory solutions.

Cities may consider running challenges as an approach to tackle complex, cross-cutting problems, such as climate change, when existing approaches become exhausted or when conventional methods fail to address emerging problems effectively.

How does a challenge help your city?

1. Stimulate innovation

Cities and local governments can run challenges to harness a wide range of innovative ideas and solutions both within and outside their communities. Challenges encourage new and creative solutions by tapping into diverse expertise and perspectives, going beyond traditional approaches. For example, in the Climate Smart Cities Challenge in Curitiba, the Smart Neighborhoods winning team developed a behavior change model to encourage citizen participation in creating sustainable neighborhoods through urban public cleaning services. Moreover, the city has received support in implementing its climate policy, PlanClima, through the creation of a cross-functional committee established by the Mayor's decree as part of the Climate Smart Cities Challenge.

- What problem could benefit from a range of fresh perspectives and new approaches?

Box 01:

Regional innovation policies and grand societal challenges

Regional innovation seeks to recognize the vital role of regional policies in the transformation required to tackle grand challenges and the need for more context-specific factors in innovation policy [4].

The Metropolitan mindset is a shift in thinking to build trust among cities and a critical element to regional prosperity. It proposes collective action among neighbouring cities, towards addressing urban challenges, building stronger cities and tackling grand societal challenges that transcend boundaries.

METRO MINDSET

---

4   Isaksen, A., Trippl, M., & Mayer, H. (2022). Regional innovation systems in an era of grand societal challenges: reorientation versus transformation. *European Planning Studies*, 30(11), 2125–2138. https://doi.org/10.1080/09654313.2022.2084226

---

2. Address complex problems

Challenges can tackle intricate and multifaceted problems where conventional methods might fall short. They can uncover innovative problem-solving methods and effective solutions that traditional government procurement processes might overlook. For example, the Mayor's Resilience Fund, a GBP 1 million challenge fund by the Mayor of London, effectively engaged innovators (engineers, social enterprises, tech SMEs) to develop solutions for some of London's most critical issues (e.g. smart mobility, air quality) during post-COVID recovery.

- Is the problem interconnected with other systemic issues?
- How can we frame the problem in a way that encourages innovative solutions?

3. Engage stakeholders

Running challenges invites participation from a wide range of stakeholders, including local businesses, third sector, researchers, and the public; it enables governments to engage directly with those experiencing the effects of the current problem. In 2018, the Government of Canada launched the Smart Cities Challenge, welcoming municipalities, local and regional governments, and Indigenous communities across the country to leverage data and technology to improve the lives of their residents.

- Which stakeholders should be involved in defining and addressing the problem?
- How can we ensure that underrepresented or marginalized groups are engaged in the challenge process?
- Do I understand the innovation ecosystem?

4. Harness collective intelligence

Collective intelligence emerges when people collaborate to gather a wide range of information, ideas and insights to tackle a social challenge. Challenges draw on external knowledge and skills, bringing in expertise that may not be available within government entities (Challenge Works, 2023). By targeting real-world problems and incorporating insights from a broad range of contributors, cities can use challenges to address pressing issues affecting residents and businesses, particularly those who are often left out of local government processes.

In 2021, the Local Food Challenge spearheaded by the Mayor of London was delivered in partnership with Groundwork London and Barnet Together. Groundwork London brought expertise in sustainability, food waste reduction, and local community projects. As part of Barnet Together, which connects local people, charities, and businesses, they ensured innovators could have access to data on food demand into the operational needs of food projects. This collaboration provided deep insights into local food systems, enabling innovators to develop scalable, locally-grounded solutions to food insecurity and waste.

- What knowledge or skills are missing within our organization that challenge organizers or innovators could provide?

- Are there opportunities to partner with networks or organizations that can amplify collective intelligence?

5. Inspire governments to work in different ways

Challenge-driven innovation fosters the acceptance of new ideas and enables governments to be more open to change and agile (Challenge Works, 2023). A challenge can inspire governments to explore new ways of working, providing a platform for diverse stakeholders to collaborate in ways that might not otherwise occur. For example, in the Climate Smart Cities Challenge, Makindye Ssabagabo partnered with a winning innovator to recycle around 62 tonnes of plastic waste each month, creating 8 direct and 70 indirect employment opportunities as well as USD 200 in monthly rental income for the city. Also in the Climate Smart Cities Challenge, local governments in Bristol and Bogota were able to leverage the challenge as an opportunity to work across different agencies within government, and with local nongovernmental actors, such as the Bristol Housing Festival.

- What lessons can we learn from the challenge to inform ways of working?

- How can we leverage the challenge to break down silos within our organization and encourage collaboration?

6. Accelerate scalable solutions

By offering financial support and structured incentives, challenges can speed up the development of practical and scalable solutions while de-risking the process for innovators. The Mombasa Plastics Prize provided structured incentives which helped young innovators rapidly develop practical solutions to tackle marine plastic waste in Mombasa County. The challenge offered prize money and seed funding to motivate innovators in implementing plastic waste solutions. Hackathons, field trips, coaching, and networking events de-risked the innovation process, equipping innovators with the social and technical skills and resources needed for their solution development. The incubator program within the challenge was extended to allow innovators to scale their solutions effectively.

- What types of incentives can help innovators refine and scale their solutions?

- Are there specific barriers that the challenge can help innovators overcome?

7. Unlock systemic change

Challenges can spark systemic change by encouraging diverse stakeholders to collaborate, experiment, and rethink existing systems, laying the groundwork for broader policy, regulatory, and market shifts. While challenges alone cannot fully solve these issues, they can catalyze the innovations and partnerships essential for long-term transformation. In 2019, the City of Montréal won Canada's Smart Cities Challenge to adopt a smart cities approach to improve the lives of their residents through innovation, data and connected technology. Through its ambitious Montréal en Commun proposal and a network of community partners, the city reduced reliance on cars, promoted equity and inclusion in mobility, fostered resource and public space sharing and leveraged data to better understand the needs of its residents.

- What steps can we take to ensure solutions address root causes and not just the symptoms of the problem?

- Do I have a holistic understanding of my challenge across sectors and levers of change?

Explore!

- Canada's Smart Cities Challenge
- Montréal en Commun
- Solving Problems in Cities with People at the Center
- The Mombasa Plastics Prize
- Local Food Challenge
- Mayor's Resilience Fund
- Sustainable Cities Challenge

How to run an innovation challenge in a city

1	**Set the Stage**	Identify roles, capacities, funding and time
2	**Discover & Define**	Understand the problem with stakeholders, craft your challenge statement & call to action
3	**Design & Launch**	Develop, communicate and engage on terms & conditions, criteria, incentives, and the application process
4	**Assess & Support**	Review proposals, create a judging panel, host demo-days and pitch session, matchmake
5	**Embed & Implement**	Accelerate, procure or facilitate the private marketplace

1 Set the Stage	2 Discover & Define	3 Design & Launch	4 Assess & Support	5 Embed & Implement

18

Step 1 | Set the Stage

Before embarking on an innovation challenge, understanding the requirements for resources, capacities and duration, and setting your expectations is foundational to the process.

Step 1: set the stage provides an overview of what you'll need to prepare a challenge project and examples to consider.

Key roles in challenge-driven innovation

The key roles and their descriptions have been adapted from Challenge Works for the context of this guide. Readers will find it helpful to note that the roles may at times overlap, be adapted or expanded given the different contexts of each challenge and the location it takes place.

Challenge community: The community where a challenge takes place are the main people experiencing the problem at different levels. They can include the people most impacted by the problem, people who would use the solutions that are developed, and potential customers of the solutions that get developed; these groups may overlap, but not always. Challenge community typically possesses essential insights into the problem's scope and its effect on daily life. In a city, they can include local governments, residents, businesses and community organizations who are directly affected by the problem and stand to benefit from the emergence of innovative solutions. In some instances, they can also include civil servants that are policy leads.

Challenge owners or organizers: The organization that will lead the actual implementation of the challenge. They have ownership of the initiative and are accountable for providing leadership and oversight throughout the challenge. Challenge organizers can also be the organizations or entities responsible for designing, implementing, and managing the challenge with the challenge owners. They typically have expertise in running open innovation challenges and ensure the challenge runs seamlessly from start to finish. Their set of skills and domain knowledge may complement each other..

Innovators: Innovators are those who will ideas, concepts, prototypes or solutions to address the problem, or seize the opportunity. Understanding the types of solutions they can offer, ethical and human rights due diligence, motivations and the resources they need is crucial for success. In a city, innovators can range from individuals (e.g., local entrepreneurs) to larger entities (e.g., startups, universities, non-profits).

Enablers: Enablers assist both the project and its innovators by providing crucial knowledge, resources and support throughout the process. They can include challenge organizers who provide targeted support on outreach or market research as well as (but not limited to) wider stakeholders like government community-based organizations and/or the private sector. For example, organizations or government agencies that own data may act as enablers since they provide essential insights allowing innovators to experiment, iterate and make informed decisions throughout the solution development process.

As mentioned above, depending on the challenge and its unique context, an individual or organization could take on more than one role. For example, a city could be both a challenge owner (leading the implementation of the challenge) and an enabler (providing essential information about the city's context to the innovators)

The Sustainble Cities Challenge in Varanasi

Challenge community	Challenge owner	Challenge organizers	Innovators	Enablers
Religious tourists	City of Varanasi	Toyota Mobility Foundation	SMEs and social enterprises with capabilities in:	Data and data providers
Residents		Challenge Works	Mobility	Subject matter experts
Elderly people		Worlds Resources Institute	Urban design	
People with disabilities			Master planning	
Emergency services			crowd control	
			security	
			tech and AI	

The table highlights the key roles within the Sustainable Cities Challenge in Varanasi. Varanasi, one of the world's oldest cities, holds immense spiritual, cultural, and historical significance, attracting numerous tourists annually. Its narrow lanes complicate infrastructure development, posing mobility challenges for vulnerable populations. There was an opportunity to leverage the cross-section of technology and urban design to create multidisciplinary approaches. Through Toyota Mobility Foundation, the city was looking to "create innovative, data-driven solutions that make crowded areas of Varanasi's old city of Kashi safer and more accessible for religious tourists, local residents, and vulnerable populations (such as elderly people and people with disabilities)."

Box 02:

Open call for cities

City-based challenges such as the Climate Smart Cities Challenge and the Sustainable Cities Challenge often begin with an initial step: an open call for cities. An open call invites cities to express interest in using challenge-driven innovation to address their chosen urban problem.

Open calls help indicate the kinds of challenges that interested cities are seeking to address, the political and technical will to solve the challenge and the kind of capacities and resources available. If you
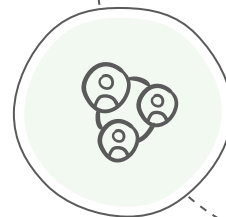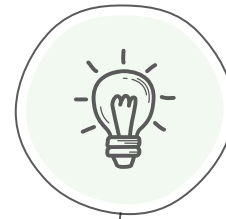
can work with multiple cities, consider having an open call for cities. If you are a city, an open call can also be used to identify entities within your city who are keen to engage with you through a challenge-driven innovation initiative.

