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## Methodology: Mapping SDG-Driven Tech Innovation Ecosystems





## I. Introduction



chieving the SDGs requires a rapid and targeted deployment of solutions and resources in the years ahead. The SDG-Driven Tech Innovation Ecosystems project is a practice-based international consortium collaborating to create dedicated pathways to scale innovative, tech-based solutions to the SDGs.

The consortium is comprised of the Global Steering Group for Impact Investing (CSC) and affiliated National Advisory Boards (NABs) for Impact Investing in Israel (IFIE), France (FAIR), Italy (SIA), and Portugal (MAZE). The project also involves ancillary partners in Central European (CEE) countries.

With actors, resources, and initiatives often fragmented, members of the consortium have joined together to produce a mapping methodology to help countries map their ecosystems, producing a clearer picture of current strengths and areas for improvement. By identifying these strengths and best practices, the consortium envisions scaling and replicating SDG-driven ecosystems and innovations that are inclusive, sustainable, and better suited to support a just green, digital, and social transition.

## II. Methodology



his mapping methodology comprises the SDG-Driven Tech Innovation Building Blocks Framework (see Section IV) and associated mapping questions (see Section V).

Building on the GSG's Impact Ecosystem Policy Toolkit, the SDG-Driven Tech Innovation Ecosystem Building Blocks Framework outlines the essential roles and components of SDG-driven tech innovation ecosystems, which include the market participant, the market facilitator, and the market regulator roles (see definitions below.) A suggested set of 44 mapping questions comprises the consortium's ecosystem mapping questionnaire.

MARKET **PARTICIPANT**  Key actors and entities providing impact capital (supply) or organisations championing impact-tech or digital social innovation (demand). These include public, private, and philanthropic actors.

MARKET **FACILITATOR**  Actors, programmes, initiatives, and systems that produce, collect, and share information and/or educate about SDG-driven tech innovation (i.e., the centre of expertise within government, for-profit and non-profit intermediaries, academic, and research institutions).

MARKET REGULATOR Legal and regulatory frameworks that dictate the direction of travel by providing clear definitions, standardisation, and enforceability, while fostering support and recognition of the importance of SDGdriven tech innovation.

By providing clear definitions of each building block and supplying pertinent mapping questions for evaluating and assessing the local ecosystem, this methodology aims to answer the following research questions related to the current state of play of SDG-driven tech innovation ecosystems:

- ▲ Who are the main public, private, and social sector actors and their skill sets in your country's SDG-related tech ecosystem?
- ▲ What are the economic values, sources of funding, and use cases for resources?
- ▲ What are the main **policies** that govern this space?
- ▲ What are the most meaningful relationships and collaborations (i.e., **networks**) between stakeholders involved in this ecosystem?
- ▲ What are the main **strengths**? What is working?
- ▲ What are the main **barriers**? What can work better?

## III. Conceptual Framework



here is already strong consensus that meeting the SDGs requires systemic and transformational innovation that is not created by any single actor alone but rather an ecosystem of actors from different sectors and domains who work collaboratively and pledge various resources (financial, research, know-how, etc.) to achieve shared goals.

Further, as we enter the final years of the period during which the SDGs are to be achieved, there is an added realisation that digital technology must serve as a catalyst to rapidly scale solutions and partnerships that achieve global goals.

These conditions have led policymakers and academics alike to call for what has often been termed mission-oriented innovation policies and ecosystems<sup>1</sup> or collaborative innovation blocs.<sup>2</sup>

Inspired by these lines of thinking, this conceptual framework defines the SDG-driven tech innovation ecosystem as the convergence of two distinct but adjacent ecosystems - tech innovation and social innovation (see definitions below.) These ecosystems exhibit contrasting origins, funding sources, business models, user profiles, aspirations, and regulatory oversight but each contributes practices, approaches, and business models that have the potential to accelerate achievement of the SDGs.

