

The Solutions Lab

Scaling for Sustainable Infrastructure

Results Booklet

10-Month Multi-Stakeholder Journey
from 2019 to 2020



TABLE OF CONTENTS

ABOUT THE SOLUTIONS LAB: Scaling for Sustainable Infrastructure	3
CALL TO ACTION: TOWARDS A NEW PARADIGM FOR SUSTAINABLE INFRASTRUCTURE	7
DELIVERING SUSTAINABLE INFRASTRUCTURE AT SCALE TO MEET THE SDGs.	10
THINK20 POLICY BRIEFS	13
WORKSTREAM RESULTS	
Gender-Responsive Infrastructure	15
Integrated Upstream Planning	20
Sustainable Infrastructure Project Preparation.	24
MEETINGS	
1st Meeting in Berlin.	30
2nd Meeting in Mexico City	31
3rd Meeting “Milan Online”	32
OUTREACH EVENTS	
Global Solutions Summit Panel	33
Sounding Board	34
PARTICIPANTS	36
HOSTING TEAM	49
CONVENING PARTNERS.	51
FURTHER GIZ SUPPORTING PARTNERS	52
SUSTAINABLE INFRASTRUCTURE TOOL NAVIGATOR	53

THE SOLUTIONS LAB

SCALING FOR SUSTAINABLE INFRASTRUCTURE

Sustainable infrastructure is globally recognised as key to realising the Sustainable Development Goals (SDGs) and the Paris Agreement on Climate Change. Over the last years, more and more strategies, policies and tools have been developed to unleash this untapped potential for sustainable development. Yet, public and private sector still struggle to put in place infrastructures that meet the four principles of sustainability: economic and financial, environmental, social and institutional. To analyse what hinders broad uptake of sustainable infrastructure solutions, to identify approaches that work, and to devise strategies for their scaling, the Global Solutions Initiative (GSI) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH jointly launched “The Solutions Lab: Scaling for Sustainable Infrastructure” in October 2019.

The Lab brought together 28 experts from academia, policy, finance and infrastructure development in a 10-month multi-stakeholder journey: the first convening took place in Berlin (November 2019), followed by a meeting in Mexico City (February 2020) and a final online-meeting (June/July 2020), with collaboration since advancing virtually due to the COVID-19 pandemic.

This Booklet is built around a ‘Call to Action’ for a pivot towards a new paradigm in sustainable infrastructure delivery. It documents the process as well as key outputs of the Lab and provides Thematic Briefs by several Lab workstreams, including on “Integrated Upstream Planning”, “Sustainable Infrastructure Project Preparation” and “Gender-Responsive Infrastructure”.

RATIONALE

The outbreak of the COVID-19 pandemic brutally exposed weaknesses in existing infrastructure systems: a lack of basic health and sanitation facilities, inadequate transportation and energy networks and insufficient digital infrastructure still affect the well-being of billions of people and hamper their ability to cope with the health, social and economic ramifications of the pandemic. To close this infrastructure service gap in line with the SDGs, and thus to lay the very foundation on which societies can build the prospects of a more prosperous, resilient and inclusive future, additional investments of USD 18 trillion must be mobilized until 2040, according to [G20's Global Infrastructure Hub](#).

At the same time, it is becoming increasingly clear that infrastructure can also incur negative effects on people and planet: the expansion of grey and unsustainable infrastructure has been dangerously contributing to climate change and the associated destruction of ecosystems has been facilitating the spread of zoonotic diseases like HIV, Ebola or COVID-19.

In both positive and negative ways, infrastructure thus touches upon all dimensions of sustainability: economic, institutional, social and environmental. Therefore, the [G20's Osaka Declaration](#) underlines that while "infrastructure is a driver of economic growth", what the world needs is not simply 'more' but 'quality infrastructure'. As evidenced by the Osaka Declaration, sustainable infrastructure development is recognized by policy makers as key to realizing the Sustainable Development Goals (SDGs) and the Paris Agreement. To this end, more and more sustainability tools, policies and strategies have been developed. Yet, the public and private sector still struggle to put in place infrastructure that serves the overarching goal of recoupling economic and social progress within our planetary boundaries.

OBJECTIVES

To analyse what hinders broad uptake of existing sustainable infrastructure solutions, to identify approaches that work, and to devise strategies for their scaling, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Global Solutions Initiative (GSI) jointly launched "The Solutions Lab: Scaling for Sustainable Infrastructure" in October 2019.

The Lab community has since established several work-streams through which it channels its efforts on scalable solutions, including: (1) on Integrated Upstream Planning; (2) on Sustainable Infrastructure Project Preparation; (3) on Gender-Responsive Infrastructure; and (4) to co-author Policy Briefs for the G20's Think20 Engagement Group.

FORMAT

The Solutions Lab brought together a diverse set of stakeholders with 28 experts from academia, policy, finance and infrastructure development and 15 countries. Work in the Lab benefited from an exchange of experiences across regional and professional boundaries, which allowed participants to appreciate new perspectives – a prerequisite for social innovation, including our efforts to scale sustainability solutions across regions.

The Solutions Lab consisted of three face-to-face meetings in Berlin (November 2019), Mexico City (February 2020) and "Milan Online" (June/July 2020) as well as a virtual dialogue process throughout the 10 months. To regularly test and adjust the ideas developed, the Lab organised "sounding boards" with a wide range of stakeholders, including a group of Mayors in the Mexican state of Oaxaca (February 2020) or Think Tank representatives and Multilateral Development Banks (MDBs) (forthcoming).

With the formal end of the Lab in July 2020, the Solutions Lab members decided to continue cooperation as a self-organized community of practice. Implementation of outputs is expected to continue organically beyond 2020.

METHODOLOGY

In today's world, economic, social and environmental issues are increasingly interrelated. No matter the topic, a growing number of actors is involved and cause and effect can be far away in space or time. Yet, most of our approaches are still developed in sectoral and organisational silos. Thus, the way we respond to our challenges no longer matches the complexity and dynamics of global challenges.

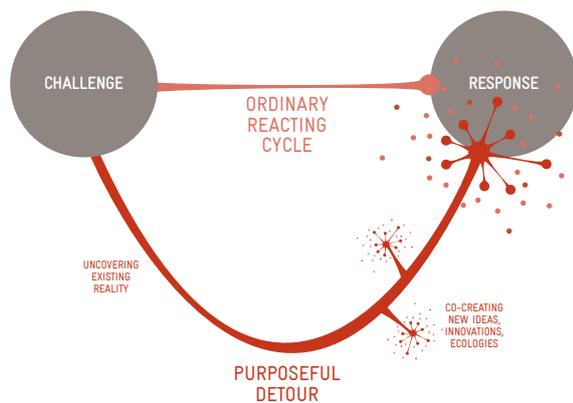
With the 2030 Agenda for Sustainable Development, the international community recognized the strong interlinkages between all dimensions of sustainability and called for a holistic approach to global development. The SDGs reflect a realisation that the necessary transformation towards sustainability cannot be achieved unilaterally, and that

we need spaces that allow for a collective search for new approaches. The Solutions Lab created such a space based on the “Social Lab approach” of the [Global Leadership Academy](#) of GIZ GmbH.

A Social Lab is systemic and participatory. Where leaders and change agents have diverse perspectives on how to address their shared area of concern and no single actor can identify a solution, the Social Lab fosters collaboration across organisations, sectors and often national borders. This helps create the necessary commitment of different stakeholders to work towards common goals in the long run.

Rather than a linear and reactive approach, the Social Lab is emergent and responsive to the changing nature of the challenge addressed. In other words: It provides space for a purposeful detour that enables the group to collaboratively explore complex realities, to co-create and to scale innovative solutions (see graph).

TWO WAYS OF ADDRESSING CHALLENGES



Thematically, the Lab built on work done by the Emerging Markets Sustainability Dialogues (EMSD) of GIZ since 2014 to shift the policy debate from ‘more’ to ‘more sustainable’ infrastructure and to pilot solutions in and with emerging markets.

KEY OUTPUTS OF THE LAB

T20 Policy Briefs: Four Policy Briefs co-authored by Lab members were accepted by the Think 20 Engagement Group and will inform discussions during Saudi Arabia’s G20 presidency. Upon completion, all Policy Briefs will be accessible via the [G20 Insights Platform](#).

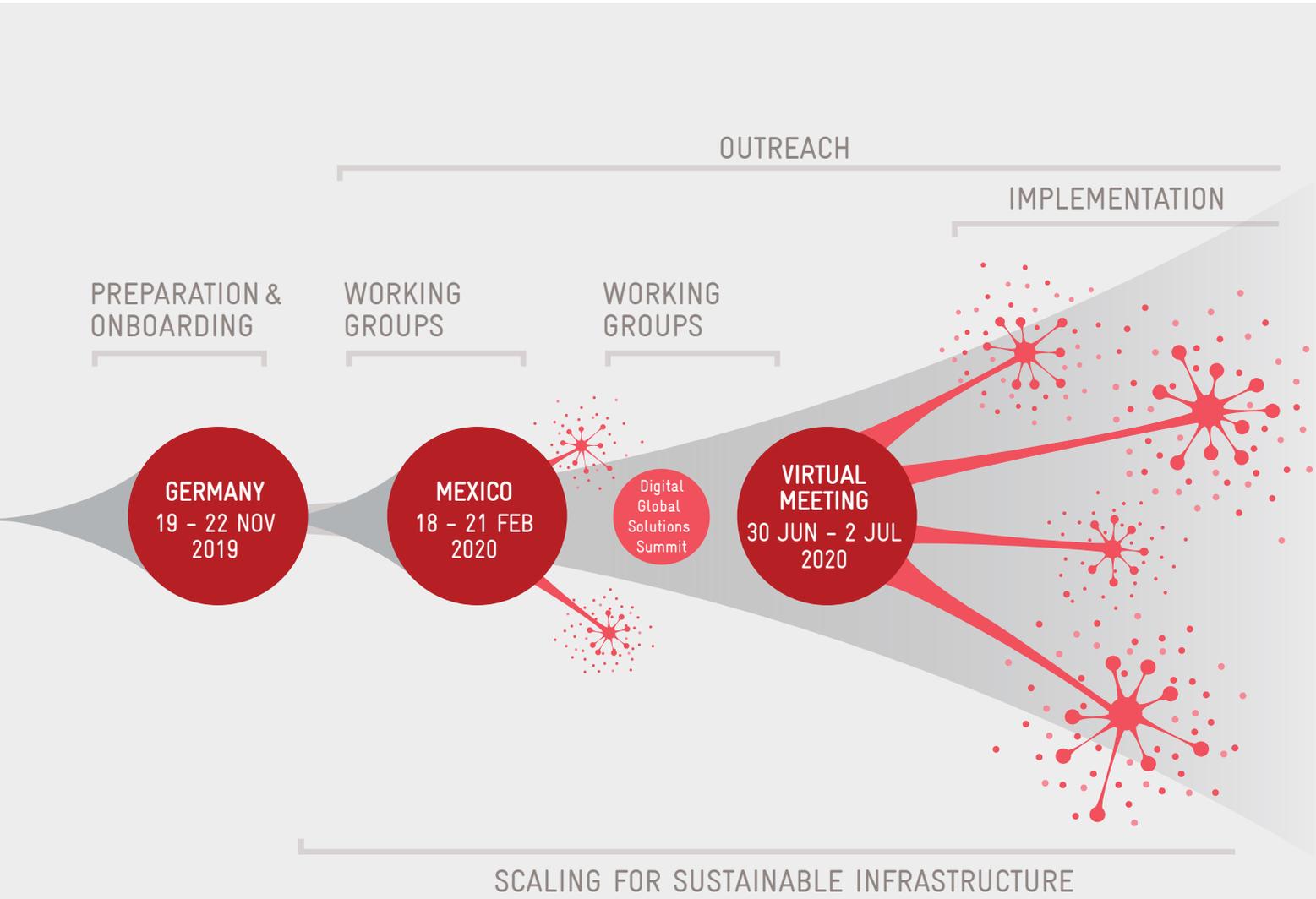
Global Solutions Summit 2020: The Lab contributed a ‘Global Table’ on [“COVID-19 & the Reinforced Case for Sustainable Infrastructure Development: Mobilizing Infrastructure Investments as Catalysts for Net Zero & SDG Delivery”](#).

Integrated Upstream Planning: This [Thematic Brief](#) illustrates why major efforts are needed “upstream” to spatially plan across sectors and prioritise investments that best balance trade-offs among economic viability, ecosystems, equity, service delivery and resiliency considerations. This [Guidance Note](#) seeks to aid public officials who seek to employ evidence-based systems models for integrated upstream planning.

Gender-Responsive Infrastructure: This [Thematic Brief](#) illustrates why infrastructure is not “gender-neutral” and why a shift towards gender-responsive solutions is needed to meet the Global Goals. To educate infrastructure practitioners and future change-makers, this workstream works towards an open source knowledge repository and a massive open online course on gender-responsive solutions.

Sustainable Infrastructure Project Preparation: This workstream has been supporting Mexico’s National Infrastructure Fund (FONADIN) on mainstreaming sustainability considerations across its project pipeline. Outputs include a [Thematic Brief](#), which illustrates the importance of purposeful project preparation to close the infrastructure service gap sustainably while attracting private capital, as well as a [Guidance Note](#) that documents FONADIN’s experience to foster peer-learning and capacity building for similar institutions around the globe.

THE PROCESS



CALL TO ACTION

Towards a new, holistic Paradigm for Sustainable Infrastructure Delivery

We;

The twenty-eight participants of the Solutions Lab: Scaling for Sustainable Infrastructure, drawn from a diversity of geographies and organizations, came together in a 10-month collaborative process to identify and overcome barriers to sustainable infrastructure development at scale,

Believing in;

The central role of sustainable infrastructure for attainment of the SDGs as well as for the sustainability of the natural environment and climate, and in the urgent need to scale up impact to enhance the sustainability of infrastructure investments everywhere, especially in the developing world,

Concerned;

That converging global crises in climate, biodiversity and health as well as widening social inequalities call for a fast and concerted pivot away from the current unsustainable trajectory of infrastructure delivery that consumes ever more natural resources and exacerbates fragility and the risks of future crises,

Having Convened;

In different parts of the world and with experts from various disciplines to deliberate how sustainability considerations can be more systematically integrated throughout the full infrastructure lifecycle [from enabling environments and strategic planning through project preparation, procurement and financing all the way to construction, operations and maintenance, and finally the decommissioning/repurposing of an asset],

Cognizant;

Of the fact that sustainable infrastructure dividends range from the jobs created and its ability to generate greater connectivity, productivity and economic activity (economic), through the regeneration of natural resources and restoration of biodiversity and ecosystem services to the mitigation and adaptation to climate change (environmental), to enhancing equity of public service delivery and empowerment of all segments of society (social), thus playing a decisive role across all dimensions of sustainability; and...

The need for improved synergy across the increasing number of initiatives, tools and information available to support the integration of meaningful sustainability criteria into the infrastructure lifecycle, so that together they can drive the transformative change needed to meet our Global Goals, including the SDGs, Paris Agreement, Sendai Framework and Convention on Biodiversity,

Noting;

The multitude of constraints to sustainable infrastructure provision, including the inability to transform needs to investment opportunities, inadequate mobilization of private capital, stakeholders working in silos culminating in a lack of integrated upstream planning and coherent downstream implementation, as well as the need for capacity-building to empower public sector officials and infrastructure practitioners to overcome technical and financial implementation barriers,

Agreed;

Through consensus on the following definition of sustainable infrastructure:

“Sustainable Infrastructures are built or natural systems that provide services in a manner that ensures economic and financial, social (including gender), environmental (including climate resilience), and institutional sustainability in line with the Global Goals and over the entire infrastructure lifecycle”,

Committed;

To contribute our collective insights toward improved delivery of sustainable infrastructure, we issue the following Call to Action

- Adopt a new, holistic paradigm of infrastructure delivery that integrates meaningful economic and financial, social, environmental and institutional sustainability and risk criteria throughout the full lifecycle, is rooted in long-term strategies for sustainable development and which is flexible and resilient enough to respond to interlinked global challenges, including climate change, biodiversity loss, public health crises, growing social and economic inequality, rapid urbanization, and new technologies.
- Work with public and private stakeholders to give traction to this new paradigm, including by strengthening sustainability criteria in upstream policy and institutional foundations, in project preparation (platforms), in scaling up finance for sustainable investments not least from the private sector and by shifting finance away from unsustainable infrastructure.
- Move beyond traditional ESG risk management approaches at the asset level and embrace a holistic, systems-level view of the long term positive and negative impacts of infrastructure development through integrated planning approaches that begin “upstream” and include proper valuation of ecosystem services, biodiversity and of interlinked human and ecological health as public goods.
- Develop better indicators for measuring the sustainability of infrastructure at the aggregate level, based on its ability to meet public need for services sustainably and inclusively. These indicators are needed to effectively measure progress towards SDG target 9.1 and to inform integrated long-term infrastructure planning that accounts for impacts at the landscape scale.
- Facilitate inclusive and transparent public participation processes in infrastructure development to enhance social benefits and leave no one behind. Special efforts should be made to include the most vulnerable groups like women and girls, the rural poor, and indigenous peoples.
- Systematically collect, share and use data to enable informed decisions along the infrastructure lifecycle including on service gaps and investments, biodiversity, emissions, data for material passports, including gender-disaggregated information on needs and use patterns.
- Mobilize financial and technical assistance to build the technical and institutional capacities necessary to tackle the sustainable infrastructure challenge, from integrated upstream planning, to the sustainability of individual assets, to the mobilization and transformation of finance.
- Align fiscal policies and incentives with sustainability to create an enabling environment that is conducive to leveraging the necessary private capital to close the USD 18 trillion infrastructure service gap by 2040.
- Put sustainability at the center of COVID-19 recovery measures and invest in social, environmental and economic infrastructure that promotes job creation, expands access to critical services, strengthens natural systems, increases the resilience of our societies and economies to future shocks and puts them on zero-emission-ecological-regeneration pathways.