Besides using open calls to invite cities or other entities to apply for a challenge, open calls can also be leveraged to increase participation from communities and residents of cities, by asking inputs and contributions when setting up the stage (Step 1) for the challenge and during the design and definition of a problem (Step 2). Challenge owners or organizers can use existing platforms, such as participatory budgeting meetings, citizen assemblies, or use digital platforms to collect feedback.

Digital platforms for public participation not only allow input of ideas, suggestions, and feedback, but can also systematize the contributions with analysis and visualization of data. At the United Nations Innovation Technology for Cities - UNITAC, digital systems for participation are developed using mapping technologies, georeferenced data and collaborative interfaces.

Dependending on the target group for the call, a semi-closed call - focusing on a specific profile or expertise - might be suitable. In this case, the challenge organizers can choose to disseminate the call openly with a specific criteria for who is eligible to apply, or they may choose to do a focused outreach where an invitation to apply is sent individually. Here it is important to factor the time required for focused outreach vs launching an open call with eligibility criteria, that will require time spent in the shortlisting process.

Capacities required to run an innovation challenge

In city-based challenges, the local government may serve as the challenge owner with the required capacities, or partner with or hire an organization who might have one or more of the required capacities. The city government will also provide sectoral expertise, review and contribute to selecting the innovators, and lead on embedding or implementing the emerging solutions.

Apart from the **five key roles** described in the previous section, there are important capacities required to deliver a challenge:

Tip!

Challenge organizers should realistically evaluate their readiness and constraints before launching a challenge. The section 'When and why you should run a challenge' is a good start to reflect on working with challenge-driven innovation, and the very list of capacities highlighted in this section can work as a check-list to critically assess readiness.

Project management & coordination

Project management and coordination efforts will set the direction and influence the experience of all those involved in your challenge. It is important that at the beginning the leads or co-leads of the challenge clearly define and plan the development of the challenge journey:

- Write the project document
- Establish mechanisms to ensure the participation of the challenge community involved (e.g., advisory committees)
- Preliminary analysis and problem definition, based on the inputs from the community
- Prepare a Theory of Change
- Map stakeholders

- Develop a workplan
- Estimate a detailed budget
- Define the timeline, including milestones
- Assign roles and responsibilities
- Develop a communications and storytelling strategy
- Develop a governance model, including roles of funders, challenge organizers, judges and other partners
- Create a monitoring, evaluation and learning plan
- Develop a risk framework
- Establish a knowledge management plan, including the publication of knowledge products that support documenting the challenge impact

Facilitation & implementation

In addition to project management and coordination, facilitation and implementation can be a critical enabler in the success of an innovation challenge. Strong facilitation and implementation is required in order to navigate through the complexity of the context and the challenge being addressed, and to work with a diverse range of stakeholders.

While project management and coordination is necessary for smooth execution of the project, the role of the facilitator can ensure that progress is being made towards the ultimate goal of solving the challenge defined. This role can best be served by an organization or individual who is deeply embedded in the context within which the challenge is being experienced, and may be a team within city government, or external. For the Climate Smart Cities Challenge, the city of Bristol partnered with Bristol Housing Festival, a local think-and-do tank, to convene conversations and facilitate the development of an innovative, implementable and scalable approach to zero-carbon affordable housing in the city.

Communications & storytelling

Preparing and implementing an innovation challenge requires a strong communication and storytelling approach to ensure objectives and needs are well understood. Building the narrative can also include linking local impact and value to

global frameworks as SDGs and other international agendas to demonstrate the contributions of your challenge.

Innovation challenges also benefit from having a dedicated brand identity, a logo and a website or webpage. Especially during **Step 3: Design & Launch**, outreach to potential partners and innovators is crucial to the diversity and quality of innovator applications that are received. This is often achieved via a number of channels, including broadcast methods like media or social media, and direct outreach to potential innovators via the networks they tend to use.

Materials to support communications and outreach include videos, social media content, data and narrative describing the problem, a well-designed challenge brief and an email newsletter. Having a communications brand strategy for each step of your challenge supports transparency with partners by demonstrating progress while also keeping stakeholders engaged. Depending on whether your city and challenge partners have a communications team, consider recruiting a communications firm or a communications professional to join the organizing team.

Adopting a sensitive communication approach is essential, particularly for vulnerable population groups. For instance, using alternative communication modes to ensure inclusivity and addressing the specific needs of digitally illiterate individuals (e.g., printed materials, visual aids) can help ensure that information is available to all.

Tip!

As part of your communications and storytelling strategy, identify relevant platforms to promote your innovation challenge, including international events, forums, and other relevant digital platforms such as websites, blogs and media contacts. This is particularly strategic when launching your challenge.

See more: Step 3 design & launch

Translation & interpretation

Many innovation challenges navigate between the international and local spheres, either because the challenge owners or organizers are from international organizations or development agencies, for instance, working with local governments, local organizations or communities, or because the sponsor or donor for the challenge is from abroad, or speaks another language. These are some examples of possible scenarios where there is more than one language involved.

Therefore careful consideration for translation and interpretation services might be required through the course of the challenge process. While this is particularly important during **Step 3: Design and Launch**, it is equally a consideration for all stages of the process. Having team members that speak local languages where needed, with the ability to translate and interpret for more widely spoken international languages might be necessary.

Increasing engagement is important to ensure an inclusive outreach process, which can mean tailoring the communication to speak to the people through channels they are familiar with and accessible to them. This will ensure a broader interest in the challenge and more diverse inputs.

Having open calls and challenge information only available in one language will reduce the engagement of stakeholders and impact the experience of all those involved in the challenge in the long-term. It also impacts the capacity to communicate the initiative overall, its activities and relevance to a wider audience. For international challenges open for innovators globally, this can limit the number of applicants.

Sectoral expertise

Depending on the sectoral focus of the challenge, relevant expertise or advisory support can be brought on to the innovation challenge process. For example, if the challenge focuses on energy efficiency, an expert with deep technical knowledge of fuel technologies, renewables and carbon neutrality can better inform the challenge and increase

the potential for impact. Sectoral expertise can be brought on board at various points in the challenge process. This could include during challenge definition, evaluation, or implementation, or all of them.

Including other expertise, as part of providing technical support or building capacity, strengthens the challenge approach. This can include, for example, behavioral change and other areas.

Monitoring, learning & evaluation

Planning monitoring and evaluation activities before launching a challenge ensures the collection of relevant data for both internal insights and external storytelling. This plan should be flexible and updated throughout the challenge implementation.

Tip!

Strong knowledge management and documentation of spillovers and learnings also contribute to monitoring and evaluating the impact of your challenge, as well as for effectively communicating its theory of change. When it comes to partnerships, no guide can replace the learning that comes from the experiences of doing it. This makes it very important to adopt a reflexive approach to establishing partnerships, which can maximize learnings.

The Finnish Innovation Fund Sitra identified the "growing need for methodological inventiveness and experimentation, in addition to conventional evaluation methods, particularly the need to develop dynamic indicators of impact that can be clearly communicated to external stake-holders."

Action 1

Create the learning objectives and the evaluation framework

In this step, it's important to plan the evaluation from the outset to ensure that relevant data is collected throughout the process. This data can be valuable for both internal learning and external storytelling. If a third-party evaluator is engaged for a formal impact evaluation, involving them early on can facilitate the development of the evaluation framework and research questions, ensuring the relevant data is collected.

This is a crucial step to establish learning objectives, especially, to capture spillovers. See the **Tip!** for more information.

Action 2

Collect the learnings during the challenge

This step focuses on gathering data throughout the challenge and conducting reflections on the process at key milestones with challenge organizers. Regular check-ins can help capture insights and identify areas for improvement, enhancing the overall effectiveness of the challenge.

Action 3

Disseminate and implement the learnings

This final step involves identifying actionable insights for challenge organizers to guide future activities. Additionally, conducting a long-term evaluation after the challenge can help provide valuable assessments of the activities against intended outcomes, supporting continuous improvement.

Source: Adapted from Challenge Works, 2023

Innovation challenges & the innovation mindset
Starting on an innovation challenge process might require exploring new approaches and ways of working. Helpful prompts for a kick-off session, and a reminder, in general when working with innovation:

Embracing complexity
Innovation processes are not always straightforward and will require adapting to unforeseen circumstances, changing pace or direction, re-evaluate the process.

Learning from failure Very rarely in the innovation journey you will get things right in the first attempt. And the outcomes of each attempt will provide learnings and input for your next iteration, so this makes it very important to learn from the process, especially from failure, and ensure your innovation journey includes feedback loops. Documenting the learnings is crucial to learn from them.

Challenge the status quo: What if - Exercise thinking outside the box, stretch your creative thinking and problem-solving skills, to explore and envision new opportunities. The recipe for open innovation will certainly include new ingredients, in novel formats.
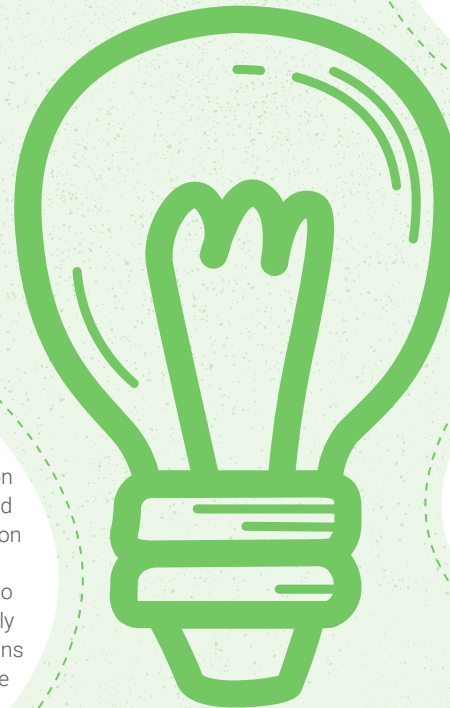
Building resilience Embracing the uncertainty that comes with innovation processes is key to build resilience and persistence through nonlinear innovation processes, especially when you feel frustrated, which is natural and likely to happen. Giving in to frustration will only divert your focus from thinking of actions and solutions, while building resilience to difficulties can help you develop a solution-oriented mindset.

Creating a safe space
Foster a space that accommodates dialogue and encourages creativity while respecting a diversity of perspectives.

Explore!
- Compendium of innovation methods
- Field Guide to Human-Centered Design

Funding for challenge-driven innovation

Funding challenge-driven innovation can take various forms, each serving a distinct purpose. The table below highlights key differences among six common innovation funding mechanisms.

