Achieving Cross Border Government Innovation

SURFACING INSIGHTS AND EXPERIMENTING ACROSS BORDERS

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OPSI

Observatory of **Public Sector Innovation**

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Country Abbreviations

OECD Countries			
Australia	AUS	Norway	NOR
Austria	AUT	Poland	POL
Belgium	BEL	Portugal	PRT
Canada	CAN	Slovak Republic	SVK
Chile	CHL	Slovenia	SVN
Colombia	COL	Spain	ESP
Czech Republic	CZE	Sweden	SWE
Denmark	DNK	Switzerland	CHE
Estonia	EST	Turkey	TUR
Finland	FIN	United Kingdom	GBR
France	FRA	United States	USA
Germany	DEU		
Greece	GRC	**OECD accession countries**	
Hungary	HUN	Costa Rica	CRI
Iceland	ISL	Russian Federation	RUS
Ireland	IRL		
Israel	ISR	**OECD key partners**	
Italy	ITA	Brazil	BRA
Japan	JPN	People's Republic of China	CHN
Korea	KOR	India	IND
Latvia	LVA	Indonesia	IDN
Lithuania	LTU	South Africa	ZAF
Luxembourg	LUX		
Mexico	MEX		
Netherlands	NLD	**Other non-OECD countries**	
New Zealand	NZL	Romania	ROU

OPSI

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FOR GOVERNMENT INNOVATION

OPSI is a global forum for public sector innovation. In a time of increasing complexity, rapidly changing demands and considerable fiscal pressures, governments need to understand, test and embed new ways of doing things.

OPSI works with governments to understand and encourage new approaches to address society's complex problems by empowering public servants with new insights, knowledge, tools and connections to help them explore new possibilities.

The MBRCGI was established to cultivate a culture of innovation within the government sector through the development of an integrated framework.

The MBRCGI aims to make innovation one of the key pillars of the UAE Government, in line with the vision of H.H. Sheikh Mohammed Bin Rashid AlMaktoum, UAE Vice President, Prime Minister and Ruler of Dubai, to enhance governmental operations and the country's competitiveness by making the UAE Government one of the most innovative in the world and promoting a digital, knowledge-based economy.

The MBRCGI aims to strengthen the UAE's innovation ecosystem by experimenting with new approaches and building capabilities and networks, thereby enriching the culture of innovation and spurring innovation locally, regionally and internationally.

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Over the last few decades innovation in the public sector has entered the mainstream in the process becoming better organised, better funded and better understood. But such acceptance of innovation has also brought complications, in particularly regarding the scope of the challenges facing innovators, many of which extend across borders. Solutions designed to meet the needs of a single country are likely to be sub-optimal when applied to broader contexts. To address this issue, innovators need to learn from others facing similar challenges and, where possible, pool resources, data and capacities.

Such an approach should be self-evident in an era of climate change and pandemics. Problems take shapes that do not map neatly onto the inherited boundaries of governance. Yet our multilateral organisations – mostly set up in the middle of the last century – are often ill-suited to take the necessary action. They may have to act at a global scale or not at all, and may find it difficult to work with coalitions of the willing that want to move at a faster pace. In many cases there are constraints on their resources and authority– particularly given the current emphasis among many of the largest countries on autonomy and sovereignty.

As a result, we find ourselves in an era when micro or minilateralism is becoming more common: nations or cities are joining together in smaller groups to solve problems. Some of these actions have a high level of visibility, such as the bridge built by Copenhagen and Malmo across the Oresund to drive economic growth in a region that straddles two nation-states. Others such as collaborations on cybercrime or terrorism have a lower level of visibility, but are no less impactful.

This timely report describes the evolution of a new field of cross-border innovation – a key aspect of minilateralism. It documents a remarkable range of initiatives springing up around the world in very diverse fields, and discusses the potential implications of these innovations.

Some of these initiatives tackle issues beyond the immediate horizon – literally in the case of the Deep Space Food Challenge of Canada and the US, a project seeking to develop new food sources for space, and just one of many tapping into the resources of global collective intelligence. Some initiatives are much more urgent – a topical example being the Global Vaccines Confidence Summit, which has focused on the best ways to tackle vaccine hesitancy. This project builds on two decades of collaboration around vaccines, first with the GAVI alliance and then more recently with COVAX, which is working to ensure more equitable access to vaccines.

Some projects are quite technical in nature. For instance, the Bank for International Settlements' (BIS) Innovation Hub brings together central banks that want to experiment with innovative financial technologies, such as central bank digital currencies or new ways to allow friction-less cross-border payment. Other projects focus more on industrial change. For example, a programme in Europe is experimenting with the use of 5G networks for autonomous vehicles, echoing an earlier collaboration three decades ago that accelerated innovation in GSM mobile, and helped Europe leap ahead with the support of new institutions like ETSI that continue to set standards through successive generations of mobile technology.

Some recent examples concern particularly difficult tasks. For instance, Canada and France are working with the OECD to run randomised control trials on combating misinformation online. Other cases relate to growing fields of innovation in public policy, such as the increasing use of behavioural insights tools across multiple networks and different levels of government.

A distinctive spirit characterises many of these initiatives which is perhaps reflected in their willingness to cross borders. There is a striking commitment to openness – the majority of these initiatives are transparent and many use open data in its various forms rather than hoarding information and knowledge within government. Consistent with this spirit is a commitment to the principles of collective intelligence – the idea that the best solutions will probably come from out-side government and beyond the circle of "usual suspects" – big companies, top universities and so on. Many projects use challenge prizes and open innovation methods that in principle allow anyone, anywhere to propose a solution.

A distinctive democratic impulse underlies many of these initiatives – a desire to engage citizens in the work of solving problems. This is very apparent in imaginative programmes such as those of Europe's Climate-KIC, which commits to involving citizens in the co-design of policies and solu-tions. It is also apparent in the proliferation of democratic innovations taking place at the global level, including citizens assemblies for genomics or climate change. These innovative processes draw on momentum from local or national innovations, such as Ireland's use of citizens assem-blies to advocate for marriage reform or France's various deliberative forums targeting climate action.

A particularly interesting example is the Global Innovation Collaborative, which helps cities work together to address shared challenges. Again, this project has its precursors, such as the clubs of cities that used to privately share transport data, or organisations like Citymart that link cities to innovators globally. However, projects like the Global Innovation Collaborative offer the potential to place co-operative work on a firmer footing, and are currently addressing the challenges facing creative cities, 25 years after the establishment of the first global networks dedicated to this area.

These initiatives are never easy. Any kind of innovation in the public sector requires the necessary authority, resources and skills to make it happen – and these are bound to be harder to mobilise when multiple governments are involved. In addition, the closer you get to action on any scale, the more obvious it becomes that some of the ideals of agile government are in tension with each other. Top-down missions can clash with bottom-up customer responsiveness, and the desire to draw on evidence can clash with politics and speed.

But any reader of this report will soon get a feel for the energy, diversity and spirit of these new cross-border innovations. It is obvious why they are spreading. Innovators naturally want to find like-minded people to learn from and talk to, and may feel quite isolated in their own ministries and departments. Smart governments can see that there are potentially sizeable benefits to pooling the costs and risks of experiments – as well as the insights that result. And in the wake of recent lockdowns, everyone is perhaps more attuned than ever to linking up online.

So what does this all mean? And what challenges does it present? One which the report identifies is the challenge of skills. Diplomacy can sometimes look like a very antiquated skill, particularly when governments can easily talk to each other and bypass ambassadors with an email or phone call. Yet a more interconnected world actually needs much more, not less, diplomatic skill, albeit increasingly combined with other skills. This is already becoming apparent in the worlds of global science and technology, where there is ever greater need for individuals skilled in both diplomacy and technology who can help navigate global challenges around genomics, AI, climate and the frontiers of neuroscience. Individuals with a comparable set of skills will be needed increasingly to design and execute projects of the kind described in this report – "cross-border innovation facilitators" who combine technical proficiency and an ability to implement with a diplomat's feel for connecting diverse interests and cultures.

A second challenge is how to institutionalise this work. It is not too difficult to engage people in consultations across borders, and not all that hard to connect innovators through clubs and networks. But transforming engagement into action can be trickier. It is particularly hard to share data – especially if it includes personal identifiers (although in the future more "synthetic data" that mirrors actual data without any such identifiers may be more commonly used, particularly for collaborative projects in fields such as transport, health or education). It is also hard to get multiple governments to agree to create joint budgets, collaborative teams and shared accountability, even though these are often prerequisites to achieving significant impacts.

Yet, as any good bureaucrat knows, collaborations are much more likely to become sustainable if they are institutionalised and become part of someone's job, as recent examples as diverse as GAVI and ETSI have shown.

These are all arguments for nurturing this emerging field and pursuing the recommendations made in this report. In particular, it is important to highlight the value of templates, models and frameworks – work for which the OECD is ideally suited – all of which reduce the friction and costs involved in putting together collaborations.

The space of cross-border innovation will only become more important in the coming decade. The advantages of faster learning and pooled action to reduce risks and amplify benefits should be self-evident. After all, this is how science evolves. A remarkable proportion of scientific projects now involve teams from multiple countries, again pooling learning and the costs while also sharing the benefits. This dynamic will form an important part of effective innovation in the public sector, and this very welcome report provides essential insights for reaching this goal.

Introduction

This is the second in a series of three reports on *Achieving Cross-Border Government Innovation* that document key findings and tell important stories about the innovative ways in which governments and their partners are collaborating to tackle cross-border issues, ranging from regional challenges to the most pressing global issues of today.[1] These reports also seek to surface core challenges and success factors associated with cross-border government innovation, and make key recommendations to help governments pursue and obtain the most from cross-border innovation initiatives, building on existing OECD Best practice principles on international regulatory co-operation and other relevant OECD work streams.[2]

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1 See https://cross-border.oecd-opsi.org for all reports in this series. Details about the broader context for this work can be found in the first report Governing Cross-Border Challenges.
2 It is important to note that not all cross-border government efforts fall squarely under the header of "innovation". Collaboration between governments over many years and in different areas is covered by OECD work, including International Regulatory Co-operation (https://oe.cd/irc), regional innovation reviews and studies (https://oe.cd/il/reg-innovation https://oe.cd/irl-innovation), development co-operation (https://oe.cd/dev-coop) – including for climate resilience (https://oe.cd/climate-resilience), understanding the transboundary impacts of public policies (https://oe.cd/xboundary-impacts), formal recommendations on cross-border co-operation in the enforcement of laws against spam (https://oe.cd/rec-spam) and protecting privacy (https://oe.cd/rec-privacy), and cross-border governance arrangements for science, technology and innovation (https://oe.cd/il/xborder-sti).

Figure 1: Key inputs for cross-border innovation efforts

104	131	141
Cases from Call for Innovations	Cases from extensive research	Workshop experts from 43 countries

This series is an outcome of the longstanding partnership between the OECD Observatory of Public Sector Innovation (OPSI) and the UAE Mohammed Bin Rashid Centre for Government Innovation (MBRCGI). [3] Over the last year, OPSI and the MBRCGI have worked together to better understand these issues by gathering and synthesising a number key inputs (Figure 1).

In the first report, *Governing Cross-Border Challenges*,[4] OPSI and the MBRCGI identified a range of key activities undertaken by governments and their partners. These include: putting in place innovative governance bodies to co-ordinate cross-border innovation; building innovation networks to support horizontal linkages; and exploring emerging governance systems dynamics, such as co-governance and co-funding among partners. While these efforts have provided an architecture for cross-border government innovation, a number of governments have employed other novel methods to bring forth new thinking and test potential innovative solutions.

This second report focuses on the use of innovative methods by governments to **surface insights and experiment across borders.** The field of public sector innovation and related fields such as open government have long promoted the building of conduits for ground-up ideas and solutions, such as through democratic decision-making processes and collective intelligence. Likewise, experimentation is a key mode of innovation in governments and is gradually becoming a norm. Ideas and solutions derived from these efforts help government move beyond organisation-centric thinking and make it possible to test ideas in ways that promote learning and help keep risk levels manageable. The success of these efforts within countries and jurisdictions has led governments and their partners to apply similar approaches in cross-border and even global contexts.

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3 For previous results of this partnership, see the reports on surfacing global trends in public sector innovation https://trends.oecd-opsi.org (2020), https://trends2019.oecd-opsi.org (2019), http://oe.cd/innovation2018 (2018) and https://oe.cd/eig (2017).
4 https://cross-border.oecd-opsi.org.

This work has identified two leading approaches and three associated case studies:

Surfacing ground-up insights and collective intelligence

Identifying new ways to work across borders to surface ground-up ideas and solutions from stakeholders and the public, ranging from dialogues that are fully open or targeted to specific groups to mass-scale collective intelligence initiatives.

Deep Space Food Challenge (Canada and United States)

An international collaboration between the Canadian Space Agency and NASA that incentivises innovators to address gaps in the field of food production technologies to meet the needs of space exploration, which can address terrestrial needs, such as reducing food insecurity on Earth.

Global Innovation Collaborative (cities around the world)

A collaborative platform that allows cities around the world to discuss mutual issues, share ideas and data, and launch global open innovation competitions to invite passionate people with great ideas to co-develop solutions to shared urban challenges.

Experimenting and testing across borders

Experimenting with new approaches in an iterative way across borders and jurisdictions in order to manage risk, reduce uncertainty and the cost of failure, better gauge public reaction to potential interventions, and learn lessons in order to scale up or cancel efforts.

5G-MOBIX – Cross-border collaboration for autonomous vehicle experimentation (China, European Union, South Korea, Turkey)

A collaborative, international network of partners from different sectors coming together to test 5G-enabled connected and automated vehicles across European borders and promote their large-scale deployment.

Government Accelerators (United Arab Emirates)

A platform for government entities to address challenges and achieve ambitious goals in short periods. It focuses on accelerating the delivery of strategic programmes, the development of policies and regulations, and enhancing government services.

Key challenges

Cultural barriers and norms

Lack of feedback mechanisms and learning loops

Understanding and distributing the costs and benefits of cross-border efforts

Undeveloped ecosystems

Scaling up experiments

Key success factors

Culture of openness and innovation

Agility and adaptability

Understanding ecosystems and engaging diverse stakeholders

Clearly defined roles

Existence of cross-border facilitators

These case studies, alongside workshops and research and analysis of Call for Innovations submissions, have surfaced key challenges and success factors to cross-border government innovation.[5] Key examples are listed in the table above, with more addressed in the report.

We commend the efforts identified in this report and believe they may represent early signals towards a shift to a new stage in the evolution of public sector innovation, where governments devise approaches to working across borders much as they have long discussed doing for bureaucratic siloes. Based on this research, five key recommendations have been identified for governments:

5 As discussed in the "Unpacking findings and lessons" chapter of this report, many key challenges and success factors for initiatives relevant to the discussed topics are related to those identified in the report Governing Cross-Border Challenges. In terms of key findings, success factors and subsequent recommendations, this report focuses on those specifically relevant for surfacing insights and experimenting across borders rather than dedicating discussion to topics already covered in the first report.

Key recommendations

1. Formalise the role of and build capacities for cross-border innovation facilitators.

Invest in building capacities for facilitator roles to create the right spaces for ecosystem actors to work collectively across boundaries. To this end, convene actors for trust-based dialogue and sharing information and learning, thereby prompting challenging but necessary discussions, managing conflict and differences, and encouraging innovation by leveraging relevant innovation methods.

2. Develop and execute ongoing approaches for mapping and engaging with cross-border ecosystem actors.

Map cross-border ecosystems as a foundation for identifying and pursuing opportunities for strategic cross-border innovation, and develop a replicable and adaptable approach to continuous engagement that is consistent with relevant OECD instruments.

3. Conduct cross-border activities using iterative practices and continuously learn from and communicate about them.

Adopt a cross-border approach that allows for iterative adaptation and provide conduits for lessons learned and stakeholder feedback to be continuously considered and folded into activities. In addition, maintain open up two-ways channels of communication by consistently and openly reporting intentions, progress and setbacks, and allowing stakeholders and the public to provide input.

4. Ensure cross-border initiatives are designed with scalability in mind, and establish a pathway for implementation and scaling.

Consider scalability from the outset when embarking on cross-border innovation efforts and weave critical elements into the design of initiatives. Ensure a pathway to implementation by having processes and infrastructure in place that enable cross-border innovation efforts to be introduced incrementally to other parts of the system.

5. Implement formal mechanisms to surface ground-up insights and experiment across borders.

Intentionally and explicitly explore different types of cross-border mechanisms for surfacing ground-up insights and conducting experiments (e.g. citizens' assemblies, open challenges, crowdsourcing and collective intelligence opportunities, testbeds)
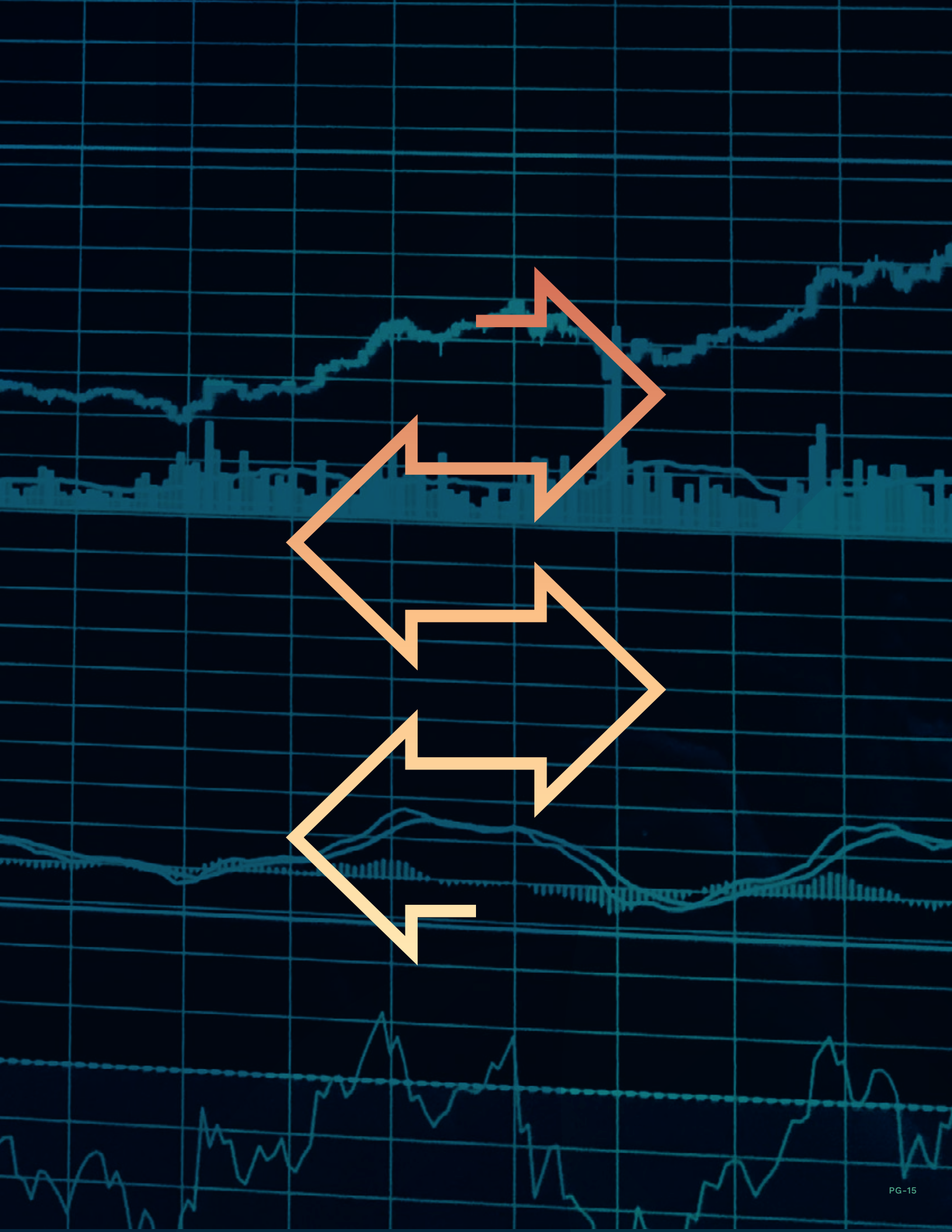
Surfacing ground-up insights and collective intelligence

THEME - 1

*"This is our joint responsibility. Democracy is more than voting in elections every five years. It is about having your voice heard and being able to participate in the way society is built." - **Ursula von der Leyen, President of the European Commission (2019)***

Governments and their partners are working across borders to identify new ways to enable ground-up insights and solutions from stakeholders and the public. These efforts range from simple but effective dialogues that are either open or targeted to specific groups, to mass scale cross-border collective intelligence initiatives that contribute to addressing major challenges. These efforts are often preceded by mapping exercises to help governments take an informed approach and ensure all relevant stakeholders are known and involved.

The first report in this series focused on innovation bodies providing top-down or centre-out direction, and networks enabling horizontal linkages for collaboration. This second report highlights efforts that enable bottom-up flows of information across borders. Such flows involve different levels of push (e.g. from the public and affected stakeholders) and pull (e.g. from government) in order to bring forth ideas and perspectives, and can also feed into formalised governance mechanisms and decision-making processes.

Such efforts help government enhance public sector innovation efforts by moving towards collaborative innovation, which

"eschews the idea that innovation results from the heroic efforts of great individuals who operate in a stimulating environment and receive support from sponsors and champions" (Torfing, 2019). Governments can achieve greater value by working with external partners, including members of the public. As Professor Jacob Torfing of Roskilde University notes, this type of innovation "opens up public bureaucracies by engaging a diverse group of public and private actors in processes of creative problem solving... disturb[ing] established practices and their cognitive and normative underpinnings, thereby triggering transformative learning processes while simultaneously building joint ownership over new and bold solutions." (ibid.)

Mapping ecosystems as a blueprint for change

A frequent first step in designing processes for ground-up ideas often involves considering and mapping out relevant ecosystems (OECD, forthcoming, a). This provides government with a full understanding of all processes, institutions and actors involved (Chilla, Evrard and Schulz, 2012). Research for this report found that governments and their partners have devised innovative methods to engaging in mapping from a cross-border perspective.[6] A good example in this regard is the work performed by Climate-KIC[7] with national and local public authorities, businesses and non-government organisations (NGOs) across Western Balkan states to map ecosystems for collective policy engagement around circular economy issues and the European Green Deal.[8] The aim of this mapping is to obtain a clear picture of the current ecosystem and where, how and who is involved in specific value chains, thereby enabling strategic cross-border and cross-sector alliances. The efforts involved centre around challenge-led mapping workshops using methodology refined through testing on 40 initiatives across Europe and Latin America.[9] The methodology is intended to determine the transformation potential of specific problems in a given systems context and to enable actors to "to jointly develop a portfolio of actions [through] processes of policy co-design" (Climate-KIC, 2020). Climate-KIC focuses on adapting approaches to the specific context, and stressed to OPSI that such approaches do not constitute a step-by-step manual, but rather function as a set of mechanisms for challenge-led collaboration.