UPSTREAM CONSIDERATIONS & INTEGRATED PLANNING

- Increase funding for integrated upstream planning through existing multilateral platforms and dedicated national integrated financing frameworks.
- Create policies and capacity building programs that incentivize regional and local scale risk-based integrated planning and strengthen planning functions at all governance levels through multidisciplinary teams.
- Promote the use of digitalization and systems modeling at all scales from global to local to improve data collection across the infrastructure lifecycle, support evidence-based decision-making, and implement performance-based procurement.
- Apply integrated approaches that explicitly consider nature-based solutions and evaluate climate risks while connecting to project level sustainability and resilience standards.

SUSTAINABLE INFRASTRUCTURE PROJECT PREPARATION

- Follow the lead of forward-leaning project preparation institutions in integrating sustainability up- and mid-stream to attract private capital at the asset level.
- Engage in cross-stakeholder coordination to ensure the push from the private sector and the pull from the public sector for improved sustainability are aligned and responsive to market demands.
- Support harmonization of sustainability criteria among Multilateral Development Banks and other initiatives to provide a clear definition of a sustainable asset as well as guidance on quantitative and qualitative indicators for project preparation and investment communities.
- Ensure that expertise and knowledge are made readily available and digestible to guide project preparation on the ground.

GENDER-RESPONSIVE INFRASTRUCTURE

- Acknowledging that infrastructure is not gender-neutral, systematically collect and analyze gender-disaggregated data to cater to the differentiated needs and use-patterns of girls and women and set-up gender-sensitive platforms for consultation with end-users.
- Promote the implementation of national policy, legal and regulatory frameworks for gender equality that are linked to long-term strategic development plans.
- Systematically identify positive spill-over effects of gender-responsive infrastructure and act on its centrality to delivering all 17 SDGs.
- Apply relevant frameworks, tools and standards to ensure that gender is mainstreamed across all stages of the infrastructure life cycle.
- Empower women and disadvantaged groups to partake in infrastructure decision-making, including at leadership levels, through equal employment measures, capacity-building and gender-sensitive procurement among other measures.

DELIVERING SUSTAINABLE INFRASTRUCTURE AT SCALE TO MEET THE SDGs

Achievement of the Sustainable Development Goals (SDGs) is intimately entwined with infrastructure delivery. In fact, infrastructure plays a key role across all four dimensions of sustainable development¹: (1) economic and financial, (2) environmental, (3) social and (4) institutional.

Concerning **economic and financial sustainability**, infrastructure dividends range from the jobs created during construction, operation or maintenance to the ability for infrastructure to generate greater overall economic activity. By connecting communities to cities, education and employment, infrastructure such as telecommunication or transport underpins economic goals that are vital to every country.

Next, infrastructure can help conserve natural resources or reduce the impact of climate change, thereby contributing to **environmental sustainability**. Renewable energy, for example, is critical to decrease dependency on fossil fuels whereas mass transit systems contribute to the reduction in pollution and generation of greenhouse gases by taking cars off roads.

Whenever equitable access is assured and critical services are delivered to all segments of society, infrastructure is also a driver of **social sustainability**. By providing the transport necessary for women in rural areas to participate in the workforce or the clean water and sanitation that reduce maternal mortality, infrastructure advances gender equality, too.²

Finally, to allow successful performance across economic and financial, environmental and social criteria, infrastructure must also be **institutionally sustainable**. Thereto, apt institutional capacity and procedures, including for data collection and monitoring, must be in place all the way from strategic planning to decommissioning of infrastructure assets. What is more, infrastructure ought to be aligned with national and international frameworks.

It was therefore a milestone achievement that infrastructure is recognized in the 2030 Agenda for Sustainable Development both as an explicit goal (SDG 9) and implicit

means to realize other SDGs³. Table 1 below illustrates inter-linkages between infrastructure and various SDGs. Beyond SDGs, it is critical to align infrastructure delivery with policy frameworks like the Paris Agreement on Climate Change and UN Convention on Biodiversity (CBD).

FINANCING SUSTAINABLE INFRASTRUCTURE

According to the G20's Global Infrastructure Hub, **the world is facing a USD 15 trillion gap between projected investment and the demand for adequate global infrastructure by 2040**. An additional USD 2.7 trillion would be necessary to meet Paris Agreement targets by 2030.⁴ This gap is particularly wide in developing countries where, according to the World Bank, infrastructure investment needs are estimated at 4.3 per cent of GDP, approaching USD 1 trillion per year.⁵ With 75 per cent of the infrastructure expected to exist in 2050 not yet built⁶, how infrastructure is planned, build and operated today, has a crucial impact on our ability to deliver a more prosperous, sustainable and inclusive future for decades to come!

Moreover, the more systemic challenges of today's world – from rapid urbanization and technological advances to climate change and water shortages all the way to major health crises – call for more complex and inter-connected infrastructure solutions. More so, the conversation evolves from a narrower focus on the infrastructure "investment gap" to a more encompassing discussion of the "service gap"; that is, from the need to simply spend more to the need to spend better.⁷

Public infrastructure investment remains dominant across developing countries. Traditionally low levels of efficiency coupled with the fact that public budgets alone are insufficient to fund growing infrastructure needs mean, however, that there is an **imperative to leverage private capital to close the gap. This is especially true in the wake of COVID-19**, which puts additional stress on public budgets around the world. As the immediate health crisis is

1 IDB (2018). What is Sustainable Infrastructure? – A Framework to Guide Sustainability Across the Project Cycle. 

2 The Economist Intelligence Unit (2019). The critical role of infrastructure for the Sustainable Development Goals. 

3 IISD (2015). Why Infrastructure is Key to the Success of the SDGs. 

4 Global Infrastructure Hub (2020). Global Infrastructure Outlook. 

5 Rozenberg J., Fay, M. et al. (2018). How much is needed? Infrastructure Investments for Sustainable Development. World Bank. 

6 Wiener, D. (2014). Sustainable Infrastructure as an Asset Class. Global Infrastructure Basel (GIB). 

7 Rozenberg, J., Fay, M. et al. (2019) Beyond the Gap: How Countries Can Afford the Infrastructure They Need while Protecting the Planet. World Bank Group publication. 

addressed and governments begin to focus on job creation and economic stimulus, developing countries must grab the opportunity and leapfrog towards a development vision that is fit for the future. As trillions of dollars are programmed at levels unseen in the post-WWII era, **sustainable infrastructure is key to a green, resilient, and inclusive recovery.**

DEFINING SUSTAINABLE INFRASTRUCTURE

The Solutions Lab's development vision is rooted in a holistic definition of sustainable infrastructure that draws on the diverse sectoral and geographic experiences of its members.

This definition of sustainable infrastructure encompasses several critical elements: First, sustainable infrastructure is far more than human-made physical assets and extends to nature-based solutions. Beyond the assets, sustainable infrastructure is about delivering services to the public in a way that ensures positive value across a range of dimensions, including not just economic and financial, but also social, environmental, resiliency, and institutional dimensions. Further, value is assessed based on a full lifecycle approach, including planning, design, procurement, construction, operation, maintenance, and decommissioning. Figure 1 below shows the overlapping nature of these critical elements, all combined into the following definition:

"Sustainable Infrastructures are built or natural systems that provide services in a manner that ensures economic and financial, social (including gender), environmental (including climate resilience), and institutional sustainability in line with the Global Goals and over the entire infrastructure lifecycle, from strategic planning all the way to decommissioning."

Deeper exploration of its components reveals the complex and inter-connected nature of sustainable development and so the complex and interconnected nature of reaping benefits through infrastructure development.

Built vs. Natural: Human-made assets include the concrete and steel of the built environment. Natural assets are of the natural environment, comprising geology, land, water and associated ecosystems, air and all things living. It is from natural capital that humans derive a wide range of ecosystems services, which made human life possible in the first place.⁸ The term 'systems' used in the definition

	The most direct call for increased investment in sustainable infrastructure. But, implicitly, infrastructure development will also play an important role in many other SDGs, as outlined below.
	Targets relate to access to basic services, building resilience and reducing vulnerability to climate-related extreme events, and other economic, social and environmental shocks. Good infrastructure is needed to provide this resilience, as well as for public service delivery, such as education, healthcare or access to water and energy.
	Targets refer to an increase in investment for rural infrastructure, which illustrates the importance of infrastructure investment, not only in urban but also in rural areas.
	Target 3.8 focuses on access to quality essential health-care services for which the development of health centers and hospitals in urban and rural areas will be essential
	Target 4.a demands the construction and upgrading of learning facilities.
	Target 5.4 points at the need for provision of public services and infrastructure for social protection of unpaid care and domestic work.
	This goal and the underlying targets focus on availability, access, and sustainable water management, all which require carefully planned infrastructure projects.
	Targets 7a and 7b refer explicitly to the promotion of investment in and expansion of energy infrastructure.
	Target's relating to infrastructure planning or issues such as waste management, transportation, climate change mitigation and adaptation, and resource-efficiency, require sustainable infrastructure development to reach this goal.
	Target 12.7 refers to the implementation of sustainable procurement practices and policies that will have to be reflected in the procurement of infrastructure projects as well.
	This goal implies that infrastructure projects have to be structured in a way that helps on the mitigation and adaptation front, as well as being explicitly developed to protect the poor and vulnerable groups of the effects of climate change.
	Targets refer to multi-stakeholder partnerships. Public-private partnerships (PPPs), private participation and private investment will become increasingly important as a way of delivering infrastructure.

Table 1: Infrastructure and the SDGs

indicates that genuine sustainable development requires the transformation not just of individual assets but of whole systems towards environmental, societal and institutional compatibility.

Services: As outlined above, the concept of infrastructure goes beyond assets and extends to the services that are provided by and interplay between such assets. The objective in fulfilling a country's infrastructure needs is thus not solely about investment, but about providing services – such as renewable electricity, low-carbon urban transport, clean water and sanitation services or reliable ports and airports – that serve all segments of society and leave no one behind.

Multiple dimensions of sustainability: While consideration of economic and financial aspects of course continues to be required, no longer are these aspects alone sufficient: social, environmental, and institutional dimensions must be explicitly considered in line with the Global Goals, including but not limited to the SDGs, Paris Agreement (NDCs) and UN Convention on Biodiversity targets.

⁸ Adapted from [OECD Glossary of Statistical Terms](#) and [Natural Capital Forum](#).

Full lifecycle approach: Beyond considering the costs of construction, the full lifecycle of any infrastructure solution – from strategic planning, through operation and maintenance all the way to decommissioning and repurposing – should be considered when assessing its value across the dimensions outlined above. This way, the decision to build new, rehabilitate, or not build at all are all brought to the fore as alternatives.

ILLUSTRATING SUSTAINABLE INFRASTRUCTURE DELIVERY

Illustration 2 outlines the different phases of the infrastructure lifecycle aligned with the definition of The Solutions Lab. The phases are represented in a sequenced, circular manner to reflect the fact that sustainability considerations do not end with the decommissioning of any built asset but involve the recycling of materials used as well as a continuous repurposing of existing solutions. In reality, infrastructure development is more complex and at times iterative. For example, while a strong ena-

bling environment with robust institutional frameworks is ideally established at the outset and underpins the entire lifecycle, the reality is that policy and regulations may be enhanced, and government capacity strengthened along the way. In addition, whilst strategic planning, which sets forth service level goals and the way to achieve those goals generally happens at the beginning, the reality is that strategic planning does not happen once or in isolation and so plans may evolve over time. With regards to project planning, procurement and finance, depending on the role of the private sector (e.g. private participation or private investment), these phases may look different. In addition, it is conceptually helpful to distinguish between phases that occur “upstream” at the pre-investment level and those project-specific phases that occur “downstream”. Last, the infrastructure lifecycle presented predominantly reflects the process behind the delivery of public services through infrastructure, which is in the domain of governments to plan and prioritise.

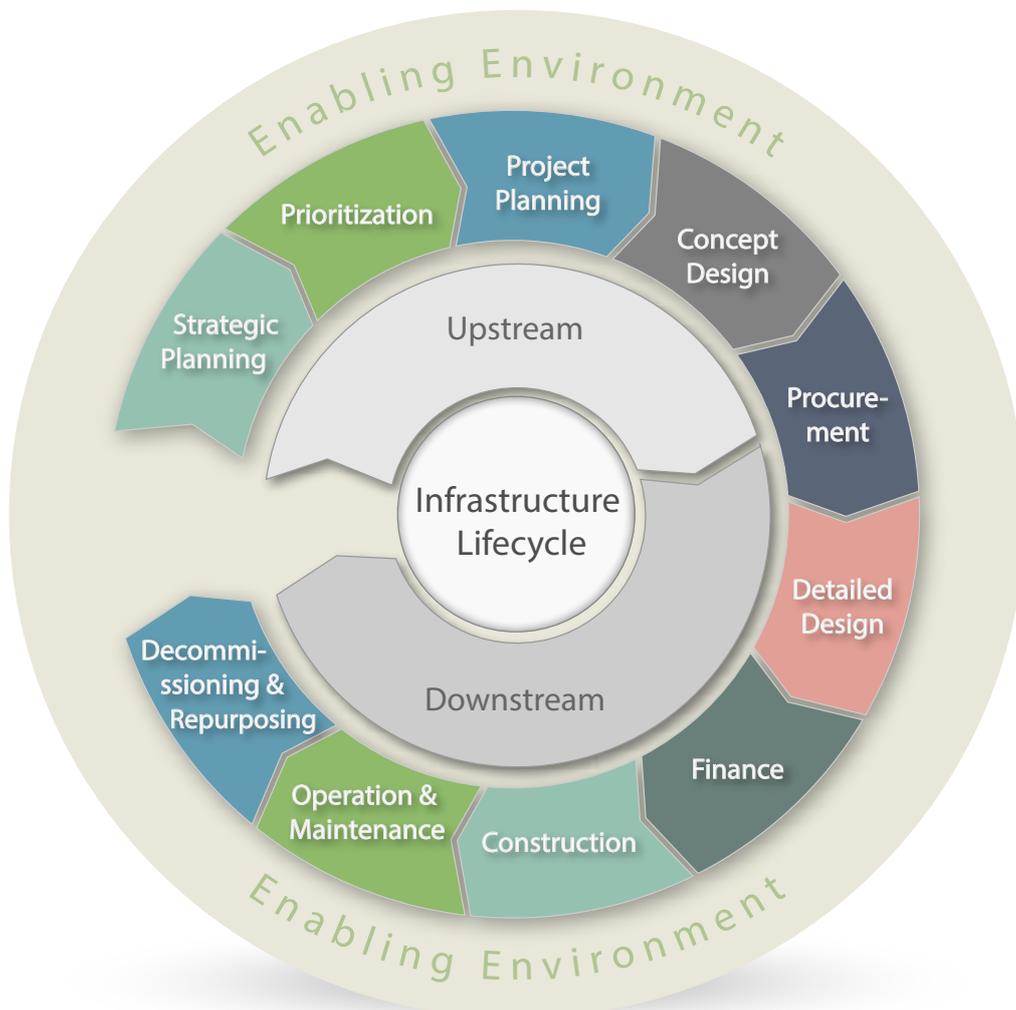


Illustration 2: Infrastructure lifecycle graph

THINK20 POLICY BRIEFS

The [G20's Osaka Declaration's](#) call to invest in 'quality infrastructure' was a milestone for it recognizes sustainable infrastructure as key to delivering the SDGs and Paris Agreement. Now, the challenge is to translate this high-level aspiration into concrete policies and action on the ground. An important avenue to achieve just this is the Think20 (T20) Engagement Group. The T20 are a group of leading think tanks which provide a link to regional and global research communities. On that basis, the group serves as a sort of "ideas bank" and systematically feeds evidence-based policy recommendations to the G20 working groups, minister committees and summit leaders. Today, under Saudi Arabia's T20 leadership, the topic of sustainable infrastructure has not only been dedicated its own Task Force 3 on "[Infrastructure Investment and Financing](#)". The strong interlinkages with ecological sustainability are also recognized by Task Force 2 on "[Climate Change and Environment](#)". The Solutions Lab community was honoured to count Mr. Nicolas Buchoud and Mr. Gabriel Lanfranchi, co-chairs of both Task Forces respectively, amongst its participants. At the Lab's inaugural meeting in Berlin, they introduced their task forces' agendas and priorities and invited the Lab community to contribute policy proposals.

Since then, several Lab participants joined forces with external experts to write policy briefs, three of which have been accepted by Saudi Arabia's T20 presidency and will inform discussions in Riyadh and beyond. Topics include (1) Policies for Data-Driven, Integrated Planning of Sustainable Infrastructure; (2) Shaping the New Frontiers of Sustainable Urban Infrastructure; and (3) An Urbanization and Infrastructure Response to Covid-19.

Abstract of all three briefs can be found below and final versions will be published in full on the [G20 Insights platform](#).