- <sup>1</sup> Mission-oriented investment ecosystems, or MOINs, refer to a collaborative network of actors involved in creating and implementing solutions that address specific societal challenges or missions. Mazzucato argues for the State to play a central role in producing game-changing breakthroughs. Mazzucato, M. Mission-Oriented Research & Innovation in the European Union. A problemsolving approach to fuel innovation-led growth, 2018. Available at https://ec.europa.eu/jrc/communities/ sites/default/files/mazzucato\_report\_2018\_0.pdf
- $^2$  N. Elert (\*)  $\cdot$  M. Henrekson Research Institute of Industrial Economics (IEN), Stockholm, Sweden Collaborative Innovation Blocs: and Mission Oriented Innovation Policy: an Ecosystem Perspective in K. Wennberg, C. Sandström (eds.), Questioning the Entrepreneurial State, International Studies in Entrepreneurship 53. Available at https://library.oapen.org/bitstream/ handle/20.500.12657/54427/978-3-030-94273-1. pdf?sequence=1#page=342
- $^{3}$  Schumpeter, J.A. The Theory of Economic Development: An Inquiry Into Profits, Capital, Credit, Interest, and the Business Cycle; Harvard University Press: Cambridge, UK, 1934
- <sup>4</sup> OECD. Available at: https://www.oecd.org/regional/ leed/social-innovation.htm. The European Union defines social innovation as "New ideas that meet social needs, create social relationships and form new collaborations. These innovations can be products, services or models addressing unmet needs more effectively." Available at: https://singlemarket-economy.ec.europa.eu/industry/strategy/ innovation/social en

**TECH INNOVATION**  A process of creative destruction, driven by entrepreneurial activity and resulting in the transformation of economic systems through the introduction and adoption of new technologies and business approaches.3

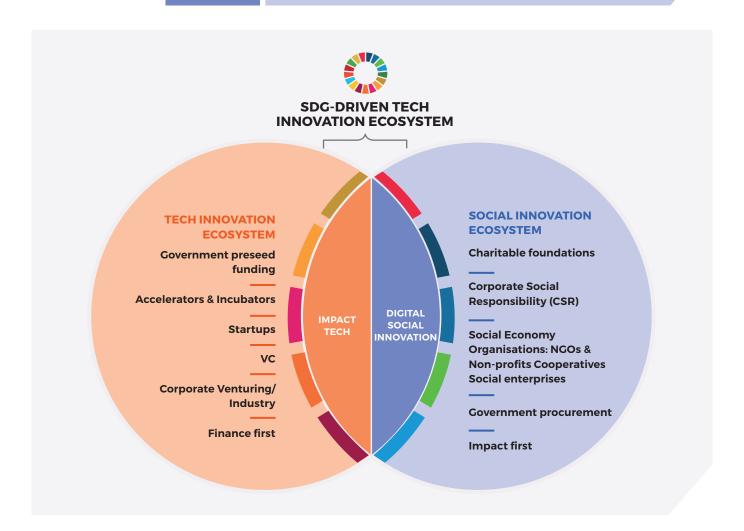
SOCIAL **INNOVATION**  Design and implementation of new solutions that imply conceptual, process, product, or organisational change, which ultimately aim to improve the welfare and well-being of individuals and communities.4

Within the overlapping spheres of two ecosystems, we have identified 'impact-tech' and 'digital social innovation (DSI)' (see definitions below.) Recognising the fragmented nature of these two ecosystems and their respective actors, our methodology seeks to join together the actors, resources, and initiatives of impact-tech and digital social innovation to offer a bank of solutions that can be harnessed to achieve the SDGs.

IMPACT TECH Technological solutions to address social and environmental challenges. Impact (tech) start-ups are commercially focused and possess an explicit intention to generate impact aligned to one or more SDGs, measuring and managing impact through commonly accepted frameworks.

DIGITAL SOCIAL INNOVATION

A type of social innovation in which innovators, users and communities collaborate using digital technologies to co-create knowledge and solutions for a wide range of social needs. Digital social economy organisations may not explicitly reference the SDG in their core strategies but are explicit about their approach and the impact they seek to generate.<sup>5</sup>



NESTA defines digital social innovation organisations are defined as data-driven organisations that engage in one of six activities (1) New ways of making, (2) Open democracy, (3) The collaborative economy, (4) Awareness networks (5) Open Acceess, and (6) funding acceleration and incubation that enable sustainable behaviours and lifestyles. NESTA (2015). "Growing a Digital Social Innovation Ecosystem for Europe DSI Final Report." The European Commission, 2015. Available at https://ec.europa.eu/futurium/en/system/files/ged/50-nesta-dsireport-growing\_a\_digital\_social\_innovation\_ecosystem\_for\_europe.pdf

Additionally, this methodology seeks to capture the initiatives, organisations/startups, or investments that have the potential to contribute to the SDGs but do not explicitly target the SDGs. We refer to these actors and efforts as 'impact-aligned' (see the definition below.)

IMPACT-ALIGNED Initiatives (policies, networks, etc.), enterprises, or investments that may align with the UN SDG and/or targets but which do not explicitly reference alignment to the SDGs, nor measure its contributions to the SDGs as part of its mission or explicit objectives.