In another example, as part of its Etorkizuna Eraikiz "Building the Future" initiative,[10] the Provincial Council of Gipuzkoa in northern Spain, part of the Basque-speaking region that cuts across Spain and France, has conducted a large mapping and systemic overview of work and actors in the region to better answer questions such as "What opportunities and spaces exist for experimentation?" and "Where would the Council benefit from guidance and how are various actors involved in the system?". The Council conducted large open workshops of interested parties to collectively map the system and ecosystem of relevant actors.[11] A number of resources exist that can assist public sector practitioners and leaders in exploring ecosystem mapping. Data is a valuable tool for exploring and understanding transboundary and transnational ecosystem dynamics according to different flows (e.g. financial flows, movement of people, trade, environmental flows, and knowledge transfers). OPSI's colleagues in the OECD Policy Coherence for Sustainable Development Goals division (PCSDG)[12] and the EC Joint Research Centre[13] have developed a conceptual framework for analysing transboundary interrelationships in the context of the 2030 Agenda.[14]

As an additional resource, researchers at the University of Luxembourg have developed a "Cross-Border Institutional Mapping" tool and methodology for multi-level mapping of cross-border institutions, policy arenas and "political topography" (Chilla, Evrard and Schulz, 2012). The German development agency GIZ has produced an excellent *Guide for Mapping the Entrepreneurial Ecosystem*,[15] which serves as a reference and practical toolkit to help understand how to observe, analyse and visualise ecosystems. Figure 2 shows a sample mapping output. Similarly, the World Bank has published a holistic framework to map and diagnose city innovation.[16] While some of these guides focus on private sector

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6 Although it does not discuss mapping, https://op.europa.eu/en/publication-detail/-/publication/6a43bcbb-85a9-43fc-afa3-db58c42f4730 provides interesting insights and lessons learned about pioneering regional innovation ecosystems in the EU.
7 Climate-KIC is the EU's main climate innovation initiative (www.climate-kic.org). See https://oe.cd/clmate-kic-ecosystems for more details.
8 See https://oecd-opsi.org/innovations/cross-kic-circular-economy-western-balkans and https://transitionshub.climate-kic.org/knowledge-visualisations/navigating-from-system-mapping-to-innovation-portfolios-in-the-western-balkans.
9 See Climate-KIC's Challenge-led System Mapping: A knowledge management approach (https://transitionshub.climate-kic.org/publications/challenge-led-system-mapping-a-knowledge-management-approach) for practical details about this methodology.

10 See https://oecd-opsi.org/innovations/etorkizuna-eraikiz-building-the-future and www.gipuzkoa.eus/es/web/etorkizunaeraikiz. See also discussion on the related Gipuzkoa Lab in the next chapter of this report.
11 See https://oecd-opsi.org/anticipatory-innovation-governance-in-gipuzkoa for background information.
12 www.oecd.org/gov/pcsd.
13 https://ec.europa.eu/info/departments/joint-research-centre_en.
14 While focused on the private sector, the OECD Science Technology and Innovation (STI) Directorate have recently published a report on Industrial Policy for the Sustainable Development Goals which includes a chapter on "The cross-border impact of SDG-related activities" (OECD, 2021l).
15 See www.goethe.de/resources/files/pdf197/5.-guide-for-mapping-the-entrepreneurial-ecosystem.pdf.
16 https://documents1.worldbank.org/curated/en/623971467998460024/pdf/100899-REVISED-WP-PUBLIC-Box393259B-Tech-Innovation-Ecosystems.pdf.

**Figure 2: Sample ecosystem mapping
output from the GIZ guide**

Secondary actors   Primary actors
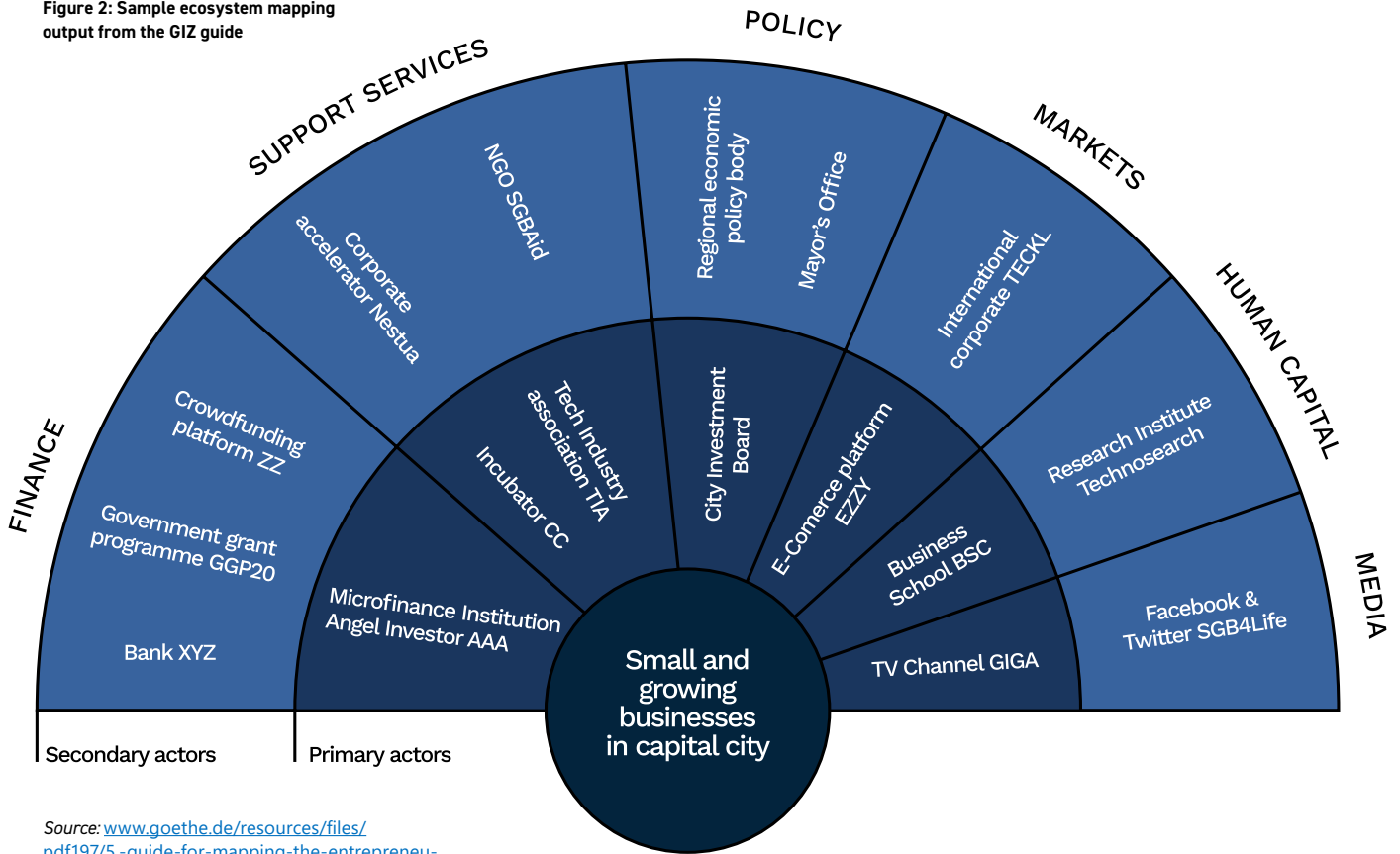
Source: www.goethe.de/resources/files/
pdf197/5.-guide-for-mapping-the-entrepreneu-
rial-ecosystem.pdf.

enterprises, much of the foundation and exercises are relevant and useful for mapping public sector ecosystems and actors that interact with them. Neither the GIZ nor World Bank tools are explicitly cross-border in nature, but they have the potential to be used in a versatile manner.

Ecosystem mapping and management is critical to bringing about systems approaches for cross-border government innovation. As found with broader science, technology and innovation policy, the increasing multi-disciplinary, cross-sectoral and cross-border profiles of key actors challenge traditional innovation systems and require the development of adequate conditions to build trust, effective communication and commitments (OECD, 2013a). Understanding who is involved and the interplay between them is a critical precondition.

While ecosystem mapping can help governments understand affected or relevant players, they must also keep in mind that the public in general is also a stakeholder and includes individuals that may not appear on their radar during mapping exercises. Thus, efforts for surfacing ground-up insights should include an open public component that can coexist with or alongside engagement targeted at ecosystem actors. Broader public-facing ground-up examples are discussed later in this chapter.

Engaging and convening ecosystem actors for collaboration

When governments have a strong sense of the actors involved in their relevant ecosystems, they can better access those ecosystems or provide conduits for contributions and inputs, which can bring forth new ideas and insights (OECD, forthcoming, a). Government efforts to promote stakeholder participation, with a view to delivering better policies, strengthening democracy and building trust, have grown significantly in recent years (OECD, 2021a, 2020a, 2019a). A seemingly small but growing number of these initiatives incorporate innovative ways of surfacing ideas from across multiple borders and jurisdictions.

Many cross-border efforts to source ideas and insights are driven by the desire to achieve collective goals or address global challenges. Global challenges call for "enhanced involvement of multiple stakeholders in co-innovation and value co-creation, and help stakeholders to benefit from them" (Hirvikoski et al., 2020).

An excellent example of these efforts was the Global Vaccine Confidence Summit.[17] A "first-of-its-kind event" that convened targeted experts from around the world to strengthen confidence in vaccines by coming up with ways for governments to build trust. Key outcomes of the summit included the development of a digital insight platform to provide global and local insights and details on trends in vaccine confidence and misinformation, and an academic coalition to better understand "infodemics".[18]

Another excellent example of this is the "17 Rooms" initiative, which was oriented around the 17 SDGs and organized by Brookings and The Rockefeller Foundation.[19] 17 Rooms "aims to surface practical next steps within each goal while also stimulating productive connections across all goals" (Brookings, 2021) It brings together identified leading experts and practitioners from 17 communities of practice and from across the world to generate ideas and progress towards achieving the SDGs over a period of 12-18 months (17 Rooms Secretariat, 2020).

An additional example involves governments in the Latin American and Caribbean (LAC) region seeking to grapple with the rapidly unfolding landscape and implications of artificial intelligence (AI). The "AI Latin America SumMIT", organised by MIT Latin American researchers in January 2020, identified and brought together leading AI leaders and practitioners from across the region to collaborate on a regional approach to AI (Figure 3).[20]

These targeted and tailored *inreach* efforts only scratch the surface of what is possible in terms of engaging relevant innovation ecosystems. More open forms of engagement offer even greater potential, as discussed in the next section.

Surfacing ground-up ideas from challenges and collective intelligence

OPSI and the MBRCGI have observed an increased focus on cross-border challenge-driven research and innovation, with a particularly strong influence from agendas such as the SDGs.[21] Accordingly, much of this research is scoped around global goals or problems, but is more open than the targeted efforts discussed in the previous sub-section. Similarly, mass collective intelligence exercises that look past borders, and are sometimes global in scale, are also gaining momentum. Research has found that good ideas can emerge from unexpected places, especially when unusual combinations of players are brought together. The key challenge is to provide the right environment for such ideas to surface (Peach, Berditchevskaia and Bass, 2019). Innovative and open cross-border challenges and collective intelligence processes can provide this environment.

An excellent example of an open, cross-border innovative challenge is the Deep Space Food Challenge, a collaborative effort between NASA and the Canadian Space Agency. Hundreds of thousands of dollars are invested in food production ideas for

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17 www.gov.uk/government/news/world-leading-experts-commit-to-building-vaccine-confidence-at-uk-hosted-global-vaccine-confidence-summit
18 According to the Oxford English Dictionary, an "infodemic" is "an excessive amount of information about a problem that is typically unreliable, spreads rapidly, and makes a solution more difficult to achieve".
19 _www.gov.uk/government/news/world-leading-experts-commit-to-building-vaccine-confidence-at-uk-hosted-global-vaccine-confidence-summit.
20 The details are documented at https://ialab.com.ar/wp-content/uploads/2021/01/AI-BOOK..pdf.

21 In particular, SDG 17 on "partnerships for the goals", which necessitates cross border collaboration https://sdgs.un.org/goals/goal17.

Figure 3: Hackathon held as part of the AI Latin America SumMIT

Source: https://ialab.com.ar/wp-content/uploads/2021/01/AI-BOOK..pdf.

Figure 4.1: Global Cities Fund project in Peru

Source: www.mayorsmigrationcouncil.org/gcf.

long-term space missions, but also to improve food security on Earth (related to SDG 2 – Zero Hunger)[22] (see the full case study at the end of this chapter).

While the scope of such challenges can be global, the focal points are often municipal. Some key examples identified through OPSI and MBRCGI work include:

- **Global Cities Fund for Inclusive Pandemic Response.**[23] Led by the Mayors Migration Council (MMC), the Global Cities Fund is a USD 1 million proposal-driven initiative that responds to the unmet needs of cities supporting migrants and refugees during the COVID-19 pandemic. Cities around the world provide proposals on ways they could use funding to build inclusive communities. Donors have funded five initial projects in Colombia, Lebanon, Mexico, Peru and Sierra Leone, and the MMC has developed a pipeline of 20 more city government proposals to further attract donor interest, increase funding efforts, and expand the focus beyond COVID-19, such as assisting migrants and refugees in Lebanon and Peru (see Figures 4.1 and 4.2).

- **Global Innovation Collaborative.**[24] This collaborative platform enables cities around the world to discuss mutual issues, share ideas and data, and launch global open innovation competitions for entrants with great ideas to co-develop pioneering solutions to shared urban challenges (see the full case study at the end of this chapter).

Figure 4.2: Global Cities Fund project in Sierra Leone

Source: www.mayorsmigrationcouncil.org/gcf.

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22 https://sdgs.un.org/goals/goal2.
23 See www.mayorsmigrationcouncil.org/gcf and https://oecd-opsi.org/innovations/gcf-for-inclusive-pandemic-response.

24 See https://citiesinnovation.global and https://oecd-opsi.org/innovations/global-innovation-collaborative.

Current guidance around challenges does not offer strategies geared specifically for cross-border efforts, but the general approach and practices remain relevant. Nesta's *Challenge Prizes: A Practice Guide* provides a how-to guide on the subject (see Figure 5),[25] and the US government also has issued a *Challenge and Prize Toolkit.*[26]

25 See www.nesta.org.uk/toolkit/challenge-prizes-a-practice-guide and https://oecd-opsi.org/toolkits/challenge-prizes-a-practice-guide.
26 See www.challenge.gov/toolkit and https://oecd-opsi.org/toolkits/challenge-and-prize-toolkit.

Figure 5: Challenge prize process diagram

Considering setting up a challenge prize?

Discover and define

Initial scoping into promising topics

Rejected idea

Rejected idea

Promising topic

Prize-amenable problems

Design

Rejected prize prototypes

Prize design prototypes

Rejected prize prototypes

Iterated version

Full prize design and implementation plan

Deliver

Pre-launch activities

Launch

Entry period

Selection

Support to innovators

Award

Post-prize evaluation

Source: www.nesta.org.uk/toolkit/challenge-prizes-a-practice-guide

Also making an impact and often broadly open to participation are innovative cross-border collective intelligence efforts. These tend to focus on fostering collaboration among actors that may have good ideas, rather than promoting competition. Collective intelligence efforts involve different forms of collaboration and are amplified by advances in technology, as discussed below. NESTA describes collective intelligence as "the mobilisation of information, ideas and insights", and categorises them under three main categories: connecting people with people, connecting people with data, and connecting data with data (Berditchevskaia and Baeck, 2010).

While the concept of people working together and sharing information is a classic one, technology has changed the ways in which collective intelligence may be applied and scaled in real world environments. Thanks to the Internet and increasingly smart computing technologies, it is now possible to connect with a more diverse range of people and communities, in real-time, to share knowledge and skills. The powerful combination of greater access to a wider range of human intelligence, paired with machine intelligence, provides new opportunities to address problems in ways not previously possible, including at scales that cross borders and may be even global in scope. In its Collective Intelligence Design Playbook,[27] Nesta outlines key principles that can help guide governments embarking on collective intelligence projects to "increase [the] diversity of the people you involve and the opinions you listen to" and to "integrate different types of data to unlock fresh ideas". The European Commission has also identified the main elements of collective intelligence for solving challenges in society (see Figure 6).

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27 https://nesta.org.uk/cidplaybook.

Figure 6: Main elements of collective intelligence for solving societal challenges

A number of innovative cross-border collective intelligence projects that leverage these principles and elements have been identified through OPSI and the MBRCGI's research, many of which capitalise on the power of tech to reduce barriers to entry for collaboration. Relevant examples involving collective intelligence across national borders include:[28]

- **iLabthon.[29]** Combining elements of challenge-style events and collective intelligence, iLabthon was the first marathon in the world to create government innovation laboratories. Held over 20-31 January 2021 by Brazil's Conexão Inovação Pública RJ (Public Innovation Connection), with support from government agencies, the virtual event brought together 1 327 participants, 132 speakers and mentors, and 27 existing public sector innovation labs to build the foundations for new innovation labs in Brazil, Guinea-Bissau, Mexico and Mozambique. Participants were broken up into competing teams to develop minimum viable products of new labs that considered five key dimensions: strategy, services, structure, learning and communication. Over 130 lab projects originated from the event, with top ideas being implemented.

- **WeFarm.[30]** A "farmer-first community and marketplace" aimed at farmers across African borders, WeFarm enables users to crowdsource expertise, identify misinformation and solve problems via the platform. WeFarm is the world's largest platform for small-scale farmers (with over 2.5 million users and 40 000 questions and answers handled daily) (Berditchevskaia and Baeck, 2010). This process is done via SMS, which ensures inclusivity for farmers who lack full Internet access. Although not a public sector project, WeFarm helps to illustrate how simple technology can bring together collective ideas to provide public value, providing valuable lessons to governments pursuing similar ends.

- **Urban Air Action Platform.[31]** The world's largest air quality data platform, led by the UN Environment Programme (UNEP), the Urban Air Action Platform is "bringing together real-time air pollution data from over 4 000 contributors, including citizens, communities, governments and the private sector to work towards healthier, more sustainable cities" (UNEP, 2020), helping government take informed policy action.

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28 For additional examples of collective intelligence, including some that reach across borders, see https://collective-intelligence.thegovlab.org.
29 https://oecd-opsi.org/innovations/ilabthon.
30 https://about.wefarm.com.
31 www.unep.org/explore-topics/air/what-we-do/monitoring-air-quality/urban-air-action-platform.

Not all collective intelligence necessarily involves active ground-up participation, with some examples more focused on data collection for the public good. For instance, the UNDP Accelerator Lab in Serbia works to help the government better understand and cope with a rapidly decreasing population. By analysing data from the World Bank, LinkedIn and Google searches (while anonymising data and taking steps to protect privacy), the lab was better able to map and understand trends behind outward migration (e.g. skills lost, sectors impacted, etc.) (Berditchevskaia et al., 2021). It also incorporated challenge elements, such as a USD 50 000 prize for identifying new data sources that could help the lab further understand migration challenges. As these types of efforts involve more passive involvement on the part of those generating data, ethical and other related principles need to be considered. Depending on how they are implemented, the efforts could also run contrary to principles that underpin collective intelligence efforts (e.g. Nesta's collective intelligence design principle to "be citizen-centred: data empowerment, not data extraction"). The OECD's new Recommendation on Enhancing Access to and Sharing of Data (EASD) can help serve as a guide in this regard.[32] EASD is the first internationally agreed upon set of principles and policy guidance for governments explaining how to maximise the cross-sectoral benefits of all types of while protecting the rights of individuals and organisations (OECD, 2021b). It includes a specific provision for governments to "further improve conditions for cross-border data access and sharing with trust".

Evolving cross-border democratic practices and models

The increasing complexity of policy making and the failure to find solutions to some of the most pressing policy problems have prompted politicians, policy makers, civil society organisations (CSOs) and the public to reflect on how collective public decisions should be taken in the 21st century. The classic public sector focus on "transparency" is insufficient. More open and dynamic forms of public participation in public decision making can deliver better policies and services, strengthen democracy and build trust. Evidence also shows that public input can provide more holistic inputs, is rooted in daily experience with a variety of perspectives, and is able to counter groupthink (Rosa et al., 2021).

Whereas many of the examples discussed in this chapter focus on the benefits governments can gain and the knowledge they can reap from key stakeholders and citizens, cross-border democratic and participatory processes are also critical for helping people to understand and learn about pressing topics and issues, allowing them to feel heard and contribute to change, and enabling governments to provide them with quality public services that meet their needs. Governments and citizens learning together provides a strong foundation for harmonious collaboration between government and non-government actors in ways that are *mutually* beneficial and promote trust in the public sector and strengthen democracy at large.

Previous work (OECD, 2020a) and current OPSI and MBRCGI work has found that governments and their partners are building frameworks for open democratic processes, with some seeking to provide spaces to surface insights and perspectives among more targeted groups. These efforts have significant potential to catalyse cross-border change. However, as governments build out new mechanisms and approaches for cross-border collaboration and innovation, it is critical to keep relevant stakeholders and citizens in the loop and involved in integral ways that allow them to weigh in and offer meaningful contributions and feedback that are taken into account. Such an approach improves cross-border policies, services and other initiatives, and can also strengthen the legitimacy of governments and consequently citizens' trust in them (OECD, 2020a). Conversely, failure to facilitate and follow through with participatory dialogue can erode trust and confidence in the ability of governments to tackle major issues. The *OECD Good Practice Principles for Deliberative Processes for Public Decision Making* can help ensure such efforts are done in a manner that yields benefits and supports trust, as touched on below.[33]

Large-scale democratic processes

Assembling ordinary citizens from all parts of society to deliberate on complex political questions and develop collective proposals has become increasingly attractive in this context, as discussed in the OECD report *Innovative Citizen Participation and New Democratic Institutions: Catching the Deliberative Wave.*[34] This report surfaced 11 good practice principles for these types of efforts (Figure 7). OPSI and the MBRCGI's work has found that governments are taking steps to foster such ground-up participatory efforts, and to put in place the requisite infrastructure at scales that increasingly cut across national and jurisdictional borders.

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32 See www.oecd.org/sti/ieconomy/enhanced-data-access.htm.

33 https://oe.cd/delib-principles.
34 https://oe.cd/deliberative-wave.