Abstract of Policy Brief 1: Policies and Implementation Guidelines for Data-Driven, Integrated, Risk-Based Planning of Sustainable Infrastructure

"We propose that Group of 20 (G20) countries create, within a robust enabling policy and institutional framework, a set of policies and actions to facilitate the use of a data-driven, risk-based, integrated systems planning and procurement approach in the "upstream" phases of sustainable infrastructure development. A focus on resource-efficient development, including nature-based solutions—with investment in natural capital and ecosystem services, supported by open data and systems planning—has the potential to reduce infrastructure costs by up to 40% when delivering the Sustainable Development Goals (SDGs). The approach

can also address the drivers and vulnerabilities of increasing infectious disease incidences like COVID-19. The recommendations involve the use of metadata, data specifications, and network services as well as modelling to guide decision-making, monitoring, and reporting and collecting data. Specifically, this brief proposes that the G20: 1) develop funding programs explicitly designed to support more holistic, cross-sectoral landscape- or regional-scale planning in G20 countries and emerging markets; 2) develop integrated regional and local planning tools and standards; 3) expand and develop platforms for using open data and adopt data standards to improve transparency and accessibility; 4) create new performance-based procurement approaches for large-scale sustainable infrastructure, and 5) mobilize investment in linked global/local-scale climate risk and ecosystem service modelling tools."

Co-Authors from the Solutions Lab:

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- **Ryan Bartlett**, Director Climate Risk Management & Resilience, World Wildlife Fund USA
- **Steven Crosskey**, Head of Infrastructure and Project Management Strategic Initiatives, UNOPS
- **Anuj Malhotra**, Technical Head & CEO, Centre for Green Mobility Delhi
- **Rowan Palmer**, Sustainable Infrastructure Partnership, UNEP-WCMC

Abstract of Policy Brief 2: Shaping the New Frontiers of Sustainable Urban Infrastructure - Reviewing the Long-Term Value of Infrastructure Investments and Enabling System Change

"Addressing global investment gaps in infrastructure has been a consistent priority for the Group of Twenty (G20) over the last decade. This has culminated in the formulation of the G20 Quality Infrastructure Investment Principles (QII) in 2019, along with the convergence of the G20 priorities and the global development goals. However, multilateral development and environmental agendas have largely missed the multiplier effect of urbanization on rising challenges such as global warming or biodiversity losses, a decades-long trend which has only been accelerated by the delivery of new infrastructure since the last global financial crisis in 2007–2008. This policy brief calls for a breakthrough in the delivery of new infrastructure, determining that in the context of the COVID-19 crisis, any new policy choices should yield high socio-economic multipliers and enhance resilience. As a number of major global ecosystems are reaching a tipping point, such as those in the

Amazonia and Arctic, the timing is critical. Therefore, the delivery of designated Quality and Sustainable Infrastructure Investment Principles (QS-II) should focus on shaping new technological and financial frontiers for critical infrastructure assets on land and at sea. Prioritizing time to market acceleration through innovative partnerships between public and private market players and mobilizing financial enablers, such as sustainable procurement, can help build an accountable pathway for large-scale change and mainstream nature-based solutions in global and regional infrastructure project pipelines."

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- **Lori Benita Kerr**, Global Infrastructure Facility (hosted at the World Bank)
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Abstract of Policy Brief 3: A Sustainable Urbanization and Infrastructure Response to the Covid-19 Pandemic

"The COVID-19 pandemic is, at the surface, a health crisis, but it has rapidly escalated into a series of socioeconomic challenges in a world interconnected by cities. Fearing the collapse of public health systems due to the lack of preventative and curative strategies, the World Health Organization, supported by national governments, has urged people to adopt social distancing measures. However, international organizations and national governments have considered cities as implementation sites for solutions instead of partners for shared assessments and for defining inclusive rescue and recovery plans. Moreover, the disruption of supply chains and global trade due to COVID-19 has been well assessed, but not its impact on lower-income communities with poor levels of basic services. These have become clusters of contagion and illustrate social and physical infrastructure's centrality in COVID-19's contagion and mitigation patterns. Responses to the crisis and the road to poverty reduction and productivity run directly through infrastructure investments, but the window of opportunity to achieve the UN 2030 Agenda is narrowing in the context of degraded global macroeconomic indicators. For the G20 to be effective, it must deliver a recovery plan that changes the pre-COVID-19 crisis status quo, as over 60% of global GDP comes from fewer than 1,000 cities and metropolitan areas of +500,000 inhabitants. Further, the bulk of urbanization occurs in the Global South, where cities account for 70% of all infrastructure investment needs,

and informality levels are high (OECD 2015; UNDESA 2018; UN-Habitat 2016). This policy brief outlines how a "G20 Urban Platform" could prioritize infrastructure investments that build more capable cities in more capable states, a much-needed turn in multilateralism to support peace and equitable growth. This can put the global development and environmental agendas back on track."

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GENDER-RESPONSIVE INFRASTRUCTURE

Workstream Results

This group of experts from the public sector, academia and financial institutions launched the 'Gender-Responsive Infrastructure' workstream of The Solutions Lab in March 2020 with two main goals in mind: First, to counter the flawed yet widespread perception that infrastructure is gender-neutral, which consistently leads to a failure to adequately consider the different roles, responsibilities and needs of women. As a result of such gender-blind planning, women across the world remain disproportionately affected by inadequate energy, sanitation, transport and other critical infrastructures. Over the last months, this workstream has therefore been working to bring the following insight to the fore of global policy debates: Without a pivot to gender-equitable infrastructure, true progress on SDGs and the transformation towards a more sustainable, prosperous and inclusive future for all remains elusive. Second, to move from theory to action, this group has been developing educational materials that provide actionable guidance to infrastructure professionals on how to plan, build and operate truly inclusive infrastructures. Work centered around the following outputs:

Thematic Brief [in this booklet]: The document illustrates how COVID-19 unveiled the shortcomings of gender-blind infrastructure development. It makes the case that taking a gender-responsive approach would trigger enormous economic, social and environmental spill-over effects, such as raising global GDP by unleashing women's untapped economic and entrepreneurial potential. Next, the document points to key existing tools and frameworks to successfully mainstream gender across the infrastructure lifecycle.

Educational Materials: The lack of a gender-dimension to the training of infrastructure professionals presents a major hurdle to inclusive infrastructure development. To fill this gap, this group is currently working to set up an open-source knowledge repository with relevant publications, guidelines and good practice examples as well as a slide-deck that would later be turned into a massive online open course.

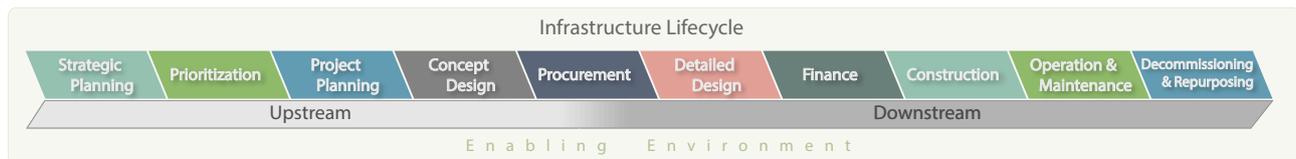
Global Solutions Summit: The Solutions Lab contributed a panel on "COVID-19 & the Reinforced Case for Sustainable Infrastructure" to the summit. In their accompanying Vision Statement, Cristina Contreras and Lorena Zemp provide recommendations to the G20 on how to address economic recovery, climate change and gender inequality in an integrated approach to 'building back better'. Zeinab Elbakri contributed an additional Vision Statement on infrastructure and the social and economic implications of COVID-19 in the Global South.

Policy Brief Gender-Responsive Infrastructure for a Prosperous and Inclusive Africa: Sunita Pitamber and Zeinab Elbakri have been instrumental to setting up the African Network for Women in Infrastructure (ANWIN) – a group of women industry leaders that works to mainstream gender into the continental Programme for Infrastructure Development in Africa (PIDA). ANWIN are currently working on a Policy Brief which outlines how African policy makers can unleash the potential gender-responsive infrastructure holds for women's economic empowerment and the realization of Africa's Agenda 2063. The final Policy Brief will be available through the website of the Emerging Market Sustainability Dialogues.

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THEMATIC BRIEF

Why infrastructure is not gender-neutral and what we can do to make it responsive to the differentiated needs of women and girls



The 2030 Agenda is a milestone agreement as it reflects a global consensus to balance economic development with social inclusivity and ecological sustainability. To turn promise into reality, all societies must “achieve gender equality and empower all women and girls” (SDG 5). For whilst they make up half of the world’s population – and therefore also hold half the world’s human potential – women and girls across the world remain disproportionately burdened by poverty, hunger or climate change⁹. One of the root causes is a lack of access to basic infrastructure services such as clean water, sanitation or safe public transport¹⁰. In the long run, all of this undermines their ability to integrate into and benefit from public life in all its social, economic and political aspects.

In order to remedy this problem, it is crucial to recognize that contrary to popular opinion infrastructure is not gender-neutral. In other words: the demand for and use-patterns of infrastructures by men, women and the LGBTQI¹¹ community differ significantly due to the gendered realities of their lives. Additionally, intersecting inequalities in education, employment patterns, economic means and social categories such as class or race all influence what services people need as well as their ability to benefit from infrastructures and related economic sectors. To give just one example, the enhancement of a public transport system through an expansion of paved roads should not go at the expense of access and safety for those pedestrians unable to afford transportation tickets. Recently, gendered differences in infrastructure use and demand have also been brought to light by the COVID-19 pandemic¹². Women’s livelihoods and jobs have been particularly vulnerable as they represent around 70% of the global care/social workforce and generally have less job security or social protec-

tion than men¹³. They are more likely to be laid off in times of crises and less likely to benefit from economic response measures. Yet, despite the existence of such differences, infrastructure is more often than not planned, built and operated in a gender-blind manner and is, by consequence, biased towards the needs of adult men.

To make public services more responsive to everyone’s lives, it is critical to systematically assure participation of women and meaningful consideration of their needs and demands across each stage of the infrastructure lifecycle. Mainstreaming gender into infrastructure will not only empower women and girls in their upward social mobility, reduce the gender gap and improve access to human rights. Research also demonstrates a broader economic rationale: according to the OECD¹⁴, applying a gender-lens to infrastructure development would increase the total GDP of its member-states by 2.5% until 2050¹⁵. More generally, policies that target women’s economic empowerment have the potential to contribute as much as \$28 trillion (or 26% increase) to global GDP in just a decade¹⁶. An important means to unlock this potential lies in addressing the gendered impacts of infrastructure in tandem with related areas such as agriculture, food production and industry¹⁷.

BARRIERS TO GENDER-RESPONSIVE INFRASTRUCTURE DEVELOPMENT

Inadequate knowledge and awareness: The infrastructure sector, still predominantly male-dominated, tends to regard infrastructure as gender-neutral. Policymakers and business leaders alike do not sufficiently acknowledge gender as an essential and beneficial component of sustainable infrastructure development. This is due to insufficient un-

9 UN Women (2018). Turning Promises Into Action: Gender Equality in the 2030 Agenda. [🌐](#)

10 UNOPS (2020). Infrastructure for Gender Equality. [🌐](#)

11 LGBTQI: lesbian, gay, bisexual, transgender, queer and intersex.

12 Chatham House (2020). The Covid-19 Gender Gap: How Women [...] Will Drive Economic Recovery. [🌐](#)

13 UNOPS (2020). Infrastructure for Gender Equality. [🌐](#)

14 OECD: Organisation for Economic Co-operation and Development.

15 OECD (2020). Presentation delivered at The Solutions Lab: Scaling for Sustainable Infrastructure.

16 McKinsey (2015). McKinsey Global Institute: The Power of Parity. [🌐](#)

17 UNOPS has shown sustainable infrastructure to positively influence the achievement of all 17 SDGs and 92% of its targets.

derstanding of the differentiated infrastructure needs and use-patterns of women and men as well as the result of a narrow focus on environmental sustainability factors at the expense of a holistic ESG approach.

Lack of gender disaggregated data: A systematic collection of gender disaggregated data is required at both project and aggregate levels to generate reliable information on the differentiated needs of women as infrastructure end-users. In addition, data on labour force participation including at the leadership level and on access to training is crucial to highlight and ultimately improve the role of women as contributors to the sector. In all this, quantitative approaches should be complemented by qualitative means, including data gained through gender-sensitive platforms for end-user consultation. Supplementary trend-analyses are important to incorporate insights into upstream-planning and national development plans.

False perceptions of costs: Gender-responsive infrastructure is often perceived as time-consuming and expensive. However, a report by the WHO¹⁸ and World Bank estimates that for new projects, full compliance with accessibility standards only requires about 1% of the total cost whilst guarding against much higher expenses of retrofitting¹⁹. Inadequate design and planning that constrains the accessibility of infrastructure services negatively impact the overall business case²⁰. For instance, surveys reveal that women and men use public transportation at different times and frequency, depending on their work-family obligations: whilst men tend to commute more directly to work, women travel shorter distances with multiple stops. Solid financial due-diligence takes such gender-disaggregated data into account.

Unfavourable enabling environment: The right policy, legal and regulatory frameworks can act as key enablers for mainstreaming gender into infrastructure development. Operating at the intersection of governments' regulatory and buying powers – and accounting for 30% of national GDP in developing countries on average²¹ – procurement processes can help unleash the vastly untapped economic potential of women entrepreneurs. Yet, it is estimated that Women Owned Businesses (WOBs) win less than 1% of all contracts in public procurement globally²². From the average company size to access to financial services, WOBS face considerable economic, social and at times regulatory barriers to accessing tenders and winning procurement contracts. Regulatory steps such as increasing the trans-

parency of processes, avoiding large contracts with multiple bundled requirements or implementing prompt payment can help address these challenges and lead to an overall improved quality of services²³.

Lack of capacity building and training: As a consequence of the overall lack of awareness on the topic, opportunities for training and capacity building fall short throughout the infrastructure lifecycle. Where they exist, capacities on gender-responsive infrastructure are often located at and constrained to a small gender advisory division in the planning process. Additionally, women face a lack of equal employment measures downstream. A study of fifteen developing countries, for instance, showed that in the water, sanitation and hygiene sector, women professionals made up less than 17% of labour force²⁴. Targeted capacity building for women can remove barriers to participation, including through the provision of construction skills training to local communities and women, which promotes livelihood opportunities and builds domestic capacity in the labour-based construction sector.

SOLUTIONS TO MAINSTREAMING GENDER ACROSS THE INFRASTRUCTURE LIFECYCLE

To ensure that infrastructures address the service needs of men and women alike, gender has to be mainstreamed across the infrastructure lifecycle. Here are a number of steps that can be taken thereto²⁵.

Strategic Planning: Besides supportive policy, legal and regulatory frameworks for an overall enabling environment, long-term visions for gender mainstreaming should be in place. A Gender Action Plan (GAP) is an important roadmap tool that outlines specific activities and tangible benefits. A GAP allocates financial and human resources and sets concrete targets along a timeline. It can be developed at different levels (national, regional, local) and by various stakeholders including planners and project developers.

Prioritization: Key Performance Indicators (KPI) and specific gender criteria should be enshrined in regulatory and voluntary standards to ensure those projects are selected that serve the needs of all segments of society and which balance social, environmental and economic considerations. The public and private sector should promote projects that support women empowerment and gender equality in the infrastructure sector by means of gender-sensitive employment activities and by incorporating women into the

18 WHO: World Health Organization.

19 UNOPS & UN Women (2019). *Guide on Integrating Gender Throughout Infrastructure Project Phases* [...]. 

20 OECD (2019). *Gender Equality and Sustainable Infrastructure*. 

21 International Trade Centre (2014). *Empowering Women through Public Procurement*. 

22 Ibid.

23 Ibid.

24 UNOPS (2020). *Infrastructure for Gender Equality*. 

25 For a detailed explanation of some of the tools, see: UNOPS & UN Women (2019). *Guide on Integrating Gender Throughout Infrastructure Project Phases* [...]. 

decision-making process. These KPIs can be applied at different levels, including the project pipeline.

Project Planning: A Gender Analysis (GA) conducts qualitative and quantitative research to provide an evidence-based project design that is responsive to social frameworks and contextual gender-needs. Environmental and Social Impact Assessments (ESIAs) help to evaluate possible externalities of infrastructure projects. A corresponding action plan can support the identification of mitigation measures. Sex-disaggregated Beneficiary Assessments analyse benefits of the project such as accessibility, employment measures and social impact disaggregated by sex, geographic location, economic status, educational level or ability status. Resettlement Action Plans (RAPs) can minimize the negative impact of resettlements through gender-sensitive strategies, including equal access to compensation and property rights.

Concept Design: The opportunities for improvement and specific needs identified through the GA as well as the ESIAs should be crystallized into practical solutions, incorporated into the project and defined in greater detail during the next phases. Stakeholder and Community Engagement ensures in-depth participation of marginalized groups, contributes to gender equality and mitigates the project risks to community subsets. This engagement should follow gender-sensitive guidelines to avoid an unintended exclusion of women: holding workshops at inconvenient times in the context of gendered home care responsibilities or an obstructive workshop design that is not responsive to gendered norms on vocal public engagement can for instance create challenging barriers.

Procurement: Gender-Sensitive Procurement integrates enabling requirements and specifications that encourage the potential of women owned businesses and female workers. Procurement measures, based on solid market research, can mainstream gender in the stages of sourcing, solicitation, contract awarding, issuance and management through even small adaptive measures²⁶.

Detailed Design: Based on the specifications given in the concept design, further refinement of how the current project design will account for the different gender needs should be conducted. Furthermore, the different gender-responsive roles and responsibilities should be defined downstream. These measures will help to ensure the achievement of inclusive infrastructure projects that suit everyone's needs and demand.