For instance, within tech innovation ecosystems, various actors such as investors, startups, incubators, accelerators, networks, and communities have the capacity to make a positive impact on society and the environment. However, without explicit alignment with a defined mission, purpose, and measurable targets, they are less likely to actively promote this agenda and advance measurable, targeted progress.

By exploring the interconnected spheres of these two ecosystems, this methodology aims to gain a deeper understanding of the ecosystem of actors, roles, and resources that is already explicit or can be encouraged to be more explicit, through access to information, training, networks, communities of practice, and/or regulation, about its alignment and contributions to the SDGs.

# IV. SDG-Driven Tech Innovation Building Blocks Framework

dopting the framework presented in the <u>GSG's Impact Ecosystem</u>
Policy Toolkit, the SDG-Driven Tech Innovation Building Blocks
Framework describes the roles and components that comprise
SDG-Driven Tech Innovation Ecosystems. These are the roles of **market**participant, market facilitator, and market regulator (see definitions in
Section II). Each role involves several sub-categories that are either key
actors or key components of an SDG-driven tech innovation ecosystem.
The selection of building blocks and their definitions were defined and
developed based on an initial mapping exercise undertaken by Consortium
partners and affiliated researchers.

For the purpose of mapping the SDG-driven tech innovation ecosystem, the ID number of each building block is linked to the mapping questions in Section V.

## **Market Participant**

ID		Building Block	Sub-category	Definition	
SUPPLY					
Al	1	Impact-tech financing	Public financing	Financing from governmental bodies or public institutions to support the development of impact tech. It includes grants, subsidies, and equity/debt financing for impact tech-related projects or organisations. It also includes tech transfer programmes for impact tech startups, i.e., financing from pre-seed to growth stages of technology.	
	2		Private financing	Financing from private sector investors, including VCs, institutional investors, corporates, family offices, high net worth individuals, etc., for impact startups.	
	3		Public- private partnership	Collaborative arrangements between government entities and private sector investors to mobilise financial resources for impact tech projects and startups. It includes government-led investment funds in partnership with private investors or social impact bonds, which may or may not be government-led.	
	4		Philanthropic financing	Financing from charitable foundations or venture philanthropy organisations for impact startups.	
A2	1	Digital social innovation (DSI) financing	Public financing	Financing from governmental bodies or public institutions to support social innovation or DSI. It includes grants, subsidies, and equity/debt financing for social innovation or digital social economy projects/organisations.	
	2		Private financing	Financing from private sector investors, including VCs, institutional investors, corporates, family offices, high net worth individuals, etc., for social innovation or digital social economy organisations.	
	3		Public- private partnership	Collaborative arrangements between government entities and private sector investors to mobilise financial resources for digital social innovation solutions. Government, philanthropic, or corporateled initiatives that mobilise private sector support for digital social innovation, for example, investment funds, blended finance initiatives, social impact bonds, accelerator programmes, etc.	
	4		Philanthropic financing	Financing from charitable foundations for social innovation or digital social economy organisations.	
DEMAND					
А3		Impact startups		Tech ventures with an explicit strategy to generate measurable positive impact globally, aligned to the SDGs and which measures and manages its impact in accordance with impact investment practices and standards.	
<b>A</b> 4		Digital social economy organisations		Social economy organisations championing digital social innovation that adopts technology and digitalisation.	

### **Market Facilitator**

п	<b>D</b>	Building Block	Sub-category	Definition
В1		Dedicated central unit		A centre of expertise within the government that withstands changing administrations to develop and oversee impact tech or digital social innovation policies.
B2		National and municipal level strategies		Strategies and/or policies at the national and municipal level implementing SDGs and guiding the development of impact tech or digital social innovation.
В	3	Research, think tanks, and academia		Academic degree programmes that focus on sustainable development and the SDGs with administrative-level commitments; and other academic or research institutions provide research on impact-tech/DSI with its ethical use of the technology.
B4	1	Intermediary support	Impact advisory firms	Firms that provide specialised guidance and services to help investors and organisations align their investments with impact-tech.
	2		Networks	Conferences, workshops, symposia, consortia, peer groups, working groups, platforms, and networks for impact tech or digital social innovation.
	3		Impact accelerators/ incubators	Accelerators and/or programmes dedicated to supporting and scaling impact startups and digital social economy organisations.
	4		Market data	The availability of data or studies on the size and nature of impact-tech and DSI ecosystems.
	5		Tech transfer programmes	Programmes for impact-tech and/or fostering tech transfer in emerging or developing markets.
	6		Deal-making platforms	Data and/or deal platforms connecting supply and demand. It can also include platforms that match SDG challenges with techbased solutions and other matching opportunities between impact investors and impact startups/digital social economy organisations.