An increasingly common approach to involving the public in ideation and decision making is citizen assemblies (OECD, 2020a). Until 2020, most citizen assemblies took place in person. However, the COVID-19 pandemic led to a shift in methods and approaches, with assemblies held online and a variety of approaches used to ensure inclusivity (e.g. provision of digital tools and mentorship to ensure digital participation is successful). There are possible downsides to moving processes online, including the potential for more "linear and binary thinking through voting tools, rather than a nuanced understanding of other people's reasoning and values" (Chwalisz, 2021), and such potentially negative consequences need to be considered and addressed. However, the shift to virtual environments allows for cross-border citizen assemblies on a much broader scale. In fact, some have long argued for such a transition. The concept of Deliberative Global Citizens' Assemblies, for instance, which is based on "ordinary citizens drawn from all the countries of the world" (Dryzek, Bächtiger Milewicz, 2011) could be better positioned than current processes to take a long-term perspective and consider the global good beyond national borders. Cross-border citizens assemblies and similar efforts appear to be gaining traction. For instance:

- **The Global Citizens' Assembly on Genome Editing**.[35] The ease and precision with which gene editing can now be performed has led to new ethical and regulatory questions. The Centre for Deliberative Democracy and Global Governance at the University of Canberra is convening a global citizens' assembly on Genome Editing to be held in 2022. The process commences with national-level deliberative cases to explore the diversity and complexity of issues, before building to a 24 participant global citizens' assembly. Participants represent the countries most affected by genome editing and will deliberate over five days about future principles and governance. Recommendations will be provided to global governance bodies (the UN, WHO and FAO) and relevant stakeholders from government, industry, civil society and science.

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35 www.globalca.org.

Figure 7: Good practice principles for deliberative processes for public decision making

Source: https://oe.cd/delib-principles.
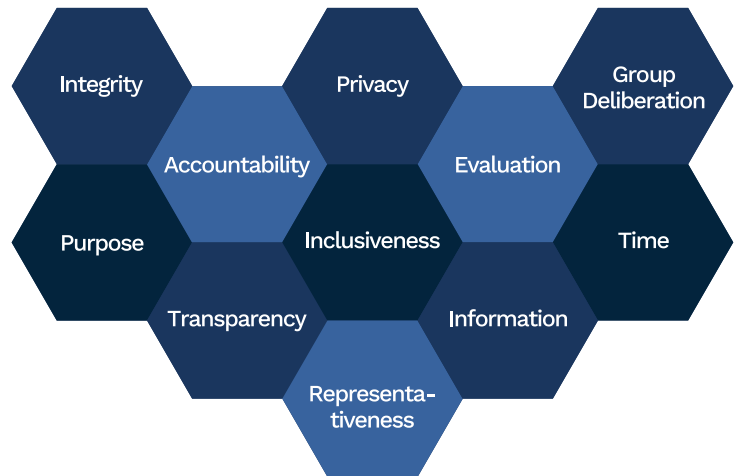
- **The Global Citizens' Assembly for the United Nations Climate Change Conference**. [36] Labelled as "the first global citizens' assembly that anyone on Earth can join", this initiative is seeking to engage millions of people in order to increase and improve participation, engagement and decision making on global climate and ecological issues. It serves as platform for different representative groups, including citizens, institutions, media, civil society and cultural influencers, to work together on these issues. Co-designed by experts and participants, the organisers is testing the model in 2021 with 100 core participants that reflects the diversity of the world's population, and chosen via a lottery. Assembly members developed an interim "People's Declaration for the Sustainable Future of Planet Earth",[37] which they presented at to the UN CoP26 proceedings in November 2021. The plan is to scale up to a larger 1 000 participant event in 2022.

- **The Digital Way to EU Citizen Participation: The conference on the future of Europe and beyond.**[38] A Citizens' Dialogue with 100 randomly selected citizens from Denmark, Germany, Ireland, Italy and Lithuania was held to discuss Europe's democratic, digital and green future. It was organised by the private German foundation Bertelsmann Stiftung and two other foundations and the European Commission (Bertelsmann Stiftung, 2021).

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36 https://globalassembly.org.
37 https://globalassembly.org/declaration.
38 See the summary report at https://bit.ly/3AVytGo.

The above examples have been initiated by public sector organisations and public universities to bring forth ground-up insights. However, more grassroots efforts are also underway that aim to push ideas towards the public sector. These efforts are not let by the public sector, but do demonstrate the large-scale, cross-cutting potential for citizens' assemblies and similar ground-up efforts as well as the strong desire to contribute to change among those who participate. Some examples include:

- **Citizens Take Over Europe.**[39] This "group of civil society organizations, citizens and residents from across Europe, joined in a common effort to promote a forward-looking and citizens-centred European democracy". Formed in 2020 and spanning 10 countries, the initiative demonstrates the desire of grassroots citizen-driven communities to take part in shaping the future of European democracy and the potential of collective action. The group focuses on ground-up idea generation and action through open working groups including by promoting citizens assemblies on a European level.

- **#WeEuropeans**.[40] The non-profit and transnational association CIVICO Europa and Make.org held a "union-wide consultation of citizens, by citizens, to bring about the real concerns of Europeans" in the run-up to the 2019 European elections.[41] During

an eight-week window, residents from 27 countries submitted proposals. Afterwards, participants from each country voted on their own national top 10 proposals; a European-wide vote then delivered an EU top 10 called the "Citizens' Agenda". An in-person event held to allow citizens and residents to discuss the top proposals (Figure 8) was followed by an awareness-raising campaign focused on the proposals. In total, 1.7 million participants generated over 30 000 proposals and submitted over 11 million votes, with numerous actions taken by institutions and politicians.

Cross-border bottom-up models and efforts around anticipatory innovation also appear to be gaining momentum. "Participatory foresight" can serve as a tool for bottom-up policy innovation and can also enable bottom-up citizen involvement in policy making and better align the needs of the public with government policy (Rosa et al., 2021). It can also help public sector innovation systems become more focused and able to explore multi-actor interests and intersections (ibid.). One such example is the EU's CIMULACT project,[42] which ran until 2018 and brought together 1 000 citizens in 30 European countries to co-create visions for desirable sustainable futures and transform them into recommendations for future research and innovation policies and topics. OPSI's Anticipatory Innovation Governance work streams, as discussed in the next chapter, also supports ground-up knowledge flows, largely through the lens of hands-on experiments and pilots.

39 https://citizenstakeover.eu.
40 See https://weeuropeans.eu/ie/ie and http://collective-intelligence.thegovlab.org/case/we-europeans.
41 https://civico.eu/en/process.

42 www.cimulact.eu.

Figure 8: Presentation of the Citizens' Agenda

Source: https://about.make.org/post/weeuropeans-un-quiz-citoyen-pour-voter-informes-aux-elections-europeennes.

To assist governments in pursuing open and participatory efforts, the OECD Open Government Unit is developing a Citizen Participation Checklist, in the context of a co-operation project with the European Commission's Directorate-General for Regional and Urban Policy (DG REGIO). The Checklist will include topics like planning and implementing citizen participation, and ensuring quality participation. The OECD expects to release versions of this product tailored for different contexts in late 2021, and a master playbook interactive website in 2022. Additional relevant resources found on the OPSI Toolkit Navigator[43] include:

· MASS LBP's How to Run a Civic Lottery.
· The UK Government's Open Policy Making Toolkit.
· Making Sense's Citizen Sensing: A Toolkit.
· The Open Government Partnership's Participation and Co-Creation Toolkit.
· The United States Public Participation Playbook.
· The Government of Tasmania, Australia's A to Z of Engagement Techniques.

Smaller-scale and targeted processes

Other cross-border efforts are more targeted to specific populations, and often driven by users and peers within the system. The International Youth Foundation's (IYF) (Re) Connecting Youth project[44] has brought together government agencies and youth services organisations in the United States (Baltimore, New Orleans, the State of Nebraska) with peer organisations in Argentina, Brazil and Mexico, to learn from each other. This project leveraged a participatory youth-driven methodology for enhancing youth school, training and educational participation that was developed by Pro Salud, a civil society organisation in Tijuana, Mexico.. One key area of focus areas was "youth as assets" – youth involved in the design and delivery of programmes to promote peer-led programming, youth leadership, civic engagement and movement building (Figure 9).[45] IYF issued a report[46] highlighting key lessons learned, including that "Cross-border learning offers programs a fresh look at their work". Focusing specifically on the cross-border element, IYF shared four important lessons on the public service knowledge platform Apolitical:[47]

1. **Relationship building takes time**. "The investment in time and travel was critical for gaining buy-in from leadership and for allowing staff adequate time to learn".

2. **Upfront work pays dividends**. It is important to document the approach to ensure consistent implementation.

3. **Different contexts may require adaptation**. "The goal isn't merely replication – it's the cross-pollination of ideas and learning when and why adaptation is necessary".

4. **Be on the lookout for culturally appropriate adaptations**. There is no "one-size fits all". The approach adopted may need to be adapted to fit local cultural norms and expectations.

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43 See https://oecd-opsi.org/toolkit-navigator for information on these resources.
44 See https://iyfglobal.org and www.iyfreconnectingyouth.org.

45 www.iyfreconnectingyouth.org/process.
46 See https://iyfglobal.org/sites/default/files/library/ReConnecting_Youth_Lessons_Across_Borders.pdf.
47 https://apolitical.co/solution-articles/en/baltimore-case-for-cross-border-learning.

Figure 9: Youth engagement in action

Source: www.iyfreconnectingyouth.org.

Another relevant example is the University of California, San Diego (UCSD) Center on Global Justice,[48] whose "X-Border Lab"[49] operates at the border of San Diego, California and Tijuana, B.C., Mexico. The Lab employs ground-up approaches to engage the region as a global laboratory in investigating cross-border challenges specific to the area: deepening social and economic inequality, dramatic migratory shifts, the encroachment of border walls, and the disproportionate impacts of climate change on vulnerable populations. The Lab sees the border itself as a zone of urban and political creativity, and empowers cross-border citizens and residents to re-imagine their surroundings. Among its main activities are UCSD Community Stations, a network of hubs located in disadvantaged neighbourhoods on both sides of the border, designed for collaborative research, teaching and advocacy among researchers, schools, and community nonprofit partners. In an interview with OPSI, initiative co-lead Dr Fonna Forman described the stations as "a cross-border stitch designed to eliminate borders as a barrier and to create new flows and collaborative situations". Ground-up perspectives permeate the Community Stations. The researchers involved recognise that they possess only a partial knowledge of the situation and must engage with community members to ensure consideration of other perspectives regarding critical decisions about project design and implementation (Tully et al., 2021). Cross-border residents are also offered compensated teaching opportunities at UCSD, which helps to build strong trust-based relationships with project partners as peers.[50]

Building adaptable cross-border frameworks for sustainable change

Some organisations have started to develop more formalised models and frameworks to support ground-up ideation and participation. Such models can be innovative in their own right, as well as in terms of the integration of cross-border collaboration into their development process. A recent example is DIALOG for Innovation and Local Growth,[51] which forms part of the Interreg Europe programme.[52] Partners in six European countries (Belgium, Bulgaria, Germany, Spain, Switzerland, and Italy, the lead partner) are collaborating on a framework for public bodies to design, plan, implement and assess complex policy instruments related to sustainable territorial development. The core objective is to improve the effectiveness of innovative policies for regional competitiveness through the involvement of local stakeholders and citizens in policy and decision-making processes. The different country partners, and the fact that they have different socio-economic and cultural characteristics, functions as an important driver of innovation and a means to uncover a broad variety of insights. The framework explores four angles (information, consultation, involvement and collaboration), and develops specific engagement methodologies, instruments and support actions. The project's efforts also increasingly culminate in cross-border learning, for instance, the development of a Digital Cooperation Platform (DCooP) for documenting experiences and sharing knowledge across borders.

Another example is the Democratic Society,[53] which focuses on climate resilience with support from EIT Climate-KIC.[54] This initiative created the Democratic Climate Model,[55] which itself represents an innovative cross-border collaboration. Underpinned by democratic principles and meaningful citizen participation, the pilot model "responds to the gap in pan-European efforts to democratise climate action, providing terminology and models to shift cities from a solely technocratic to a democratic approach to climate resilience". It was developed in partnership with the public sector, funders, civil society and communities.[56] The model is informed by a programme of "deep demonstrations" in 14 European cities, which found that four elements are necessary for cities to progress towards climate resilience: "diversity of actors, participatory culture, resourcing and subject-matter expertise, and cross-border collaboration at local, regional and national levels".

48 https://gjustice.ucsd.edu.
49 http://gjustice.ucsd.edu/x-border-lab.
50 For more information on these efforts, see "Unwalling Citizenship", a keynote lecture by the Center on Global Justice leaders. A video is available at https://ecornell.cornell.edu/keynotes/overview/K040921.
51 See www.interregeurope.eu/dialog and https://oecd-opsi.org/innovations/dialog-interreg.

52 Interreg Europe offers opportunities for regional and local public authorities across Europe to share ideas and experience on public policy in practice, thereby improving strategies for their citizens and communities. See www.interregeurope.eu.
53 www.demsoc.org.
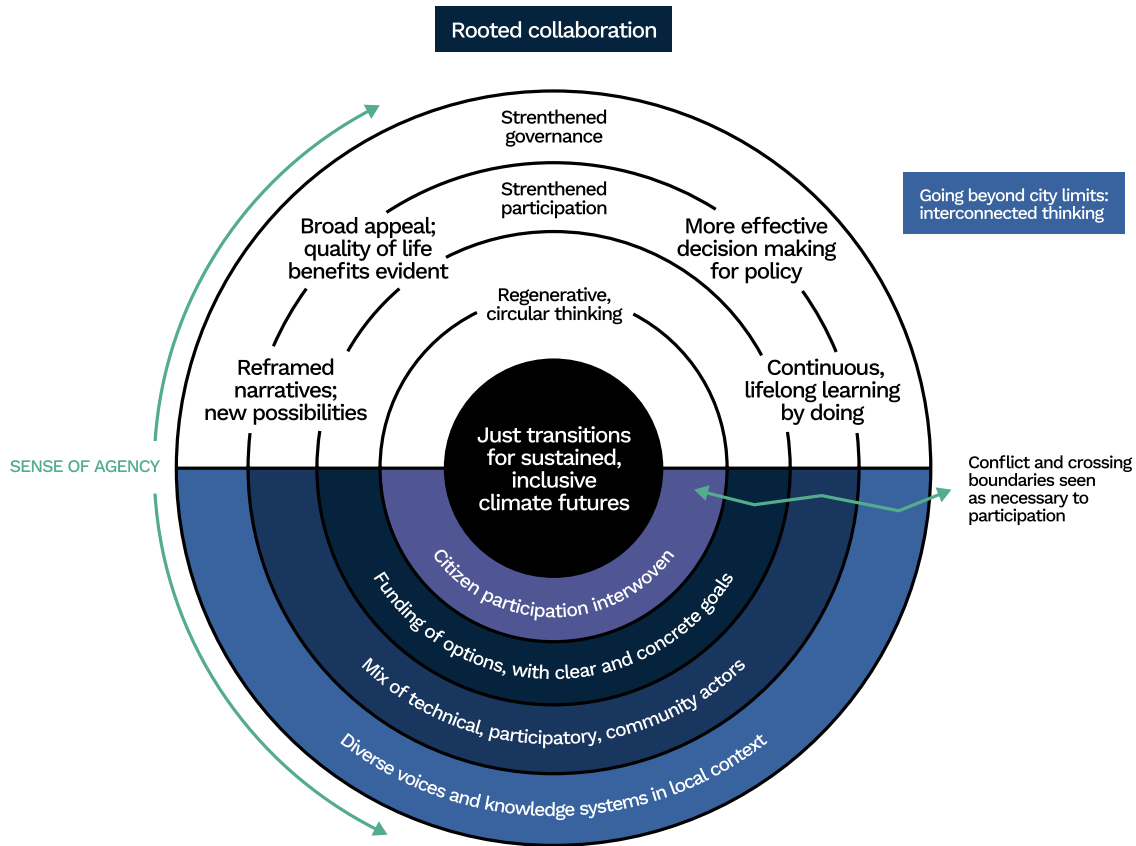54 EIT Climate-KIC is the EU's main climate innovation initiative. See www.climate-kic.org.
55 See https://oecd-opsi.org/innovations/democratic-climate-model.
56 For more details see www.demsoc.org/projects/healthy-clean-cities-deep-demonstrations.

Figure 10: Characteristics of rooted collaboration

Figure 10 illustrates the intersection of participatory community with deeply rooted collaboration. Cities are using the model to design "portfolios of experiments" for participatory democracy in order to achieve systemic change in a number of areas.

The Co-Cities project is another example of a framework for collaboration across borders focused on the city level.[57] Based on a series of experiments, LabGov developed a "Co-City Protocol"[58] that facilitates the achievement of sustainable urban development through collaboration with local communities and capacity building of local authorities (LabGov, 2020). The Protocol focuses uses a combination of design principles (e.g. collective governance, experimentalism), "Co-City Cycle" process steps (e.g. mapping, prototyping, modelling) and tools (institutional, legal, financial and digital) to generate community-driven change. While the Co-City model is an adaptive one that can be applied to a city's individual context, there is an element of collaboration and learning across boundaries. For instance, the Co-Cities team at LabGov have invited cities implementing the methodology and those hoping to do so, to participate in workshops to learn from each other and to discuss common issues and challenges.

Universities are also emerging as key players in building frameworks and institutionalising cross-border innovation systems more broadly (van den Broek, Benneworth and Rutten, 2019). Universities support these efforts by:

- acting as important sources of "institutional entrepreneurs", which can help build strong and resilient cross-border regions
- impacting other sub-systems within regions, such as firms and policy makers.
- building networks across borders and instilling in young people a cross-border mindset.

For instance, the Laurea University of Applied Sciences has studied the role of academic institutions in supporting ground-up cross-border efforts in Finland's intranational Helsinki-Uusimaa region (Hirvikoski et al., 2020). The university and Finland's Ministry of Education and Culture have funded the Co-creation Orchestration[59] initiative to promote these efforts and create a capacities framework and model that is "helping companies, public sector, academia, and citizens to co-create better health and wellbeing services" (ibid.).

59 www.cco.laurea.fi.

57 http://commoning.city.
58 https://labgov.city/co-city-protocol.

Strengthening processes at home to support ground-up cross border innovation

While the core focus of this report is cross-border government innovation, much of which involves transnational issues, it is important to note that progress in this area tends to start at home with domestic policies, processes and cultures, particularly in relation to valuing ground-up and stakeholder and citizen-driven insights. OECD member and partner countries vary significantly in this regard. For instance, the OECD has identified being "user-driven" as one of the top transformational dimensions in digital government maturity. A government becomes more user-driven by assigning a central role to people's needs and convenience in the shaping of processes, services and policies; and by adopting inclusive mechanisms that facilitate this process (OECD, 2020b). The 2017 Tallinn Declaration on eGovernment, which has been signed by 32 European countries, commits states to designing and developing services guided by the principles of user-centricity, including citizen engagement.[60] As seen in Figure 11, public sector maturity in this area varies, which by extension affects the ability of governments to collaborate and innovate together. Governmental efforts also vary significantly in terms of the availability of training for civil servants on topics related to open government (Figure 12). Governments will need to mature

national efforts in these areas in order to strengthen their abilities on a global stage.

Governments can draw on research, tools and resources to enhance their capacities in these areas from a number of OECD sources:

- OPSI's **Toolkit Navigator**[61] provides support by orienting users around a vast collection of innovation toolkits, enabling users to find those best suited to their situational needs, including on topics related to open government.
- The OECD **Digital Government and Data Unit**[62] explores how governments can best use information and communication technologies to embrace good government principles and achieve policy goals.
- The **Open Government Unit**[63] supports governments in designing and implementing policies by providing advice and recommendations on how to integrate open government principles into public sector reforms.
- The **Observatory of Civic Space**[64] supports governments in protecting civic space by collecting data on the most effective legal, policies and implementation frameworks, acting as a knowledge-sharing platform among practitioners, and developing international standards.

60 https://ec.europa.eu/newsroom/document.cfm?doc_id=47559.

61 https://oecd-opsi.org/toolkit-navigator.
62 www.oecd.org/gov/digital-government.
63 www.oecd.org/gov/open-government.
64 www.oecd.org/gov/open-government/civic-space.htm.

Figure 11: Digital government maturity in being user-driven
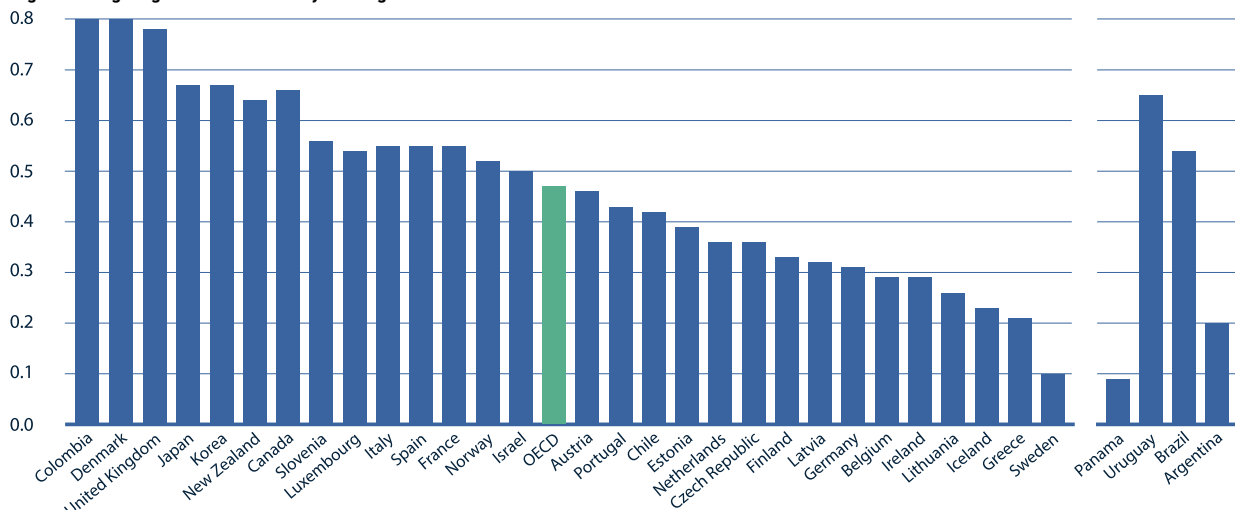
Source: OECD (2020c).