Finance: Gender-Responsive Budgets (GRB) address differentiated needs and interests by allocating expenditure and gender-responsive commitments in a re-directing manner towards the well-being and inclusion of women and other marginalized groups. To give an example: women and girls in developing countries are responsible for over 70% of water collection or 200 million hours spent – per day²⁷. This underscores the vital importance of gender-responsive targets as the reduction of budgets for water access might inadvertently cause girls to spend more time fetching water and less in school. A Sex-disaggregated Expenditure Incidence Analysis further scrutinizes the gendered impact of a project's resource allocation, for instance whether the design of a new school building favours equal attendance of girls and boys. Numerous reports highlight that adolescent girls frequently drop out of school due to a lack of (adequate) toilets as well as menstrual hygiene and sanitary facilities, particularly in low-income countries.

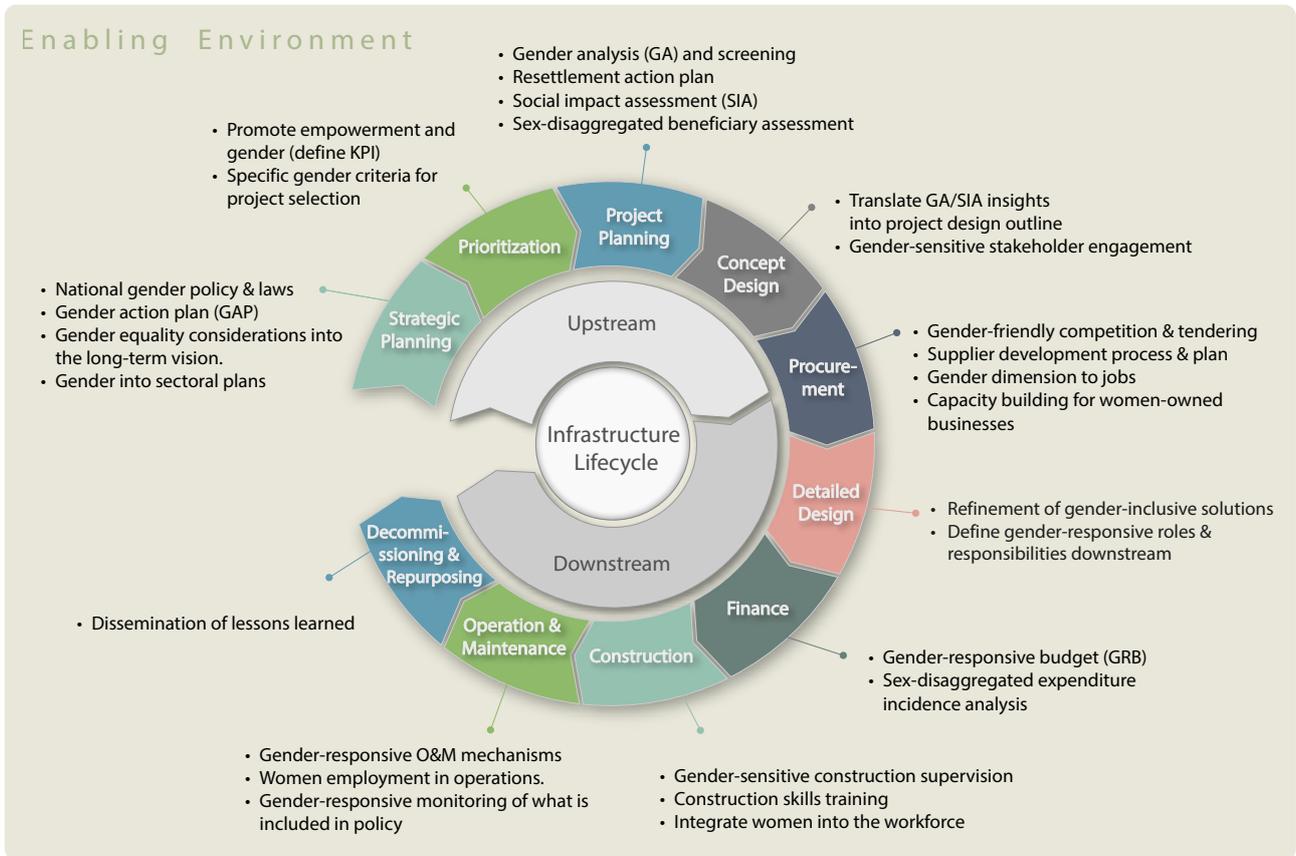
Construction: Gender-Responsive Construction Supervision and equal employment measures not only enhance safety and security but also help integrate more women into the workforce through skills training and technical assistance. For example, a lack of job advertisements targeted to women or their placement in channels women are unlikely to consult hinders their increased economic activity in this sector. Safe and secure work environment should be created on construction sites through policies, legislation and campaigns to prevent Gender-Based Violence (GBV) and sexual harassment on sites. Roles and responsibilities for the integration of these measures should be assigned and plans for future monitoring defined.

Operation & Maintenance: Gender-Responsive O&M Mechanisms acknowledge the importance of community ownership and ensure that projects are well-maintained to provide equitable services to both women and men. Gender-mainstreamed O&M plans enhance diverse employment opportunities for women through human resource policies and practices including equitable recruitment, technical training and responsive workforce management.

Decommissioning and Repurposing: Gender-responsive Monitoring and Evaluation includes the dissemination of lessons learned and an impact analysis concerning objectives and indicators of the GAP. Ideally, long-term assessments on the project's gendered impact and benefits are conducted and shared.

²⁶ See also: International Trade Centre (2014). Empowering Women through Public Procurement. 

²⁷ UNICEF (2016). Collecting Water is often a Colossal Waste of Time for Women and Girls. 



Gender mainstreaming across the infrastructure lifecycle

INTEGRATED UPSTREAM PLANNING

Workstream Results

The 2030 Agenda for Sustainable Development calls for integrated approaches to sustainable development which factor in interdependencies of sectors, regions and different interest groups. This imperative crucially applies to sustainable infrastructure planning: True progress on the Global Goals remains elusive if sustainability is only addressed one infrastructure project at a time. Rather, sustainability must be mainstreamed through integrated upstream planning approaches that integrate all relevant sectors and stakeholders. In practice, however, segregated infrastructure planning is still widely spread, thereby failing to reap efficiency gains and positive spill-over effects from integrated upstream planning approaches.

Therefore, this workstream focused on raising awareness about the centrality of integrated upstream planning considerations to improve sustainability and resilience of infrastructure development at early stages. Bearing this goal in mind, the workstream defined the challenges that hinder broad uptake of integrated upstream planning for sustainable infrastructure and outlined solutions to overcome these barriers. The members formulated recommendations to support integrated upstream planning for the international donor community as well as for national and sub-national public authorities. To anchor the generated knowledge within the international infrastructure community and to position the topic more prominently on global agendas, the workstream delivered the following outputs:

Thematic Brief [in this booklet]: This summary outlines the major challenges to integrated upstream planning for sustainable infrastructure. Followingly, it identifies five essential criteria for scaling up integrated upstream planning and concrete recommendations that support implementation.

Guidance Note on Good Practice Guidance for International Actors, Countries and Cities in Strategic Planning for Sustainable Infrastructure: To provide hands on guidance for actors involved in infrastructure planning at different levels, this note makes the case for integrated upstream planning for sustainable and resilient infrastructure. It includes detailed explanations of challenges, scaling approaches and good practice examples, concluding in concrete recommendations for measures to be adopted by the different stakeholder groups mentioned above.

T20 Policy Briefs: The workstream members contributed to two policy briefs for the Think20 (T20) process, the intellectual backbone of the Group of Twenty (G20). The briefs informed on (1) Policies and Implementation Guidelines for Data Driven, Integrated, Risk-based Planning of Sustainable Infrastructure and on (2) Shaping the New Frontiers of Sustainable-Urban-Infrastructure: The Need for System Change to Re-Couple Growth with Sustainability and Shared Prosperity. The briefs will be available at the [G20 Insights Platform](#).

Contribution to the 2020 Global Solutions Summit: The workstream participants contributed the Global Table on [COVID-19 and the Reinforced Case for Sustainable Infrastructure Development: Mobilizing Infrastructure Investments as Catalysts for Net Zero & SDG Delivery](#), outlining the importance of sustainable infrastructure investments for green economic recovery and public service delivery post COVID-19.

Online event series on How Integrated Planning Approaches Can Help Build Sustainable and Resilient Infrastructure in a post-COVID-19 World: This online event series offers insights into the importance of integrated upstream infrastructure planning, its link to sustainable development and its implementation at national, regional and municipal levels as well as on the practical application of methods, tools and approaches that support implementation, such as systems modelling and capacity assessment tools.

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THEMATIC BRIEF

Guidance for International Actors, Countries and Cities



WHY INTEGRATED UPSTREAM PLANNING IS KEY FOR SUSTAINABLE INFRASTRUCTURE

True progress to fulfil the ambitious goals of the global agreements—the Paris Agreement, Convention on Biodiversity, Sendai Framework, and Sustainable Development Goals (SDGs), among others—is close to impossible if sustainability is addressed only one project at a time. Major efforts are needed “upstream” to strategically and spatially plan across sectors and with diverse stakeholder participation in order to prioritize infrastructure solutions that best balance potential trade-offs among economic viability, resilience, ecosystems and biodiversity, social equity, and service delivery (Figure 1).

The world already faced converging global crises in climate change, biodiversity loss, and socioeconomic inequality before COVID-19 that demonstrated a profound need for improvements in current infrastructure planning and development. This pandemic and the resulting global economic recession only further amplify the need for **integrated upstream planning approaches that build resilience and lay the foundations for sustainable and inclusive growth.**

Sustainable infrastructure is a powerful solution at the heart of these multiple global agreements designed to address these crises. Given the “lock-in effect” of infrastructure assets and that more than 75% of the infrastructure aimed to be built by 2050 is not yet in existence today (and up to 70% anticipated in developing countries), the timing is opportune to leapfrog into the sustainable development of the future.²⁸

Upstream Planning: Government-led processes to determine strategic and land use plans at the national, sub-national, or municipal scale, including for specific or large-scale infrastructure solutions, based on national government strategic development visions and sub-national, mul-

ti-stakeholder group determined priorities.

Integrated Planning: Multisectoral, inclusive, multi-disciplinary, and stakeholder-based processes to determine priorities for infrastructure solutions that balance environmental, social, and economic aspects of sustainability across the entire lifecycle of infrastructure systems in the provision of essential services.²⁹

Planning efforts are critical to not only reduce costs but also avoid worst case future climate change scenarios. Potential savings have been calculated to be as high as 40% (from 8% to 4.5% of GDP) to meet the infrastructure-related SDGs in developing countries.³⁰

WHAT ARE THE MAIN BARRIERS TO INTEGRATED UPSTREAM PLANNING?

Even with such clear evidence of the cost savings, especially in addressing the increasing physical and transitional risks of climate change^{31,32,33}, very few national or sub-national governments regularly carry out such integrated upstream planning. The Solutions Lab has identified the following common political economy and technical implementation barriers preventing wider implementation of integrated upstream planning:

1. Weak political will due to limited awareness of the benefits across all stakeholder groups;
2. Limited funding in “upstream” and integrated planning compared to individual projects, especially in developing countries;
3. Insufficient sector-specific data at the necessary scale;
4. Poorly designed or low capacity institutional structures or processes to manage more integrated upstream planning approaches.

²⁹ UN Environment (2019). *Integrated Approaches to Sustainable Infrastructure*.

³⁰ Rozenberg, J., Fay, M. (2019). *Beyond the Gap: How Countries Can Afford the Infrastructure They Need while Protecting the Planet*. World Bank.

³¹ Ibid.

³² Watkins, G., Mueller, S.U., Ramirez, M.C., Serebrisky, T. & Georgoulis, A. (2017). *Lessons from Four Decades of Infrastructure Project-Related Conflicts in Latin America and the Caribbean*. IDB.

³³ Hallegatte, S., Rentschler, J. & Rozenberg, J. (2019). *Lifelines: The Resilient Infrastructure Opportunity*. World Bank.

²⁸ Egler, H.P., Frazao, R. (2016). *Sustainable Infrastructure and Finance: How to Contribute to a Sustainable Future*. Global Infrastructure Basel.

HOW TO ENSURE INTEGRATED UPSTREAM PLANNING IN PRACTICE?

Once a country is determined to implement and invest in sustainable infrastructure, five essential criteria must be met to overcome the above-mentioned barriers:

1. Forward-looking national strategic vision and planning framework

Effective integrated upstream planning can only occur with a clear vision of sustainable development set by the national government with buy-in from key relevant stakeholders. The admittedly multifaceted and sometimes conflicting goals of poverty reduction, sustainable development, biodiversity conservation, and climate change mitigation and adaptation need to be addressed simultaneously and systematically.³⁴

2. Policy, institutional, and regulatory reforms combined with capacity building

Policy and regulatory reforms combined with human capacity building are essential for most countries to successfully implement integrated upstream planning. This is especially important given the heavily sector-siloed nature of infrastructure planning in many countries; and even robust planning institutions are newly challenged by the cross-cutting nature of climate extremes and their impacts, requiring innovation and investment.

3. Innovative financial models to fund integrated upstream planning

Innovative new funding concepts that move away from individual projects to diversified portfolios that provide different kinds of return to different classes of investors (e.g. development banks take more risk than private, institutional capital) are one potential solution to insufficient funding upstream. A blend of green, social and municipal bonds with different interest rates attached as part of a 'master fund', for example, can finance integrated upstream planning that reduces risks for a portfolio of public-private-partnership investments in infrastructure projects.³⁵

4. Evidence-based decision support through systems modelling

Systems modelling technology combined with increased satellite data availability should be introduced in order to enable integrated, multisector (ecosystems, energy, water, urban, health) modelling of complex, geographically large systems. While data availability continues to be a chal-

lenge in many countries, digitization and increasingly cheap computing power have made such models to inform strategic and spatial development planning highly cost-effective and powerful tools.

5. Strong stakeholder engagement processes

Deliberate involvement of diverse coalitions of stakeholders, from multiple levels of government and the private sector to communities, indigenous populations, and other representatives of civil society is essential for any successful integrated upstream planning process. It not only avoids costs of potential expensive delays in future project implementation,³⁶ but is essential for determining and balancing development priorities amongst all groups.

RECOMMENDATIONS FOR INTERNATIONAL AND DOMESTIC INSTITUTIONS

To facilitate integrated upstream planning globally at scale and ultimately drive investment toward sustainable infrastructure projects, we suggest the following actions for influential institutions involved in sustainable infrastructure.

International: MDBs, NGOs, Bilateral Aid Agencies

- Collaborate to **develop a universal high resolution digital model of the Earth** that includes links directly to, and shares data with, integrated systems modelling for people and ecology at national and sub-national/regional scales so that risk assessment for future scenarios for sustainable infrastructure designs and their impacts can be improved over time.
- **Allocate funding through existing multilateral platforms** explicitly targeted at developing countries to provide governments with resources dedicated to national and sub-national data-driven, upstream integrated infrastructure planning processes and capacity building for associate institutions.
- **Support the digitalization of infrastructure project preparation** to facilitate government access to best practices and technical assistance and improve data collection across the whole project lifecycle, including the use of systems modelling support tools (above) and most effectively target global goals in climate, biodiversity, SDGs, etc.

³⁴ Institution of Civil Engineers (2019). Enabling Better Infrastructure: 12 guiding principles for prioritising and planning infrastructure. 

³⁵ The Ecological Sequestration Trust (n.d.). Smart ways to mobilise more efficient and effective long-term investment in city regions. 

³⁶ Watkins, G., Mueller, S.U., Ramirez, M.C., Serebrisky, T. & Georgoulas, A. (2017). Lessons from Four Decades of Infrastructure Project-Related Conflicts in Latin America and the Caribbean. IDB. 

National planning ministries and departments

- **Update national integrated financing frameworks** that determine how national development and infrastructure strategies will be financed and implemented (considering all financial and non-financial means of implementation, e.g. public, private, domestic and international finance, technology and capacity building) to explicitly allocate funding to integrated upstream planning.
- **Create policies and capacity building programs that incentivize sub-national and local scale risk-based integrated upstream planning** to address urban-rural linkages and the health and resilience of people and the ecosystems that support them, while enabling smart choices to be made for sustainable infrastructure planning and delivery.
- **Create mechanisms to ensure diverse stakeholder engagement** in strategic and spatial planning processes for infrastructure solutions, including non-state actors (NGOs, the private sector) and local communities.
- **Create a data specification development plan** that includes data needs, collection strategies, specifications, handling, and brokerage for the full lifecycle of sustainable infrastructure investments; and has interoperability between different data sources. Match the data needs to those required for risk screening tools by funders; and support capacity building across different stakeholders around new data policies and data processing.
- **Update national building and infrastructure standards** in line with increasing climate risks and to enable new integrated systems solutions, including the potential for nature-based solutions, to be used.

- **Strengthen planning functions within municipalities** by creating: multi-disciplinary teams with urban designers, planners, hydrogeologists, naturalists, architects, finance experts, and biodiversity experts to work together in a collaborative environment and engage in urban infrastructure planning and design; creating a centralized data platform to be used by these multidisciplinary teams; building capacity and increase funding for systems model application and development to support integrated upstream planning; and requiring that infrastructure investment funds flow through the multidisciplinary planning team to ensure investment decisions follow plans.

See full [Guidance Note](#) on Integrated Upstream Planning for additional detail, including requisite data and conceptual frameworks to support such modelling approaches.

State / regional planning departments

- **Adopt new integrated upstream planning tools** for cross-sector collaboration at regional (sub-national) and local scales so that landscape, urban, rural and infrastructure planners can apply integrated approaches that explicitly consider nature-based solutions and can evaluate and measure climate risks while connecting to project level sustainability and resilience standards.