## **Market Regulator**

ID	Building Block	Definition
C1	Public procurement	Public procurement regulations that explicitly reference the SDGs and/or related sustainability topics.
C2	Fiscal incentives	Research and development (R&D) tax credits or other fiscal incentives for corporates and impact ventures/ enterprises
<b>C</b> 3	Impact reporting and disclosure	Frameworks or taxonomies issued by regulatory bodies defining impact-tech or investment and its alignment and/or contribution to the SDGs and standardised approaches for assessing, measuring, and/or disclosing impact-tech. It also includes guidance on the responsible and ethical use of technology.

## V. Ecosystem Mapping Questions

The following mapping questions are linked to the ID numbers referenced in the above Building Blocks Framework.

## Mapping Your Country's SDG Tech Building Blocks

#### **MARKET PARTICIPANTS**

#### A1.1. PUBLIC FINANCING FOR IMPACT-TECH

- 1. Which governmental bodies or public entities have dedicated funding or financing facilities for impact-tech and or impact-aligned sectors? (Refer to definitions in Section III.) Please include examples of these funding facilities, referencing their objective, stage (ideation, incubation, growth, etc.) and eligibility criteria.
  - a. What are the primary forms of financing for impact startups?
  - **b.** Please indicate whether and to what extent these initiatives explicitly target the SDGs. Include URLs where possible.

#### A1.2. PRIVATE FINANCING FOR IMPACT-TECH

- 2. What was the total value of VC funding invested in tech startups last year? (all sectors; pre-seed to pre-IPO)? Please indicate values in USD. Include URLs where possible.
  3. What was the total number of VC deals last year? (All sectors; preseed to pre-IPO)
  4. Approximately how many VCs in your country have a dedicated strategy to invest in or support impact startups (i.e., impact VCs)? Please explain.
  - a. How many of them explicitly reference the SDGs?
  - **b.** If information is available, what was the total amount invested/contributed by impact VCs last year?
  - c. How many impact startups did they support last year?
  - d. What SDGs or sectors are most supported?
  - e. Provide 3 examples from your country you believe exemplify best-in-class impact VCs for impact tech. Include a brief description of each, including the URL to VC's website, URL to strategy, URL to impact report. Where possible, please include information on how they assess or measure the impact or contributions to the SDGs.
- **5.** Please explain other types of active private sector investors in your ecosystem that support impact startups (e.g., institutional investors, corporates, family offices, high net worth individuals, etc.).
  - **a.** Provide 3 examples from your country you believe exemplify best-in-class non-VC impact investors for impact tech. Include a brief description of each, including the URL to the website, URL to the strategy, and URL to the impact report. Where possible, please include information on how they assess or measure the impact or contributions to the SDGs.

## A1.3. PUBLIC-PRIVATE PARTNERSHIPS FOR IMPACT-TECH FINANCING 6. Are there any government-led investment funds for impact-tech that mobilise private capital in your ecosystem, for example, initiatives like finance blended finance solutions, social impact bonds, etc.? a. If so, please provide successful examples. Include URL to the relevant website, URL to the strategy, and URL to the impact report if possible. **7.** Are there any cases of geographical clusters created by the government fostering collaborations between actors for impacttech/DSI? A1.4. PHILANTHROPIC FINANCING FOR IMPACT-TECH **8.** How many charitable foundations or venture philanthropy organisations have a strategy that invested or made grants to impact startups? a. Provide 3 examples from your ecosystem you believe exemplify best-in-class impact tech funders. Include the website URL and brief description. **A2.1. PUBLIC FINANCING FOR DIGITAL SOCIAL INNOVATION 9.** Which governmental bodies or public institutions have dedicated funding or financing facilities for social innovation or DSI? a. If yes, please include examples of these funding opportunities, referencing their objective and eligibility criteria. Include URLs where possible. **b.** If yes, do these initiatives explicitly target the SDGs? **A2.2. PRIVATE FINANCING FOR DIGITAL SOCIAL INNOVATION 10.** Which private sector investors finance digital social economy organisations or support social innovation/DSI-related projects? (this question looks at investments into DSI organisations, as opposed to grants). a. Provide 3 examples from your country you believe exemplify best-in-class impact investors for DSI. Include a brief description of each, including URL to the website, URL to the strategy, URL to the impact report. Where possible, please include information on how they assess or measure the impact or contributions to the SDGs. A2.3. PUBLIC-PRIVATE PARTNERSHIPS FOR DIGITAL SOCIAL INNOVATION **FINANCING** 11. Are there any government, philanthropic, or corporate-led investment funds for digital social innovation that mobilise private capital in your ecosystem, for example, blended finance solutions,

**a.** If so, please provide successful examples. Include URL to the relevant website, URL to the strategy, and URL to the impact

social impact bonds, etc.?

report if possible.