Figure 12: Availability of training for civil servants on open government topics, 2020
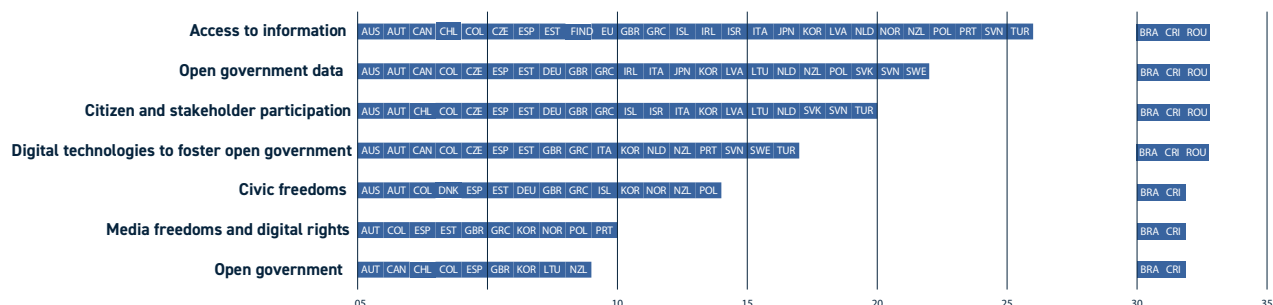
Source: (OECD, 2021c).
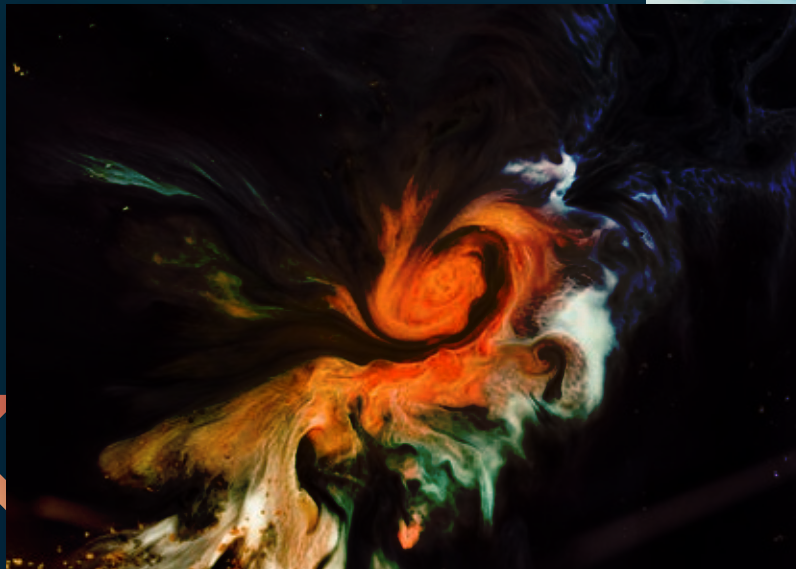
Deep Space Food Challenge

(Canada, United States)

"Good food for healthier, happier humans in space and on Earth"
- The Deep Space Food Challenge Mission

Astronauts in orbit receive shipments of food from spacecraft regularly launched from Earth. However, future astronauts on trips to Mars and beyond may spend years in space, without the possibility of regular shipments. These astronauts will need to bring everything they need with them. The Deep Space Food Challenge (DSFC)[65] incentivizes innovators to address technology gaps in the field of food production technologies to meet space exploration. The DSFC also has the potential to benefit terrestrial needs, such as reducing food insecurity on Earth. This Challenge represents the first international collaboration between NASA through its Centennial Challenges Program (CCP),[66] the Canadian Space Agency and Impact Canada, the Canadian Government's unit for impact and innovation.[67]

65 See www.deepspacefoodchallenge.org and https://oecd-opsi.org/innovations/deep-space-food-challenge.
66 NASA Centennial Challenges were initiated in 2005 to directly engage the public in the process of advanced technology development. The programme offers incentive prizes to generate revolutionary solutions to problems of interest to NASA (www.nasa.gov/directorates/spacetech/centennial_challenges).
67 Impact Canada is a component of Canada's Privy Council Office, with a mission to help departments accelerate the adoption of innovative funding approaches to deliver meaningful results to Canadians (https://impact.canada.ca/en/node/19).

Context

Space is a powerful driver for positive change, innovation and inspiration on Earth. It provides a common focal point for stimulating curiosity and opportunity. It encourages visionaries, technologists, scientists and problem solvers to cross-fertilise new ideas and inspire action against common challenges. One such challenge is feeding astronauts. Food is obviously essential for life on Earth, but it is also a critical component of human space exploration missions. As space missions increase in duration and distance, it will not be possible to bring all of the required crew consumables (air, water and food). In space, many basic needs remain the same, including the need to supply spacecraft crews with access to healthy, safe and nutritious food over missions of long duration. Additionally, efforts to develop new and efficient forms of food production in space could generate technologies that have a reduced impact on resources needed for food production on Earth, especially in extreme environments, disaster-affected area and resource-scarce regions.

The primary capability gaps for long-duration space missions in food systems production are: system reliability, system closure (resource reuse/recycling), crew safety, food variety, nutrition and acceptability, power requirements and crew time. Although many food systems on Earth may offer benefits to space travellers, the ability of these systems to meet spaceflight demands has not yet been established. This challenge presents an opportunity to push new and existing technologies forward in an effort to meet these demands.

International collaborations have been key to the success of countless space missions. In space, collaboration is the logical approach, as all space crew, technology, tools and spacecraft are dedicated to the same objective. In this context, The DSFC provides incentives for innovators globally to advance the field of food production technologies.

An innovative solution

The DSFC is a public prize competition[68] that has been co-created by NASA, the Canadian Space Agency (CSA) and Impact Canada, and executed in parallel competitions. The goal of the Challenge is for innovators to create novel food production technologies or systems that require minimal inputs and maximize safe, nutritious and palatable food outputs for long-duration space missions, and which have the potential to benefit people on Earth. It is an iterative challenge, generating ideas from Canada and the US, as well as from across the globe through the international challenge, and moving potential innovations from concept designs to prototypes that can be tested in a lab environment before eventually becoming part of a food production system.

Launching a challenge engages new players in the search for breakthrough solutions. An open innovation approach is a key feature of the initiative, designed to incentivize new ideas and innovators to address a technology gap. Interested teams were given constraints and criteria to guide their initial concepts, but NASA and the CSA designed the challenge specifically to enable innovators to introduce creative and novel ideas. As a key project manager from NASA stated, "when you open a challenge you don't want to constrain participants too much with technical requirements. It's important to leave space for creativity, and ideation – here, there were a lot of commonalities across the needs of the agencies".

While formal arrangements and relationships existed between NASA and CSA, the DSFC is an example of organic collaboration that grew from knowledge-sharing sessions. The identification of common interests related to food production systems during these sessions led to the discovery of commonalities in terms of goals and constraints, including a desire to explore technology solutions, the need for an ideal space for creation, and the determination of crucial constraints and criteria for all parties. Additionally, there was a strong drive for innovation from the Canadian government, with CSA and Impact Canada wanting to learn from NASA's 15-year experience running challenges with the Centennial Challenges Program.

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68 10 prizes of CAD 30 000 in Canada, 18 prizes of USD 25 000 in the US and Recognition prizes for International teams.

Figure 13: Collaboration characteristics

NASA Challenge
- Distinct Rules Document
- NASA-managed Prize Purse
- Eligibility Criteria

Synchronized Activities
(e.g. webinars)

CSA Challenge
- Distinct Application Guide
- CSA-managed Prize Purse
- Eligibility Criteria

**CSA and NASA have a shared Challenge Design, including:
Challenge Statement, Goals and Assessment Criteria**

Source: NASA and CSA.

To explore the concept further, experts across Canada and the United States convened to share experiences and ideas, and to design the challenge. An initial ideation workshop brought together decision makers and numerous stakeholders from both countries, and functioned to foster and solidify trust and mutual respect across borders. This led to the development by CSA and NASA of a shared Challenge Design, which included a Challenge Statement, Goals and Assessment Criteria.

The agencies also incorporated some bespoke design features within their respective policy frameworks. For instance, each country had its own respective jury and prize purses for national participants. The organizing teams co-ordinated with both jury panels to ensure consistency in implementation, particularly in regard to external communications and the evaluation process. The two teams also co-ordinated the International DSFC, a space for innovators from outside the two countries to promote and find funding for their ground-breaking ideas. While winners of the International category do not receive direct funding from the agencies, their projects are showcased at international networking events, which enhance the potential impact of their ground-up, innovative ideas.

On 20 October 2021, NASA announced the 18 Phase 1 US and international winners of the DSFC, who would receive a total of USD 450 000 for ideas leveraging new technological advances that could feed astronauts on future space missions.[69] The winners span multiple states and industries and include Far Out Foods (Minnesota) and Interstellar Lab (California) for their concepts of food growth and self-sustaining production systems, KEETA (Thailand) for their 3D-printed food system, Space Bread (Florida) whose innovation allows astronauts to make bread quickly and easily in space, and uBites (Illinois) whose invention utilises plastics and biomass waste as a carbon source for food generation. Winners from Phase 1 can now apply for Phase 2 funding.

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69 https://deepspacefoodchallenge.org/winners.

Figure 14: NASA astronaut Megan McArthur enjoys fresh food on the International Space Station

Source: www.nasa.gov/press-release/nasa-announces-winners-of-deep-space-food-challenge.

On 9 November 2021, CSA also announced their Phase 1 winners, with applicants receiving CAD 30 000 in grant funding and the opportunity to prototype and test their designs. The winners include Canacompost Systems, who use black soldier fly microbiota to compost organic material during long missions, and the CANGrow Modular Indoor polyculture food production system, which is able to provide over 500 kg of nutrient-dense food annually. Winners now have one year to build and demonstrate the prototype as part of Phase 2 of the challenge, which will award up to four prizes of CAD 100 000.

Novelty

For NASA, the DSFC is the first Challenge to be developed in collaboration with the space agency of another country. The Challenge is also the first outcomes-based approach to be implemented by the CSA and marks the beginning of an enduring collaboration with Impact Canada and NASA Centennial Challenges. For Canada, the creation of open innovation and outcomes-based approaches such as this collaboration establishes a new space for innovators of any background to create novel technologies that can solve everyday challenges, particularly in an industry long known to be restricted to governments and large aerospace companies.

While there are many strong examples of cross-border collaboration in space, the Challenge represents the first time that NASA and CSA have employed innovative approaches such as collective intelligence and public prize competitions to more rapidly and collectively advance towards their goals.

The Challenge also has a "look and feel" that marks it out from other funding programmes. Its strategy of openness and transparency attracts new talent and enhances capacity in the field, leading to new ideas and potentially viable solutions to key issues of interest to the partners. Enhanced awareness among communities of innovators is thus a critical success factor for challenges.

Impact and potential

After only the three months, the DSFC had attracted tremendous support from innovators and fired the public imagination on social media, with overall engagement surpassing larger, high-visibility missions. Dozens of articles were published,[70] and close to 1 000 participants attended the first three webinars.[71]

- The **Challenge Information Webinar** provided an overview of the challenge, background on the topic from NASA and CSA Subject Matter Experts, and information for potential teams on how to assemble their team and register.[72]

- The **Space Food Webinar** was a moderated panel discussion that featured a former NASA astronaut and a current CSA astronaut, along with food scientists and nutritionists. The webinar discussed the history of food production systems, highlighted the experiences and opinions of astronauts, and addressed the potential impacts of innovative and novel solutions on future food productions systems for space exploration. The webinar also featured the first release of a promotional video with Alton Brown from the Food Network's *"Good Eats"*.[73]

- The **Solving for Earth** webinar featured experts from across government and the private sector, and explored current food needs on Earth. This moderated panel discussed the unique food security challenges in the Canadian North as well as in rural and urban communities in developed and developing nations around the globe. The panel also examined current efforts to address the challenges, and what innovations from initiatives like the Deep Space Food Challenge could mean for the future of terrestrial food production. Attendees were able to submit questions for the panellists to answer.[74]

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70 https://impact.canada.ca/en/challenges/deep-space-food-challenge/media, The race is on to develop space food for Mars — and it could change how we eat on Earth | National Post.
71 https://impact.canada.ca/challenges/deep-space-food-challenge/webinars.
72 This webinar can be viewed on-demand at www.youtube.com/watch?v=5GAb1LO5vJA.
73 This webinar can be viewed on-demand at www.youtube.com/watch?v=4uj0qLBI8mI. The promotional video can be found at www.youtube.com/watch?v=es4CpOY3Xuk.
74 This webinar can be viewed on-demand at www.youtube.com/watch?v=Sw4aTfIAJw8.

The potential scale for solutions is significant. From a market perspective, the DSFC is helping to incentivize commercial applications of the solutions on Earth and in space. There are also significant benefits for teams of innovators competing in the challenge. Exposure and experience garnered through the Challenge will enable the creation and enhancement of new companies and jobs, provide opportunities for innovators from underserved and/or unreached communities, and could result in new technologies becoming mainstream and more available and cost effective.

From a user perspective, both space-bound explorers and gravity-bound humans on Earth will benefit from advances in food production systems. For example, novel and improved production technologies in harsh or remote climates can support greater food production in other milder environments, including urban centres where vertical farming, urban agriculture and other novel food production techniques can play a more significant role.

Overall, the DSFC creates an open environment for better ideas and greater impact in the field of food production, both in space and right here on Earth. Furthermore, the Challenge has created new networks and channels and opened up boundaries for innovators, with innovation-focused companies offering new jobs, connecting innovators with potential investors to bring to life new ideas and technologies, and further legitimising emerging technologies that could be mainstreamed into food production systems.

Challenges and lessons learned

During the planning stages, the greatest risk to this project would have been a failure to collaborate. While NASA had an established planning process and had already executed a number of open innovation challenges on other subjects, this was the first such challenge for CSA. Initial complexities included whether each party's core needs would be met and whether collaboration would create greater value for both parties, or dilute funding or focus across the border.

Such complexities were quickly overcome through a strong commitment to collaboration and knowledge sharing at the outset. This led to positive benefits on both sides and resulted in a distinct but parallel challenge that allowed for cross-pollination as well as the ability to contextualise solutions. The essential supporting infrastructure provided by NASA, CSA and Impact Canada also enabled rapid deployment of the challenge prize method. Clear and consistent communication between planning teams, along with a general spirit of co-operation, has contributed significantly to the success of the challenge.

Having clarity on the "why of cross border collaboration" and operating on the principles of genuine and successful collaboration, such as listening, openness and mutual respect, gave the agencies confidence to work through the "how" in the early stages of the design process. As a project manager at CSA explained, "Committing to the collaboration and committing the right resources is really important. So too is securing the institutional backing, and investing in building a team that can sustain the implementation efforts". The cross-border collaboration was further reinforced by a process of mutual learning early on that served both NASA and CSA, both within the Challenge and more broadly. This underlined the value of collaboration and stimulated further information sharing activities with other departments in NASA as well as engagement with other experts, further expanding collaboration across borders.

One of the key takeaways from CSA and NSA is the importance of working towards a similar goal. Additionally, the nature of this goal extends beyond borders and thus allows for the creation of a global challenge, broadening the pool of potential solution makers and increasing both agencies' chances of finding strong and viable concepts. Furthermore, it was crucial that the DSFC balance top-down and bottom-up advocacy, decision making and approaches. Nurturing connections on a personal level between the two teams – which had similar working methods and similar roles in their organisations – as well as securing senior management commitment and communication on the intent to collaborate, proved vital to the success of the cross-border challenge.

Global Innovation Collaborative

The Global Innovation Collaborative (hereafter, "the Collaborative")[75] is a network and platform for collaboration through which city governments from around the world launch open innovation competitions and invite passionate innovators to deploy solutions in local testbeds, alongside local partners. Its mission is to leverage challenge-based principles and collective intelligence to surface collective ideas and stimulate shared learning, with the goal of accelerating the economic recovery from the COVID-19 crisis and creating more resilient and sustainable cities. The platform's first and current *Creative Cities* challenge focuses on boosting the recovery of creative sectors in Berlin, London, New York and Paris.[76] The goal of this challenge is to develop new tools, systems and processes that can help guarantee the long-term financial resilience, environmental sustainability, and social equity of creative venues, businesses and events.

75 See https://citiesinnovation.global and www.oecd-opsi.org/innovations/global-innovation-collaborative. Unless otherwise noted, the sources for this case study were the OPSI case study and interviews with George Johnston (Nitrous) on 1 September and 21 September 2021.
76 More information on the Creative Cities Challenge can be found at https://citiesinnovation.global/challenge/60b5e0661df9b5001c6d1f22

Context

The COVID-19 pandemic led to complex and unprecedented challenges for cities around the world. Rising infection rates in densely populated urban centres heightened the need for strong restrictive measures, with significant negative consequences for economic activity. Businesses were forced to close and many individuals – especially in the music, culture and creative industries – lost their jobs and main sources of income. The pandemic also significantly affected global interconnectedness. Many international value chains were disrupted, geopolitical issues led to border closures, production and trade within national borders were reinforced, and local tourism heightened as international travel slowed to a trickle. Large metropoles were particularly affected by such developments: economic dynamism was crippled and municipalities experienced sharp decreases in fiscal revenues[77] and faced other economic challenges. Among the Collaborative's members, Paris saw a decrease in economic activity of 37% during the first phase of the pandemic (versus a decrease of 34% at national level),[78] while London observed a record unemployment rate increase that reached 6.9% in November 2020 (GLA, 2021).

While policy responses to the pandemic have varied across countries at the national level, cities of similar sizes and with similar socio-economic conditions realised that they face analogous challenges related to economic recovery, the re-opening of businesses and other topical issues such as ensuring safe public transport. At a unique time of both hardship and opportunity, these commonalities clarified that the potential for cross-city collaboration through crowdsourcing knowledge and sharing learning experiences across borders. Beyond the pandemic, many mid- and long-term challenges faced by urban centres – such as pollution reduction, climate change adaptation and inclusive housing – are also common global issues. Operating in silos in such contexts is counterproductive as local governments have much to gain from collaborating with citizens and other municipalities across regions or countries.

An innovative solution

The Collaborative is a space for cities to collectively agree on shared challenges and launch open innovation competitions to source innovative tech solutions from small and medium enterprises (SMEs) and entrepreneurs from across the globe. The project brings together innovators to co-develop pioneering solutions to these shared challenges, alongside datasets and innovation assets from industry. Local governments benefit from showcasing their local testbeds to innovators and trialling new solutions to complex, shared problems. These local testbeds provide an ideal experimental setting for innovators, enabling them to test solutions with citizens and use cities' real-world data to adjust their products before they are fully scaled. Doing so across cities and borders has several advantages for public sector actors, including:

- larger datasets to test innovations thanks to the sharing and pooling of key data for specific issue areas
- greater cost efficiencies through shared procurement and economies of scale
- greater inclusion of SMEs in public procurement processes from which they are often excluded
- improved shared learning opportunities.

The Collaborative involves a wide range of actors from across different sectors. Beyond collaborating with participants and innovators, mayors and local government officials also co-operate with private sector actors that contribute to the funding and scaling of projects. For example, Microsoft provides technical support and in-kind resources, while Nitrous – an urbantech venture builder – delivers the platform and provides support to run the challenges and co-creation process digitally (see Figure 15 for a screenshot of the platform). Additionally, the Collaborative relies on ecosystem partners such as University College London (UCL), which provides testing facilities and knowledge resources to ensure that projects are successfully adapted and completed. The strength of the initiative ultimately lies in the ability of all partners to safely share data, learn from each other and collaborate in the development process of these innovations.

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77 https://oe.cd/34T.
78 "www.oecd.org/coronavirus/policy-responses/cities-policy-responses-fd1053ff.

The initiative's challenge process can be summarised in five key phases:

- **Challenge selection**. First, participating cities use a digital platform to explore data sets, analyse shared issues and agree on a shared challenge to pursue. The platform automatically aggregates data sets from different sectors and creates automated benchmarks to help cities understand where shared challenges exist. By working together during this planning phase, cities are exposed to significant shared learning opportunities, gaining insights into each other's experiences, processes and policies.

- **Application and first selection.** Once challenges are set, innovators (e.g. SMEs and entrepreneurs) can apply via the platform with their ideas. At this stage, the cities come together to form cross-city juries to evaluate and select the projects that make it to the second round. Juries are composed of civil servants from the different administrations of the participating cities, and project submissions are anonymised through the digital platform. This ensures that the application review and evaluation process is unbiased and that selected innovations can benefit all the cities involved.

- **Co-creation phase.** After the first set of shortlisted innovations is defined, the co-creation phase takes place. Here, the selected projects are given a chance to further improve their innovations via collaboration with other participants, industry experts and local governments. At the start of the phase, each city provides its own local impact statement – a specific mission that contextualises the broader challenge and allows the participants to adjust their innovations to meet local needs. The digital platform then matches innovators across different cities into cross-city teams to discuss the challenge, foster new shared learning opportunities and strengthen the adaptability of their projects to different urban contexts. City government representatives and innovators then participate in design-led workshops to map solutions, adjust innovations, and align them with citizens' and businesses' needs. Local community survey groups are involved throughout the process to continuously improve the innovations and ensure project development is lean and dynamic. Cities and partners also provide innovators with access to assets and data to test projects across their testbeds, develop new ideas and further improve their solutions.

- **Second selection.** Each city reviews the pre-selected innovators' updated projects and their scaling plans, choosing the specific projects they wish to support in the implementation phase.

- **Funding and scaling.** Finally, projects are introduced to local investors to assist with fundraising and scaling of the solutions.