Municipalities

- **Use systems models and data to implement performance-based procurement** for sustainable infrastructure so that public and private sector contracting parties are committed to delivering short- and long-term performance outcomes that match the sustainability and resilience needs of the community and the ecosystems that support them.

SUSTAINABLE INFRASTRUCTURE PROJECT PREPARATION

Workstream Results

This workstream was prompted by the Mexican infrastructure development bank Banobras as fiduciary of Mexico's National Infrastructure Fund FONADIN. During the first in-person meeting, FONADIN expressed interest in enhancing the sustainability of its infrastructure project pipeline with support from the Solutions Lab. Accordingly, this workstream zeroed in on solutions for sustainable infrastructure project preparation with two main objectives: Firstly, the workstream accompanied FONADIN's efforts in strengthening the delivery of sustainable infrastructure projects in Mexico through a Critical Friends Group. Secondly – building on FONADIN's journey – the workstream has been developing hands-on guidance for project preparation officials more broadly to support the development of sustainable and bankable project pipelines that attract private investors, contribute to closing the global infrastructure service gap and align with sustainable development objectives. Work centered around the following outputs:

Thematic Brief [in this booklet]: To close the sustainable infrastructure service gap in line with the SDGs, additional investments of USD 18 trillion must be mobilized until 2040. By integrating sustainability criteria into planning and preparation of new infrastructure assets, public bodies can achieve a dual objective: (i) infrastructure asset pipelines that provide essential services to societies and meet sustainable development objectives, and (ii) bankable projects that mobilize private capital because they fulfil investment criteria of forward-leaning private investors.

Critical Friends Group: The participants of this workstream formed a Critical Friends Group – in other words, an informal advisory board – to accompany FONADIN's ongoing sustainability efforts and its cooperation with the Inter-American Development Bank (IDB) in developing and implementing a sustainable infrastructure strategy. The Critical Friends Groups documents FONADIN's experience with a view to foster knowledge-sharing and capacity building for FONADIN's peers around the globe.

Guidance Note on Integrating Sustainability Considerations into Infrastructure Project Preparation: Building on the work of the Critical Friends Group, the workstream has been translating the lessons-learned into an actionable Guidance Note striving to offer a "recipe" for project preparation officials to set up effective institutional mechanisms for sustainability integration into project preparation processes. The goal is to disseminate the Guidance Note and establish it as a go-to resource for project preparation officials around the globe.

Contribution to the 2020 Global Solutions Summit: The workstream participants contributed the Global Table on COVID-19 and the Reinforced Case for Sustainable Infrastructure Development: Mobilizing Infrastructure Investments as Catalysts for Net Zero & SDG Delivery, outlining the importance of sustainable infrastructure investments for green economic recovery and public service delivery post COVID-19.

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THEMATIC BRIEF

Mobilizing Private Capital and Closing the Infrastructure Service Gap



WHY PROJECT PREPARATION IS KEY TO MOBILIZE PRIVATE CAPITAL AND CLOSE THE INFRASTRUCTURE SERVICE GAP

The global investment needs to provide adequate infrastructure services are estimated at USD 94 trillion between 2016 and 2040, resulting in a predicted **financing gap of USD 15 trillion**, according to the Global Infrastructure Hub. Achieving the SDG targets increases the financing gap by another USD 3 trillion between 2016 and 2030.³⁷

Mobilizing private investment in sustainable infrastructure is even more critical in the wake of COVID-19 because public budgets in developing countries are constrained. At the same time, there is **plenty of institutional, private capital looking** for sustainable assets with long-term stable yields.

Joining forces in closing this service gap through sustainable infrastructure will be mutually **beneficial for both public and private stakeholders**. By integrating sustainability criteria into planning and preparation of new infrastructure assets, public bodies can achieve a dual objective: (i) infrastructure asset pipelines that provide essential services to societies and meet sustainable development objectives, and (ii) bankable projects that attract private capital because they fulfil investment criteria of forward-leaning private investors. **Professionals in charge of developing infrastructure pipelines** are thus emerging as increasingly critical stakeholders in the delivery of sustainable infrastructure.

Investors' increasing demand for sustainable infrastructure assets

Forward-leaning private investors increasingly require infrastructure assets to meet sustainability criteria before positive investment decisions are taken. This is attributable to the growing recognition of investors that sustainability factors – such as environmental (including climate), social, and governance (ESG) – can carry significant risk for infrastructure assets, which may impact financial return.

Adding to this momentum, long-term oriented institutional investors – such as pension funds and insurers – are facing increasing pressure from respective regulators to incorporate sustainability factors into long-term investment decisions.

At the same time, investors are beginning to appreciate that looking through a sustainability lens during infrastructure investment due diligence may also reveal opportunities, including untapped market potential and prospects to grow revenues.

Forward-leaning private investors have already created strict sustainability due diligence frameworks (see e.g. the open source [ESG Due Diligence Tool for Infrastructure Assets](#) developed by B Capital Partners and GRESB BV) to ensure that ESG criteria, including climate factors, are rigorously analysed during infrastructure investment due diligence.³⁸

Sustainable Infrastructure Project Preparation to Mobilize Private Capital

Part of the solution to attracting more private capital is to offer more bankable projects that fulfil the sustainability investment criteria of more forward-leaning private investors.³⁹

Consequently, by integrating sustainability factors in up- and midstream phases of infrastructure project development (prioritization, project planning, concept design and procurement), project preparation professionals can help align investment opportunities with investors' sustainability due diligence criteria. Alignment with sustainability must

³⁸ Work on the integration of sustainability considerations into investment decisions includes work by WWF in cooperation with Cadmus [Sloan, W., Wright, K., Crowe, J., Daudon, J. & Hanson, L. (2019). Valuing Sustainability in Infrastructure Investments: Market Status, Barriers and Opportunities. [🌐](#)] and with Oliver Wyman [Tonkes, N., Demmer, F., Lee, E., Koh, S., Wright, H. & Chen, T.K. (2020). Incorporating Sustainability into Infrastructure. [🌐](#)] as well as initiatives by private and public stakeholders: FAST Infra, for example, a joint initiative by public and private stakeholders, is working towards a Sustainable Infrastructure Label building on a curation of existing market-facing standards [Deseglise, C. (2020). How to drive investment into sustainable infrastructure. [🌐](#)]

³⁹ While a stronger focus on sustainability considerations may help to attract forward-leaning investors, the issue of successfully mobilizing private capital has of course more dimensions that are covered extensively in guidance documents and literature elsewhere, see here for additional insights: IDB (2017). Mobilizing Private Capital for Infrastructure. [🌐](#)

³⁷ Global Infrastructure Hub (2017). Global Infrastructure Outlook. [🌐](#)

be made explicit to the private sector at the time of bid to encourage positive investment decisions.⁴⁰

This burgeoning sustainability push from the private sector is being met, in some cases, by a growing sustainability pull from the public sector. Despite capacity challenges, governments progressively recognize that a full lifecycle approach, with sustainability considerations integrated throughout, yields greater value for money in the long run than traditional approaches. Coupled with expected efficiency gains of private participation and the need to crowd-in private investment in infrastructure, this push and pull engenders a perfect impetus for governments to incorporate sustainability requirements in the preparation of infrastructure pipelines.

What are the main barriers to sustainable infrastructure project preparation?

It may be easy to agree on the merits of integrating sustainability into project preparation both as a way to ensure infrastructure pipelines in line with sustainable development objectives and to offer bankable projects that attract private capital by fulfilling investment criteria of forward-leaning private investors. Yet, actually integrating sustainability often proves challenging. The following challenges have been identified as particularly relevant barriers:

1. Professionals in charge of project preparation who are committed to sustainable infrastructure may face the **challenge of an abundance of tools, frameworks and approaches that are increasingly difficult to navigate.**
2. A **shortage of best practice examples and lack of practical guidance** on how to implement sustainable infrastructure through project preparation on the ground may add confusion.
3. To effectively incorporate sustainability considerations into project preparation, **institutional change management** – behavioral change and buy-in at all institutional levels – **has emerged as a critical ingredient.**
4. **Sufficient capacity to integrate sustainability is not always available in-house** and may thus have to be developed or sourced externally.
5. **Assessing, monitoring and showcasing the benefits/business case for sustainability is difficult** but key to justifying efforts and resources flowing into sustainability integration.

How to ensure sustainable infrastructure project preparation in practice?

To effectively integrate sustainability into up- and mid-stream phases of project preparation and thereby subsequently attract private financing, hands-on guidance may “do the trick”, especially in the case of public institutions. The Solutions Lab has developed a Guidance Note that provides orientation and advise on pragmatic steps for institutions to integrate sustainability systematically into their operations:

1. **Institutions may want to first identify their sustainability goals and define a credible roadmap to close remaining gaps.** Building on a solid understanding of the notion of “sustainable infrastructure”, institutions should decide for a sustainability framework to guide their efforts. The starting point of any meaningful strategy is to assess potential sustainability gaps against the selected framework and define steps on how to close these gaps with credible timelines and milestones.
2. **Institutions must adapt their existing internal processes to mainstream sustainability and bridge gaps identified.** Institutions should focus on user-friendly solutions and build on existing institutional processes and (IT-)systems, while securing buy-in from key stakeholders early on. Specialized innovative tools should play a supporting role in bridging identified gaps.
3. **Institutions must ensure effective change management by highlighting the benefits and business case for sustainable infrastructure and building adequate capacity.** Open and direct communication as well as onboarding and training offers may foster a new sustainability culture and increased buy-in at all levels.
4. **Implementation should start with piloting and continuous adjustment of the implementation strategy building on sound monitoring and evaluation.** As with any new strategy, integrating sustainability requires a continued reassessment of both the processes and the impact. Data on sustainability of projects should be used to inform and improve future implementation efforts.

Interested stakeholders will find more detailed information on each of these steps as well as best practice examples in the [Guidance Note](#).

⁴⁰ Sponsored by the Public-Private Infrastructure Advisory Facility (PPIAF) and the Global Infrastructure Facility (GIF) - World Bank Group and EBRD with IDB as partner, the “Aligned Set of Sustainability Indicators” (ASSI) initiative was launched in April 2019 to create coherent / aligned signalling of key sustainability criteria for governments and private investors based on multi-stakeholder consultations.

SUSTAINABILITY ENVIRONMENTAL AND CLIMATE CHANGE

EXAMPLE OF GOOD PRACTICES
 For the development of the Project, the tonnage of carbon emissions generated by the machinery were estimated, as well as the carbon capture potential of the existing vegetation.

Sustainability criteria

	ND	T1	T2	T3
Greenhouse gas emissions		█	█	
Climate risks, resilience and disaster risk management		█		
Impacts on biodiversity and native flora and fauna in the region		█	█	█
Environmental impact of the Project		█	█	█
Control and monitoring of pollutants		█	█	█
Efficient use of resources and recycling strategies	█			
Efficient use of energy and renewable sources		█	█	
Preservation or enhancement of public spaces		█	█	█

SUSTAINABILITY SOCIAL

EXAMPLE OF GOOD PRACTICES
 Effects of the project in the security of the region and in the health of workers and nearby communities

Sustainability criteria

	ND	T1	T2	T3
Access of communities to basic services	█			
Integration of communities and other interested parties	█			
Integration of disable or special needs persons	█			
Effects of the project in the security of the region and in the health of workers and nearby communities	█			
Compliance with human and labor rights	█			
Cultural heritage and indigenous people		█	█	
Gender inclusive and women's economic empowerment through the project	█			
Equal distribution of benefits and compensations to communities	█			

SUSTAINABILITY INSTITUTIONAL

EXAMPLE OF GOOD PRACTICES
 Mention is made of Environmental Management Program, which will monitor the strict compliance with current legal provisions on environmental matters during the life of the Project.

Sustainability criteria

	ND	T1	T2	T3
Alignment with national and international objectives		█	█	
Sectoral and Institutional Integration		█		
Corporate sustainability, management and governance		█		
Transparency and anti-corruption protocols	█			
Legal requirements and compliance with social and environmental policies		█	█	█
Development of more sustainable technologies and capacities		█	█	
Knowledge transfer in matters related to sustainability	█			
Information collection and monitoring	█			

Figure 1: Projectos Mexico – illustrative sustainability criteria

Projectos Mexico is a notable example of a government taking action through enhancing internal capacity and raising the bar through integrating sustainability requirements into infrastructure projects in the early phases of the infrastructure lifecycle. By doing so, the government is sending a strong and clear message that sustainability is a critical part of infrastructure considerations, which aligns

with forward-leaning private investors and, aspirationally, will incentivize greater numbers of private investors to also consider sustainability factors. The Projectos Mexico Platform has been recognized as a “benchmark for the world” by the Global Infrastructure Hub (GIH), securing Mexico a number one ranking in procurement in GIH’s InfraCompass2020.

Global Infrastructure Hub (2020). InfraCompass 2020 – Set your infrastructure policies in the right direction. Sydney: Global Infrastructure Hub. 



THE SOLUTIONS LAB

MEETINGS



The Solutions Lab Community at their 2nd meeting in Mexico City

Berlin	20 - 22 November 2019
Mexico City	19 - 21 February 2020
"Milan Online"	30 June - 2 July 2020

1ST MEETING IN BERLIN

In November 2019, 28 participants from 15 countries kicked-off the 10-month collaborative journey “The Solutions Lab” in Berlin.

The organizers borrowed from the ‘Social Lab’ methodology, which, rather than taking a linear approach, is responsive to the changing nature of the challenge addressed. At the time of the Berlin meeting, for instance, participants could not have predicted that COVID-19 would put health infrastructures around the world to the test and reshape our understanding of resilience. Yet, the Lab format allowed them to collaborate flexibly and produce meaningful interventions, including a panel on “COVID-19 & the Reinforced Case for Sustainable Infrastructure” at the 2020 Global Solutions Summit.

The Berlin meeting lay the groundwork for this and other outputs of the Lab. This entailed, for instance, an in-depth session by which participants ultimately arrived at a definition of sustainable infrastructure that would serve as a shared conceptual framework henceforth.

In another session, participants discussed existing barriers to the uptake of sustainable infrastructure solutions. What is more, to arrive at a more systematic overview about the sustainable infrastructure universe, participants mapped initiatives and tools, not least by means of the “[Sustainable Infrastructure Tool Navigator](#)” of GIZ.

What became apparent throughout discussions was the need for a holistic vision on sustainability across sectors and spanning the entire infrastructure lifecycle, from integrated upstream planning to the repurposing of materials used. Participants therefore decided to form a workstream on “Narrative & Vision”, which contributed to the “Call to Action” and chapter on “Delivering Sustainable Infrastructure at Scale to meet the SDGs” among other things.

In addition, the format encouraged participants to form workstreams which engaged in thematic deep dives on integrated upstream planning approaches and to define meaningful approaches for sustainable infrastructure project preparation.

To anchor discussions on the latter in practice, Sergio Forte of Banobras and Cristina Contreras of Harvard University presented their effort to mainstream IDB’s sustainability framework into the infrastructure pipeline of [Mexico](#)



Lab participants discuss country case studies

[Projects Hub](#). This sparked an ongoing discussion on how to increase transparency for investors and incentivize developers to improve their sustainability performance.

Leading up to 2020, a year seen as decisive to up ambition on climate targets and biodiversity, the group also sought to put infrastructure front and centre in policy debates. The organizers thus invited Prof. Naoyuki Yoshino, then Dean of the Asian Development Bank Institute (ADBI), to share his experiences as Co-Chair of the Think20 Infrastructure and Financing Task Force. Work in Berlin benefitted additionally from the presence of two co-chairs of current T20 task forces who invited the group to submit proposals for policy briefs. Four such briefs have since been accepted by this year’s T20 presidency (see chapter T20 Policy Briefs).

To launch such an ambitious multi-stakeholder format, the city of Berlin proved to be an inspiring location. Grounded in a rich history, the city has recently been undergoing rapid change across former lines of geographical and social division. To experience the manifestations of this in infrastructures old and new, the group was invited to join a self-guided tour through the urban quarter of “Berlin Ostkreuz”. These practical insights sparked a debate on the lack of systems level planning even in industrial countries where infrastructure development is often more advanced and highlighted the need to integrate social and environmental sustainability considerations at a pre-project level – a topic that would become a focal point of work in the Lab.

2ND MEETING IN MEXICO CITY

Following the kick-off in Berlin, the Solutions Lab re-convened for a second face-to-face meeting in Mexico City, from 19 to 21 February 2020. The choice of location meant that participations were challenged to discuss their solutions in a country where sustainable infrastructure is both urgently needed and high on the agenda. Rising to the challenge, the Inter-American Development Bank (IDB) positioned itself as a driver of transformative change in the region, not least through its [“IDB Sustainable Infrastructure Framework”](#). The organizers were therefore delighted to team-up with the IDB as co-host of the Mexico meeting. In Mexico, the main goal was to provide space to continue collaboration within several workstreams established in Berlin, including:

T20 Policy Briefs: Participants continued their work to inform discussions at the G20 presidency. Topics include (1) innovations in revenue and finance models for sustainable infrastructure development, (2) policies for data-driven, integrated, risk-based infrastructure planning; and (3) avenues to shape the new frontiers of sustainable urban infrastructure.

Sustainable Infrastructure Project Preparation: The meeting was kicked-off with an expert input by Mariana Silva on mainstreaming the IDB Framework in Latin America. Discussions then moved to institutional change necessary for the application of meaningful ESG criteria to the pipeline of Mexico's National Infrastructure Fund (FONADIN). This also prompted the decision to establish a ‘Critical Friends Group’ in support of FONADIN's effort and document its experience with a view to peer-learning.