Table 01: Innovation funding mechanisms

|	Challenge prizes	Grants	Impact investing	Accelerators & Incubators	Procurement	Advanced Market Commitments
Funding given for	Success and achievements based on outcomes and impacts	Estimated costs and promise of outcomes	Estimated costs, projected impact and financial return	Development of early-stage ideas and models	Estimated costs and promise of outcomes	Purchase of solution, once it has been produced
Solutions	Diverse and novel	Typically established approaches	On trajectory to impact	Highly variable, early stage	Predictable and well established	Novel
Degree of openness	Low barriers to entry, active outreach	More restrictive, track record often required	Highly restrictive, evidenced proposition required	Highly selective, focus on cohorts	Highly limited, pre-qualification needed	Variable
Ability for teams to innovate/ pivot	High and encouraged	Low, approval required	High, with agreement	High and en-couraged	Low and discouraged	High
Risk of solution failure	Low, payment by result	Medium, dependent on due diligence	High, failure anticipated	High, failure anticipated	Medium, dependent on contractual terms	Low, payment by result

Source: Challenge Works

Depending on the choice of challenge methodology and the design of the incentives, funding might be required for a grant or prize to the winner or winning solution. Winning solutions might also require more funding than the monetary incentive provided through the challenge, and can be raised collaboratively. Depending on the nature and maturity of the winning solution, additional funding could take the form of a grant or investment.

The below capacities are not exclusive to challenge-driven innovation initiatives, but are important to implement the different steps highlighted in this guide, and therefore require dedicated funding:

● Project management

● Administration and coordination

● Facilitation and orchestration

● Monitoring, learning and evaluation

● Communications and marketing
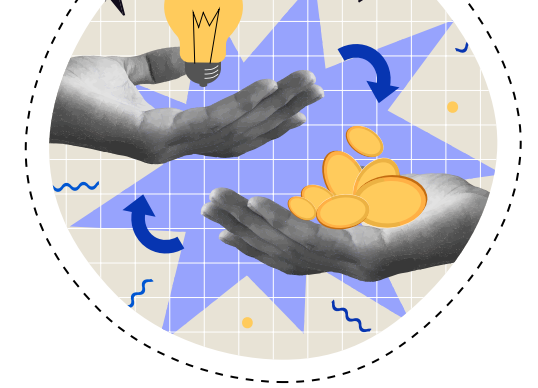
● Sectoral expertise and guidance

● Translation and interpretation (if needed)

Funding is also needed to support travel, workshops and other operational costs as required. The choices around the challenge design, intended duration, scale of the initiative and availability of resources will determine the actual budget required.

Tip!

If your goal is to implement the winning solution, consider mobilizing resources beyond the available prize or grant money. This is especially important to consider while designing the incentives, evaluating the proposals and finally implementing the solutions.

Explore!

Over the years, private funders – including family and corporate foundations, philanthropic organizations and international development donors have supported a variety of challenge-driven innovation initiatives in and for cities. Explore some examples below

● Bernard Van Leer Foundation's Urban95 Challenge

● Fondation Botnar's Future Cities Challenge

● Bloomberg Philanthropies' Mayors Challenge

● BRAC's Urban Innovation Challenge

● Vinnova's Climate Smart Cities Challenge

● Toyota Mobility Foundation's Sustainable Cities Challenge

● FedEx and Charities Aid Foundation (CAF) America's Sustainable Cities Mobility Challenge

Duration of city challenges

Innovation challenges are flexible to accommodate different timelines, depending on the objectives, the intended participants and incentives, and resources available. They can last for shorter periods of time - a few months - to longer durations of journeys of three to four years.

When preparing to run a challenge in your city and planning the activities and different stages of the challenge, the leads should take into consideration funding available, the objective of the challenge, the participants in the challenge and their incentives.

Tip!

Unforeseen circumstances and unplanned constraints can delay the challenge process, so it is highly recommended to consider time buffers and allow a certain degree of flexibility in the implementation of the challenge.

A good approach to planning is to understand what the milestones in the timeline are, so you will know better when it is possible to be flexible and when the timeline is bound to specific milestones.
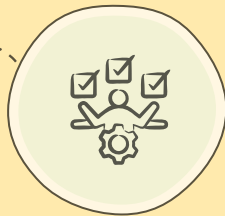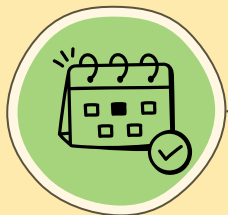
The table below introduces examples of challenges with different formats and durations, highlighting the five steps of this guide, which will be examined in detail in the upcoming sections.

After completing all the steps, readers are invited to revisit this table with a fresh perspective.

Name	Step 1: Set the Stage (including roles & duration)	Step 2: Discover & Define	Step 3: Design & Launch	Step 4: Assess & Support	Step 5: Embed & Implement
Challenge on digital tools for public participation	UN-Habitat Challenge-owner/organizer UN-Habitat was the challenge owner and organizer, leading the challenge from conceptualization to implementation, owning the challenge process. 2 hrs over 3 days	The Challenge provided a space for cities and local governments to learn more about **digital platforms for public participation** and its providers and explore how these could match the city needs based on people-centred standards, such as transparency and inclusion.	**Providers of digital platforms:** Exposure and visibility of products to cities; feedback from cities that they would not have reached outside the Challenge. **Cities:** Expand knowledge on digital platforms for public participation, interact with service providers, understand people-centred standards when choosing such platforms.	Solutions were assessed through pitch sessions where participants from both private and public sectors showcased various solutions to cities and UN-Habitat partners for evaluation for the criteria of promoting inclusion and being people-centred.	Cities gained insights into best practices from around the world, which informed how they engaged their citizens in participatory processes. Solution providers could understand better real demands and challenges faced by cities, and could incorporate the feedback received through this challenge to enhance the functionalities and architecture of the technology they offer.
Applied Digital Rights Initiative	Cities Coalition for Digital Rights (CC4DR) CC4DR was the challenge owner, steering the idea for the initiative and responsible for orchestrating the participation of cities and academia. They worked with other enablers and challenge organizers to implement the process. 2 days	Pairing academic institutions with city governments, the Challenge connected expert researchers to real-world problems faced by city governments **operationalizing digital rights** across policy and programs.	**Academic institutions:** Gained insight into the wide range of questions and challenges faced by the international group of cities and the practical considerations involved in their questions. **Cities:** Strengthened partnerships with academia; received insights from existing research on topics relevant for the cities and the challenges they had identified.	The initiative did not involve any assessment, instead, cities were connected to select academic institutions to come up with answers to novel, nuanced questions and practical methods to make digital rights a reality in the lives of local residents.	Knowledge from the partnership helped fill the research gap and answer some of the pressing questions therefore shedding some light into how municipal governments could explore safe, beneficial, and pro=social ways to employ new technologies

Name	Step 1: Set the Stage (including roles & duration)	Step 2: Discover & Define	Step 3: Design & Launch	Step 4: Assess & Support	Step 5: Embed & Implement
Urban Green Recovery in Kigali	Ministry of ICT and Innovation of Rwanda, GIZ, BMZ Germany's BMZ, under its Innovate2030 program, was the challenge owner, with co-organizers and enablers Rwanda's Ministry of ICT, GIZ, DigiLab and the MakeIT Alliance. 6 months	Digital tools and innovative approaches regarding **green recovery and green urban infrastructure** creating a resilient Kigali, that can be used as a blueprint for more rapidly growing cities in the future.	The best team of each Challenge received prize money of EUR 3.000 Collaboration opportunities with partners, and funding amd /or accelerator programs, contact with experts in the field and partner organizations Mentoring and access to events	A submission template as well as guiding questions were provided for participants to use. Finalists pitched their ideas in front of a jury of high-ranking representatives from diverse sectors. The solutions were evaluated on various metrics including political relevance(solving a core problem for target groups), scalability(potential for success), team (vision and leadership), and sustainability.	The results of all final teams are documented in a large publication, highlighting winning teams and their solutions to stimulate discourse in politics, economy, and society.
GSMA Innovation Fund for Climate Resilience and Adaptation	GSM Association Challenge-owner/organizer GSMA is the challenge-owner and organizer, while enablers (funders) include the UK Foreign, Commonwealth and Development Office (FCDO), the Swedish International Development Cooperation Agency (SIDA). 3 years	The objective of the Fund is to help accelerate the testing, adoption and scalability of **digital innovations** that enable the world's most vulnerable populations to adapt to, anticipate and absorb the negative impacts of **climate change.**	Successful projects are to receive grant funding of between GBP 100,000 and GBP 250,000 over 15 to 18 months, and technical assistance: Mentoring and expert advice Networking and showcasing opportunities Facilitating relevant partnerships Monitoring and evaluation support	The selection process involved assessing the various participants' capacities in terms of adequate financing systems, adequate internal human resource capability to implement the project, compliance with various laws and regulations including those pertaining to data protection and privacy. Another vital criterion used was how the suggested solutions contribute towards the SDGs.	Winning participants set measurable socio-economic targets and targets measuring how solutions improve the capacity to adapt to, anticipate and/or absorb climate-related shocks and stresses for low-income and vulnerable communities/ individuals. These select indicators are tracked for up to 2 years after the end of the grant and require cooperation with the GSMA's teams to collect additional evidence on project outcomes.

Name	Step 1: Set the Stage (including roles & duration)	Step 2: Discover & Define	Step 3: Design & Launch	Step 4: Assess & Support	Step 5: Embed & Implement
Public Markets Challenge	Challenge Works collaborated with the Mayor of London as challenge organizers and owners, to design and deliver the **Mayor's Resilience Fund**. The enabler (funder) was the London Economic Action Partnership. Additional partners included Well Street Market, Ridley Road Market, Kingsland Market, Hoxton Street, Chatsworth Road and Broadway Market. 6 months	The challenge aimed to develop a scalable digital service that simplifies the licensing process for market traders in London, allowing them to easily apply for licenses and access trading opportunities across multiple markets and boroughs.	Finalists received GBP 10,000 and the opportunity to work closely with challenge partners over five weeks to develop their solutions. They received tailored capacity building support in areas such as service design, pitch coaching, data usage and government procurement processes. The winners were awarded GBP 40,000 and the chance to implement their solution.	The entry and assessment process were conducted via the Greater London Authority platform, where a total of three assessors reviewed the entries during one week. Additionally, five judges were involved in the challenge.	OpenMarkets.London by Tabled successfully implemented their solution in collaboration with partners from the Mayor's Resilience Fund and continues to thrive today. They offer a single portal for traders to apply for a trading license across London authorities such as Kensington and Chelsea, Hackney, Camden, Tower Hamlets, Southwark Council and Brixton Station Road Market.
Mombasa Plastics Prize and Incubator	Funded by USAID and Global Affairs Canada Delivered by Nesta's Challenge Works, Proportion Global. Close the Gap Hub, Swahilipot Hub, Foundation Brand Spark PR U.S. Department of the Interior 2 years	The goal was to reduce marine plastics waste in Mombasa County's informal settlements by inspiring the development of youth-led solutions.	57 young innovators (18-25 years old) received a total of KES 21.38 million of financial support (prize funding, monthly stipends and seed funding). They also received bespoke training and mentoring to equip them with the skills, networks and knowledge to develop their solutions (hackathons, team coaching, group training, field trips, events).	Potential applicants aged 18-25 were invited to submit a brief Google form along with a video, as background research indicated that individuals living in informal settlements were more comfortable speaking in English than writing. The assessment criteria prioritized the enthusiasm and potential of the proposed solutions over existing experience or academic qualifications.	The innovators formalized their enterprises. Some of them successfully secured investment deals while others chose to defer their offers until their businesses were better positioned to accept them.