## A2.4. PHILANTHROPIC FINANCING FOR DIGITAL SOCIAL INNOVATION **12.** How many charitable foundations, venture philanthropy organisations, or corporates have invested or made grants to digital social economy organisations? a. Provide 3 examples from your ecosystem you believe exemplify best-in-class DSI funders. Include the website URL and brief description. **A3. IMPACT STARTUPS 13.** What is the number of tech startups vs impact startups in your country? (or what percentage of all startups can be considered impact startups?) Please provide a URL of market sizing studies or a reference of your estimation. If actors in your ecosystem do not produce an annual market sizing study, please refer to Dealroom data on impact startups (startups with SDG tags). a. What SDGs or sectors are most targeted? **b.** Provide 3 examples from your ecosystem you believe exemplify best-in-class impact startups. Include a brief description of each, including the URL to VC's website, URL to strategy, URL to impact report. Where possible, please include information on how they assess or measure the impact or contributions to the SDGs. **14.** What was the value raised by total tech startups vs the impact startups last year (USD)? Please provide a URL of market sizing studies or a reference of your estimation. If actors in your ecosystem do not produce an annual market sizing study, please refer to Dealroom data on impact startups (startups with SDG tags). **a.** What are the primary sources of funding for impact startups at different stages, ranging from pre-seed to pre-IPO? **A4. DIGITAL SOCIAL ECONOMY ORGANISATIONS 15.** What is the number of social economy organisations (e.g. non-profits, cooperatives, associations, social enterprises, etc.) that are part of the DSI ecosystem? Please provide a URL of market sizing studies or a reference of your estimation. a. Please provide up to 3 examples, including name, URL, and description of its mission and activities. **16.** How many digital social economy organisations raised funding last year? Please provide a URL of market sizing studies or a reference of your estimation. a. What was the total value raised by digital social economy

#### **A5. RESOURCES**

organisations last year?

economy organisations?

☐ 17. Please synthesise/summarise the key resource flows and values captured above (i.e., from capital supply actors to impact startups and digital social economy organisations.)

**b.** What are the primary sources of funding for digital social

#### **MARKET FACILITATOR**

cover the SDGs.

**23.** Please list up to 3 examples of graduate courses, research

**24.** Have any universities or independent research institutions issued guidance on the responsible and ethical use of technology?

Include the URL where available.

fellowships, and research programmes that explicitly cover the SDGs.

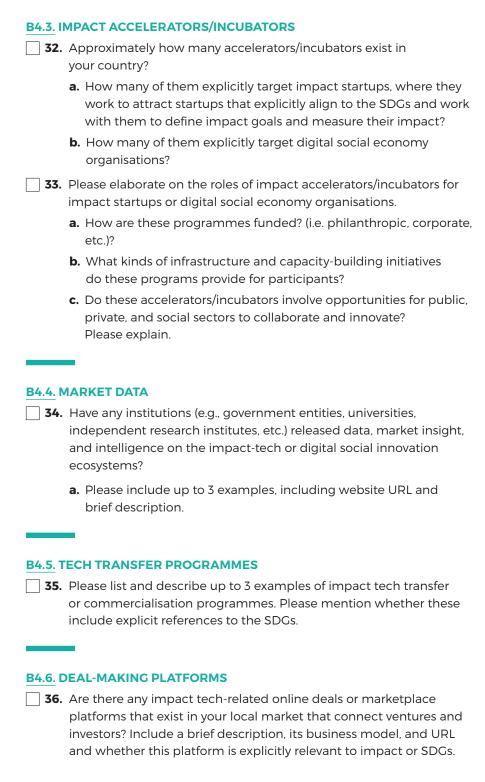
## **B1. DEDICATED CENTRAL UNIT 18.** Does the office of your President/Prime Minister have a dedicated team in place to address the SDGs? If yes, please include the URL. a. If so, does the team address tech innovation or digital social innovation? **B2. NATIONAL AND MUNICIPAL LEVEL STRATEGIES 19.** Do the below-referenced national ministries reference impact tech or digital social innovation in their current strategy/workplan? Reference all that apply: » Environment » Health » Education » Transportation » Infrastructure » Agriculture » Energy » Utilities and Water » Other (please reference) **20.** Do municipalities in your country have explicit SDG action plans or strategies? (Please include up to 3 examples). a. If so, do these action plans focus primarily on main cities or do they also cover peripheral cities/towns? **b.** If so, do these plans include SDG monitoring or measurement frameworks, c. If so, do these action plans include funding for research and development, digital innovations, or early-stage ventures? **B3. RESEARCH. THINK-TANK. AND ACADEMIA 21.** How many colleges or universities signed up for the UN SDG Accord, a commitment to embed the SDGs into education, research, leadership, operations, administration, and engagement activities? **22.** Please list up to 3 examples of undergraduate courses that explicitly