Integrated Upstream Planning: Based on a series of case studies (Mysore, India; Paris, France; and rural Ghana), this group deepened discussions on how to empower infrastructure planners to prioritize investments that best balance social, economic and environmental trade-offs. A lack of actionable guidance ultimately motivated the group to begin work on a joint [‘Integrated Upstream Planning Guidance Note’](#), which would assist practitioners in translating solutions for integrated and geo-spatial planning into practice.

A new workstream on **“Gender-Responsive Infrastructure”** was initiated by Sunita Pitamber, who helped set-up and introduced the Lab to the “African Network for Women in Infrastructure” – a network to give women a bigger stake



Participants working on an Integrated Upstream Planning Guidance Note

in infrastructure planning. Participants also benefitted from an input on policy pathways towards gender-responsive planning by Özlem Taskin (OECD) and from a regional perspective on the Indian WASH sector by Paramita Datta Dey (National Institute of Urban Affairs).

The meeting also provided a space for excellent expert inputs on key challenges identified at the outset of the Lab: (1) How to systematically integrate sustainability across the entire infrastructure lifecycle; and (2) improving the “business case” for sustainability.

On the former, Lori Kerr of the Global Infrastructure Facility (GIF) provided insights into ongoing work of MDBs towards a common set of indicators for sustainable infrastructure (Link) and sparked a discussion on how to take this framework to the private sector. Peter Head, Founder of Resilience Brokers, in turn painted a vision of how advances in Earth Systems Modelling can enable risk-informed infrastructure investment decisions and optimize the use of nature-based solutions.

On the latter, Luis Mejia, Director at BlackRock, illustrated how climate change led to a profound reassessment of risks and asset values in the financial sector. Against this backdrop, BlackRock began embedding ESG Principles in all its investment processes and joined Germany, France and various foundations in establishing the Climate Finance Partnership.

All impulses demonstrated the importance of multi-stakeholder approaches to infrastructure development and the need to deliver sustainability at scale – which was to be the focus of the 3rd meeting in Milan.

3RD MEETING “MILAN ONLINE”

The Solutions Lab reconvened for a series of online meetings from 30 June to 2 July 2020 under the bitter-sweet theme “Milan Online”. Bitter, because it reflected the reality that the world had been hit by a viral pandemic and socio-economic crisis in its wake which thwarted the community’s plan to meet in Milan. Sweet, because from digital breakout corners to a virtual tour of the University of Bocconi’s zero emissions campus, participants demonstrated extraordinary commitment to using all means available to collaborate under difficult circumstances.

In many ways, the attempt to shift not just exchange but genuine collaboration across numerous time-zones to the virtual sphere was a first for the organizers. What the meeting showed: methods from brainstorming and mind-mapping to strategy-trees can be just as effective online in a group where trusted relationships exist. In all this, the organizers were lucky to draw on the digital facilitation skills of [SprintDoctor](#)’s Rakesh Kasturi along with the Lab facilitators Elizabeth Maloba and Eva Philippi. Specifically, the combined use of MS Teams, Slido and carefully designed Mural Boards allowed participants to simultaneously edit and vote on a shared definition of sustainable infrastructure (Mural 1) or regroup in break-out rooms to continue fine-tuning their outreach strategy (Mural 2).

Board Excerpt 1: Virtual Collaboration on a shared Understanding of Sustainable Infrastructure 1

At the heart of the meeting, however, stood the work on scaling strategies to implement identified solutions across sectors and countries. To give just one example: For the “Gender-Responsive Infrastructure” workstream this meant (1) identifying means to counter the perception that infrastructure is gender-neutral and (2) to provide advice on how to mainstream gender-responsive approaches. More concretely, participants jointly sketched-out an outline for a massive online open course, drafted a roadmap for implementation and defined key steps to secure funding among other things.

At the same time, it proved impossible to simply continue work where it was left: COVID-19 had changed everything. Instead, participants emphasized throughout that sustainable, resilient infrastructure is part of any successful and sustainable response to the crisis. Whilst in the short-term, infrastructure investments are critical to recovery and job creation, the delivery of public services from health infrastructure to water and sanitation increase resilience in the long-term.

The end of “Milan Online” also marked the end of the official Solutions Lab journey. As co-organizers, the team at GIZ has been honoured to work with such a diverse, inspiring group of change makers, who are united in their passion for sustainable infrastructure and the belief that it is critical to deliver on the SDGs and Paris Agreement. This commitment is reflected not least in their decision to continue their collaboration as a self-driven ‘community of practice’.

The Emerging Markets Sustainability Dialogues (EMSD) of GIZ will continue to facilitate the implementation of identified solutions through GIZ’s bilateral portfolio across 120 countries.

OUTREACH EVENT

Global Solutions Summit Panel

COVID-19 & THE REINFORCED CASE FOR SUSTAINABLE INFRASTRUCTURE

The COVID-19 pandemic brought health systems even in the most advanced economies to the brink of collapse. In many countries, the situation is compounded by a lack of critical infrastructure services: scarcity of health and sanitation facilities as well as inadequate communication and energy infrastructure still affect the well-being of billions of people today.

In response to the crisis, the Solutions Lab offered advice on how governments can use infrastructure investments to 'build back better'. With this goal in mind, participants contributed a panel to the 2020 Global Solutions Summit. Since its inception under the German G20 Presidency, the summit established itself as a trusted platform for policy exchange. The Lab's panel on "COVID-19 & the Reinforced Case for Sustainable Infrastructure: Mobilizing Infrastructure Investments as Catalysts for Net Zero & SDG Delivery" brought together:

- **Aziza Akhmouch**, Head of Cities, Urban Policy & Sustainable Development, OECD
- **Ryan Bartlett**, Director of Climate Risk Management & Resilience, WWF
- **Amar Bhattacharya**, Senior Fellow, The Brookings Institution
- **Robert Gorißen**, Deputy Director General, International Policy, BMU
- **Heike Henn**, Director for Climate Policy and Climate Financing, BMZ
- **Lori Benita Kerr**, Senior Infrastructure Finance Specialist, GIF
- **Tetsushi Sonobe**, Dean, ADBI

Here is what we learned from the debate:

Lesson 1: 'Grey Infrastructure' is not fit for purpose. We need sustainable solutions at scale to deliver on the Global Goals and protect communities against future pandemics.

Lesson 2: We need holistic and integrated planning approaches, which align national development strategies with SDG delivery. Integration of cities and a focus on public goods delivery are critical to success.

Lesson 3: COVID-19 will strain public budgets. To build back better, we need innovative revenue models that crowd-in private capital.

Lesson 4: Shovel-ready investments into sustainable infrastructure are key to any successful response to COVID-19. Think grey and green, big and small, public and private.

Lesson 5: Fighting the pandemic requires global action. To mobilize infrastructure for a green, inclusive recovery, the G20 can:

- Redefine SDG 17 to create accountability for partnerships; leverage ODA and PPPs for sustainable infrastructure.
- Engage in standardization efforts for quality infrastructure investment (QII), sustainable finance and risk management.
- Harmonize stimulus packages to transition to a green economy, including renewables, energy-efficiency, nature-based solutions.
- Engage across levels of governments: Urban20 can help localize the G20 agenda.
- Support quantifying benefits of sustainable infrastructure and nature-based solutions.
- Make use of the historically low oil price and phase out fossil fuel subsidies.

Various Lab members added additional perspective in the form of Vision Statements. Peter Head made the case that to pivot towards a world in which improved health and well-being are central, governments must fund and apply systems planning supported by risk-based modelling to all infrastructure systems. The good news: According to a World Bank analysis, such an approach can reduce total investment costs to deliver the SDGs by 40%.

Next, Cristina Contreras and Lorena Zemp reminded us that in taking a "gender-blind" approach, we will fail to build back better. Instead, governments must invest in infrastructures that are gender-responsive and in gender-disaggregated data that sheds light on existing inequalities.

You can watch all contributions to the Global Table at the Summit [website](#).

SOUNDING BOARD

Oaxaca, Mexico

In February 2020, the Solutions Lab organised a Sounding Board in the Mexican State of Oaxaca. The event was split in two parts and aimed to put preliminary results and ideas to the test in dialogue with (1) a group of local mayors and (2) members of Oaxaca's state government planning office COPLADE. The Lab was represented by Sergio Forte of Banobras, Cristina Contreras of Harvard University, Ryan Bartlett of WWF as well as Mario Bernal and Vanessa Bauer of GIZ.

Not only are local governments at the forefront of implementation challenges concerning infrastructure planning, but mayors also often carry the responsibility to ensure the sustainability of infrastructure projects – that is to maximise service delivery whilst minimizing negative externalities on the environment and community. This Sounding Board therefore provided a fantastic opportunity for the Lab to generate discussion around the relevance of its ideas – not least around integrated upstream planning – in what is perhaps one of the most complex local governance contexts: Oaxaca is divided into 570 municipalities, 418 of which are governed under the system of uses and customs with myriad forms of self-government.

Participants discuss with municipal servants in Oaxaca

To set the scene and see whether they would pass the test of local relevance, Solutions Lab participants initially shared their definition of sustainable infrastructure as well as practical examples from the different workstreams. And while opinions in the room somewhat diverged, most participants indeed highlighted the relevance of both a long-term vision and the prioritization of projects that promote environmental conservation and adaptation in a region severely impacted by climate change.

Next, local experts shared challenges to sustainable infrastructure delivery in their day-to-day operations. What stood out were coordination challenges around environmental, social and administrative issues such as river pollution or inadequate waste management. For example, a vast number of water treatment plants in Oaxaca are inoperable due to high costs not accounted for in the planning phase or insufficient capacity to maintain and operate the facilities, thereby underlining a lack of purposeful integrated upstream planning.

As such, both municipal counterparts and COPLADE identified the Lab's findings on the benefits of integrated upstream planning and community-based capacity building



Participants discuss with municipal servants in Oaxaca

to be of direct relevance to their work. At the same time, many participants expressed concerns, including on:

- **The over-dependence on federal funding** pre-allocated to investments severely limits capacities to fund integrated planning studies.
- **Municipalities do not dispose of the necessary capacities** for holistic planning and oversight along the entire infrastructure lifecycle.
- **The shortage of legal frameworks for integrated planning and insufficient tax collection** systems further complicate sustainable infrastructure delivery.
- **A lack of awareness** on the benefits of integrated planning paired with **declining trust in public authorities** hinders inclusive upstream consultation processes.

For the Solutions Lab, the feedback from Oaxacan counterparts proved crucial to adjust and rethink workstream findings. Key takeaways were shared during a follow-up webinar with the larger Lab community, including the need to place stronger emphasis on empowerment and mentality change amongst the citizenry and the local leadership as well as an enabling environment conducive to integrated upstream planning – in Oaxaca and at higher administrative levels. Considering these needs, Lab members not only showed interest in staying engaged with the Oaxacan counterparts – they also suggested a series of concrete solutions for better integrated upstream planning such as an inventory of planning tools available in Spanish language and mechanisms for evidence-based decision making at upstream levels. These suggestions have been taken up in discussions with local stakeholders to identify future collaboration opportunities.



PARTICIPANTS

The Solutions Lab is designed for leaders and change agents from the worlds of policy-making, business, development practice, academia and civil society. The participants come from diverse backgrounds and are united by their passion for sustainable infrastructure and their commitment to transformation and scaling solutions. The participants share their perspectives on sustainable infrastructure, discover new approaches to change and collaboratively put scalable solutions into action.

PARTICIPANTS

28



PARTICIPANTS

14



COUNTRIES



SAUD AYID ALSHAMMARI
SAUDI ARABIA

The Saudi Fund for Development Regional Manager

Saud Alshammari is a Civil Engineer who works in the Saudi Fund for Development (SFD) as a Projects Manager. During his 10 years working with SFD, Saud oversaw the preparation and implementation of many development projects in developing countries by granting them the technical aids necessary. Saud holds a PhD in construction engineering and management.

Over the coming years, my organization's contribution to sustainable infrastructure will be to support countries in achieving their plan to meet the requirement of SDGs. Saudi Fund for Development can play an important role by making additional resources available to Governments for meeting their requirements for Building Back Better. Our main priority is to make sure that SDGs-related activities will proceed hand-in-hand with the implementation of developing countries' own vision, and this includes developing strategies for strengthening collaboration and the role of SDGs at different levels as well as promoting international partnerships around the SDGs through development assistance.



APOORVA BAJPAI
DENMARK

United Nations Office for Project Services Infrastructure Sustainability and Resilience Analyst

Apoorva Bajpai has been working on sustainable urban development and infrastructure planning in South Asia and West Africa across various multilateral, bilateral, private and public sector institutions. Currently, she works with the Infrastructure and Project Management Group at UNOPS on providing technical assistance, and developing knowledge products, tools and methodologies to support governments around the world in achieving inclusive, sustainable and resilient infrastructure development. She has previously worked with the UK government and PricewaterhouseCoopers, advising city governments in India on the adoption of

global good practices in planning. She is an urban development planner and architect and received her master's in urbanisation and international development from the London School of Economics and Political Science (LSE).

Over the coming years, my organization's contribution to sustainable infrastructure will be towards supporting governments in achieving their development goals and visions through adoption of an evidence-based infrastructure approach. This approach entails data and information-driven decision-making for planning, delivery and management of sustainable infrastructure solutions. Through technical assistance, implementation support, capacity building, tools, guidance and frameworks, UNOPS helps countries globally address their infrastructure challenges to meet their development targets.



RYAN BARTLETT
UNITED STATES OF AMERICA

World Wide Fund for Nature Director of Climate Risk Management and Resilience

Ryan Bartlett has been working in climate risk and resilience for 10 years, training WWF staff and partners around the world, developing tools, and improving and translating science to better understand and prepare for the risks and impacts of climate change. He has worked with a broad array of stakeholders and partners, from local communities to the UN and the private sector in priority WWF conservation landscapes in Central America, Coastal East Africa, and South and Southeast Asia. He currently manages projects focused on integrating climate and ecosystem services data and information to support improved landscape and regional planning for resilience. He previously worked in international water policy at Duke University's Environmental Law and Policy Institute and received his master's degree in environmental management from Duke's Nicholas School in 2010.

Over the coming years, I will work to raise awareness around the importance of tackling sustainable infrastructure not just one project at a time but working to improve "upstream" planning to arrest critically important negative trends in biodiversity loss, climate change, and economic inequality. I will work to better define barriers and challenges preventing more integrated, system scale action, and work to scale solutions around the world, but

particularly in developing economies. WWF will continue to put even greater effort into not just fighting unsustainable projects when no other options are available, but actively working with all major actors, from finance to fellow NGOs, communities and governments around the world to identify and plan for better outcomes for nature and people.



NICOLAS BUCHOUD
FRANCE

Grand Paris Alliance

President

Nicolas J.A. Buchoud is the president of the Grand Paris Alliance, an independent, non-profit and awarded think-tank on sustainable metropolitan development and investment policies. He is the founding principal of Renaissance Urbaine strategic advisory with a track record of achievements in complex cross-cultural, scientific, entrepreneurial and institutional contexts from Vancouver to Vladivostok. A member of the board and advisory committee of several global companies, research centers, civic organizations, he is a trusted partner and negotiator. He served as chief of staff of a city mayor and advisor for planning and climate change to the President of Paris Ile de France Region and he regularly publishes and lectures on urbanization and infrastructure development, innovation, social capital and inclusion. Nicolas J.A. Buchoud is an alumnus of Sciences Po Paris in public law, public administration and urban affairs. He holds a master degree from Paris La Sorbonne University in 17th Century Chinese history.

Over the coming years, we shall deepen our engagement with the T20 and the Global Solutions Initiative to connect the sustainable infrastructure agenda with issues of cities, community resilience, inclusion, and nature. We launched the Grand Paris Alliance a decade ago and built an active think-tank out of what was initially an informal roundtable of public and private decision makers thriving to shape a new generation of sustainable metropolitan policies. Our engagement is in driving collective and cooperative work, in connecting the global infrastructure investments agenda with community resilience, social capital and nature. In the current crisis context, achieving the 'decade of the SDGs' will require a finer grain of multilateral macro-economics to combine local and global strength. We believe this is also an orientation that the G20 should embrace.



AMAR BHATTACHARYA
UNITED STATES OF AMERICA

Brookings Institution

Senior Fellow

Amar Bhattacharya is Senior Fellow at the Global Economy and Development Program at Brookings Institution. His focus areas are the global economy, development finance, global governance, and the links between climate and development with a focus on the role of sustainable infrastructure. He also co-leads the Sustainable Finance and Growth Initiative of the New Climate Economy. From April 2007 until September 2014 he was Director of the Group of 24. Prior to that, Mr Bhattacharya had a long-standing career in the World Bank. He completed his undergraduate studies at the University of Delhi and Brandeis University and his graduate education at Princeton University.



**GABRIELA CANALES
GALLARDO**
MEXICO

Institute of Planning and Development Management of the Metropolitan Area of Guadalajara

Development Management Director

Gabriela is Director of Development Management at the Institute of Planning and Development Management of the Metropolitan Area of Guadalajara (IMEPLAN). She is responsible for the development and implementation of the Projects Bank and the Metropolitan Impact Ruling, as well as international cooperation initiatives, environment, sustainability, climate change and information technologies, within the nine municipalities of Guadalajara.

Gabriela has a Master's in Environmental Management from Yale University and one in Peace Studies from Kyung Hee University, Korea. She has a degree in International Relations and is experienced Project Manager with a demonstrated history of working in the government sector and skilled in Nonprofit Organizations, Sustainable Development, Conflict Resolution, Facilitation, and Environmental Awareness.