Challenge-driven innovation in conflict-affected areas

The full-scale invasion of Ukraine, in 2022, has since caused devastation and casualties, particularly in the cities, **forcing around 6 million people to flee Ukraine and approximately the same number to gain the status of internally displaced**. The damage to civil infrastructure, housing, cultural and educational facilities, and the environment has been happening in the East of the country since 2014, yet in February 2022 gained an enormous national scale. **Local governments are under acute pressure to rebuild their communities and restore basic services and bring back those who had to leave**. Although the war continues, Ukraine is already thinking and preparing the way for the country's recovery.

Recovery planning is a complex and multidimensional task. It is also highly context-specific and requires tailoring to the unique challenges and characteristics of each affected area. And it is not just about fixing things: it aims to restore the community by including the social, economic, and environmental context.

Stakeholders and citizens are actively encouraged to engage in the decision-making process, ensuring recovery plans resonate with people and the community, addressing their needs, aspirations, and perspectives.

Explore!

UN-Habitat Urban Lab in Ukraine is working with governments partners and other stakeholders in Ukraine to support urban recovery planning , which includes support to key policies such as reforming the housing sector and revising Ukraine's urban planning code. UN-Habitat will further establish an urban recovery framework for Ukraine to help guide the development of policies and mechanisms enabling a sustainable recovery at local level

Together with its partners, UN-Habitat assess the recovery needs of cities in all affected sectors – including the provision of housing, basic services, and employment – and develop holistic urban recovery plans.The Urban Lab in Ukraine is a hub of urban expertise and knowledge for practitioners, experts, academia, NGOs, and other organizations to discuss urban recovery issues in Ukraine, to provide inputs to ongoing initiatives, and to produce and share knowledge on other urban issues in Ukraine. It works in close collaboration with UNITAC, the UN Innovation Technology Accelerator for Cities, developing an Urban Recovery Planning System to visualize and analyze urban data and serve as a digital spatial decision support system.

Box 03:

The Blue and Green Innovation Challenges - Strengthening the economies of the cities of Mykolaiv and Ternopil.

The European Union (EU), the Government of Denmark, and the United Nations Development Programme (UNDP), together with the BOOST Impact Acceleration Programme team, are implementing the Innovation Challenge, a unique acceleration programme for Ukraine which is part of the wider Mayors for Economic Growth (M4EG) initiative.

Twelve teams representing micro, small, and medium-sized enterprises with innovative ideas in the "blue" or "green" economy were selected to participate in the programme.

Programme participants will receive mentoring support, business acceleration assistance, networking opportunities, and funding of up to US$10,000 to help them realise their innovative ideas.

The "green" economy is a holistic approach to economic development aimed at improving human well-being and social justice while reducing environmental risks and natural resource scarcity. For Ternopil, transitioning to a "green" economy means implementing sustainable, circular, and nature-based business practices that promote innovation, job creation, and a better quality of life for all residents.

The "blue" economy is the sustainable use of water and marine resources to grow economics, improve living conditions, and create jobs, while preserving marine and coastal ecosystems. It covers, in particular, the following areas: fishing, aquaculture, marine and coastal tourism, marine energy, and marine biotechnology.

Step 2 | Discover & Define

This step builds a deeper understanding of the problem that will be central to the innovation challenge and identifies opportunities. It includes adopting a systems approach to develop deep understanding of the problem and its root causes, engaging with a range of stakeholders and understanding the context of the city. Once the problem has been explored in depth with multiple stakeholders, challenge organizers can move to define opportunities for a challenge to solve the problem. During this phase, they are able to identify the most appropriate pathway forward for solving the problem or an aspect of the problem, and how to define the challenge in more detail.

Discover the problem

Understanding the context of the city

A dedicated team is mobilized to collect, compile and analyze information and data related to the problem area in the city. Detailed, fact-based and recent information about the problem space, the locations and communities impacted, and the stakeholders involved is gathered to develop a strong understanding of the challenge faced by the city. It requires systematic collection of secondary data, administrative data (if available), documents including available policies, publications, research studies, websites and other relevant resources. Qualitative insights from user-research and expert or key informant interviews can supplement primary and secondary data sources. Leveraging existing knowledge and experience from policy makers, experts and problem owners will reduce the time and effort needed during the discovery phase. This step can include:

01 Data collection, primary and secondary research and document review

02 Interviews, group discussions and user-research workshops

04 City governance structure analysis (e.g., understanding who has decision-making authority, the different offices, teams and roles)

03 Preliminary stakeholder mapping and outreach

Stakeholder mapping & engagement

By understanding the context of the city, challenge owners and organizers begin to identify stakeholders involved and impacted by one or more the problems being considered for the innovation challenge. Mapping out the stakeholders and their relationship to the problem(s) helps sharpen the perspectives of the challenge, recognise varying viewpoints, and identify critical points of interest. For the innovation challenge to remain relevant and inclusive, it is ideal to cast a wide net and identify a diverse set of stakeholders. Depending on the kind of problem in focus, this could include city government representatives from various departments, business owners, residents, academic researchers and service providers and users. It is especially critical to identify and engage with marginalized populations and vulnerable groups such as women, children, youth, the elderly, differently abled people, racialized, ethnic and religious minorities who have a perspective on and stake in the problem.

Once stakeholders have been mapped and identified, engaging them through a participatory process helps focus the challenge, generates interest and credibility, and establishes early buy-in, all critical for subsequent steps of the challenge process.

Engaging stakeholders helps deepen the contextual understanding of the city, the problem at hand, and the potential solution space. **Exploring a variety of engagement formats e.g., social media, in-person workshops and public gatherings, and preparing relevant communication material that can be used during this step is recommended.** For instance, depending on the region in which the challenge takes place, leveraging various types of media (e.g., radio, television) can be appropriate to connect with stakeholders.

Problem definition

Problem definition starts in the discovery phase with the systems mapping work and builds on it to identify the root causes and opportunities to solve the problem. The problem that challenges tackle can be multifaceted and include various elements such as market failures, lack of awareness, stagnation in innovation, weak entrepreneurial ecosystem, lack of investment and unnecessary regulatory barriers in the problem area. The challenge organizers will map previous work to address the problem and define the specific aspects of the problem the challenge might focus on to unlock the most impact on the community and final beneficiaries.

Involving stakeholders early in the process (e.g., challenge community) is crucial to inform the problem definition by incorporating real needs, diverse perspectives and increase buy-in for other activities requiring stakeholder engagement (e.g., conducting interviews to validate the challenge drafts).

Systems analysis

System analysis is a problem-solving process that draws in insights from multiple stakeholders to better understand the challenge at hand and identify potential enablers to solve the challenge. This step seeks to answer *What else do we know or need to know about this challenge? and Who are our stakeholders and what are their needs?*

The aim of the systems analysis is to identify the key root causes of the problem and the real potential impact that the challenge can unlock. One way to perform a systems analysis is through an initial mapping of the needs and interests of stakeholders – potentially reframing the challenge from different perspectives. Workshops with key stakeholders, co-organised by challenge organizers and challenge owners, can help to collaboratively unpack the problem area from multiple dimensions and viewpoints.

Such a convening helps to get beneath the obvious, and reveal latent assumptions and blindspots.

This step may include a deep exploration of:

- Underlying barriers to solutions
- Needs to be addressed, including marginalized populations and vulnerable groups
- Drivers and enablers of the challenge identified
- Existing initiatives, data, projects and resources that can complement the challenge and integrate it into efforts that are already in place.

Define the challenge to be addressed

Problem statement

When challenge organizers have a good grasp of the problem definition, they can create the problem statement which is a concise, public-facing summary outlining the issues the innovation challenge aims to address. It details the problem, its causes, effects, and key barriers to innovation. Approaches such as the 5W1H (What? Who? Where? When? Why? How?) can be used to further define the problem statement.

By defining the problem, challenge owners can better communicate to innovators the context in which their solutions must deliver impact, as well as the rationale behind the challenge. To effectively identify the problem to be solved, challenge organizers can build on the research activities conducted during the discovery step:

1. Understanding the context of the city;
2. Stakeholder mapping and engagement;
3. System and root cause analysis;
4. Problem definition.

Challenge statement

In the context of innovation challenges, a challenge statement is a concise call to action that clearly communicates the task for innovators. It succinctly encapsulates:

- The "ask" for people and organizations.
- The target beneficiaries, whether people, organizations, or communities.
- The desired outcomes from the proposed solution.

For instance, the challenge statement for the Smart Mobility Challenge was to *"create a tool which helps organizations reduce the number of air polluting journeys their vehicle fleets make whilst transporting goods in urban areas. The tool should enable organizations to easily input their data, and suggest efficiency improvements tailored to them based on this."*

Box 04:

Challenge statements – a call for creativity and problem-solvers

In an effort to address pressing issues across multiple sectors including construction, agriculture, health, and others, various corporations in the South East Asian Region come together in the South East Asia Open Innovation Challenge to tap into the creativity of start-ups and MSMEs by providing challenge statements for innovators to develop solutions. The most effective and feasible innovations for each challenge statement are worked on collaboratively by the demand drivers and innovators, accelerating piloting and deployment to the regional market.]

Challenge drafts

Challenge drafts are high-fidelity versions that are used to gather feedback from stakeholders on the strengths and weaknesses of the different draft options. Each version will take a different approach or tackle a different aspect of the problem or goal (Challenge Works, 2023). Iterating these challenge drafts helps you test and refine the challenge statement and programme design through interviews with diverse stakeholders and workshops with subject-matter experts, with the aim of developing the most promising option into the ultimate challenge design.

Challenge drafts include the problem focus area, targeted innovators, timing, and scope of the challenge. City and local governments acting as challenge-owners may consider who needs to approve the final challenge drafts and assess the level of justification required for decisions.

The challenge drafts typically include the following elements:

- The **problem statement** for readers to understand the problem to be solved
- The **challenge statement** for readers to understand what innovators will be asked to do
- The **structure of the challenge** and the **incentives** for readers have a better understanding of whether it is feasible to meet the challenge statement within the given resources.