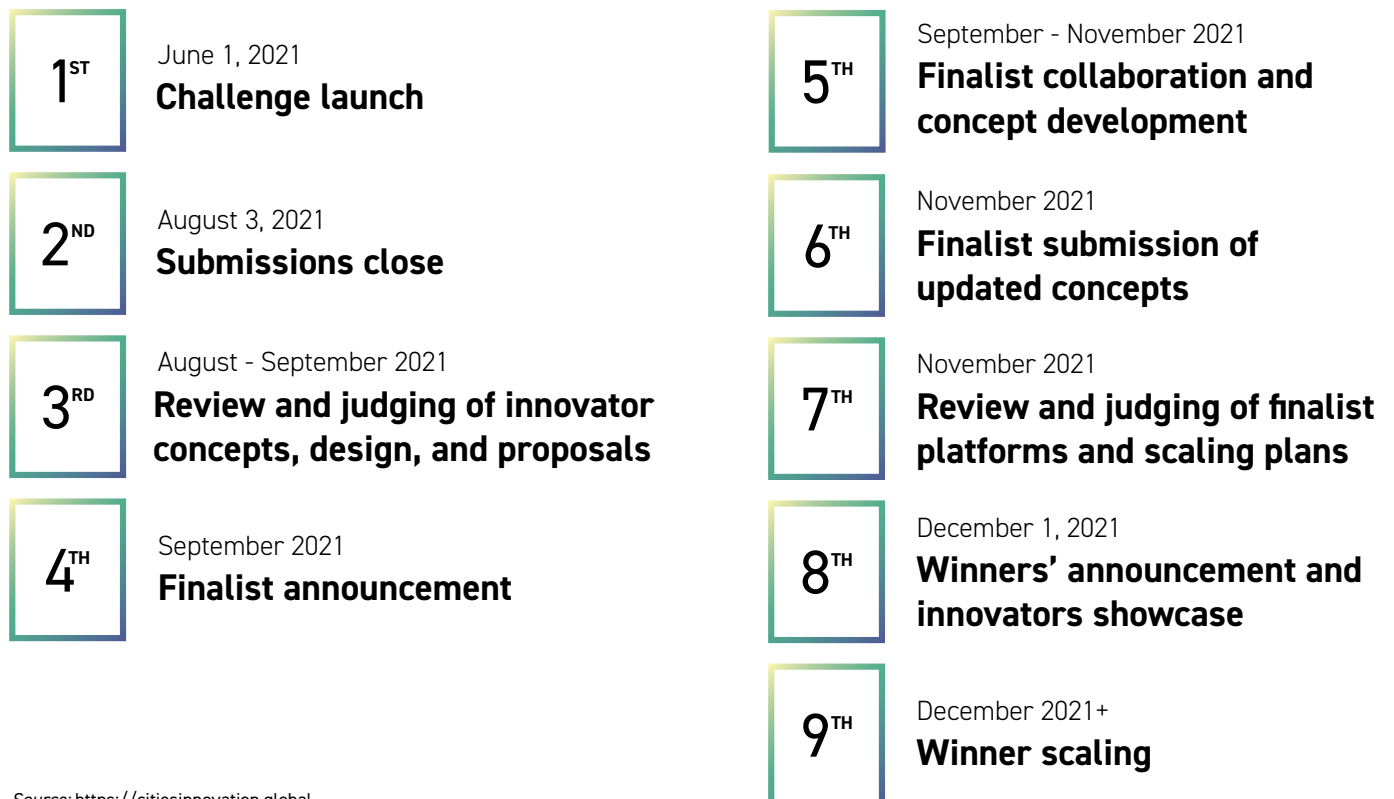**Figure 15: New York City's challenge platform summary page**

Source: Global Innovation Collaborative.

The Creative Cities challenge – the Collaborative's first cross-border initiative involving Berlin, London, New York City and Paris – is currently in its co-creation phase, with winners set to be announced in December 2021 (see Figure 16 for a timeline). The cities have specified their impact statement and are currently collaborating with innovators and partners to fine-tune the pre-selected projects. Berlin, for example, has decided to focus on social distancing and contact tracing in large venues to ensure their safe re-opening in the coming months. London is providing innovators and other cities with data on passenger flows around metro stations after large events to model and improve social distancing measures.

Novelty

The Collaborative was born out of a desire to break border silos in challenge-based co-creation and to encourage cities to look outwards when thinking about solutions to local challenges. Its collaboration-based platform, powered by Nitrous, takes advantage of tech solutions to fully leverage a truly unique approach to urban, challenge-based collective innovation and to solve some of the most pressing issues for cities around the world. This is done by gathering, co-creating and developing ideas across borders in an agile and scalable way that involves a wide range of stakeholders and partners. Cities and innovators learn from each other through new connections and processes that enable them to share data, experiences and ideas. These processes are continuously strengthened through agile sessions with local administrations to help ensure that challenges are relevant and reflect the current and future needs of citizens and businesses. In addition, design-thinking workshops with feedback surveys are held every six months to iterate on the platform and ensure its updates incorporate the latest technologies to address innovators' and cities' needs.

Figure 16: Creative Cities Challenge timeline

1ST — June 1, 2021
Challenge launch

2ND — August 3, 2021
Submissions close

3RD — August - September 2021
Review and judging of innovator concepts, design, and proposals

4TH — September 2021
Finalist announcement

5TH — September - November 2021
Finalist collaboration and concept development

6TH — November 2021
Finalist submission of updated concepts

7TH — November 2021
Review and judging of finalist platforms and scaling plans

8TH — December 1, 2021
Winners' announcement and innovators showcase

9TH — December 2021+
Winner scaling

Source: https://citiesinnovation.global.

Impact and potential

Through its first initiative on the recovery of the creative sector, the Collaborative expects to finalise ten new co-created solutions from across the four cities on shared challenges, and to help secure seed stage funding from local investors in at least three of the proposals in total. Access to data, local testbeds and funding will empower these innovators to further improve and bring forward ground-breaking solutions for creative industry challenges and to put their creativity at the service of citizens and local communities, contributing to the sustainable, inclusive development of urban centres.

The more overarching goal is to achieve scale, both in terms of the reach and impact of current projects and, more broadly, in terms of platform involvement through the addition of new cities and challenges. By growing in scope, the Collaborative's team hopes to expand its impact on citizens and SMEs, especially in cities from less economically developed countries. The addition of new cities will see the platform evolve and improve with new knowledge, experiences and inputs, while new challenges will reflect a wider set of citizen and business needs. Potentially, challenges will move beyond COVID recovery to encompass a greater number of sectors and topic areas such as urban development, the future of the workplace and climate change. At this time, the Collaborative is considering new cities to work with in its second phase.

Challenges and lessons learned

Balancing the needs of each city and accommodating the interests of a wide set of stakeholders remains one of the biggest challenges for the Collaborative when addressing many unique challenges. As with all new solutions, establishing product/market fit is a key challenge, and one that requires considerable validation and time to get right. Failure to achieve product/market fit quickly can extend the life of solutions which are not fit for purpose, and wastes valuable time and resources. This challenge was harder to overcome with virtual communications, where it is difficult to receive direct, on- the- spot feedback from stakeholders. To help reduce this difficulty, the Collaborative worked closely with local challenge partners who had previous experience of digital solutions, in order to provide teams with necessary validation. The teams further leveraged the platform to provide regular updates on progress, which challenge partners could respond to directly.

In terms of success factors, the political and strategic support of different cities was crucial in the initial stages of the project to get key partners on board. Looking ahead, leadership and guidance from all the other cities will also be paramount to ensure successful scaling of the initiative and to guarantee that the innovations are implemented successfully. For this reason, strengthening relationships and fostering active communication between partners remain key success factors. The cities must remain actively involved and willing to collaborate to establish mutually beneficial outcomes, especially through the sharing of challenges, data and local partner access. The same remains true for innovators. By involving and organizing them collectively in the co-creation phases of the projects and providing them with ad-hoc communication channels, the Collaborative has been able to create a space for ground-breaking, bottom-up solutions that take full advantage of collaborative processes. This approach ultimately results in the greatest impact for citizens and businesses, thereby contributing to the long-term resilience and sustainability of the cities involved.

Experimenting and testing across borders

THEME - 2

The increasing complexity and interconnectedness of the issues affecting present-day societies has contributed to growing interest among governments and policy stakeholders in evidence-based policy making (OECD, 2020d). This has in turn led policy makers in many governments to focus more strongly on experimental approaches that enable them to test and evaluate how businesses, members of the public and other end users respond to innovative policies or services before fully implementing them. Experimentation and testing can indeed play an important role in helping governments manage the political and economic risks of innovation: small-scale tests can make innovation more tangible and less uncertain, as well as providing greater learning and feedback opportunities and lower costs of failure (OECD, 2017a). The increasing focus on experimental approaches has also been triggered by the need for public policies to keep up with fast technological change in a context where policy making and regulation are often outpaced by rapid, cross-border scaling of new technologies (e.g. drones, data use, IoT and AI) (OECD, 2020e, 2017b). This has increased demand for new, effective approaches that allow governments to adapt quickly to technological innovation, in order to safeguard the interests and rights of citizens, among other things (OECD, 2021d).

In this context, there have been growing calls for governments to adopt more agile and adaptive governance and regulatory models to prepare the public sector to deal with unforeseen change (OECD, 2021d). Adaptive governance is based on the implementation of formal and informal mechanisms that enable governments to plan, implement and evaluate initiatives continuously through experimental, iterative social learning (OECD, 2021e). Similarly, agile models for public policy imply the continuous analysis of contextual elements and an iterative design and dialogue-based approach to the improvement of systems that can help achieve policy goals by taking into account their continually evolving context (METI, 2021). This underlying foundation of agility and adaptability supports a number of different approaches to testing and experimenting

with new ideas and solutions, allowing government to continually learn from successes and mistakes and, as appropriate, scale up or terminate these efforts. OPSI and the MBRCGI have participated in the work of the United States National Academy of Public Administration's Agile Government Center,[79] which has recently finalised a set of Agile Government Principles (see Box 1) to help governments consider how to approach agility in government. [80]

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79 https://napawash.org/the-agile-government-center/overview.
80 While agile approaches to government processes are important, the phrase has become something of a buzzword, with some claiming processes to be agile when this is not the case ("agile BS"). The US Department of Defence has developed a guide to "Detecting Agile BS" that pertains to agile software development but also includes relevant insights for other type of agile processes, and can help identify when processes are really "agile". See https://media.defense.gov/2018/Oct/09/2002049591/-1/-1/0/DIB_DETECTING_AGILE_BS_2018.10.05.PDF.

Box 1: Agile Government Principles

Mission. Achieving mission objectives constitutes the heart of Agile Government. The mission should be clear, focused, easy to communicate and understand, and embedded in organisational strategy.

- **Metrics.** Performance measures should be established early on. Metrics should reflect the organisation's mission and strategy, and be primarily outcome focused, widely agreed upon, evidence based, and easily understood and tracked.

- **Customer-driven behaviour.** Customers should be involved in the design of efforts, and a focus on customers should be ingrained into organisational strategy and culture.

- **Speed.** A faster pace can be achieved by establishing clear deadlines for short, iterative activities ("sprints"), and creating a sense of urgency across an agile team. Continual and direct communication will enable the team to make well-supported and timely decisions.

- **Empowered, highly skilled, cross-functional teams.** Teams should include individuals from different functions whose knowledge and buy-in will help develop and execute strategy, and streamline operations. Team members should be experts in their role and diverse in their thinking, backgrounds and experience.

- **External networks.** Cross-agency and cross-functional networks are an integral part of leveraging the support of customers and the public in designing an agile solution, and in accomplishing the objectives of the organisation.

- **Persistence.** Achieving successful outcomes requires continual experimentation, evaluation and improvement. Agile organisations learn from successes and failures and persist in developing new approaches to achieving results.

- **Innovation.** New ways of accomplishing the mission and satisfying customers should be created by agile teams, and changes that streamline rules and processes should be encouraged and rewarded by organisational leaders.

- **Evidence-informed solutions.** Acting based on evidence should inform the design and implementation of agile policy, regulatory and programme options.

- **Organisational leaders.** Leaders should drive the adoption of agility in strategy development, eliminating roadblocks, aggregating and assuming risks, continually communicating with and empowering teams to make decisions, rewarding successes and learning from failures, and holding teams accountable for results.

Source: Agile Government Center (as edited by OPSI).
Note: October 2021 edition.

The concepts of adaptive governance and agility also feed into the principles of *anticipatory regulation*, an approach developed by Nesta that aims to provide guidance and tools for regulators to "identify, build and test solutions to emerging challenges" (Armstrong, Gorst and Rae, 2019). By building on six innovative principles (see Figure 17), anticipatory regulation seeks to stimulate flexibility, collaboration and innovation, ultimately contributing to more responsive and effective regulation and policy making.[81]

In this context, key guidance for policy makers is provided by the OECD Recommendation of the Council on Agile Regulatory Governance to Harness Innovation (OECD, 2021f). The guidelines enhance coherent and interoperable cross-border regulatory action, and aim at promoting regulatory approaches that make sure that "innovation serves fundamental societal goals and enhances prosperity and well-being on a sustainable basis".

Figure 17: The six principles of anticipatory regulation

Source: www.nesta.org.uk/feature/innovation-methods/anticipatory-regulation.

81 See also relevant work from the MBRCGI and the UAE Global Innovation Council on Anticipatory Public Budgeting: https://demoshelsinki.fi/julkaisut/anticipatory-public-budgeting.

To achieve these broad goals, the recommendations focus on:

- adjusting regulatory management tools to ensure regulations are fit for the future
- laying institutional foundations to enable co-operation and joined-up approaches, both within and across jurisdictions
- developing or adapting governance frameworks to enable the development of agile and future-proof regulation
- adapting regulatory enforcement activities to evolving needs.

If effectively set up, agile regulation can support experimentation by enabling private and public actors to work together in an efficient, citizen-oriented manner, thereby contributing to rules and structures that are flexible in the face of unpredictable change. Seven countries around the world have demonstrated leadership in this area by signing on to the world's first "Agile Nations" agreement (see Box 2).

Box 2: Agile Nations Charter

In late 2020, seven countries (Canada, Denmark, Italy, Japan, Singapore, the United Arab Emirates and the United Kingdom) signed the Agile Nations Charter, an international agreement aimed at unlocking the potential of emerging technologies by fostering responsible innovation and entrepreneurship. The agreement, supported by the OECD and the World Economic Forum (WEF), lays out the countries' commitments to creating an ideal regulatory environment for new ideas and innovations to flourish while safeguarding the interest of citizens and of the natural environment.

The intergovernmental regulatory cooperation network of signing countries aims to foster wider and stronger regulatory cooperation across the globe, promoting good practices in rulemaking, including:

- anticipating and identifying innovations and the opportunities and risks they present in a timely way while engaging openly with stakeholders on how these opportunities and risks should be managed

- implementing rules in ways that harness the potential of digital and other technologies to minimise the administrative burden of compliance

- exploring opportunities to jointly test approaches to rulemaking through collaborative initiatives

- dentifying opportunities to develop interoperable rules relating to innovations

- co-ordinating enforcement activities as necessary to manage cross-border risks from innovations and strengthening mutual capability-building to enhance shared learning opportunities

In the year following the signing of the agreement, the network has developed several projects across its six priority work streams: pro-innovation approaches to regulation; data and communications; green tech; medical devices and treatments; mobility; and professional business services. These include a multilateral project between Canada, Denmark, Italy, the UAE and the UK on experimental approaches and sandboxes to allow start-ups and innovators to safely test, develop and launch new technologies and business models.

Sources:
https://oe.cd/agile-nations, https://gov.uk/government/publications/agile-nations-charter.

OPSI's work on both Mission-Oriented Innovation (OECD, 2021g) and Anticipatory Innovation Governance (AIG)[82] also helps to set the stage for innovation through experimentation. AIG involves testing futures insights through prototypes and pilots, while mission-oriented innovation takes the form of local on-the-ground tests that advance towards big ambitious goals (OECD, 2021h). Mission-oriented innovation also provides a framework that gives directionality to innovation efforts and a structure to convene ecosystem actors for collective dialogue and experimentation (OECD, 2021g). For instance, OPSI works with a public sector partner in Sweden with the mission to halve the number of people dying of lung cancer. In this mission, bottom-up experimentation complements a top-down approach. Decentralised testbeds allow room for various bottom-up solutions to emerge, responding to the challenge from diverse angles.

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82 https://oecd-opsi.org/projects/anticipatory.

Experimental approaches have also become increasingly popular in policy evaluation processes, primarily in the form of randomised control trials (RCTs). This experimental policy evaluation method works broadly by randomly assigning individuals affected by a policy into a "treatment group" and comparing them with a "control group", another randomly assigned group of similar individuals unaffected by the policy.[83] Random assignment enables researchers to single out the effects of a policy or intervention and to produce an unbiased evaluation of its impact.

The need for iterative and experimental approaches becomes ever more evident when operating across borders and dealing with transboundary issues. Experimental approaches can help deal with the added layer of complexity and uncertainty embedded in cross-jurisdictional work by generating evidence about which practices are most suited to deal with uncertain, interconnected cross-border issues (OECD, 2021i), as well as which modes and forms of cross-border collaboration work best in different contexts. Such benefits are enhanced if the partners are able to capitalise on the learning opportunities that cross-border experimentation provides and to effectively build the trust and knowledge needed to successfully operate in new cross-border contexts (OECD, 2013b).

Experimental approaches, such as those discussed above, are increasingly being applied in cross-border contexts. OPSI's work recognises that many upcoming challenges will not be constrained by national borders, implying that strategic foresight and futures work as inputs into anticipatory innovation must be global in focus (Tõnurist and Hanson, 2020). In Slovenia, OPSI has been developing public sector future scenarios that concentrate on experimentation in talent management. In the context of hybrid and highly distributed working conditions, the scenarios will be validated by government experts from across the European Union, who will discuss potential, common cross-border innovations. Cross-border missions will also become increasingly important, and to further this work, OPSI is building a joint Mission Action Lab together with the OECD Directorate of Science, Technology and Innovation (STI) and the Development Co-operation Directorate to create learning opportunities around mission-oriented innovation across countries.[84]

The work conducted by OPSI and the MBRCGI has identified three main layers related to innovative approaches in cross-border testing and experimentation that can help make sense of this emerging topic:

1. Innovative spaces and mechanisms for testing and

experimentation across borders: these are innovation labs and hubs where ideas, innovations and experiments are designed and co-created.

2. Real-world cross-border testing and experimentation: these are testbeds for innovations and Behavioural Insights experiments.

3. Building a strategic layer for cross-border experimentation: these are broader strategies to scale experiments and make innovations sustainable.

Importantly, while the distinctions between these layers contribute to conceptual clarity on cross-border experimentation, the three categories often overlap in practice. Both frameworks and innovation labs often support and promote tools for real-world experimentation, with the latter being embedded in broader approaches.

Innovative spaces and mechanisms for testing and experimentation across borders

OPSI and the MBRCGI's research and Call for Innovations have highlighted the growing presence of cross-border spaces for experimentation where stakeholders from different jurisdictions (and often different sectors) openly discuss, design and evaluate innovations before they are implemented, iterated upon and, if successful, scaled. While traditional government innovation labs tend to have a specific national or municipal focus,[85] the spaces identified here span jurisdictional borders and often deal with issues of a global nature.

A notable example is the Inter-American Development Bank (IDB) Cities Laboratory,[86] a place for sustainable urban development for innovation, design and experimentation. The aim of the lab is to address urban development and growth issues in cities across the Latin America and the Caribbean (LAC) region, primarily via pilot projects and proof of concepts that connect ideas with financing, while generating new ideas from experience. The laboratory utilises a problem-solving approach that is iterative and non-linear, based on urban experimentation, design thinking and

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83 www.povertyactionlab.org/resource/introduction-randomized-evaluations.
84 See www.oecd.org/sti and www.oecd.org/dev, respectively.

85 For a list of government innovation labs around the world, see: https://apolitical.co/government-innovation-lab-directory.
86 www.iadb.org/en/urban-development-and-housing/idb-cities-lab.

co-design, and follows five key steps: exploration, experimentation, evaluation, scaling-up and communication. A key feature of the laboratory's structure is its wide geographic reach and stakeholder base, which comprises officials of the IDB, industry players and local actors (community, academia, government), promoting a multi-sectoral approach that encourages citizen participation across different countries.

Another notable cross-border lab based on openness and wide-ranging partnerships is the Gipuzkoa Lab in the Basque-speaking region of Northern Spain, which also extends into France ("Basque Country"). [87] The lab represents a key starting point for policy and technology experimentation in the region, and is currently engaged in 25+ local experimental projects in a variety of thematic areas, including climate change, SME innovation, and skills and capacities development for civil servants. Similarly to the IDB Cities Lab, these projects are conducted through open collaborations with local and international partners from civil society, academia, international organisations and private companies. By involving partners from across the border, the region hopes to increase its experimentation capacity and address a growing number of cross-border challenges, ultimately strengthening its ability to anticipate and respond to the evolving needs of citizens and businesses.

As discussed throughout this report, OPSI and the MBRCGI have found that engaging with and co-ordinating stakeholders is crucial to take full advantage of potential synergies, increase learning opportunities and reduce duplication efforts when experimenting across borders. This is particularly the case when the policy, technology or service being tested is planned for adoption or implementation across borders, making co-ordination during the experimentation phase a must. A key example can be found in the work of the Bank for International Settlements' (BIS) Innovation Hub,[88] which fosters collaboration among central banks on innovative financial technology. One of the Hub's main projects involves experimentation with central bank digital currencies (CBDCs) and multi-CBDC arrangements (mCBDCs) to facilitate, among other things, frictionless cross-border payments. Through its mCBDC Bridge initiative, the Hub stimulates international dialogue and conducts experiments on mCBDC arrangements in collaboration with institutions in China, Hong Kong, Thailand and the United Arab Emirates. The ultimate aim is to explore and test the potential of a single multi-currency CBDC system, involving a variety of cross-border stakeholders early on in the process to

ensure that pilots and experiments closely reflect the needs and requirements of users and partners (Auer, Haene and Holden, 2021).

Experimentation across borders also requires adequate institutional and legal structures and mechanisms to ensure that innovations can be effectively piloted and tested in conditions that match closely those where the project will be scaled up and more fully implemented. In this context, OPSI and MBRCGI research has found that governments are increasingly adopting innovation testbeds to experiment with innovations. Testbeds – which include terms such as "demonstrators" and "sandboxes" – are policy instruments originating in the business sector used to improve the adaptive or anticipatory response to the problem under consideration (Arntzen et al., 2019). These instruments create low-risk environments for public and private stakeholders to discuss, test, evaluate and learn from experimentation in the most effective way possible.

While most examples of testbeds and sandboxes have been developed at the national level, the need to improve cross-border cooperation is recognised and the number of cross-border testbeds has grown in recent years (World Bank, 2020). For example, the European Commission has set up the ISA^2 Interoperability Test Bed to provide public administrations, businesses and innovators with a tool to collaborate across borders and to test the conformity of their digital interoperability projects with European legislation.[89] Many of these efforts tend to be designed by governments but are aimed at private sector actors. In the tuna fishing industry, for instance, the Cross-Border Threat Screening and Supply Chain Defense Center of Excellence is collaborating with the Texas A&M University Department of Computer Science to develop a blockchain testbed that enables industry players to experiment with the technology, in order to improve global supply chain traceability and more easily conform with evolving government regulation in the United States.[90] As revealed by the World Bank Group's research on the topic (World Bank, 2020), cross-border sandboxes are also particularly relevant in the Fintech sector, where they offer several specific advantages, such as streamlining cross-border processes and stimulating support, collaboration and harmonisation across borders in a variety of areas. A number of governments are working to ensure that the creation of these experimentation spaces is replicable and sustainable, and have established formalised strategies and frameworks for cross-border testing and experimentation, as discussed below.

Finally, public sector innovation incubators and accelerators that cross borders also appear to be emerging as a place to nurture ideas and help strategise scaling up – often the most difficult

87 The Gipuzkoa Lab is part of the provincial council of Gipuzkoa's innovative Etorkizuna Eraikiz (Building the Future) initiative, described in the previous chapter of this report. For more information, see: www.gipuzkoa.eus/en/web/etorkizunaeraikiz/experiment/experimental-projects and https://oecd-opsi.org/innovations/etorkizuna-eraikiz-building-the-future.