**CRISTINA CONTRERAS
CASADO**
UNITED STATES OF AMERICA

Harvard University

Lecturer

I am a Research Associate in the Zofnass Program for Sustainable Infrastructure at Harvard University, where I focus on promoting sustainable practices in infrastructure projects on a global scale and where I have collaborated on the development and application of tools to quantify sustainable infrastructure. In my efforts to build capacity around sustainable infrastructure, I also work as an independent expert consultant for international financial institutions and public agencies in the US and Europe. This work has allowed me to focus on how the different tools and systems to quantify SI have evolved at the global scale and to reflect on the main impediments to streamline sustainability in infrastructure projects. I am a member of several working groups including the "UNEP Expert Working Group on integrated approaches to sustainable infrastructure", American Society of Civil Engineers' (ASCE), "Sustainable Infrastructure Standards Committee" and the "Planning Committee on Global Sustainability".

Over the coming years, my organization's contribution to sustainable infrastructure will be to continue educating minds and raising awareness on the importance of sustainable infrastructure, maintaining excellence as a core principle for a future transformation.



EDOARDO CROCI
ITALY

Bocconi University

Coordinator Green Economy Observatory

Member of the Managing Committee of GREEN - Centre for Research in Geography, Resources, Environment, Energy and Networks of Bocconi University - where he is coordinator of the Green Economy Observatory (GEO) and of the Smart City Observatory. He also teaches "Carbon Markets and Carbon Management" at Bocconi. He coordinates research activities in several national and European projects on green and circular economy, energy efficiency, smart cities and urban green infrastructures. He is member of

the Thematic Network on Sustainable Cities of UN-SDSN (Sustainable Development Solutions Network). He is president of Italia Nostra Milan's delegation. He served as Milan City Deputy Mayor for Mobility, Transport and Environment and President of the environmental protection agency of Lombardy Region.

Over the coming years, my organization's contribution to sustainable infrastructure will be to build new knowledge through research and teaching, also envisioning the institution of a new course at Bocconi University. The contribution will be particularly focused on the economic evaluation of the benefits provided by sustainable infrastructures.



STEVEN CROSSKEY
DENMARK

United Nations Office for Projects Services

Deputy Director, Infrastructure and Project Management

Steve Crosskey is a Civil Engineer with nearly 30 years of experience in both the private and development sectors. Steve has worked primarily in the planning and management of infrastructure projects involving urban and rural development initiatives, with a focus on road infrastructure and relating to access to markets, food security, and conflict sensitivity. A major focus area for Steve has been infrastructure that is sustainable, resilient and inclusive. Steve joined UNOPS in September 2014. In his current position, Steve has worked to assist governments in providing infrastructure and project management solutions in the context of the 2030 Agenda for Sustainable Development. He has also developed guidance and innovative tools to enhance the capacity of governments to plan, deliver and manage infrastructure systems to meet development challenges. Steve holds a BEng. Honours in Civil Engineering from Oxford Brookes University.

Over the coming years, my organization's contribution to sustainable infrastructure will be towards supporting governments in achieving their development goals and visions through adoption of an evidence-based infrastructure approach. This approach entails data and information-driven decision-making for planning, delivery and management of sustainable infrastructure solutions. Through technical assistance, implementation support, capacity building, tools, guidance and frameworks, UNOPS helps countries globally address their infrastructure challenges to meet their development targets..



PARAMITA DATTA DEY
INDIA

National Institute of Urban Affairs
Senior Research Officer

Paramita is a city planner with over 22 years of experience in the urban development sector. Currently, she works for the National Institute of Urban Affairs, a premier think tank organization of the Government of India. She leads the capacity building programme for scaling up sustainable infrastructure on waste management in 4041 Indian cities – the Swachh Bharat Mission, Urban (SBM-U). She has worked to bridge the gap between infrastructure policy and practice in four countries (India, Nepal, Bangladesh and Sri Lanka) through the South Asia Urban Knowledge Hub. She has helped create Innovation labs on Urban WASH solutions in Indian cities. Her work experience spans multiple stakeholders. She has worked with several Ministries of the Government of India in internationally funded projects by BMGF, ADB, UNDP, CIDA, USAID, World Bank and many others. She has also participated with leading think tank organizations like the Centre for Policy Research (CPR) and the Centre for Science and Environment (CSE).

Over the coming years, my organization's contribution to sustainable infrastructure will be towards supporting the different levels of Government in India to achieve the sustainable development goals through several urban development missions. This will include evidence-based policy research, advocacy and capacity building. This includes tools like research work, policy briefs, guidance frameworks, technical support, forming city-to-city networks and associated platforms, curriculum development etc..



ZEINAB EL BAKRI
CANADA

Savannas Enseades LDA
Senior Adviser

Zeinab el Bakri has been working in the area of gender and sustainable development for over thirty years both in academia, and at several multilateral development banks and institutions. Between 2006–2009, she was Vice-President Operations at the African Development Bank where she

covered areas of agriculture, human development, gender and governance. Between 2010–2012, she became Director of the Delivery Unit in the Office of his Highness Prime Minister of Kuwait where she worked to help implement Kuwait's Ten-Year Development Plan, especially in areas of education, procurement and the business environment. Between 2012–2017, she was a member of the World Bank's Inspection Panel working on areas of accountability and environmental and social policies. Since 2018 she has been serving as Senior Advisor to the consulting firm Savannas Enseades, where she assisted with the establishment of the African Women in Infrastructure Network.

Over the coming years, my organization's contribution to sustainable infrastructure will be in ensuring that gender becomes a fundamental aspect of sustainable infrastructure in Africa. We intend to continue assisting with the provision of support for appropriate policies for gender inclusive infrastructure and tools and training to support capacity building in this important area. To date Savannas has done this through helping establish the African Women in Infrastructure Network (ANWIN).



SERGIO FORTE
MEXICO

Banco Nacional de Obras y Servicios Públicos, S.N.C.

Deputy Chief Executive Officer of Investment Banking

Sergio is Deputy Chief Executive Officer of Investment Banking at Banco Nacional de Obras y Servicios Públicos, S.N.C. (BANOBRAS), where he is responsible for the administration of the National Infrastructure Fund (FONADIN), and the promotion of Mexico's infrastructure agenda through the platform Mexico Projects Hub. Mr. Forte holds a bachelor's degree in business administration from the ITAM, with broad experience in both, the public and private sectors in fields such as stock markets, banking and project finance. Prior to his current position, Mr. Forte held executive positions at Banca Mifel, the National Infrastructure Fund, the Institute for the Protection of Bank Savings (IPAB), and Bancomext.

Over the coming years, my organization's contribution to sustainable infrastructure will be not only the development of new projects based on sustainability criteria, but also the willingness to influence other institutions. We signed

the Principles for Responsible Investments and are about to sign a joint statement with the Mexican Private Equity Association recognizing the importance of sustainability and developing joint actions to promote its principles. We have just created an Infrastructure Sustainability Unit in order to develop best practice frameworks and institutionalize every effort we make to assure that, in the future, Mexican infrastructure becomes more and more sustainable.



PETER HEAD
UNITED KINGDOM

Resilience Brokers

Chair and Founder

Peter is a civil and structural engineer who has become a recognised world leader in major bridges, advanced composite technology and in sustainable development in cities and regions. In 2008, he was named by the Guardian as one of 50 people that could 'save the planet'. He was cited by Time in 2008 as one of 30 global eco-heroes. In April 2011, he left Arup to set up Resilience Brokers, a Charity which has brought together top scientists, engineers, economists, financiers, health, ecology and other specialists to create, demonstrate and scale a CHEER (Collaborative Human-Ecological-Economics-Resource systems) Geographic Information System (GIS) platform to enable city regions to plan, design and implement inclusive resilient growth using low carbon development approaches which are energy, water and food secure. Peter is the editor of Roadmap 2030, Financing and implementing the Global Goals in Human Settlements and City Regions. Peter is visiting professor in sustainable systems engineering at University of Bristol.

Over the coming years, my organization's contribution to sustainable infrastructure will be to bring forward new modelling tools to enable an integrated approach to decision making in the planning and design at both national and local scales in cities and regions around the world. A variety of policy changes, new data systems and funding vehicles will be necessary to facilitate integrated systems planning and de-risked investments in critical infrastructure across all sectors and we have brought together a large multi-disciplinary group to explore this and provide advice on this in the lead up to G20 meetings in November 2020. This is called Pivot Projects and you are all invited to join us www.pivotprojects.org



LORI BENITA KERR
UNITED STATES OF AMERICA

Global Infrastructure Facility

Senior Infrastructure Finance Specialist

With more than two decades of leadership in international development and infrastructure investment, Lori joined the Global Infrastructure Facility (GIF) in 2018. GIF provides transaction advisory to developing countries to build pipelines of bankable sustainable infrastructure programs / projects that attract private capital. Before, Lori was Senior Director at Climate Finance Advisors advising investors, governments and DFIs on climate-smart investment strategies and blended finance solutions. Lori held management and senior roles at IDB Group. She was private sector focal point for CIFs and GEF, investment committee chair of a \$250M blended climate finance fund, oversaw loan and equity portfolios, and reviewed risk / return of proposed loans and investments. As senior advisor to VP Private Sector, she led initiatives to enhance development impact of IDBG's private sector activities. As senior investment officer, she led the organization, structuring, negotiation and execution of project finance, corporate finance and guarantee transactions.

Over the coming years, my organization's contribution to sustainable infrastructure will be to mobilise significantly greater levels of private capital into sustainable infrastructure in emerging markets and developing countries by assisting governments at the national and subnational levels, through both funding and hands-on technical expertise, to build bankable pipelines of investment opportunities aligned with low-carbon, climate-resilient growth pathways and with the SDGs. Complementing our upstream efforts to ensure 'quality at entry', we are designing downstream risk mitigation mechanisms to further expand the market for private finance in sustainable infrastructure.



GABRIEL LANFRANCHI
ARGENTINA

Buenos Aires City Government

Buenos Aires Environmental Urban Plan Managing Director

I am an architect and urban planner by training. I hold a master's degree in urban economics from Torcuato Di Tella University and a MIT SPURS fellowship in urban and regional studies. Currently I am the Director of the Cities Programme at CIPPEC. We focus on urban inequality, climate change, digitalization, and metropolitan governance. I have been co-leading T20 task forces related to infrastructure and climate change in Argentina and Japan. I am an affiliate researcher at ESI MIT where I founded the MIT Metro Lab course. I currently direct the Postgraduate course on Metropolitan Urbanism at the University of Buenos Aires. I co-edited *Steering the Metropolis*, an IDB publication on Metropolitan Governance, and participated as lecturer and key note speaker to many International conferences and courses such as the 9th World Urban Forum, Habitat III, the Moscow Urban Forum, the Metropolis Summit, Smart City Expo Puebla, IDB Transport sector annual Meeting, and Harvard University.

Over the coming years, my organization's contribution to sustainable infrastructure will be to develop the main urban and environmental planning process of the city, co-creating projects and proposals around Sustainable Infrastructure for the City and its metropolitan Area. I will also take these lessons learned to other projects I'm leading with my firm Urbanteo, in Catamarca City (Argentina) and Colonia (Uruguay).



ANUJ MALHOTRA
INDIA

Centre for Green Mobility

Chief Executive Officer

Anuj Malhotra is a technocrat and urban infrastructure professional with over 18 years of experience in transport and urban development. Anuj is the CEO of non-profit Centre for Green Mobility and is also serving as the Transportation Advisor to the Government of Jammu & Kashmir (J&K), as

knowledge partner to the High Powered Committee of the Ministry of Home Affairs, and Senior Planning Consultant to the Sabarmati Riverfront Development Corporation in Ahmedabad. Presently he is based in Delhi. During his Kashmir assignment, Anuj provided technical input and oversight to all the projects related to planning, design and implementation of traffic-transport, urban design, urban (transport & land use) planning and urban landscape design projects in the cities of J&K. He brought into the public sector his multi-dimensional, multi-disciplinary experience for the formulation and implementation of policies, projects and internal capacity building.



NOURA MANSOURI
SAUDI ARABIA

King Abdullah Petroleum Studies and Research Centre (KAPSARC)

Research Fellow and T20 Task Force 2 Lead Co-Chair

Dr. Noura Mansouri is the Lead Co-chair of the Think 20 Task Force 2 Climate Change and Environment, a Research Fellow at KAPSARC, a Research Affiliate at the Massachusetts Institute of Technology (MIT), and an Expert at the World Energy Council. Previously, she has worked at AREVA, the global leader in nuclear energy and fuel cycle.

She earned her MBA and PhD degrees in sustainability and energy transitions from University of London and is the author of "Greening the Black Gold: Saudi Arabia's Quest for Clean Energy". Dr. Mansouri completed a post-doctoral research fellowship at MIT and received the Ibn Khaldun Fellowship from the Center for Clean Water and Clean Energy at MIT and the King Fahad University for Petroleum and Minerals. She was selected as a young scientist to attend the Lindau Nobel Laureate 2017 Meeting in Economic Sciences, was chosen to be a member of the Zayed Sustainability Prize Review Committee for 2018 and the Selection

Committee in 2019 and 2020, and received the 2015 Women Excellence Leadership Award. She is also a board member at Women in Clean Energy under the Clean Energy Business Council for the Middle East and North Africa.



ELIAS OTIENO
KENYA

Insurance Regulatory Authority Actuary

Elias advises, designs and implements policies and regulations on risk based regulatory frameworks at the Insurance Regulatory Authority. He has been at the forefront in developing policies for the public and private sector on economic and social issues especially in integrating sustainability in infrastructure development and quantifying benefits of sustainable infrastructure in Kenya's government Big Four Agenda.

Elias has also worked on various international technical assistance projects, designing and implementing risk based regulatory frameworks for the World Bank Group, IMF, Vizion Software Limited and Extremis Global Risk Consulting. He assisted in the automation process of the regulatory reporting templates in Asia, Africa and Caribbean to establish regimes of risk-based supervision.

Elias holds a bachelor's degree in Actuarial Science, a Diploma in IT and a Master of Science (MSc) in Actuarial Management from Cass Business School, United Kingdom.

Over the coming years, my contribution to sustainable infrastructure will be to use technology to collect voices, issues and sentiments that will help the actors deliver sustainable infrastructure projects in future. I will support the development of artificial intelligence and machine learning combined with advanced sentiment analysis to analyse social, economic and environmental issues and opinions. The output of the analysis will be synthesised into a format that enables improvement in the planning, design and implementation of sustainable infrastructure.



ROWAN PALMER
SWITZERLAND

UN Environment Programme Programme Specialist

Rowan Palmer is a Programme Specialist at UN Environment's Resources and Markets Branch in Geneva. He works primarily on sustainable infrastructure in the context of

inclusive green economy transitions and the 2030 Agenda for Sustainable Development. Prior to joining UN Environment in 2014, Rowan did environmental management for large-scale transportation infrastructure projects in his home province of British Columbia, Canada. Rowan holds a Bachelor's degree in International Development and Environment Studies from McGill University in Montreal and a Master's degree in International Relations from Instituto de Empresa in Madrid.

Over the coming years, my organization's contribution to sustainable infrastructure will be to promote needs-based, systems-level, integrated approaches to the planning and development of sustainable infrastructure as a driver of sustainable development, with a particular focus on the role of nature as infrastructure and infrastructure planning that incorporates nature-based solutions.



SUNITA PITAMBER
PORTUGAL

Savanas e Enseadas LDA Director of Operations

Sunita Pitamber has over 20 years of experience in development in Africa. She has held several positions at the African Development Bank, including Director of Human Capital, Skills Development and Youth Employment. Sunita has also led the AfDB Gender and Sustainable Development Unit where she has supported the design of continental gender responsive investments and sector strategies including policy dialogue tools. She also has extensive experience in supporting sustainable development in post-conflict countries. She has supported the G20 process focusing on addressing the migration crisis through youth employment and increasing private sector investments. Sunita has also led the design of the Climate Risk Management and Adaptation strategy and contributed to supporting country efforts to design climate resilient infrastructure. Currently she is supporting the African Union Commission and the African Union Development Agency to develop the African Women in Infrastructure Network (ANWIn).

Over the coming years, my organization's contribution to sustainable infrastructure will be to support regional organisations, African nations, and stakeholders in developing and implementing gender inclusive infrastructure policies that will bring transformational economic and social change to women's needs and economic empowerment in

Africa. I will also support African national and regional stakeholders in their efforts to address gender inclusive approaches and institutional capacity building.



RICARDO RIVERA
PERU

Derecho, Ambiente y Recursos Naturales Consultant

Ricardo (age 29) obtained his law degree from the Peruvian Amazonian Public University (2013) and is currently pursuing a Master's degree in Government and Public Policies at the Pontifical Catholic University of Peru, as well as a specialisation in Public Management at the same university. He has a Diploma in Strategy and Political Communication by the Graduate School of Business.

His work experience includes: productive conservancy of natural resources; design, implementation and monitoring of public policies at local, regional and national levels; environmental impact of public policies and infrastructure projects in the Amazonian basin and land use plans in Latin America and the Caribbean through case studies of mega projects of infrastructure across borderlines; and strategic thinking to achieve development within transparent, inclusive and participatory process.