Validate the challenge design

- Conduct interviews with both internal and external stakeholders (e.g., scenario testing, journey mapping)
- Sign off from stakeholders: funders, challenge organizers, city

The challenge brief

The outcome of your *Define* process is the challenge brief, a document which highlights:

Key artifacts	Supporting context
1. Challenge statement	• Background on the challenge location and barriers to overcome
2. Problem statement	• Data relevant to the challenge
3. Expected outcomes	• Related laws, plans and policies
4. Challenge structure	• Existing related initiatives
5. Eligibility and target innovators	

Examples of challenge briefs
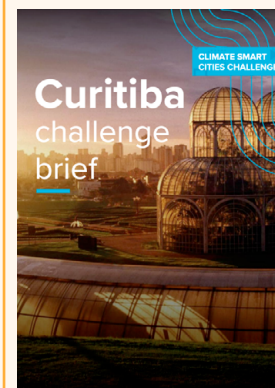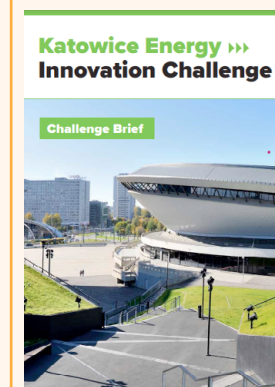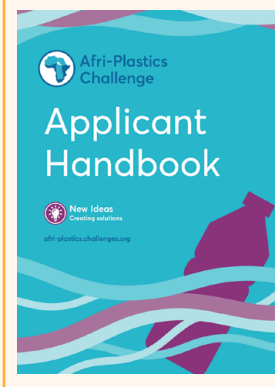
Step 3 | Design & Launch

Your challenge statement is your call-to-action. Once is defined and a challenge brief or handbook is ready you can move to designing the competition process to attract innovators. This section helps you refine your challenge statement and communicate it through a challenge brief or handbook. It then guides you through the process of establishing assessment criteria, determining incentives and preparing to launch a competition.

More details for each design element of the call for solutions is available with templates in its respective section.

Design the competition process

Designing the competition determines how the innovation challenge will be delivered, covering grant management, communication strategies, final rewards and evaluation methods. Your plan should include an assessment and selection process that articulates how innovators' achievements will be measured and validated.

The structure and incentives establish a timeline with distinct stages and associated rewards, such as grants or in-kind support, designed to enhance innovators' capacity to deliver a solution. It is important to consider the different stages while structuring a challenge (e.g. entry period, semi-finalists selection, when in-kind support is delivered, finalists selection, winners) , and to effectively communicate this to your audience to manage expectations.

Additionally, calibrating funding amounts and determining the number of innovators that grants can support are crucial design decisions. This involves balancing the funding to ensure sufficient in-kind and financial support to innovators.

Having defined the challenge and designed the competition, you are now prepared to launch the competition. To ensure that you receive ample, diverse and good quality interest from innovators to help solve the challenge identified, this section outlines how to create an application form and process, a well-communicated eligibility criteria, and well-defined assessment criteria and process. It guides you on how to build a judging panel and a communications plan for you to succeed.

Additionally, calibrating funding amounts and determining the number of innovators that grants can support are crucial design decisions. This involves balancing the funding to ensure sufficient in-kind and financial support to innovators.

Having defined the challenge and designed the competition, you are now prepared to launch the competition. To ensure that you receive ample, diverse and good quality interest from innovators to help solve the challenge identified, this section outlines how to create an application form and process, a well-communicated eligibility criteria, and well-defined assessment criteria and process. It guides you on how to build a judging panel and a communications plan for you to succeed.

Box 05:

The Sustainable Cities Challenge in Detroit "Transforming Freight"

The City of Detroit's Eastern Market is the largest historic hub for food distribution in the United States. Innovation is required in Eastern Market because current practices rely heavily on fossil fuels and inefficient logistics, which drive up operation costs and environmental impact. As it expands as a mixed-use neighborhood, the city faces the problem of balancing growth while protecting its residents' health.

Toyota Mobility Foundation, Challenge Works, the World Resources Institute and the City of Detroit organized design workshops to consult local stakeholders on the proposed prototypes and gather their insights. To address its problem, the City of Detroit articulated a challenge statement calling innovators to demonstrate solutions that could "decrease fossil fuel and reduce the costs of freight operations in the Eastern Market".

The structure and incentives establish a timeline with distinct stages and associated rewards, such as grants or in-kind support, designed to enhance innovators' capacity to deliver a solution. It is important to consider the different stages while structuring a challenge (e.g., entry period, semi-finalists selection, when in-kind support is delivered, finalists selection,winners) , and to effectively communicate this to your audience to manage expectations.

Clarify the incentives

Innovators are drawn to challenges because they help overcome financial barriers that would prevent them from developing their solution and pivot into new sectors and opportunities.(Challenge Works, 2023). Two primary ways in which innovation challenges financially incentivize innovators are:

Development grants:
Development grants are provided both upfront and at different stages (e.g., semi-finalists, finalists, winners), typically with the same amounts awarded to multiple teams. Depending on the funder, the terms and conditions (T&Cs) generally stipulate that the grant be used to develop the solution as proposed.

Prizes: Prizes or financial awards are given to one or more teams upon the completion of the open innovation challenge.

Non-financial incentives, or in-kind support are just as valuable as the prizes, as they provide resources that innovators might otherwise have to cover out-of-pocket. They aim to build innovators' capacity and skills, increasing their chances of successfully solving the challenge while creating a broader, lasting impact by strengthening the wider ecosystem - a benefit that lasts beyond the end of the innovation challenge.
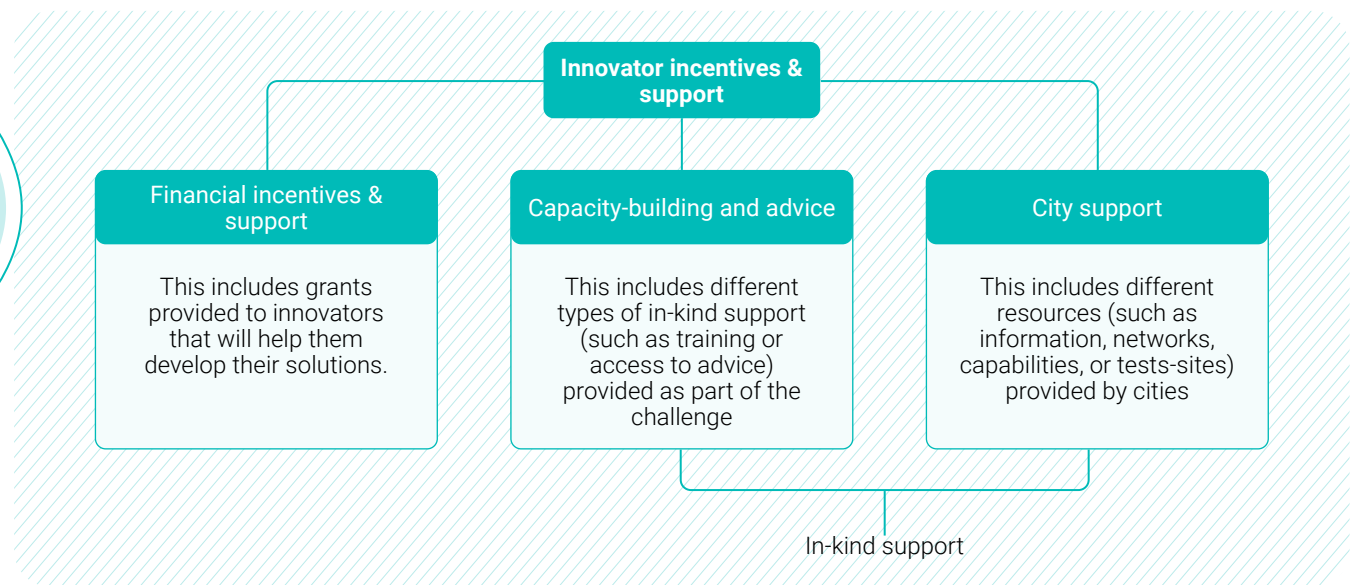
In-kind support is especially important for place-based challenges, i.e., challenges that have a specific geographical location such as a city. Cities can offer several unique forms of in-kind support:

- **Access to information** (data, policies, services, introduction to stakeholders)
- **Access to networks** (partners, stakeholders, community)
- **Access to markets** (introduction to associations, labour unions, landowners)
- **Access to testing** (end-user testing, testing sites)
- **Permissions** (special permissions to demonstrate a service)
- **Acceleration** (mentorship, coaching, peer-learning, sandboxes)
- **Promotion** (certifications, media events)

- **Advance commitment** (procurement contracts, promises of funding)

To design an effective in-kind support program, consider the following aspects:

- **Solicit input and identify needs**: Understand what innovators require to successfully develop their solutions and meet the assessment criteria. Exploring why the problem remains unresolved and identifying barriers beyond funding can provide valuable insights.
- **Evaluate resources & balance support**: Assess the resources and opportunities that can be provided within the constraints of the budget, timeframe, and city context.
- **Leverage unique opportunities**: Explore any unique resources or opportunities specific to the city that could enhance the support package.

Innovator incentives & support

Financial incentives & support	Capacity-building and advice	City support
This includes grants provided to innovators that will help them develop their solutions.	This includes different types of in-kind support (such as training or access to advice) provided as part of the challenge	This includes different resources (such as information, networks, capabilities, or tests-sites) provided by cities

In-kind support

Types of innovators incentives and support (Challenge Works, 2023)

Box 06:

Incentives in the Sustainable Cities Challenge - Venice

For the Sustainable Cities Challenge Venice, various grants were offered at different stages to innovators as well as incentives to enter:

- Semi-finalist stage: up to ten USD 50,000 implementation grants

- Finalist stage: Up to five USD 130,000 implementation grants

- Winners: USD 1.5 million final implementation funding to be shared among up to three winners

- Opportunity to engage with city officials and access to various stakeholders

- Access to a network of like-minded innovators

- Access to capacity building support in behavior change, mobility and related topics

Determine the terms & conditions

Terms and conditions (T&Cs) are the rules of the challenge that will guide potential innovators. They should reference the eligibility criteria, expectations for potential entrants, the privacy policy, a code of conduct (optional) and the judging criteria. T&Cs should be clearly communicated and accessible to potential innovators, for example, through a website or in a non-digital version (e.g. print) made available at the city administration or challenge organizer.

The eligibility criteria define who can enter the competition. Depending on the nature and needs of the challenge, this could include, for example, the legal status of the applicant, the nationality or the age. Eligibility criteria serves to make transparent who can and can not submit an application.