### **B4.1. IMPACT ADVISORY FIRMS 25.** Approximately how many impact advisory firms (including for-profit, NGO, and academic bodies) provide impact measurement and management support to startups / VCs? a. Please include up to 3 examples, including website URL and brief description. **b.** What measurement frameworks/standards do they use? c. Are startups' and/or VCs' SDG contributions validated by an accredited agency? **d.** Do these bodies provide SDG or impact management or measurement training to impact startups? **26.** What impact measurement and alignment tools do ventures, investors, and donors use to assess alignment or contribution to the SDGs? a. What percentage of the following groups in your market use impact measurement tools to monitor their contribution to the SDGs? Please explain how you arrived at your answer. (apply an informed guess, or survey, publication data if available). Note: Also cross-referenced with C3 in the chart above. » VC investors » Corporates/SMEs » Charitable foundations » Tech startups » NGOs **B4.2. NETWORKS 27.** Does your national or municipal government foster collaboration between government agencies and industry to advance impact tech or DSI ecosystems? Please reference these programmes. **28.** Do national ministries organise/ host any impact tech or DSI-related local or international events, conferences, convenings, or citizens advisory groups? a. If yes, please include details, including URL, if available. **29.** What settings exist for public, private, and social sector actors to engage with international peers and actors to learn of the direct needs on the ground related to impact tech or DSI, either from policymakers in emerging markets, investors and business leaders, local enterprises, and/or community representatives? **30.** What other events, opportunities, or platforms, if any, exist for public, private, and social sector actors (or two of the above) to ideate, create, or design new and innovative solutions, financing opportunities, or collaborations that place tech in the forefront

in support of the impact and SDGs?

**31.** Is there other entrepreneurial or networking infrastructure that was not captured in the questions above and which does not include

accelerators and incubators (see question below)?



## **MARKET REGULATOR C1. PUBLIC PROCUREMENT 37.** Has the national government mainstreamed SDGs or sustainability issues into procurement policies? Please explain. **C2. FISCAL INCENTIVES 38.** What kind of R&D tax credits or other fiscal incentives does the government provide, if any, for the development of impact tech? Please explain. **C3. IMPACT REPORTING AND DISCLOSURES 39.** Are there any frameworks or taxonomies issued by regulatory bodies defining impact-tech or investment and its alignment/contribution to the SDGs? a. If yes, has the government provided a clear and standardised definition of impact tech? Please explain. **40.** Is there any guidance on the responsible and ethical use of technology issued by regulatory bodies? **Analysis Questions** 41. What are the 3 main strengths of your ecosystem (i.e. best practices) with regard to promoting and advancing SDG-aligned tech and digital innovation? What is working? Please explain. **42.** What are the 3 main barriers where limitations or challenges exist? What can work better? **43.** Formulate a set of up to 3 recommendations - either to a specific actor or with regard to a specific initiative - to facilitate greater support to address the SDGs through innovation and technology in your country, whom would you address and what would be your recommendation?

#### **Case Studies**

- 44. Please provide 3 case studies from your country on each of the following topics. Please try to align case studies with the main strengths that you provided above.
  - **a. Themes**: case studies that align to specific SDGs (good health & well-being, quality education, climate change, etc.)
  - **b. Actors**: case studies that detail the role, activities, and/or impact of a specific actor in the ecosystem (e.g. accelerator, government programme.)
  - **c. Relationships**: case studies that profile communities of practice and interactions/partnerships between different actors (e.g. public, private, social economy actors, etc.) worthy of replication.

#### **PROJECT PARTNERS**











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