88 BIS is a co-operative owned by 63 national banks from around the world. For more details on the Innovation Hub, see www.bis.org/about/bisih/about.htm?m=1%7C441.

89 https://ec.europa.eu/isa2/solutions/interoperability-test-bed_en.

90 https://cbts.tamu.edu/2021/03/24/blockchain-testbed-for-tuna-tracking.

aspects of testing and experimenting with new concepts. OPSI has been participating in this process through its transnational Innovation Incubator programme, developed with the European Commission.[91] A mature and structured example of this type of effort is the UAE's Government Accelerators programme (Box 3).

91 https://oecd-opsi.org/building-a-project-incubator-at-opsi.

Box 3: Government Accelerators (United Arab Emirates)

The Government Accelerators (GA) programme serves as a platform for federal and local government entities to address challenges and achieve ambitious goals in short periods. It focuses on accelerating the delivery of strategic programmes, the development of policies and regulations, and enhancing government services. It aims to rethink how government works by introducing a unique model built on accelerated results, increased collaboration and innovation.

The GA programme introduces a framework that allows for better integration between government, private sector and educational institutions, as well as experimentation and innovation. By empowering front-line employees and giving them the reins and ability to work across boundaries, the initiative helps to bypass bureaucracy, foster agility and allow governments to hone their human resources leadership capabilities. To source problems to tackle through the GA programme, government teams present challenges to GA programme leaders, which are selected on the basis of a list of criteria. These include setting clear and ambitious goals, touching people's lives, involving multiple organisations or departments, and being achievable in less than 100 days. Through the GA 100-Day Challenge, accelerator teams work through three main phases of design, acceleration and sustainability. In the design phase, teams select specific challenges to address and undergo stakeholder identification. Acceleration involves experimenting and testing potential innovative solutions with no extra budget. The sustainability phase at the end of the challenge is critical for sustaining and scaling up solutions. Acceleration teams make recommendations to programme leaders for specific actions based on their results to enable them to scale up.

GA was developed by the Government of the UAE for use domestically. However, recently the UAE has been collaborating with the governments of Jordan and Uzbekistan to etransfer the knowledge and experience to enable innovation acceleration in these countries. As part of this collaboration, the UAE has assisted with capacity building for core teams and coaches in these countries as part of a train-the-trainer programme (e.g. on methodologies, governance models and the 100-Day Challenge journey). The UAE has also collaborated with the countries to better understand pressing problems, for example by hosting challenge identification workshops with senior officials from Jordan to identify specific obstacles to achieving national goals. The UAE also provided continual support to both countries as they worked with the first cohort of accelerator teams.

UAE GA leaders with senior Jordan officials

UAE GA leaders with senior Uzbekistan officials

Source: www.accelerators.gov.ae; De Jong and Monge, 2019; UAE Officials.

Real-world cross border testing and experimentation

The cross-border spaces and mechanisms described above enable both governments and private actors to overcome the legal, political and administrative challenges of cross-border experimentation and, in several cases, test their innovations in real-world or close to real-world conditions. Experimenting in such contexts has numerous advantages, both for innovators who can build an evidence base to make informed policy and service changes and to iteratively improve their ideas, and for governments who can achieve broader policy goals and increase the attractiveness and economic output of a given cross-border area (Arntzen et al., 2019). These experiments can also yield robust data sets for comparative analyses and evidence-based results to inform and scale successful public policy solutions.

Given these wide-ranging benefits and the preponderance of national borders, cross-border experimentation is also becoming increasingly important in the EU, where countries are developing innovative cross-border testing corridors for 5G-enabled autonomous vehicles.[92] The European context provides an ideal testing ground for autonomous vehicles, enabling manufacturers to rapidly test their technology in diverse contexts characterised by varied topographic and climatic conditions, different language road signs and different driver behaviours (Pattinson and Chen, 2020). To take advantage of these unique regional characteristics, the EU's 5G cross-border testing corridors create real-world legal, structural and administrative conditions for autonomous vehicles manufacturers to seamlessly test their products across national borders (see the case study at the end of this chapter).

In a number of cases, non-governmental actors are serving as catalysts for cross-border experimentation involving the public sector, providing governments with learning opportunities on how to design and implement cross-border experiments. Another example in the EU context is provided by EIT Climate KIC's Deep Demonstrations,[93] an ground-level approach to pioneering innovative climate solutions in European cities. EIT Climate KIC co-ordinates a cross-border network of scientists, students, civil servants, entrepreneurs and citizens, and collaborates with European mayors, ministries and CEOs to promote systems innovation approaches and experimentation aimed at reaching net zero emissions in the quickest and most inclusive way possible. By orchestrating a cross-border network of actors and using cities as real-world testbeds, the EIT Climate KIC approach enables governments to display and test effective solutions to fight climate change, enhance learning opportunities and inspire climate action globally.

An even broader scope is encapsulated by the Finnish think-tank Demos Helsinki through its Untitled project,[94] a global alliance of over 40 public and private organisations from different parts of the world setting out to reimagine society's key institutions. Untitled members are collaborating on a variety of experiments to solve structural global issues over the next 10+ years. The experiments cover areas such as large-scale unemployment and its social, economic and psychological consequences; democratic governance, dialogue and participation; and climate change. Untitled's innovative approach, which is based on creativity, boldness and cross-cutting partnerships, can be both an inspiration and a platform for governments seeking to adopt experimental methods that address ever-more complex issues, both within and across borders.

Certain fields and focus areas are also ahead of the curve when it comes to cross-border experimentation. Behavioural insights in particular is emerging as an approach well suited to cross-border application, perhaps because its rigorous methodology allows for clearer understanding and measurement of results (i.e. through rigorous RCTs, A/B testing and field experiments) when compared to other experimentation approaches. It also has the ability to draw on the diverse resources and expertise of BI units established around the world.

The work of the OECD Network of BI Experts places the OECD in a unique position to facilitate cross-border experiments, based on efforts to prioritise collaborative cross-border approaches to BI experimentation. For instance, in 2021 the OECD established a partnership with the Canadian and French governments to co-design and test practical solutions to counteract the spread of misinformation online (a key policy issue identified by the Network) through an RCT. A cross-border experimentation partnership was established to help governments and policy makers better understand, design, test and scale policy solutions against misinformation across jurisdictions. The preliminary results (OECD, forthcoming, b) from the first experiment in Canada may be replicated in other countries to better understand the complexities of this issue and the influence of specific country contexts on the spread of misinformation.

To support the international BI community and promote cross-border knowledge sharing and collaboration, the OECD has launched three tools:

1. An interactive map with institutions from around the world applying BI to public policy.[95]

2. A BI knowledge hub with ongoing and completed BI projects, experiments and case studies across different policy areas.[96]

3. A pre-registration tool for BI projects and experiments.[97]

However, the growing number of mechanisms and spaces for experimentation reported in the previous section does not appear to be matched by documented cross-border experiments in real-world contexts. Accordingly, it is not yet clear whether governments are to be able to adjust the design and implementation of experiments to cross-border contexts, or whether disincentives and barriers and to experimentation remain too high. OPSI and the MBRCGI will continue to monitor this space for emerging or yet-to-be-identified cross-border experiments, in order to inform future research and analysis on cross-border government innovation.

Building a strategic

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92 https://digital-strategy.ec.europa.eu/en/policies/cross-border-corridors.
93 www.climate-kic.org/programmes/deep-demonstrations.
94 https://untitled.community.

95 https://oecd-opsi.org/bi-units.
96 https://oecd-opsi.org/bi-projects.
97 https://oecd-opsi.org/bi-pre-registration-form.

layer for cross-border experimentation

The third layer for cross-border experimentation emerging from OPSI and MBRCGI research covers structures and frameworks aimed at building holistic strategies for testing innovations across jurisdictions. Their application can make cross-border experimentation a more integrated and sustainable process, beyond the creation of individual initiatives and testbeds. Such frameworks are particularly important as governments and regulators increasingly adopt the abovementioned spaces and mechanisms to help ensure policy coherence and consistency. In the absence of a more strategic approach, lack of mutually recognised testing procedures across countries, coupled with incompatible legal and administrative frameworks, has the potential to disincentivise cross-border testing and raise barriers to experimentation (Pattinson and Chen, 2019).

In Sweden, the government has developed a National Testbed Strategy to promote a holistic approach to innovation that can improve system-level experimentation, address market failures and grand challenges, and mitigate lack of investment in emerging technologies (Arntzen et al., 2019). The strategy involves the co-ordination of existing testbeds – both national and international – to create an integrated system, and the establishment of new facilities to address challenges facing society. The strategy also engages with and facilitates opportunities for businesses to test their products and processes in a real-world environment, while ensuring that innovations contribute to public value and consumers are safeguarded. This case shows how public investment in testbeds incentivises capital investment, and can often represent an effective solution to reduce the funding gap for small- and medium-sized innovative firms.

Another structured approach to experimentation was recently launched by Estonia. The Digital Testbeds Framework[98] provides a new model for collaboration that gives innovators across the world free access to the government's tech stack. This enables them to build innovative products or services, obtain proof of concept and test them in a "country-wide testbed". By giving innovators access to the country's data and code, the Estonian government is seeking to boost its innovation and experimentation capabilities in a systematic and structured way, co-creating solutions for its citizens with innovators from around the globe and sharing them with all countries through public, open source data. The experimentation framework will be based on principles of collaboration, openness and continuous iteration, to ensure that multiple stakeholders can co-create successful solutions and that the resulting innovations meet the needs of citizens and can improve government performance.

The Global Financial Innovation Network (GFIN)'s Cross-Border Testing project is another exemplary attempt to build cross-border experimentation structures. The project provides a consistent framework for testing innovations in the Fintech sector by building on the development of regulatory sandboxes in more than 20 countries worldwide. The GFIN's members comprise national financial sector regulators and/or supervisors who have made a commitment to supporting global innovation in financial services in the interest of consumers. In 2020, GFIN invited applications from businesses to conduct cross-border testing for innovative financial products and services. The Network received 38 applications to test innovative products, services or business models in a cross-border setting. One of the finalist firms, Business Reporting-Advisory Group, will commence testing of its ATOME: Matter metadata management platform in regulatory sandboxes during the GFIN testing stream for 2021. This process will involve financial authorities from Bahrain, Bermuda, Kazakhstan, Lithuania and the UAE. The objective of the GFIN testing is to develop a proof-of concept sustainability reporting template, which will allow regulators to monitor how financial market entities manage sustainability-related risks, and to perform climate change-related data analysis.

While these government-led efforts are positive steps in the right direction for cross-border experimentation and innovation, they tend to be focused on promoting economic development and advancing private sector ends. This underscores the need for similar mechanisms and strategies that promote cross-border experimentation to support transformation and innovation in the public sector. Although these seem to be largely absent, the possibility holds significant potential to contribute to government efforts to pioneer innovative policy solutions that can address complex, cross-border issues.

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98 https://e-estonia.com/testbed.

5G-MOBIX Cross-border collaboration for autonomous vehicle experimentation

(China, European Union, South Korea, Turkey)

5G-MOBIX[99] is a cross-border project aimed at showcasing the added value of 5G technology[100] for advanced Cooperative, Connected and Automated Mobility (CCAM) use cases and testing the technology's viability in the EU's unique cross-border context. The project includes two testing "corridors" between Portugal and Spain, and one between Greece and Turkey, as well as eight local urban testing sites in China, Finland, France, Germany, the Netherlands and South Korea. The testing corridors and sites are designated areas (e.g. highways, urban roads, crossings or intersections) where project partners come together, both within and across national borders, to experiment with the technology in real-world conditions. In so doing, the project seeks to address the numerous challenges that such contexts present, including discontinuous network coverage, data-sharing issues, and diverse regulatory and legal contexts. The complexity and interconnectedness of such challenges require the involvement of a diverse and complex ecosystem of actors to set up the experimentation, share experiences and diffuse the lessons learned, thereby making cross-border collaboration the linchpin of the innovation.

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99 See www.5g-mobix.com for more information. Unless otherwise noted, the sources for this case study were the 5G-MOBIX website and an interview with Coen Bresser (Senior Manager for Innovation and Deployment in the field of Connected and Automated Driving at ERTICO and 5G-MOBIX project co-ordinator) on 6 October 2021.
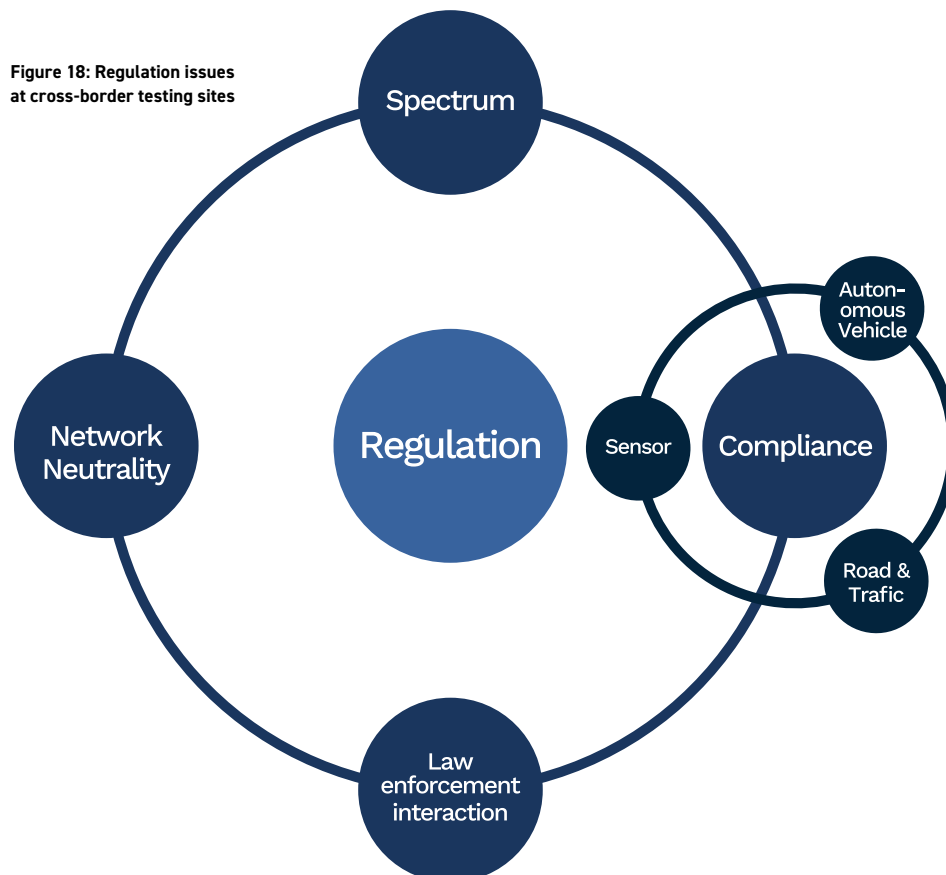100 5G builds on previous generations of wireless networks (i.e. 3G and 4G). It is intended to provide download speeds of 20 gigabits per second (Gbps) and 10 Gbps upload speeds. This represents download speeds 200 faster (upload speeds 100 faster) compared to current Long Term Evolution (LTE) networks (i.e. 4G). See https://oe.cd/il/future-5g for OECD work on the future of 5G.

Context

Fully automated vehicles, sometimes called driverless or autonomous vehicles, will generate very large amounts of data that may be transmitted in real time (OECD, 2019b). The connectivity requirements for these communication demands may have substantial implications for network infrastructure. In this context, the network speed provided by 5G technology can be critical in achieving new milestones with automated vehicles. Technology corporation Intel has stated that for fully automated vehicles to become a reality, data flows in and out of such cars need to be accomplished at faster rates than are possible with today's LTE mobile networks. Accordingly, some have described 5G networks as the "oxygen" for fully automated vehicles (VB, 2017). Automated vehicles making use of 5G networks may require the establishment of new partnerships among countries. In addition, the International Telecommunications Users Group (INTUG) has noted that frictionless cross-border 5G ecosystems are crucial for IoT devices that are mostly agnostic as regards national borders (OECD, 2019b).

The establishment of 5G infrastructure will therefore be crucial for the adoption of co-operative, connected and automated vehicles on large scale and to achieve their full potential in terms of road safety improvements, greener mobility, and increased efficiency of global transport and trade. However, given the risks and wide-ranging implications associated with the adoption of this novel technology, effective testing in real-world environments is crucial before safe, large-scale deployment is possible. This is particularly the case in the European Union where thousands of cars and trucks cross national borders every day, giving rise to specific challenges for widespread adoption of this technology. These challenges include not only the need for vehicles to quickly adapt to different road sign languages, topographies and driver behaviours (Pattinson and Chen, 2020), but also the importance of guaranteeing continuity of network coverage when crossing national borders. 5G-MOBIX partners have identified four key issues specific to cross-border environments that make experimentation crucial prior to safe deployment of 5G-enabled CCAM (5G-MOBIX, 2019a):

1. **Telecommunications** – including issues related to roaming, network continuity and service availability.

2. **Application** – including data interoperability across vehicles vendors, inconsistent time zone management, insufficient accuracy of GPS technology and lack of computing scalability to process growing data volumes.

3. **Security and data privacy** – including legal, organisational and personal data processing issues, as well as the need to establish trusted and secure communications between vehicles from different trust domains.

4. **Regulation** – including law enforcement interaction, road and traffic regulation compliance, autonomous vehicles regulation compliance and sensor compliance (see Figure 18).

Figure 18: Regulation issues at cross-border testing sites

Source: www.5g-MOBIX.com/assets/files/5G-MOBIX-D2.1-5G-enabled-CCAM-use-cases-specifications-V2.0.pdf.

For instance, in the regulatory space, given the novelty of the field and the inexperience of many actors with the functioning of 5G-enabled CCAM, it is difficult for stakeholders to contribute effectively to the technology's development without a proper cross-border experimentation framework. In relation to these key issues, for private actors alone, co-ordinating these efforts across borders can be challenging in terms of time and resources, especially in the early testing phases where short-term financial incentives might be absent. For this reason, the European Commission (EC) set up the Public Private Partnership on 5G (5G-PPP) – a cross-border partnership involving the ICT industry (manufacturers, telecom operators, providers), SMEs and research institutions – with the aim of accelerating research developments in 5G technology.[101] Under the strategic guidance of the EC's DG CONNECT,[102] the partnership gave birth to three projects which aim to test the application of 5G for connected and automated mobility across borders: 5G-CARMEN (Austria, Germany and Italy);[103] 5GCROCO (France, Germany and Luxembourg);[104] and the largest, 5G-MOBIX[105] (China, Finland, France, Germany, Greece, the Netherlands, Portugal, South Korea, Spain and Turkey).

An innovative solution

The three sister projects are now contributing to a network of industry representatives, entrepreneurs and public sector organisations, collaborating across borders to address these technological and regulatory gaps and to create the ideal experimentation environment for 5G-enabled automated vehicles. 5G-MOBIX is the largest CCAM cross-border experimentation project in the EU 5G-PPP, with a wide-ranging ecosystem of stakeholders from across the European continent. Through this broad-based collaboration, the project's partners are overcoming barriers that limit testing and improvement of the technology in the cross-border areas that characterise many EU regions. A wide variety of actors from across different sectors are involved in this endeavour to ensure that shared learning opportunities are enhanced and that the needs of citizens and of all stakeholders are effectively addressed, thereby guaranteeing that future adoption of the technology is safe, sustainable and accessible.

The ecosystem involves local governments (e.g. the Spanish council of Vigo and the Greek municipality of Kipoi), national infrastructure and transport authorities (e.g. Infraestruturas de Portugal SA and Traficom in Finland), mobile network operators (e.g. Aalto in Finland and Cosmote in Greece), communication infrastructure providers (e.g. Nokia and Siemens), car manufacturers (e.g. Ford OTOSAN), universities (e.g. Technische Universiteit Eindhoven) and ICT industry experts across the involved European countries. This wide-ranging group of actors is managed by a project co-ordination team led by members of European Road Transport Telematics Implementation Coordination (ERTICO),[106] which acts as the sole intermediary between 5G-MOBIX and the EC, and is responsible for successful and smooth running of the project (5G-MOBIX, 2018). The team employs Shenhar and Dvir's (2007) Diamond model to assess the core focal points of the ecosystem's project management.[107] While partners within the ecosystem use different frameworks to manage their work internally, top-level project management is based on personal expertise and focuses on various areas. These include: technical management to ensure consistency and correct implementation of the work plan, quality and risk management, data management to ensure FAIR data principles[108] and GDPR compliance, and innovation management to ensure that all learning and results are well known and exploitable. Such a holistic approach is key to ensuring that experimentation and learning are harmonised across the different countries and that the challenges created by legal, regulatory and technological differences can be overcome.

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101 https://digital-strategy.ec.europa.eu/en/news/5g-public-private-partnership-next-generation-broadband-infrastructure.
102 https://ec.europa.eu/info/departments/communications-networks-content-and-technology_en.
103 https://5gcarmen.eu.
104 https://5gcroco.eu.
105 https://digital-strategy.ec.europa.eu/en/policies/cross-border-corridors.
106 https://ertico.com.
107 To read more on the Diamond approach, see: www.reinventingprojectmanagement.com/material/other/030_HBS.pdf.
108 FAIR data principles aim to ensure the Findability, Accessibility, Interoperability and Reuse of digital assets. To read more, see:
www.go-fair.org/fair-principles.

This is also achieved via:

- the way in which the project is set up (with experimentation results flowing from national sites to cross-border corridors and with cross-country partners collaborating on project tasks)
- demonstrations of CCAM technology use (although limited during the COVID-19 pandemic)
- General Assemblies (where all partners convene)
- webinars, newsletters and workshops to define a shared vision among all partners (see Figure 19)
- the creation of white papers, technical papers and scientific papers
- participation in external events (e.g. ITS World Conference).[109]

109 www.5g-mobix.com/newsandevents/news/5g-mobix-at-the-its-world-congress.

Figure 19: Ecosystem partners at the project kick-off workshop

Source: 5G-MOBIX.

5G-MOBIX partners also use a variety of digital tools to streamline work across the large ecosystem and to effectively communicate on the progress and results of their different trials across organisations and countries (5G-MOBIX, 2018). In this context, the project management digital tool ClickUp is crucial for the project's success. ClickUp facilitates the planning, organisation and co-ordination of work across the ecosystem, enabling actors to keep track of progress on all testing sites and to obtain an overview of the interdependencies between different tasks across various projects. These tools and mechanisms help technical partners collaborate at all stages of infrastructure and technology development and testing. Communication of results is particularly important at this stage, as features of 5G network components and technologies for CCAM (including roadside infrastructure, operating systems and antennas) that are tested in local trial sites are then transferred for testing in the unique environments of the two cross-border testing corridors.[110] 5G-MOBIX's main cross-border corridor where the technologies are transferred extends for 250 km across the Portuguese-Spanish border and connects the cities of Porto and Vigo (see Figure 20 for a map of the area).