The T&Cs can also include a Code of Conduct (optional) on what is expected of people taking part in the challenge. Additionally, the T&Cs can also mention the judging criteria that will be used to determine who is successful in the challenge and the incentives available for innovators to apply. Another important clause is Intellectual Property (IP) ownership. It is usually best for innovators to keep the IP they create, as not doing so can discourage them from participating.

Determine the assessment criteria

The assessment criteria clearly outline the parameters against which proposed solutions will be evaluated, based on the eligibility criteria, key discovery findings and goals of the challenge (Challenge Works, 2023). These criteria allow for the assessment of success against the challenge's aims, as represented in the challenge statement, without predetermining exactly how that success will be achieved. This approach ensures that different types of entries can be compared and evaluated fairly.

- **What are the key elements needed to evaluate success?**
- **Are they clear?**
- **Are they open to multiple different approaches?**
- **Are they as simple as possible?**
- **Who is going to assess the approaches?**

Every challenge has a different set of assessment criteria and sub-criteria. To develop effective assessment criteria, city and local governments may consider including the following elements:

- **Innovation:** Is the solution novel?

- **Impact:** Will it create a meaningful difference?

- **Feasibility:** Is it technologically achievable? Is it feasible to finalize the solution in the given time frame and city context?

- **Scalability/Sustainability:** Can it attract customers and endure over time?

- **Team capability:** Does the team have the capacity to deliver?

- **Inclusiveness:** Does the solution include all genders, people with disabilities and marginalized population

- **Budget:** Is the grant money sufficient for implementation? Has the city sufficient funds to realize the solution?

- **Implementation interest:** Does the innovator also want to implement or is only interested in the prize money?

Challenges can have multiple stages of assessments to determine semi-finalists, finalists and winners for example. Depending on the number of assessment stages, this criterion can be further detailed out at each stage. In earlier stages of assessment, such as the semi-finalist stage, entrants are evaluated based on their potential to meet the assessment criteria. For finalists and winners, their progress towards achieving outcomes must demonstrate alignment with the assessment criteria.
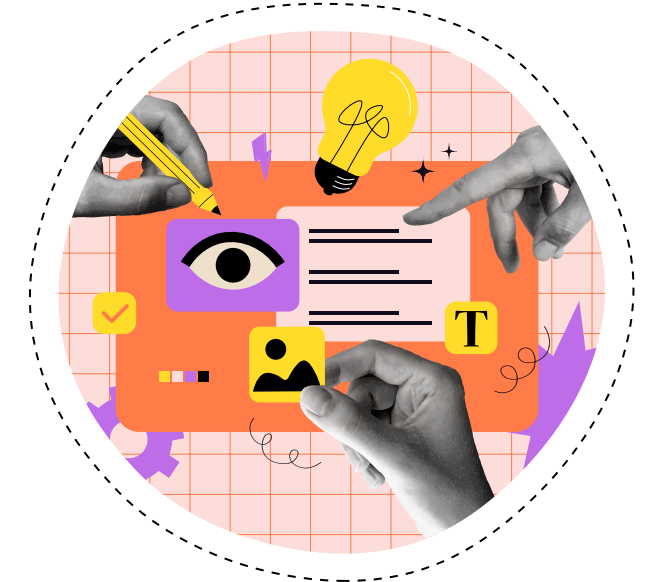
Box 07:

Afri-Plastics Challenge: Assessment criteria

Funded by the Government of Canada as part of its USD 100 million Marine Litter Mitigation Fund, the Afri-Plastics Challenge sought to "reduce marine plastics in Sub-Saharan African countries by developing and scaling innovative solutions to plastic mismanagement in a way that promotes gender equality and empowerment of women and girls." The Challenge was organized across three strands, each with a different set of judging criteria.

Strand 1	Strand 2	Strand 3
Scaling Accelerating growth	**New Ideas** Creating solutions	**Campaigns** Promoting change
Focused on scaling existing innovations	Focused on starting up new innovations	Focused on behavior change

As the urgency of marine plastic waste is growing, it is crucial to translate that awareness into tangible action and lasting behavior change. Hence, the third strand focused on creating campaigns and other creative interventions (e.g., nudges, gamification, incentives, storytelling and more) to change the behavior of individuals and communities regarding plastic waste. The criteria below applied to the third strand, guiding the third judging panel in selecting three winners from the fifteen finalists:

Criteria	Description	Weighting
Innovation	Has the solution demonstrated an innovative approach to changing the behavior of individuals and communities around plastic waste in Sub-Saharan Africa?	25%
Insight	How has the solution engaged with target audiences to generate and draw on evidence about its impact?	20%
Effectiveness	Has the solution demonstrated a change in the behavior of individuals and communities around plastic waste in Sub-Saharan Africa?	25%
Empowerment of women and girls	Did the solution contribute to the empowerment of women and girls?	20%
Legacy planning	Does the finalist have the capability and plan to further their solution (by replicating it, disseminating their methods, or scaling up)?	10%

Design the application process

A well-structured application form and process will ensure the quality of submissions match the challenge objectives. The application form should help you collect the required information to assess eligibility, potential impact and relevance to the challenge defined, and should match the assessment criteria. Potential questions to include in the application form include:

- Organization or project name
- Interpretation of the challenge
- Description of the solution
- Innovation component
- Contributions to the SDGs
- Team members
- Value proposition
- Business or financial model
- Track record
- Budget or cost
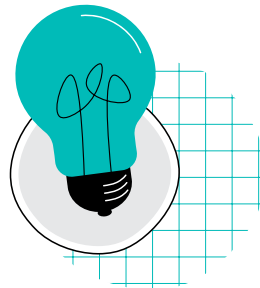
Selecting the submission format can further enhance the quality of proposals you receive. The choice of format might be determined by the target audience you seek to attract. For example, a video submission might be more attractive to a young audience, a written application more relevant to academics, and a pitch presentation more suitable for start-ups. You might also have the capacity to support submissions in multiple languages. Depending on your need you could consider a variety of submission formations:

- Online forms or specialized submission platforms
- Video applications
- Presentations
- Or a combination of these and other application formats

Non-digital formats are important for areas with low connectivity or access to digital devices. These can be addressed by using collection points and partnering with local NGOs or local assemblies.

In addition to the application form and submission format, a clear application process needs to be established. This might include having a clear deadline, multiple stages, support through information sessions and FAQs through the process. Consider the following for the application process:

- Eligibility
- Application period
- Finalists announced
- Demo day
- Winners announced
- Accelerator program period (if applicable)
- Showcase of solutions

Tip!

When using a document or presentation format, consider providing a template for applicants to use. This can include specific sections relevant to the kind of information required. This will help applicants cater the information they provide to what is desired, and also help the judging panel during the assessment stage.

Tip!

Think about application processes that you have been a part of. What did you like about the process? What didn't you like? Use these reflections to design the application form and process that you think will work best.
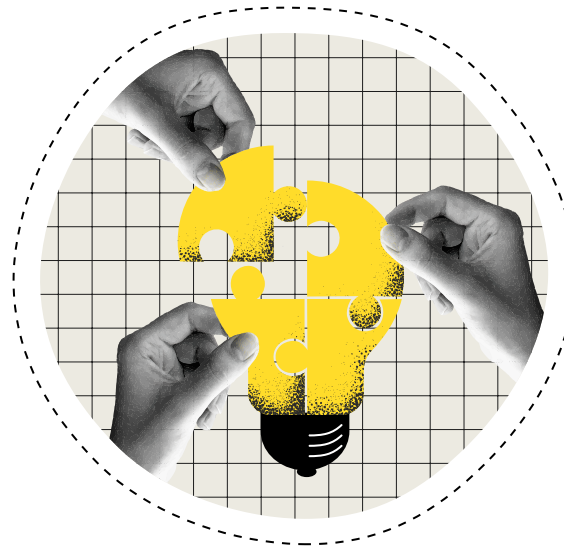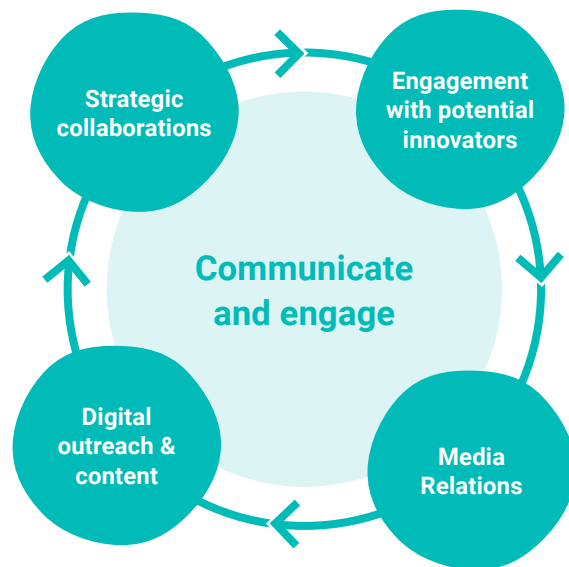
Explore!

There are a variety of platforms that can support innovation challenges' entire process or specific steps such as submitting an application and scoring the applications, here are some examples:

- submittable.com
- goodgrants.com
- decidim.org
- carrot.net
- innovationchallenge.com
- leverforchange.org
- wazokucrowd.com

Communicate & engage

Communication and engagement activities are crucial for the success of a challenge. These efforts spread the word about the challenge to potential innovators and encourage participation. They provide vital support to equip potential innovators with the necessary information and resources to enter the challenge. Furthermore, these activities contribute to the broader systemic goals by raising awareness among stakeholders, including the public, about important topics and issues (Challenge Works, 2022). This awareness can lead to increased engagement and a deeper understanding of the challenge's objectives.

Depending on the target innovators, an outreach strategy is a great tool to align with challenge organizers on how to effectively engage them and attract high-quality entries. Cities can consider various communication and engagement activities to raise the profile of a challenge:

Communicate and engage cycle:
- Strategic collaborations
- Engagement with potential innovators
- Media Relations
- Digital outreach & content

Strategic collaborations

Collaborating closely with the city's communications team or a PR agency (e.g., having the mayor champion the challenge to attract interest, developing the challenge brand, creating key brand assets, issuing a press release, using paid social media campaigns)

Engaging with local outreach partners, especially when online outreach may not be the most effective method (e.g., for a global challenge)

Engaging influencers and key opinion leaders to promote the challenge and reach various audiences

Leveraging intermediaries, relevant individuals or organizations to amplify and reshare content about the challenge with their audiences

Tapping into professional networks that shape the future of a city (e.g., urban planners, architects, local government officials) can serve not only as a valuable outreach tool but also as a source for recruiting judges for a panel or expert support for innovators

Engagement with potential innovators

- Hosting drop-in sessions to answer questions from potential innovators
- Attending or speaking at events and conferences to connect with potential innovators
- Conducting webinars to present the challenge and answer questions from potential innovators

Media relations

- Engaging with local and regional media (e.g., local news outlets, radio stations, podcasts)
- Offering interviews with key city officials or experts to discuss the challenge's significance and impact

Digital outreach and content

- Publishing blog posts and thought leadership content about the challenge and its focus area
- Creating a dedicated website for the challenge
- Spreading awareness about all of the above via different social media channels and social media campaigns

Tip!