110 For a technical overview of the specific technologies being transferred to corridors, see Table 1 of the following report: www.5g-MOBIX.com/assets/files/5G-MOBIX-D3.1-Corridor-and-Trial-Sites-Rollout-Plan-v3.0.pdf.

Figure 20: Map of the three testing corridors on the Portuguese-Spanish border

Source: https://5g-mobix.com/assets/files/5G-MOBIX-presentation-v07.pdf.

Figure 21: Autonomous shuttle trial at the Portuguese-Spanish border

Source: 5G-MOBIX.

The corridor is currently being set up and involves mobile network operators from both countries (NOS in Portugal and Telefonica in Spain), a private communication infrastructure provider (Nokia), road authorities and policy makers from across the border, private automobile manufacturers, and various technology centres and universities (5G-MOBIX, 2019b). With the addition of new infrastructure and cross-border communication channels, the partners are aiming to achieve a scenario where automated vehicles can flawlessly cross the border without network discontinuity issues.

Experimenting in real-world environments presents unique legal and regulatory challenges – even more so in cross-border contexts (see Figure 18 on regulation challenges). For this reason, projects under 5G-MOBIX rely heavily on the active involvement of local and national governments to create the necessary legal guidance and flexibility to test technologies and approaches which are not yet regulated on the market. This is particularly relevant when testing autonomous vehicles across different countries, given the possible legal complications deriving from crashes or accidents with third parties. The involvement of public sector organisations during testing phases also offers several benefits for public stakeholders themselves: not only will governments learn more about the technology and the potential policy implications deriving from its large-scale adoption, they will also be able to shape its very development from the early phases. The latter will provide private actors with insights into potential regulatory requirements and ensure that the needs of citizens are safeguarded, rather than operating from a more reactive position, as was seen in the case of ride-sharing services. These dynamics enhance the learning processes embedded in the experimentation phase and ensure that the development of CCAM in the EU effectively addresses the needs of all stakeholders involved.

The project has reached the trial phase at national and cross-border trial sites, and a broad review of the project took place at the end of October 2021, accompanied by a demonstration at the Spain-Portugal corridor. Initial results from these trials will be available in early 2022. This will then feed into the project's remaining trials and evaluation. The project co-ordination team is also set to publish a deployment study in the coming months, which will provide insights into the investment requirements linked to implementation of the initiative. While the project is currently set to end in July 2022, partners are seeking ways to renew the funding and to ensure the collaboration can continue in the following years.

Novelty

The innovative nature of the technology involved – as well as the sheer size of 5G-MOBIX's ecosystem with over 60 partners from 10+ countries – makes the project a true first in real-world cross-border experimentation. Moreover, the project's innovativeness is enhanced by a strong focus on learning and sharing across organisations, sectors and borders. Project partners employ collaborative practices such as interactive workshops to ensure that organisations can learn from each other. Cross-sector working groups and task forces are set up to develop specific technologies needed for testing sites. Lastly, all project partners are incentivised to take part in 5G-PPP activities, thereby contributing to research efforts and academic publications.

Impact and potential

5G-MOBIX and the other cross-border collaboration projects initiated under 5G-PPP are helping to build the foundations for large-scale deployment of CCAM in the EU. By providing a framework for experimentation based on collaboration and shared learning, the project is maximising the capabilities of its ecosystem to deal with complex, interconnected challenges whose solution requires multiple actors – both public and private. In accordance with European funding requirements, partners use a complex, multi-dimensional impact assessment methodology to evaluate the extent to which pre-established objectives are being achieved. During the evaluation process, these objectives are divided into three main categories:[111]

1. **Technical evaluation objectives**. These include assessment of network capabilities and network performance needs, and identification of handover/roaming events in the cross-border contexts to further enable appropriate statistical processing of raw measurement data.

2. **Impact assessment objectives**. These explore how 5G-MOBIX systems can affect quality of life (personal mobility, traffic efficiency, traffic safety, and the environment), evaluate the effects of stakeholder co-operation on the development of new innovations and future deployment of solutions, and assess the costs and benefits of tested solutions from the perspectives of society, innovation ecosystems, and individual businesses.

3. **User acceptance objectives**. These include evaluation of perceived acceptance metrics via self-assessed key performance indictors (KPIs) for cross-border corridor use cases, user-system interaction metrics (e.g. errors made by the remote driving operators) and public acceptance of the cross-border corridor use cases.

The methodology uses two assessment dimensions to reach the abovementioned objectives: (i) *Quality of Life* (including personal mobility, traffic efficiency, traffic safety and environmental metrics); and (ii) *Business Impact* (with metrics concerning customer needs, costs, revenues and progress towards commercial deployment). This multidimensional approach enables the 5G-MOBIX project to systematically explore the benefits, costs, and business opportunities of the cross-border solutions and services being tested, so as to identify key opportunities and barriers to their deployment. This is done by considering both the societal and business impacts of the technology, thereby helping public authorities and other organisation identify the role of 5G in enabling CCAM services in cross-border mobility (5G-MOBIX, 2020).

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111 For a detailed discussion of the project's evaluation framework and a complete list of the impact assessment objectives, see: www.5g-mobix.com/assets/files/5G-MOBIX-D5.1-Evaluation-methodology-and-plan-v1.0.pdf.

While the project is just a first stepping stone on the path to enable widespread adoption of connected and automated vehicles using 5G, without it early adoption and the involvement of all interested stakeholders would be impossible. Its contribution to making the technology operational and deployable on a large scale is therefore crucial, and has the potential to solve several communication and traffic management issues both within and across borders. These include increasing the safety and environmental sustainability of urban and rural mobility, as well as contributing to solving future potential issues related to trade, especially arising from increasing truck driver shortages and the demand for more environmentally sustainable trade routes. Moreover, the spread of automatic and connected vehicles will greatly impact urban development, with cities potentially becoming more efficient, safe and green, while rural areas becoming more interconnected and populous.

Challenges and lessons learned

Managing such a large network of actors across borders and dealing with new technologies and infrastructure presents various challenges for the 5G-MOBIX co-ordinators and trial site leaders. Technical challenges arise especially in relation to the transfer of the technology tested in the trial sites to the cross-border contexts. This necessitates extensive technical work as well as ad-hoc agreements between national authorities to ensure that systems work seamlessly across the border. While this operation is complex, 5G-MOBIX partners rely on knowledge and components from other 5G-PPP projects and previous EU-funded R&D activities. The same is true for other corridors in the 5G-PPP, to which 5G-MOBIX continuously provides information on project results and technology development. This approach speeds up progress, reduces duplication and, ultimately, cuts costs.

Effective and timely communication is key to ensure that such learning opportunities across projects, sectors and actors are exploited. The size and cross-border nature of the project, however, also make communication one of the greatest challenges for 5G-MOBIX ecosystem co-ordinators. Special attention is given to making sure that requests are easily understandable and actionable by stakeholders in different cultural contexts and languages, thereby ensuring that operations run smoothly across borders. At the same time, effective external communication with both EU funding institutions and other 5G-PPP programmes also proved to be essential, in order to guarantee the network's continuity and to maximise shared learning opportunities among the different projects.

Unpacking findings and lessons
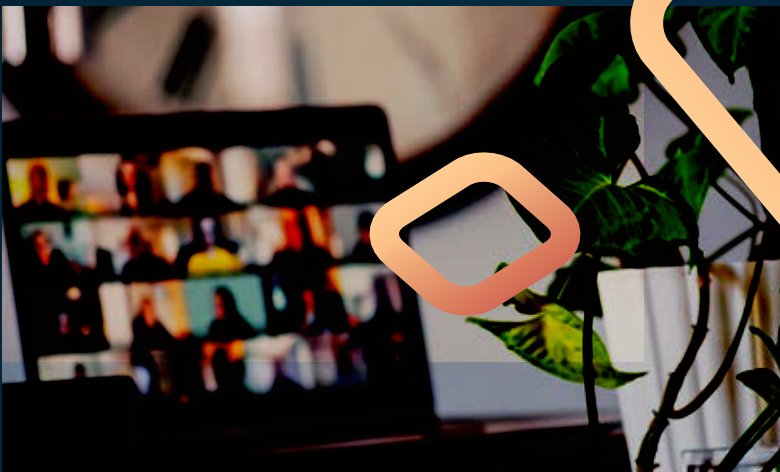
As can be seen in this report and in the previous report in this series, *Governing Cross-Border Challenges*,[112] cross-border government collaboration can present a wide variety of benefits, including regulatory effectiveness, economic and administrative efficiency (OECD, 2021j), risk management across borders and enhanced knowledge flow (OECD, 2013c), and economies of scale (OECD, 2021k).

There are also many benefits related to surfacing ground-up insights, and experimenting across borders more specifically. Gaining a better understanding of relevant cross-border eco-system actors and providing conduits for ground-up engagement, including with the public, help to ensure all voices are heard and considered, and also help to illuminate areas of opportunity for potential collaboration. Additional benefits can include fostering a culture of active listening and learning (OECD, 2020f; Hirvikoski et al., 2020), bringing about government processes that are more adaptable and agile (OECD, 2021k), mitigating risk by providing mechanisms for small-scale exploration and testing before rolling our major reforms (OECD, 2021i, 2013b) and ensuring policies and

services better meet the needs of key stakeholders and the public (Soares, 2016). Key examples from OPSI and MBRCGI research demonstrate how these efforts can help governments better understand problems and seek solutions, provide new evidence bases for decision making, promote open flows of information and data, and strengthen democratic institutions over the long term. An analysis of the specific benefits found in the Call for Innovations cases is discussed below.

While the benefits of ground-up and experimental approaches to cross-border collaboration and innovation can be significant, their scale in most cases is limited. How can such approaches be en-couraged and supported among governments and their partners? Governments pursuing such efforts can benefit from an under-standing of the challenges and success factors associated with broader (i.e. not specific to innovation) cross-border ground-up and experimentation efforts. They can also profit from an under-standing of factors specifically related to innovation projects, as surfaced by the Call for Innovations and OPSI/MBRCGI workshops with experienced leaders and practitioners.

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112 See https://cross-border.oecd-opsi.org/reports/governing-cross-border-challenges.

Making progress in ground-up cross border efforts and experiments

Important factors that limit transnational and cross-jurisdictional collaboration in a broad sense are the major costs and challenges associated with co-operating across borders. The first report discussed costs and challenges related to governance, such as additional layers of co-ordination, difficulty in deviating from established norms, understanding the costs and benefits of cross-border work, competing political interests, and providing credible assurances about the distribution of costs and benefits of collaboration.

These challenges can also hinder the ability of governments and their partners to conduct ground-up efforts and to experiment with new approaches across borders. However, a number of challenges appear to be particularly acute with this type of collaboration. For instance, a key overarching factor that affects both ground-up and experimental cross-border efforts is culture resistance to such activities – a discovery that aligns with similar findings on collaborative innovation in general (Torfing, 2019). Even when solid cross-border governance mechanisms are in place, prevalent cultures and modes for developing strategies and managing projects in the ecosystem may lead actors to pursue closed, planned and linear paths that are not always sufficient to address complex, cross-border issues (OECD, 2020f). Another key challenge is a lack of feedback and learning loops in testing new ideas. This is a common characteristic of public sector innovation efforts and can be attributed to conflict and competition among ecosystem actors (Torfing, 2019), among other factors. The end result may be duplication and overlap in efforts, with governments continually working to re-invent the wheel instead of adopting approaches that build iteratively on lessons learned. A final challenge that is particularly relevant to experimentation efforts is finding ways to scale successful small tests into larger more fully implemented initiatives (Schoop, Holden and Eggers, 2018).

While these items serve as core challenges for cross-border bottom-up and experimentation initiatives, a number of factors can also promote success. Several of these were discussed in the first report in relation to governance, and could also benefit cross-border ground-up efforts and experiments. For instance, cross-border experiments are more likely to have an impact if they contribute to a broader strategy or action plan

(OECD, 2013b). Collaboratively developing such an action plan was a key success factor and recommendation from the first report.

A number of other success factors are specifically relevant to ground-up efforts and experiments. Some of these represent the converse of key challenges, and demonstrate how specific elements can serve as "make or break" components of cross-border ground-up and experimentation efforts. For instance, OPSI and the MBRCGI's research has found that a culture of innovation, openness and experimentation is important, but can be difficult to put in place if absent. In addition, feedback loops and learning mechanisms help understand lessons that arise from innovation efforts and lead to iterative improvements based on stakeholder feedback and shared lessons, including through data and evidence gathering to promote active learning (OECD, 2020f). Beyond success factors that tend to mirror key challenges, a functional factor is the ability and willingness to put in place mechanisms and spaces where ground-up insights can be surfaced. Examples include citizens' assemblies and collective intelligence conduits, and places where experimentation can take place, such as sandboxes, testbeds and accelerators. Depending on the nature of the activity, such spaces would optimally allow for the participation of actors in the quadruple helix ecosystem (science, policy, industry and society) (Hirvikoski et al., 2020). Collaborative efforts have also found success in engaging all relevant stakeholders and actively communicating on actions and progress through multiple channels (ibid.). This is essential not only to learning but also to building trust and legitimacy. A foundational component of these efforts is time spent mapping out ecosystems and identifying relevant players: this helps government understand who needs to be involved and whose needs need to be addressed, enabling them to better take a comprehensive and systematic approach (Cosgrave et al., 2020).

Research indicates that another vital component of success in collaborative efforts is establishing roles and inducing skills and capacities in individuals and teams who work to build and shape relationships among relevant ecosystem actors – including the public (OECD, forthcoming, a). Such roles have been called "systems brokers" (Wong Villanueva, Kidokoro and Seta, 2021), "facilitator-orchestrators" (Hirvikoski et al., 2020), "conveners" (Torfing, 2019), "mediators" (Hirvikoski et al., 2020), "boundary spanners" (Van Meerkerk and Edelenbos, 2019, 2018) and "catalysts" (Torfing, 2019). In breaking down the nuances between some of these roles in collaborative innovation, Professor Jacob Torfing finds that:

"The role of the convener is to bring together the relevant actors, spur trust-based interaction, and orchestrate the exchange of information, views and ideas. The role of the facilitator is to induce the actors to collaborate by constructively managing their differences and engaging in processes of mutual learning that bring them beyond the least common denominator that is seldom very innovative and tends to preserve status quo. The role of the catalyst is to create appropriate disturbances and prompt the actors to think out of the box and develop, implement and disseminate new and bold solutions" (Torfing, 2019). For the purpose of this work, these roles and activities are referred to under the umbrella of "facilitator". Although these roles are conceived for collaborative public sector innovation efforts in a broad sense, OPSI and the MBRGI have observed a particularly strong need for them in cross-border innovation efforts, where ecosystem actors, processes, layers and cultures are multiplied.

Advancing in cross border, ground-up innovation and experimentation: Insights from projects and practitioners

To better understand the specific benefits, challenges and success factors of cross-border government innovation initiatives, OPSI and the MBRCGI analysed 104 in-depth case studies received through the Call for Innovations, and in June 2021, held workshops with 141 multi-disciplinary practitioners and leaders from 43 countries with experience in cross-border innovation, in order to learn about their experiences (Figure 22). Both exercises sought to identify the benefits, challenges and success factors associated with cross-border government innovation. The workshops also sought to gain participants' insights about possible ways to encourage advances in this field.
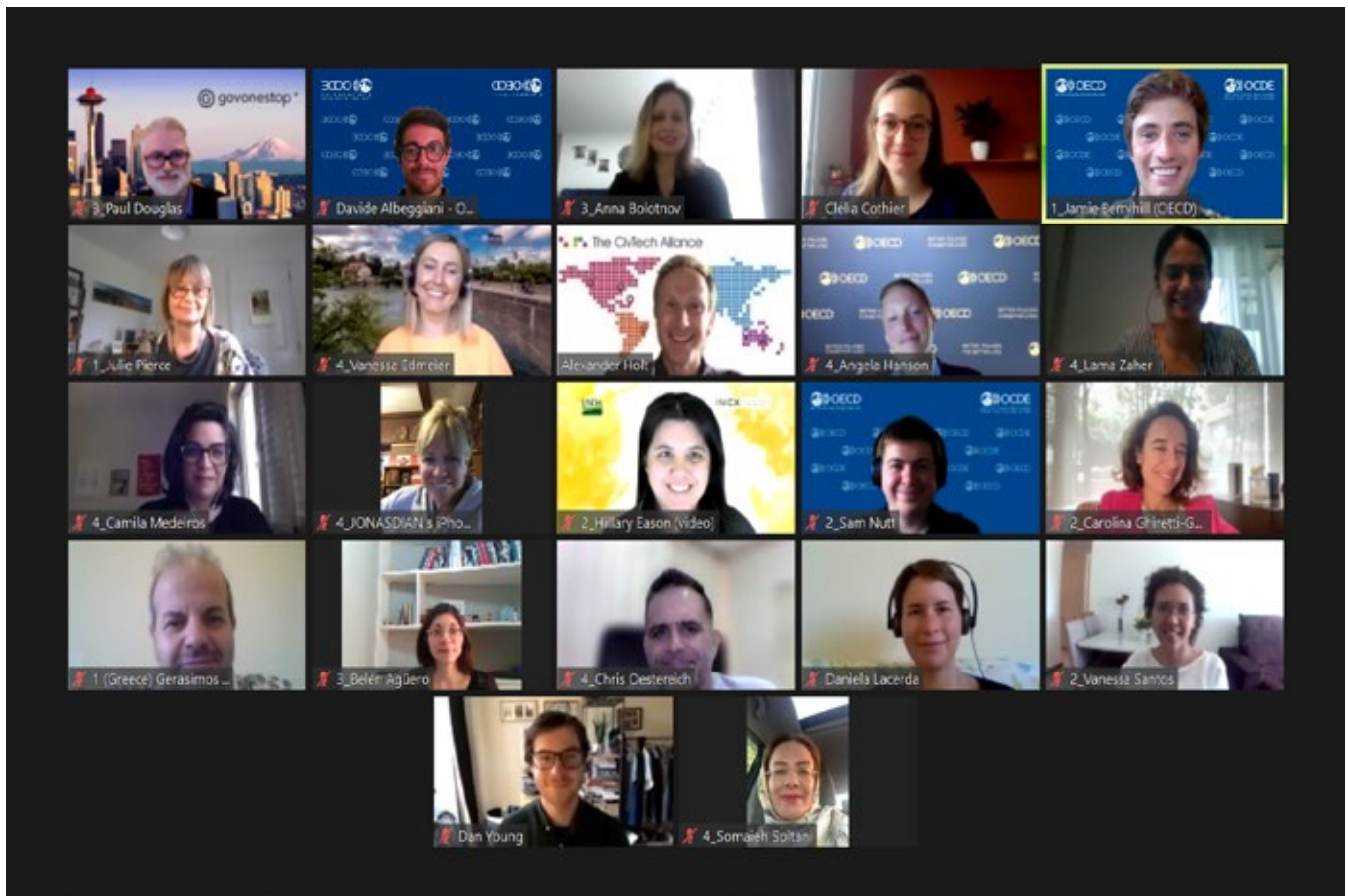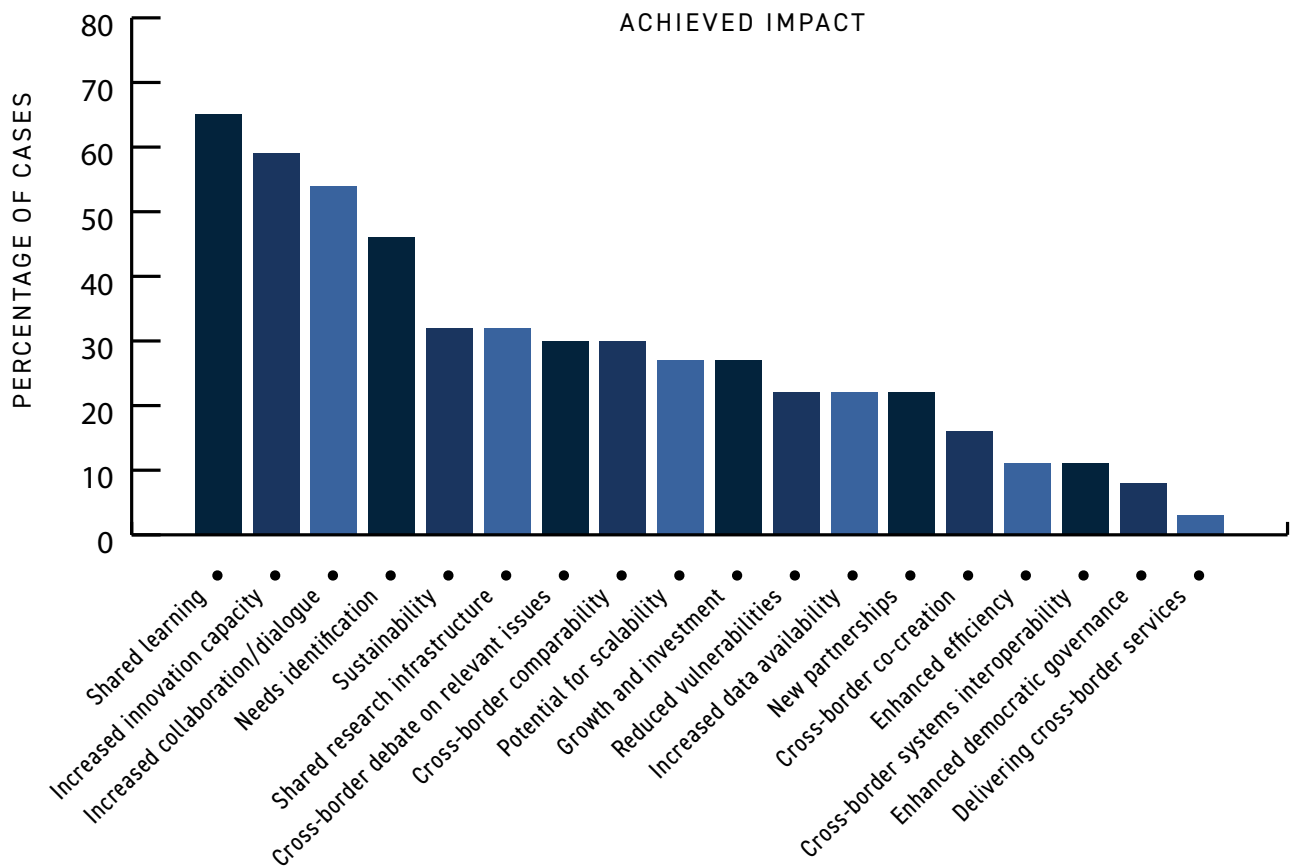
Figure 22: OPSI/MBRCGI workshop participants

Figure 23: Top cross-border innovation benefits discussed by Call for Innovations submitters

ACHIEVED IMPACT

Source: OPSI analysis of 2021 Call for Innovations submissions.