While establishing strategic collaborations, you might consider partnering with diverse organizations to engage innovators across different demographics (e.g., gender, age, geography).

Tip!

Early birds. To stimulate interest and encourage early submissions, consider offering an incentive for applicants who submit their proposed solutions before an interim deadline. The incentive for early bird applicants could include a 1-1 session with the challenge owners.

Box 08:

Afri-Plastics Challenge: Lessons

The Afri-Plastics Challenge aimed to reduce marine plastics in Sub-Saharan Africa by developing and scaling innovative solutions for plastic mismanagement. This public competition rewarded the best solutions to address marine plastic litter in developing countries, with a focus on promoting gender equality and empowering women and girls.

Given the international scope and involvement of multiple countries, local outreach partners were crucial because they were embedded within local innovation ecosystems, enabling them to understand community needs and dynamics. Their presence allowed for targeted efforts beyond online channels, helping to identify and support potential entrants in remote areas, particularly focusing on women-owned or -led organizations, which might otherwise be overlooked (Lessons from the Afri-Plastics Challenge)

Establish a governance structure

Open innovation challenges often bring together city governments, funders, judges, community leaders, and other actors, each with unique roles and expectations. As multiple stakeholders are typically involved in an open innovation challenge, establishing clear governance structures helps navigate these complex relationships and ensures the challenge progresses smoothly. It is crucial to identify who will serve as the final decision-makers—responsible for approving budgets, timelines, or major changes—and who will handle the day-to-day operations to keep the challenge moving forward, especially when the challenge organizer is not the city itself.

To support this process, challenge organizers may consider establishing governance bodies to input to the challenge design. For instance, a steering committee comprising key stakeholders—such as representatives from city government, community leaders, or funders—can contribute valuable technical and contextual insights, enhancing the relevance and impact of the challenge to the city's unique needs.

Step 4 | Assess & Support

Once innovators submit their entries, assessment plays a critical part in selecting who will proceed to the next section. **Step 4** delves deeper into planning the assessment, creating a judging panel, hosting pitch sessions or demo days as well as coaching.

Plan the assessment

Assessment planning is a critical aspect of designing an innovation challenge. The planning may involve the following:

Assessor recruitment: Selecting assessors with relevant expertise is vital to ensure quality assessments. Depending on the challenge focus, assessors could include industry experts, academics, community representatives or public officials. Efforts should be made to recruit a diverse panel of assessors to bring a range of perspectives and experiences to the assessment.

Assessor briefing: Training sessions (e.g., webinars) are essential to familiarize assessors with the challenge, scoring criteria and expectations for unbiased evaluation. Challenge organizers may think about creating an assessor handbook to prepare them to understand what their role entails.

Assessment period: The first step after the outreach period ends is to assess the eligibility of the applications (see: **Determine the terms and conditions**). A team of assessors can parse through the submissions received to determine which can move forward. Once eligible entries are selected, the submissions can be reviewed against the assessment criteria established. There could be multiple stages of assessments. Technical experts on relevant subject matter can also be resourced to serve as assessors.

Moderation meeting: Once individual assessments are completed, assessors can convene during a moderation meeting to discuss their assessments and deliberate on the strongest entries. These meetings offer an opportunity to address discrepancies, provide additional context and build consensus. The result is a shortlist of entries that demonstrate the highest potential to the judges.

Due diligence: Due diligence is a critical step following moderation. This process involves verifying the legitimacy of shortlisted entries, assessing their feasibility and ensuring compliance with the challenge criteria and legal requirements. Conducting due diligence protects the challenge's credibility and ensures the innovators can deliver the promised outcomes in ways that are also sustainable, ethical and human rights-based.

Tip!

Assessors may or may not be involved in the moderation meetings to discuss which entries should be shortlisted for judges to review, score and discuss. Managing multiple assessors and a large number of applications during a moderation meeting can be tricky. To make efficient use of everyone's time, have an impartial chair to facilitate the discussion as well as review polarizing applications in advance.

Due diligence is carried out to mitigate the risk of funding fraudulent or ineffective innovators. It may take place during the initial selection of innovators and before any financial support is disbursed. In a city context, this is especially important to:

1. Ensure funds are allocated appropriately and used as intended (e.g., if public funds or taxpayer money is involved, there is a higher expectation for accountability and transparency)

2. Safeguard the challenge owners (e.g., a city government, a funder) and the challenge organizers from reputational risk (e.g., media backlash, loss of confidence in city leadership)

3. Maintain trust and credibility in the challenge brand (e.g., if a challenge is perceived as poorly managed or susceptible to fraud, it could deter future participation from stakeholders, innovators, funders, ultimately undermining the challenge's impact)

Here are some questions to ask for due diligence pertaining to an organization entering a challenge (e.g., a company, a university:

● **Is the organization legally registered?**

● **How long has the organization been in operation?**

● **Does it have any outstanding debts or liabilities that could affect its financial stability?**

- **Are the individuals associated with the organization who they claim to be?**
- **Has the organization or any key individuals been involved in fraud allegations or past scandals?**
- **Are there any sanctions or restrictions placed on the organization?**
- **Has there been any negative press about the organization?**
- **How consistent is the organization's online presence across different platforms (e.g., website, LinkedIn, Facebook…)?**

Create the judging panel

Every challenge is different and requires a different set of expertise. This is why the challenge organizers might consider including a varied judging panel to bring a plethora of perspectives that fit the challenge focus. A judging panel could be composed of local city leaders, representatives who understand community perspectives, and a diverse range of experts (e.g. mobility, innovation, business, technology) either globally or locally sourced.

Creating a judging panel that includes high-level experts can incur costs for the challenge organizers, which should be considered in the planning budget (e.g., covering a judge's travel and accommodation for an in-person panel, offering an honorarium for those who are unable to judge on a pro-bono basis). Alternatively, challenge organizers can explore in-kind

Explore!

In order to identify, prevent, mitigate and account for how they address their adverse human rights impacts, business enterprises should carry out human rights due diligence. The process should include assessing actual and potential human rights impacts, integrating and acting upon the findings, tracking responses, and communicating how impacts are addressed (UNDP):

- Human rights due diligence: an interpretive guide
- UN Guiding Principles Business and Human Rights
- Mission-led procurement and market-shaping: lessons from Camden Council

contributions for online, remote support, and receive in return, letter of appreciation, certificate of participation, visibility through web stories and being credits in publications about the projects, to mention a few examples.

These panels independently review the highest-scoring entries, aided by input from reviewers and technical assessors. They convene to discuss and collectively choose the entries that demonstrate the most promise. Each city collaborates with challenge organizers to establish and oversee its specific judging processes. If your challenge has multiple stages, such as a semi-finalist, finalist and winner stage, each judging panel follows consistent procedures to maintain fairness and efficiency throughout the assessment of submissions and selection of innovators at various stages of the challenge

Different roles	Overview
Assessor	Responsible for reviewing and scoring eligible entries based on the assessment criteria established for the challenge. Entries that are scored the highest may be shared with technical reviewers and judges in a longlist.
Technical reviewer (optional)	May be responsible for providing technical input on the eligible entries. Although not required for every challenge, technical reviewers are useful when conducting a detailed assessment or physical testing of a solution. For example, an expert with knowledge of current research in dementia or assistive technologies can provide valuable insights on the impact or usability of digital solutions aimed at supporting individuals with dementia, such as those proposed in the Longitude Prize on Dementia.
Judge	Responsible for reviewing, discussing, and scoring the longlist shared by the assessors and the considerations shared by technical reviewers during a moderation meeting with fellow judges. The judges can be selected based on the subject matter expertise they can bring to a challenge.

Tip!

Challenge organizers may assemble a diverse panel that brings a wide range of expertise and lived experiences. Efforts can be made to ensure representation across age, gender, geography and cultural backgrounds. This diversity ensures that assessments consider various perspectives and better align with the challenge's goals, including equity, diversity and inclusion.

Host pitch session or demo days

Demo days and pitch sessions are a good way to meet the innovators and invite them to present their proposed solutions. They also provide a valuable opportunity to engage the public, facilitating direct dialogue between innovators and residents. Challenge owners and organizers need to consider the community inputs in this step to ensure the selected solutions respond to real needs.

Demo days are organized for innovators to exhibit or demonstrate their solutions, pitch sessions allow for innovators to share their ideas and sell their value proposition. Demo days and pitch sessions can also be used as a way for judges to ask questions and seek clarification from the innovators. Pitch sessions and demo days can be held in person or virtually depending on what the budget and timelines allow.

Tip!

Allocate time for innovator presentations, questions & answers, followed by a silent evaluation by the judging panel using pre-defined judging templates.

Box 09:

Sweden Green Mobility Program (Borlänge)

Borlänge is a city in central Sweden that has set an ambitious goal of becoming climate neutral by 2030. However, it faces a major challenge in reducing the emissions from commuting, which account for most of the transport sector's carbon footprint.

In Borlänge, passenger cars emit 46,000 tons of carbon dioxide every year which accounts for 64% of the transport sector's emissions. To tackle this problem, Sweden Green Mobility Program was launched as a collaborative innovation initiative that involves startups, SMEs, large employers in the city, and public sector organizations. Sweden Green Mobility Program was led by SISP and took place within the scope of the project Omställningslyftet, funded by the EU Regional Development Fund.

The program involved 20 selected startups and SMEs with diverse expertise and backgrounds. They passed through an eight weeklong process which involved team formation, collaborative proposal development, site visit, and coaching. Four proposals have been developed and gone through an evaluation and feedback process by a team of experts. During the demo day, the municipality of Borlänge selected the team "Urban Bike Flow", consisting of startups CommuteSaver, One4Tech, and Pedalink, for a pilot project worth SEK 200,000 (~USD 20,000).

The proposal involves provision of various types of bikes, measuring the greenhouse gas emission reduction, integrating the bike transport with other modes of transport, and connecting the system with employee programs.

The challenge has a wider impact beyond the boundaries of the municipality. It is initiated to assist the municipality's commitment with other 22 cities in Sweden, The Climate City Contract 2030 of Viable Cities. As innovation challenges and related programs are tilting towards a system-based approach, this program intends to be a platform for other cities to learn and be inspired from the process. For this reason, there was a system in place for other cities to observe and engage in the process which also helped to increase the visibility of the startups.

Supporting innovators

Mentoring

A common incentive provided to innovators through challenge-driven innovation is mentoring and coaching with the purpose of further developing the team and solution for market readiness or implementation. Mentoring can be especially useful for young and upcoming innovators or start-ups who will benefit from mentorship from subject matter experts or successful innovators. This is especially useful for challenges that have multiple stages, where specific mentoring can be offered to innovators to help them succeed to the next round.

Challenges may include partnerships with innovation or accelerator programs that have start-up mentoring programs that can be offered to innovators in a challenge-driven innovation process. For example, in UN-Habitat's Katowice Energy Innovation Challenge, challenge winners were offered a spot in Rawa.Ink's 10-day accelerator program.

Coaching can also be offered, especially for mature companies that might need more specific support in advancing their solutions. This could include coaching to help understand a new context or market, areas of collaboration, legal frameworks or leadership. For the Climate Smart Cities Challenge, challenge organisers UN-Habitat and Viable Cities partnered with Ignite Sweden, a not-for-profit organisation that matches start-ups with large companies to provide coaching. Coaches with relevant sectoral expertise related to the challenges identified by the four participating cities in the Challenge were identified and made available to the applicants between the finalist and winning stages of the Challenge. Their efforts helped finalists identify co-finalists to team up with to develop proposals for the winning stage of the challenge.

Whether for mentoring or coaching, understanding upfront from innovators what kind of mentorship or coaching they would find most beneficial can help craft a more purpose driven mentorship or coaching role. Input from mentors and coaches can also be included during the judging process. Aside from mentoring and coaching offered to innovators, you can also consider offering coaching and mentorship to challenge owners, in this case local governments who might need expert advice in selecting and partnering with winning innovators.
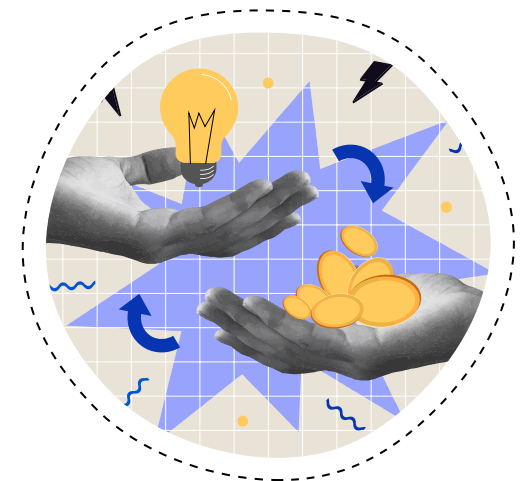
Step 5 | Embed & Implement

Solutions emerging through a challenge-driven innovation process may have limited maturity and scale or are still untested in the given urban context. To realize the true potential of the solution, challenge owners and solution providers have to work together to move beyond business as usual and craft new pathways for their successful implementation.

In its work using challenge-driven innovation for sustainable urbanization, UN-Habitat has identified two primary pathways through which solutions that have been identified or developed are implemented: public procurement and market-based models.

Public procurement

Procurement is a powerful tool to drive innovation and the private sector suppliers towards providing solutions that meet the needs of cities and are more aligned with the public interest. As challenge owners, city or local governments can leverage existing procurement processes to engage winners of an innovation challenge and implement their solutions. To this aim, challenge owners need to ensure that:

- **Innovation readiness:** The local government is ready to engage innovators in a new manner, and to consider new approaches to procuring and testing new tools or methods, including any necessary regulatory or policy changes;
- **Administration:** The challenge definition is well aligned with political and administrative priorities;
- **Budget cycles:** The challenge process is aligned with budgetary cycles;
- **Funding:** Adequate funding is available in the municipal budget to implement the solution successfully.

Tip!

Challenge-driven innovation can be a multi-year process, even when not accounting for unforeseen delays. Municipal budgets on the other hand are often annually prepared and allocated. Plan ahead to ensure that budget allocation for public procurement of the winning solution is not forfeited due to lengthier timelines or delays.

Box 10:

Katowice Energy Innovation Challenge

Identifying digital information management and communication solutions in the Katowice Energy Innovation Challenge. In the wake of severe air pollution and GHG emissions resulting from years of coal mining and steel manufacturing in the City of Katowice, UN-Habitat in partnership with Rawa.Ink - Katowice Municipality's Business Incubation centre - delivered the Katowice Energy Innovation Challenge. The challenge prompted innovators to devise digital information management and communication solutions that would empower local residents, governments and businesses in Katowice to embrace a transition to clean and renewable energy systems.

Explore!

- European Commission's Guidance on Innovation Procurement
- Pagabo: Simply Better Procurement
- Driving change through public procurement: a toolkit on human rights for procurement policy makers and practitioners
- Social rent housing at pace: The MMC playbook: A playbook for local authorities

Box 11:

Climate Smart Cities Challenge - Bristol

To implement the winning solution of the Climate Smart Cities Challenge in Bristol, the City Council used the existing Pagabo procurement framework to procure the Challenge winners. The City Council and Challenge winners signed a development agreement estimated at GBP 10m to design and deliver 29 net-zero affordable homes in 2024, demonstrating the newly developed viability model. Current Temporary Accommodation (TA) pressures cost the council about GBP 11m a year, making the development agreement with the Challenge winners politically even more important. eviewing procurement models ahead of developing a challenge will lead to a higher success rate when implementing the solutions.

| 1 | Set the Stage | 2 | Discover & Define | 3 | Design & Launch | 4 | Assess & Support | **5** | **Embed & Implement** |

43

Market-driven models

A second pathway to implementing winning solutions from innovation challenges is driven by market-facing business models. City and local governments might adopt a challenge-driven innovation process to activate a market, rather than serve as a direct procurer for a solution. In such an approach, the city or local government, as challenge owner, can partner with the winner through a variety of mechanisms. This could include formal private-public partnership models, where risks are shared by the local government together with the solution provider, and/or data-sharing partnerships. It can also mean that the city provided an environment or enabling conditions for innovators to develop solutions that are then purchased and used by individuals or public, private or third-sector organisations unconnected to city government.

Cities can also endorse or certify a solution that is then paid for and adopted by other market actors, for example, through philanthropic grants or corporate social responsibility. A market-driven approach to implementing solutions can also be sustainable in the longer run as the incentive for innovators to succeed doesn't rely on the city as the customer.

Explore!

- City Climate Finance Leadership Alliance (CCFLA)'s Financial Instruments Toolkit, Library and Case Studies.

The afterlife of innovation challenges

Innovation challenges & systems change

Challenge-driven innovation, through system demonstration, provides a powerful and comprehensive framework for cities to experiment with innovation in real life environments, seeking to understand implications to systems change and capturing potential spillovers. When a city engages in an innovation challenge, it allows for new ways of viewing a problem, new partners to collaborate to solve the problem, and new mechanisms through which the identified solutions can be embedded into the existing structures. This workflow is often completely unchartered territory for the cities and innovators, however the fresh look on the issue brings about deeper, more impactful change, as all stakeholders have the willingness to reimagine the status quo and develop an entirely new, innovative way to address an issue, situated in a larger context.

This process is also called system change — a fundamental shift in the structures, behaviors, and relationships within a system to address root causes of complex problems rather than just symptoms. In the context of innovation challenges, it involves demonstrating and scaling solutions that influence policies, practices, power dynamics, and mindsets across stakeholders to create sustainable, long-term impact at a systemic level. It emphasizes leveraging innovation as a catalyst for transformative change, ensuring broader adoption and integration into the system.

What is system demonstration?
Adopting a systems view of a given topic within the city context, the partners in the challenge will design a system demonstrator in the city. System demonstration is an approach to orchestrate a portfolio of connected innovations, targeting different aspects of a city's particular challenges. The purpose is to achieve multiple, large-scale and transformative outcomes that help a city achieve a particular goal or solution while improving the lives of residents. Multiple and diverse stakeholders in the city will come together to learn from the system demonstration, to mobilize the necessary investments for the deeper transformative change.

Practically, the challenge team works with a city, investors and other partners to demonstrate new pathways and capabilities to achieve a goal (e.g., to reduce greenhouse gas emissions), while also contributing to other key elements that affect the city and residents (e.g., nature restoration, social justice, health, security, employment and other societal benefits). Multiple levers of change including governance, policy, regulation, behaviour change, data, legal aspects, technology and finance will be activated to achieve these results, thereby inspiring other actors, redirecting financial flows and mobilizing investments for the larger goal (e.g., climate neutrality) to create a better future for all.
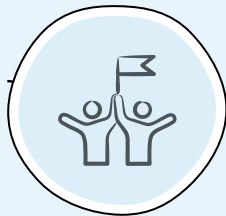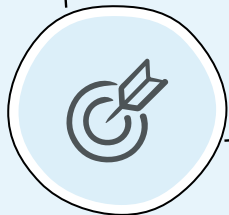
Ways to engage with us

If you'd like to learn more, fund a challenge, or get involved with Challenge Works, feel free to reach out to us at info@challengeworks. org. For media enquiries, please contact emma@seven-consultancy. com. To stay up to date with our latest news, sign up via our website: https://challengeworks.org/contact-us/.

To engage with UN-Habitat's Innovation Unit, contact us at digitalhelpdeskforcities@un.org or unitac@un.org. To follow our work, visit our website: https://unhabitat.org/ and https://unitac.un.org/.

References

1. Challenge Works (2022) Our Practice Guide. Available at: https://challengeworks.org/what-we-do/our-method/practice-guide/ (Accessed: 20 January 2025)

2. Challenge Works (2023) What can governments learn from challenge-driven innovation? Available at: https://challengeworks.org/thought-leader/what-can-governments-learn-from-canadas-challenge-driven-innovation/ (Accessed: 9 October 2024).

3. Challenge Works (2023) Solving problems in cities with people at the center. Available at: https://challengeworks.org/blog/solving-problems-in-cities-with-people-at-the-center/ (Accessed: 9 October 2024).

4. Government of Canada (2018) Smart Cities Challenge. Available at: https://housing-infrastructure.canada.ca/cities-villes/index-eng.html (Accessed: 9 October 2024).

5. Mayor of London (2023) Mayor's Resilience Fund. Available at: https://www.london.gov.uk/talk-london/topics/transport/mayors-resilience-fund#:~:text=The%20Resilience%20Fund%20is%20a,across%20London's%20economy%20more%20broadly (Accessed: 9 October 2024).

6. Mazzucato, M and Dibb, G. (2019). Missions: A beginner's guide. UCL Institute for Innovation and Public Purpose, Policy Brief series (IIPP PB 09)

7. Open Contracting Partnership (2020) Annual Report 2020. Available at: https://www.open-contracting.org/wp-content/uploads/2021/03/OCP2020_Annual-Report.pdf (Accessed: 22 January)

8. UN-Habitat (2022) Key findings and messages: World Cities Report 2022. Available at: https://unhabitat.org/sites/default/files/2022/07/key_findings_and_messages_wcr_2022.pdf (Accessed: 9 October 2024).