Analysis of the top Call for Innovations submissions helped to demonstrate the potential for cross-border government innovation in terms of real impacts.[113] Figure 23 illustrates the top impacts of cross-border innovation projects, as identified by Call for Innovations submitters.

The case studies presented in this report include similar topics. All three of the case studies, for instance, show how such efforts can promote shared learning, enhance innovation capacity (e.g. through building skills and experience), and increase opportunities for collaboration (e.g. via new networks and communications channels), laying foundations for the emergence of new partnerships. They also highlight the ways in which cross-border innovation can yield new solutions and demonstrate how such solutions can generate benefits across sectors, for example by incentivising investment in and/or commercial application of solutions. The Global Innovation Collaborative shows how cross-border partnerships help enhance the free flow of important information and data, and indicate how locally tested solutions might scale to address global challenges, including to assist vulnerable groups.

Some of the cases also highlight more specialised benefits. For instance, the 5G-MOBIX case demonstrates how early experiments can provide evidence for public sector decision making to help guide new regulatory approaches and ensure future policies and partnerships are fit for purpose. This case also demonstrates how collaboration across a wide range of stakeholders helps governments identify needs and ensure they are being met.

The real-world impacts demonstrated by the Call for Innovations submissions and case studies show clearly that cross-border innovation can be achieved and can yield significant results, including those relevant to this report. However, a number of key challenges hinder progress in ground-up cross-border efforts and experimentation.

The first report discussed a number of cross-border innovation governance challenges, which are generally relevant for ground-up efforts and experimentation as well. The real-world projects and workshop participants discussed their experiences with impediments to leveraging ground-up and experimental innovation. These often echoed the documented

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113 OPSI and the MBRCGI received 104 case studies from the Call for Innovations. All submissions and selected 37 cases underwent analysis in line with their level of relevance, novelty, maturity, impact and clear and detailed documentation (see https://oe.cd/Xborder-37). In particular, this analysis focused on the following fields: results, outcomes and impacts, challenges and failures, lessons learned and conditions for success.

challenges discussed above. For instance, key issues arising from the Call for Innovation cases include scaling up successful experiments and pilots, and cultural barriers (both internally in terms of supporting experiments and ground-up efforts, as well as externally in collaborating with partners and ecosystem actors who may have different cultures). The Call for Innovations cases also faced challenges in achieving stakeholder buy-in. As shown in Figure 24, the workshop participants identified issues similar to those from the Call for Innovations and discussed in the first report, as well as additional top challenges around:

· undeveloped ecosystems
· competition impeding collaboration
· short-term outlooks
· lack of a facilitator to drive discussions and progress.

Governance challenges explored in the first report, such as balancing different political factors, were also present in the case studies discussed in this report. The cases also illustrated challenges more specific to ground-up and experimental cross-border efforts. For instance, the cases faced

challenges in applying ground-up methods or conducting experiments in different cross-border contexts. In addition, all the cases encountered difficulties in managing and accommodating the interests of large networks of cross-border and cross-sector ecosystem actors. In the Deep Space Food Challenge case, this issue resulted in parallel but separate processes that yielded success, but perhaps limited what could be achieved compared to a more fully integrated cross-border effort. The Global Innovation Collaborate experienced difficulties navigating (or at least gaining a mutual understanding of) the different speeds of action across sectors, which can lead to frustrations for some of the actors involved. The 5G-MOBIX case also demonstrated the potential challenges that arise when trying to experiment with new types of technologies, as many actors involved did not fully comprehend or account for the new technologies in existing agreements and regulations.

These challenges can be difficult to overcome. Other governments can learn from those who have already achieved some success in innovating across borders. As with the success factors relevant to governance identified in the first report, the top Call for Innovations cases yielded a number of relevant
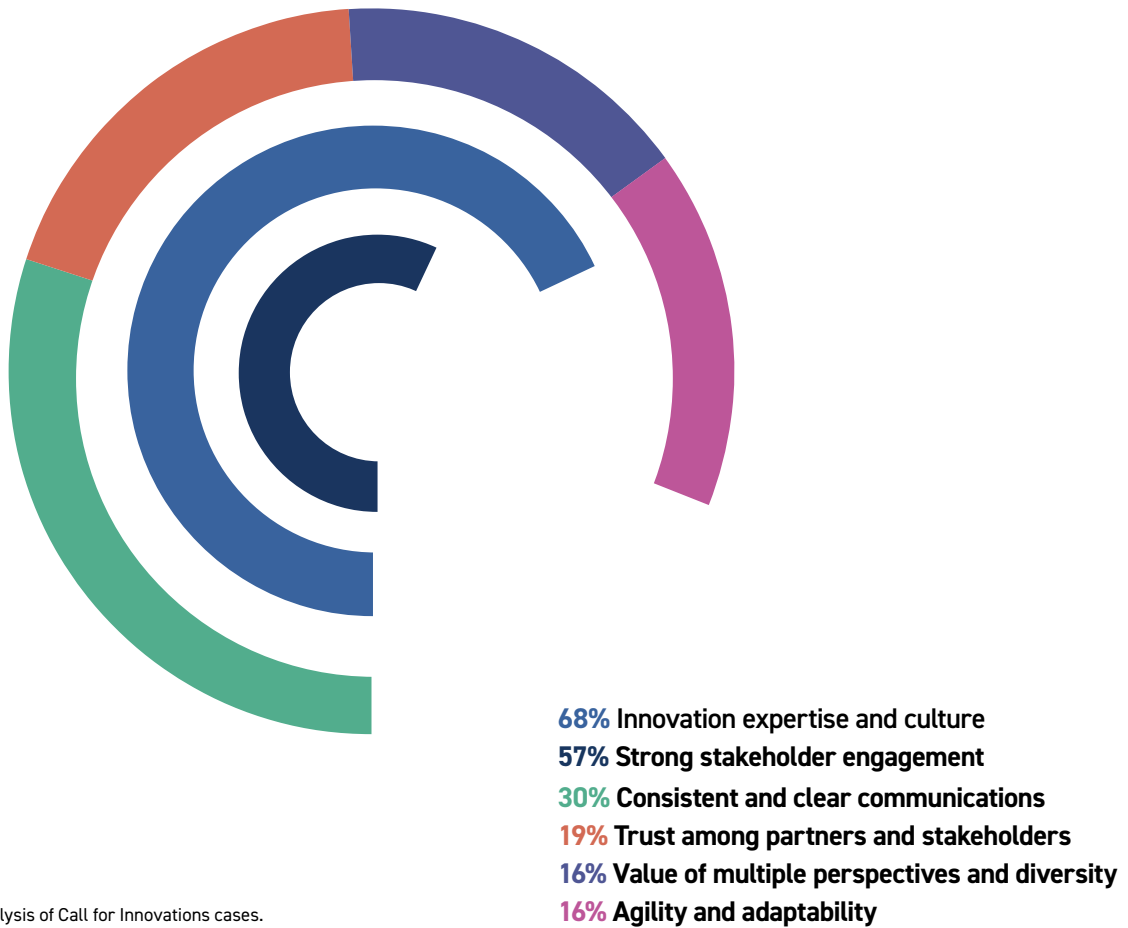
Figure 24: Types of ground-up cross-border innovation challenges discussed by workshop participants
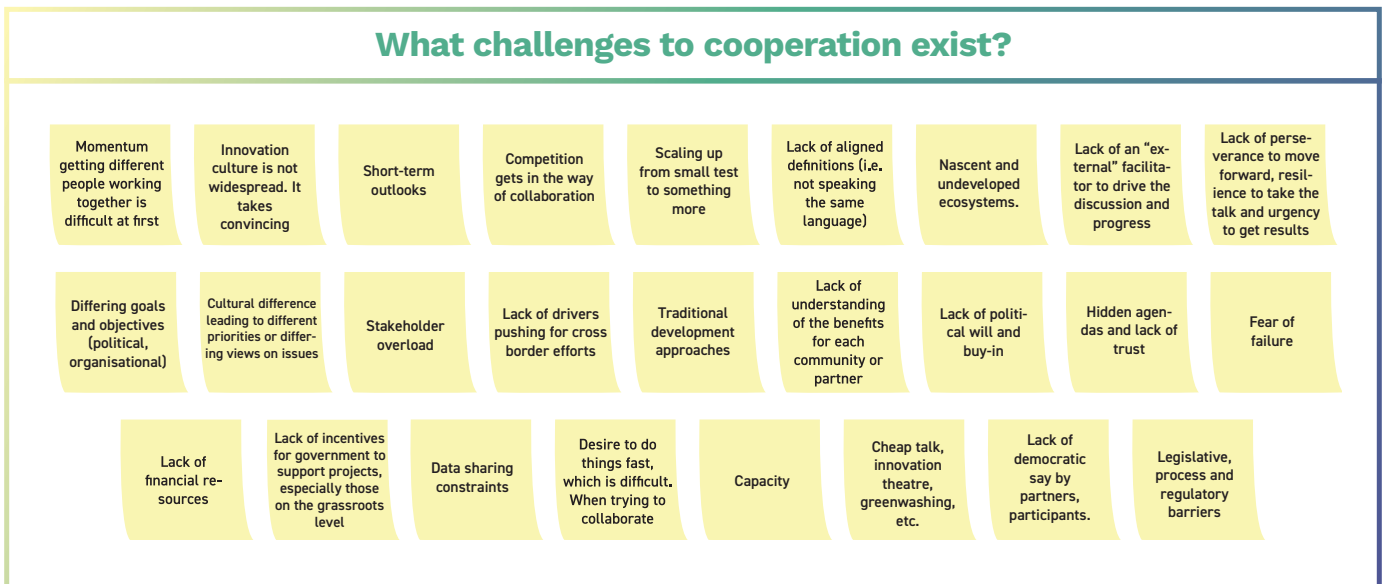
Note: The items are listed approximately in order of importance as voted on by the participants, with the most important listed at the top.
Source: OPSI/MBRCGI cross-border innovation workshops held on 3, 7 and 10 June 2021.

Figure 25: Top relevant success factors discussed in the Call for Innovations cases

68% Innovation expertise and culture
57% Strong stakeholder engagement
30% Consistent and clear communications
19% Trust among partners and stakeholders
16% Value of multiple perspectives and diversity
16% Agility and adaptability

Source: OPSI analysis of Call for Innovations cases.

factors that can contribute to successful outcomes for ground-up cross-border innovation and experimentation (see Figure 25). In fact, strong innovation expertise and culture was the most cited among all success factors in the Call for Innovations submissions.

The case studies illustrate the importance of specific conditions or factors that contribute to the success of real-world projects. Governance-related factors discussed in the first report, such as strong leadership, political support and collective goals, were also relevant for the three case studies presented in this report. For instance, the Global Innovation Collaborative shows how leadership support is critical for increasing stakeholder buy-in, scaling up small pilots and building a path for implementation. Beyond governance success factors, the case studies demonstrate factors particularly important for ground-up and experimental cross-border efforts. All three cases discussed the importance of consistent and clear communications among partners and ecosystem

actors throughout the innovation project lifecycles. This helps to clarify intentions, set expectations, enhance trust among partners and promote continuous progress. The Deep Space Challenge and 5G-MOBIXs cases identified building opportunities for mutual learning and knowledge sharing throughout the projects as an essential factor in success, and one that can strengthen collaboration and engagement, limit duplication and reduce costs. The Global Innovation Collaborative emphasised the use of open, collaborative processes in this regard, while also providing a conduit for collectively finding new solutions to common issues. All three cases also highlighted the importance of creating interpersonal bonds and strong relationships among cross-border partners, which provide many foundational benefits to collaborative work.

To help overcome the challenges associated with cross-border government innovation and to encourage success factors, workshop participants brainstormed actions that governments can take in both the short and longer term (see Figure 26). In the short term, participants suggested actions such as starting small and focusing on one challenge to tackle, promoting prototyping and "demos, not memos" as norms for tangible action, ensuring a foundation of transparency, and making it easier for the public to engage in decision making for cross-border efforts. Shifting to the longer term, participants proposed building global mechanisms to support ground-up efforts and experimentation, such as global topic-based innovation ecosystems and better international laws and regulatory frameworks. Participants also underscored the importance of specific approaches and methodologies, such as human-centred design, mission-oriented innovation with global missions[114] and "The Art of Hosting",[115] as well as the potential for creating new methodologies specifically for cross-border ground-up efforts and experiments. Equally, participants emphasised the need to train public servants on

these approaches, ensure diversity and dedicate more energy to scaling up successful tests (rather than moving to the next project), openly communicating efforts and stories, and fostering a culture of openness and innovation in general.

More work needs to be done to explore these proposed actions and to more fully understand how governments can put in place ways to seize potential benefits and overcome challenges associated with cross-border government innovation. In the coming months, OPSI and the MBRCGI will publish one additional report that explores another mode of cross-border government innovation.[116] In addition, OPSI will be working with key experts and stakeholders to develop a playbook with practical guidance on how governments can support innovation through collaborating across borders and jurisdictions. In the meantime, OPSI and the MBRCGI have developed an initial set of recommendations, based on the findings of this report, that governments can use to strengthen their ability to engage in cross-border ground-up efforts and experiments. These are presented in the next section.

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114 See OPSI's work on mission-oriented innovation at https://oecd-opsi.org/projects/mission-oriented-innovation.
115 See https://artofhosting.org.

116 All reports from this series can be found at https://cross-border.oecd-opsi.org.

Figure 26: Potential action items suggested by workshops participants
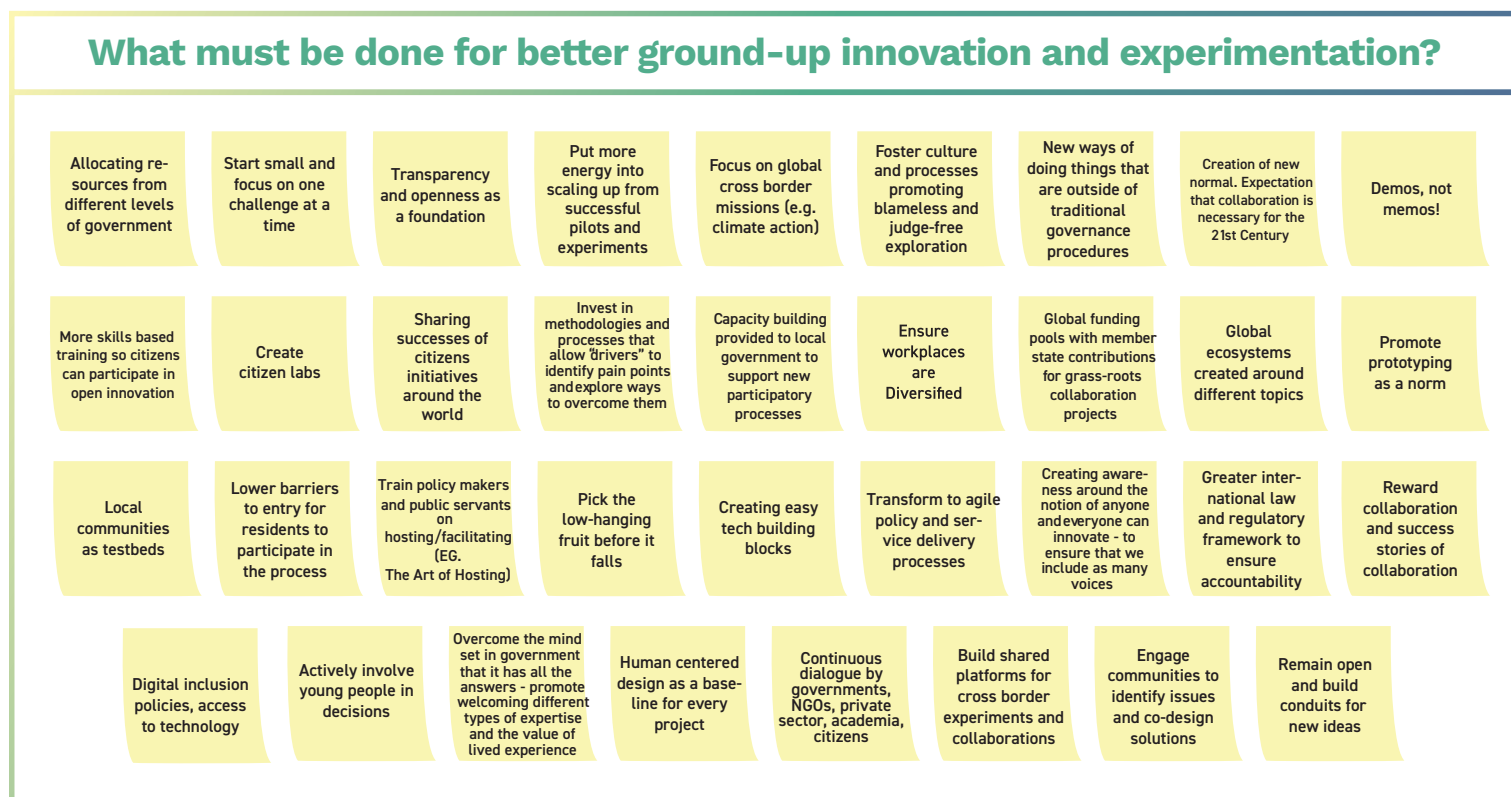
Source: OPSI/MBRCGI cross-border innovation workshops held on 3, 7 and 10 June 2021.

Recommendations

Recommendation 1: Formalise the role of and build capacities for cross-border innovation facilitators.

When governments and partners from multiple jurisdictions come together to understand and test new ideas and solutions, it can be challenging to identify shared values, establish trusted relationships, align goals and sync up processes. Governments seeking to engage in cross-border innovation should explicitly invest in creating and building capacities for facilitator roles, in order to create the right spaces for ecosystem actors to work collectively across boundaries. Facilitators could convene actors for trust-based dialogue and sharing of information and learning, prompt challenging but necessary discussions, manage conflict and differences, and encourage innovation by leveraging relevant innovation methods. As cross-border innovation often involves partners from other sectors, facilitators should also seek to promote a common understanding of the different processes and limitations of cross-sector actors. For example, this could help private sector actors understand government rules that result in a different pace of operation. Optimally, these facilitators would be invested in jointly by the major collaboration partners to help ensure neutrality and common confidence in the process from all sides.

Recommendation 2: Develop and execute ongoing approaches for mapping and engaging with cross-border ecosystem actors.

Engaging with relevant stakeholders and other ecosystem actors is critical for identifying and pursuing opportunities for cross-border innovation in a strategic manner. Key approaches include identifying those with shared or common problems and innovation focus areas, exploring multiple and diverse perspectives, and ensuring that cross-border innovation efforts offer adequate mutual benefits. A pre-requisite in this regard is understanding who the relevant stakeholders are in the first place. Governments interested in pursuing cross-border innovation should develop approaches for mapping out relevant actors in the cross-border quadruple helix ecosystem (science, policy, industry and society). They should also develop a replicable but adaptable approach to continuous engagement that is consistent with the OECD Recommendation on Open Government (OECD, 2017c) and the work of the OECD Observatory of Civic Space.[117] To strengthen legitimacy and mitigate any erosion of trust, governments should also put in place mechanisms to ensure public sector accountability in regard to following through with engagement activities. Examples include cross-border engagement as part of Open Government Partnership action plans[118] and open government reforms more broadly, as well as reporting on progress in line with the OECD Recommendation.

117 www.oecd.org/gov/open-government/civic-space.htm
118 www.opengovpartnership.org/develop-a-national-action-plan

Recommendation 3: Conduct cross-border activities using iterative practices and continuously learn from and communicate about them.

Surfacing and acting on ground-up insights, conducting experiments, and eventually scaling them into full policies and services across borders, demands agile and iterative practices. Lessons learned and stakeholder feedback must be considered on a continuous basis and folded into activities in order to make them better, or to learn from failure – which is common and expected with innovation initiatives. Learning loops and opportunities for project adaptation or even cancellation must be built into the design of cross-border experiments and initiatives. Governments must also maintain open, two-ways channels of communication, by consistently and openly reporting intentions, progress and setbacks, and allowing stakeholders and the public to provide inputs. Optimally, these efforts would be part of a formal cross-border communications strategy, agreed to by all partners, and involve an omnichannel approach that allows multiple forms of input (e.g. online, mobile and face-to-face (OECD, 2020b).

Recommendation 4: Ensure cross-border initiatives are designed with scalability in mind, and establish a pathway for implementation and scaling.

Borders can present unique environments to experiment with technologies and services, which can be used to gauge demand and demonstrate scalability. However, scaling cross-border ideas and experiments into fuller, more-implemented policies and services was a common challenge identified by this cross-border government innovation report. To help overcome this, governments should consider scalability from the outset of any cross-border innovation effort and weave critical elements (e.g. defining success up front, considering applicability in other contexts, exploring whether legal or regulatory hurdles need to be addressed, and thinking about long-term ownership and the sustainability of efforts) (Schoop, Holden and Eggers (2018) into the design of the initiative. Partners should aim to create an environment where "easy wins" can proceed to scale, using rapid iteration to work through solutions. Stakeholder engagement, as discussed above, contributes to this as well as understanding the relevance to broader audiences. On the tail end, governments need to ensure a pathway to implementation by having processes and infrastructure in place that enable cross-border innovation efforts to be introduced incrementally to other parts of the system in a planned and measured way, and in a manner that can be contextualised to different areas.

Recommendation 5: Implement formal mechanisms to surface ground-up insights and experiment across borders.

Governments should intentionally and explicitly explore different types of cross-border mechanisms for surfacing ground-up insights and conducting experiments (e.g. citizens' assemblies, open challenges, crowdsourcing and collective intelligence opportunities, testbeds). Having a diverse and adaptable cross-border innovation toolbox gives governments a variety of methods from which to choose in different situations. As seen in this report, governments can learn from and potentially adapt the growing number of efforts that have developed in a variety of different contexts.

The first report discussed how trust has been repeatedly cited as a cross-cutting critical success factor. For the topics discussed in this report, a culture of experimentation and innovation was repeatedly seen as a challenge (where it was lacking) and as a success factor (where it existed or could be developed). While it is not possible to develop a recommendation to simply "build a culture of innovation and experimentation supporting cross-border innovation", carrying out these five recommendations, coupled with the recommendations provided in the first report, and in alignment with the principles in the OECD Declaration on Public Sector Innovation,[119] will over time help strengthen such a culture. This will better enable governments to surface ground-up perspectives and experiment with new methods and processes across borders, and subsequently, to develop more informed policies and services based on what they have learned. Of course, these recommendations are easier said than done. As a follow-up to this series of reports, OPSI plans to develop a cross-border government information playbook with additional information on how these recommendations can be implemented in practical terms.

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