GAMELIHLE SIBANDA
SOUTH AFRICA

International Labour Organisation Chief Technical Adviser

Gamelihle is a systems thinker and rapid ideator who fuses his skills in civil engineering, business, ethical artificial intelligence and biomimicry (innovation inspired by nature) towards the creation of a regenerative planet; that provides enough for all forever. He has over 28 years international professional experience mainly in infrastructure investment and development in 13 countries. 20 of the years have been spent working with the United Nations in Africa and the rest in Government, Consulting and Applied Research.

He has worked in various capacities; liaising with Governments, Universities, Infrastructure Authorities, Employers' Organizations, Unions, Donors, United Nations Agencies, Consultants, Contractors and Communities on the policy, financing, feasibility, research, design, training, employment creation, Just Transition to a greener economy and implementation of infrastructure and environmental projects in both rural and urban environments.

Over the coming years, my organization's contribution to sustainable infrastructure will be policy and advisory technical assistance to Governments, private sector and other stakeholders to design and implement employment intensive, climate resilient infrastructure investments that enhance creation of Decent Green Jobs and support sustainable livelihoods.



ÖZLEM TASKIN
FRANCE

Organisation for Economic Cooperation and Development Policy Analyst

Ms. Özlem Taskin is Policy Analyst at the OECD Development Co-operation Directorate. Her work focuses on promoting climate-compatible infrastructure in developing countries and on targeting the catalytic potential of development finance towards climate action - and thereby sustainable development.

Özlem leads the work programme on green investment and development banks in the OECD Development Co-operation Directorate. Within this capacity, she has been lead author of the OECD flagship report 'Aligning Development Co-operation and Climate Action: The Only Way Forward' and the OECD-UN Environment-World Bank report 'Scaling up climate-compatible infrastructure: Insights from national development banks in Brazil and South Africa'.

A development banker with ten years of experience in investment operation and policy, she supported the promotion of renewable energy and energy efficiency in India, Serbia and Turkey. She holds a graduate degree in economics from Goethe-University Frankfurt.



CÉDRIC VAN RIEL
SWITZERLAND

Sustainable Infrastructure Foundation Programme Manager

Cédric has ten years of experience in project management and sustainability in both International Organizations and in multinational companies in Europe, Latin America, Africa and China. Cedric has extensive experience in delivering and managing capacity building program notably with the Indian Ocean Commission, the United Nations and academic experience with the University of Lille (France). Before joining SIF, Cédric was a sustainable development advisor in the Hauts-de-France region, participating in the implementation of the Third Industrial Revolution master plan initiated with Jeremy Rifkin.

Over the coming years, my organization's contribution to sustainable infrastructure will be to empower governments in the preparation and implementation of quality infrastructure using the multilateral platform SOURCE.



**MOUNTAKA WAHABOU
IBRAH**
SOUTH AFRICA

African Union Development Agency - NEPAD (AUDA-NEPAD)

Lead-Infrastructure Project Preparation and Private Sector Development

Ibrah has eight years of experience in regional economic development policies in Africa, focusing on infrastructure development and Public-Private Partnerships (PPP). Currently, he leads the Infrastructure project preparation and finance team at the African Union Development Agency (AUDA-NEPAD). His work consists of assisting African countries in preparing sustainable infrastructure project pipelines, considering social, economic and environmental dimensions from the early stage of the project development cycle. Prior to joining the AUDA-NEPAD, Ibrah worked in the field of financial inclusion of vulnerable groups in Africa, particularly the role of ICT innovations.

Over the coming years, sustainable infrastructure will be a key focus for the AUDA-NEPAD's programme delivery. The

Agency will be coordinating the implementation of an Integrated Corridor Approach for Infrastructure Development across Africa. The objective of this approach is to make infrastructure development works sustainably for communities, environment, and small and medium business. The implementation of the integrated approach will accelerate the realization of the Programme for Infrastructure Development in Africa (PIDA) and provides the necessary support for the African Continental Free Trade Area (AfCTFA)..



BARBARA WEBER
SWITZERLAND

B Capital Partners Managing Partner & Founder

B Capital Partners AG is a partner-owned investment house, established in 2003 in Zurich. We focus on core sustainable infrastructure. Since 2010, we have invested and advised capital in excess of EUR 2.6bn. Our goal is to select superior infrastructure assets for our clients, while adhering to the highest corporate ethic and standards. We are a signatory to [UN PRI](#), a member of [GRESB](#) and joined the CCRI initiative to help quantify physical climate risks. As Managing Partner of B Capital, Barbara published various books and papers on infrastructure investments and sustainable infrastructure. In June 2020, B Capital, together with GRESB, launched the first open-source ESG Due Diligence Tool for infrastructure assets to set a minimum standard. B Capital Partners and GRESB invite investors and asset managers to explore our tool, modify it to their needs and provide feedback so that it can be further developed in everybody's interest.

Over the coming years, my organization will contribute to sustainable infrastructure by improving its ESG DD Tool with the idea to make it the go-to industry standard. B Capital Partners employs the tool to provide transparent reporting and collect valuable sustainability data. We are committed to only invest in infrastructures, which have been assessed along its strict sustainability criteria. Furthermore, B Capital Partners will continue to work on the quantification of ESG factors to integrate risks and opportunities into financial models, including with the CCRI initiative. B Capital Partners will support initiatives, which introduce sustainability into the development, construction and operation of assets and will impact in supporting the enforcement of higher ESG standards in emerging markets.



LAURIN WUENNENBERG
SWITZERLAND

International Institute for Sustainable Development (IISD)

Policy Analyst – Public Procurement and Infrastructure Finance

Laurin Wuennenberg is a Policy Analyst with IISD's Infrastructure Team based in Geneva, Switzerland. His work focuses on upstream planning and financing of sustainable infrastructure, sustainable public procurement, innovation and sustainable finance. Laurin has engaged in research, capacity-building and advisory projects in Europe, South and East Africa, Latin America, South Asia and China for diverse public sector clients and multilateral organisations.

Over the coming years, IISD will continue to provide the Sustainable Asset Valuation (SAVi) service to enhance planning and decision-making for sustainable infrastructure. A recent addition is the integration of climate variables and data from the EU's Copernicus Climate Change Service. This allows valuing location specific climate-related risks and externalities to enhance planning of climate resilient projects and portfolios. In collaboration with the Global Environment Facility and UNIDO, IISD will apply SAVi to demonstrate the business case of Nature Based Infrastructure (NBI) projects. The project will build in-country capacity and offer a Massive Online Open Course on system-wide valuations of NBI. Further, IISD will continue working on sustainable finance, including Second Party Opinions for Green and Sustainability Bond Frameworks and blended finance solutions for sustainable infrastructure.



LORENA ZEMP
SWITZERLAND

Global Infrastructure Basel Foundation

Programme Director, SuRe® Standard Development and Implementation

Lorena is Director of the SuRe® Standard Programme at Global Infrastructure Basel Foundation (GIB). Lorena oversees the development, implementation and coordination of the SuRe® certification programme on sustainable infrastructure with internal and external partners. Lorena represents GIB as speaker and participant in local and international events and coordinates gender mainstreaming in GIB. Lorena is a specialist in standardization and social regulation with particular expertise in labour standards and gender mainstreaming. Previously, Lorena worked for the International Labour Organization (ILO) of the United Nations as technical M&E officer in the SCORE programme for improving working conditions in SMEs in 9 developing countries. Lorena has a business and financial background, having worked in Corporate Banking and impact investment in Canada, Mexico and Switzerland. Lorena is fluent in French, English and Spanish.

Over the coming years, my organization's contribution to sustainable infrastructure will be focused on creating real and positive impact in infrastructure through the application of the SuRe® Standard, the use and mainstreaming of nature-based solutions and inclusive approaches to infrastructure planning, design and implementation. Our vision is a world in which investments in social, economic and physical infrastructure lead to inclusive, sustainable and resilient communities and ecosystems.



HOSTING TEAM

HOSTING TEAM

GSI and GIZ developed The Solutions Lab on the basis of their common vision of a more sustainable and liveable future for all and well as their complementary skillset and networks. GSI provides participants with access to G20 work streams and a chance to present the solutions developed at the 2020 Global Solutions Summit. GIZ's global network offers ample implementation experience and an opportunity to scale innovative solutions across more than 120 countries worldwide. Building on the expertise of the Emerging Markets Sustainability Dialogues (EMSD) programme and GIZ's Working Group on Sustainable Infrastructure, key challenges for the Lab have been identified. This process is designed and facilitated by the Global Leadership Academy of GIZ.

HOSTING TEAM



JOHN HAUERT
GERMANY

**GIZ Emerging Markets
Sustainability Dialogues**
Thematic Lead

John leads the work on Sustainable Infrastructure at GIZ's Emerging Markets Sustainability Dialogues (EMSD). EMSD works with the private and public sectors as well as financial institutions to advance the sustainable infrastructure agenda in emerging markets and scale-up innovative solutions globally.

Previously, John worked as an advisor with GIZ's Economic Policy Forum and led a GIZ project on Eurasian connectivity. From 2014 to 2017, he worked on legal and investment policy issues at the OECD's Investment Division in Paris.

John studied law, politics and economics at Sciences Po, the University of Edinburgh, and Columbia University. He completed his doctorate at the University of Cologne on the legal and policy framework for investments in the extractive industries in West Africa. During his studies, he interned with the German Bundestag, the Federal Ministry of the Interior in Berlin, and international law firms in Paris. John also worked as a research assistant with the Columbia Center on Sustainable Investment.



MANUEL HOLTSMANN
GERMANY

**GIZ Emerging Markets
Sustainability Dialogues**
Thematic Lead

Manuel joined the Emerging Markets Sustainability Dialogues (EMSD) programme of GIZ as an Advisor on Infrastructure and Digital Solutions for Sustainability in 2018. Here, Manuel works with the private and public sectors as well as financial institutions to advance the sustainable infrastructure agenda in emerging markets and scale-up innovative solutions globally.

Previously, Manuel was seconded to the office of former President and head of IMF Horst Köhler. In this function, he provided policy advice and wrote speeches on a range of topics, including the 2030 Agenda, China-Europe Relations and a fair partnership with Africa. Manuel studied Politics, Philosophy and Economics at the University of York (B.A.) and International Affairs at Peking University (M.Sc.) and the London School of Economics (M.Sc.). He was editor of VOX journal at York in 2013-14. Manuel interned with the Global Public Policy Institute (GPPi) in 2013.



HOLGER KUHLE
GERMANY

GIZ Sectoral Department
Strategic Knowledge
Partnerships

As policy advisor for strategic knowledge partnerships Holger works at the Sectoral Department which is GIZ's centre of technical and methodological excellence.

With the topic grey and green infrastructure, Holger has dealt in the context of urban spaces; previously as GIZ advisor at the UN-Sustainable Solutions Network. On soft infrastructure, Holger worked on about economic, employment and regional development. The latter as GIZ adviser in the MENA region (Syria / Tunisia), within various OECD – LEED peer reviews and as previous manager at the regional development bank of the Land Berlin (IBB) with application-oriented research on new approaches to support and financing instruments while managing their implementation.

With a PhD on urban development Holger served as expert in the "Enquete Commission" on "Berlin: Fit for the Future" (Berlin House of Representatives - 13th legislative period) and later within the trilateral Jerusalem-Berlin Forum (JBF) in Palestine and Israel.



VANESSA BAUER
GERMANY

**GIZ Emerging Markets
Sustainability Dialogues**
Thematic Lead

Vanessa joined the Emerging Markets Sustainability Dialogues (EMSD) programme as a Junior Advisor in November 2019. She studied Intercultural Communication with a focus on Japanese culture and language at the University of Milan-Bicocca and the Okinawa Prefectural University of Arts (B.A.) and International Relations at the University of Cambridge (M.St.).

In 2018-2019, Vanessa was a Carlo Schmid Fellow at UN Environment in Geneva. In this function, she contributed to a series of policy papers and high-level events on sustainable infrastructure as well as training products on green industrial policy. Prior to that, Vanessa worked as a communications consultant at imaginary srl, an Italian SME specialising in gamified learning and eHealth solutions, and as a public sector advisor at PwC Luxemburg where she supported a European Commission-sponsored programme helping European SMEs tap into various Asian target markets.



EVA PHILIPPI
GERMANY

GIZ Global Leadership Academy
Facilitator

Eva facilitates dialogue processes that support multi-stakeholder groups to address their challenges and find innovative solutions in today's complex transitions. She is persuaded that creating safe dialogue spaces, meeting authentically beyond positions and with a genuine inner presence, having a clear mind and an open heart are THE way to social transformation.

Eva believes in the power of collective leadership, deep listening, co-creation and transparent communication.

Before joining GLAC, Eva was part of GIZ Academy's group Leadership & Management and prior head of GIZ Saarland's networking programme with Namibia. She works as facilitator and Systemic Coach since 2003 and holds academic qualifications in Intercultural Communication and Education Science. Eva brings skills in Leadership Development, Theory U and Transparent Communication and lived and worked in Australia, Mexico, Namibia and USA.



ELIZABETH MALOBA
KENYA

Nahari
Facilitator

Elizabeth lives in Nairobi, works across the World, and speaks English, Swahili, German and French. She has twenty years' experience in addressing complex challenges - she works in cross-sectoral, trans-professional, multi-stakeholder settings to enable people to make decisions; solve problems; exchange ideas and information; and learn. She has a strong experience in International Cooperation, Development Cooperation, and Private Sector Development.

She works in cross-cultural groups, from grassroots levels to global platforms, to support development of leaders, teams, policies, strategies, plans, and business models that contribute to addressing development challenges. She brings skills in capacity building, knowledge management, facilitation, conflict resolution and management; as well as experience as an entrepreneur to diverse assignments.



RAKESH KASTURI
GERMANY

Sprint Doctor
Remote Facilitator

Whether it's a team of five or five hundred, the ability of people to openly share information, knowledge and ideas with each other, in productive and creative ways within an organisation, is the No. 1 challenge that Rakesh encounters time and time again.

Rakesh Kasturi, is known as the sprintdoctor, and helps leaders in organisations create cultures of collaboration using agile methods like the Google Design Sprints. He enjoys facilitating smart and inspiring team environments where people dream big and focus on 1% improvements. Rakesh does this across multiple touchpoints like: innovation, strategy, learning & development and organisational development to help organisations succeed.

His practice, both diagnostic and clinical, has been peer-reviewed and tested at institutions such as Google, MIT, LinkedIn, and IBM.



RAMSES BERMUDEZ
GERMANY

GIZ Global Leadership Academy
Project Support

Ramses joined the Global Leadership Academy in February 2019 to support the development of digital solutions, recommending innovative tools for collaboration and online interaction. Ramses strongly believes in the potential of people coming together to provide solutions to today's complex challenges. With this in mind, he aims to provide an environment where people from multiple backgrounds can interact and collaborate on the pursue of innovative solutions to the global environmental challenges we are facing.

Ramses is a Nicaraguan systems engineer, who decided to pursue a life in environmental conservation. He has a Master's in Environmental Sciences and a M.Sc. in Technology and Resources Management. He has focused his professional career in sustainable development working with international cooperation organizations in developing countries, supporting environmental management, and promoting clean energy alternatives.

CONVENING PARTNERS



GLOBAL SOLUTIONS INITIATIVE

Secretary General: Markus Engel
 Programme Director: Simon Wolf
 Research Director: Dennis Görlich

The Global Solutions Initiative is a global collaborative enterprise to propose policy responses to major global problems, addressed by the G20, the G7 and other global governance fora. The policy recommendations and strategic visions are generated through a disciplined research programme by leading research organisations, elaborated in policy dialogues between researchers, policymakers, business leaders and civil society representatives. The annual Global Solutions Summit, a stepping stone to the T20 and G20 Summits, brings together international research organisations, thought-leaders and decision-makers from across political, business and civic communities.

www.global-solutions-initiative.org



COMPETENCE CENTRE ECONOMIC POLICY AND PRIVATE SECTOR DEVELOPMENT

Head of Competence Centre: Sonja Kurz

As the central service provider and knowledge broker for all aspects of economic policy and private sector development within GIZ, the Competence Centre Economic Policy and Private Sector Development advises GIZ projects worldwide. We promote productive and decent employment through high-quality economic growth. Governmental bodies profit from our advice in designing and implementing rules governing economic activity. We empower the private sector to comply with these rules and to prosper. We also promote institutions and services for the development of markets. We believe that not only the level but also the quality of economic growth is crucial to generate value. Our approach is therefore committed to providing solutions on various dimensions of qualitative growth by considering the smart, sustainable, inclusive, resilient and integrated dimensions of economic growth as well as governance aspects of economic growth.

www.giz.de



EMERGING MARKETS SUSTAINABILITY DIALOGUES

Programme Director: Brigitte Klein

A global programme of GIZ, EMSD functions as an incubator and knowledge platform for innovative sustainability solutions in and with emerging markets. To this end, EMSD convenes change agents from think tanks as well as the public, private and financial sectors in multi-stakeholder dialogues around three core topics: "Sustainable Infrastructure", "Sustainable Finance" and "Digital Solutions for Sustainability". To ensure lasting impact, EMSD and its partners scale promising solutions across GIZ's global network and through transformation processes such as the G20 engagement groups.

www.emsdialogues.org



THE GLOBAL LEADERSHIP ACADEMY

Programme Director: Wiebke Koenig

The Global Leadership Academy (GLAC) addresses global issues and works with its international partners to provide reflective dialogue spaces ('Leadership and Innovation Labs'). Based on new perspectives and insights, leaders and change agents from the fields of policy-making, business, academia and civil society develop innovative approaches and solutions to problems in their areas of influence. Funded by the German Federal Ministry for Economic Cooperation and Development (BMZ), the Global Leadership Academy is a central component in GIZ's range of services for international human capacity development.

www.we-do-change.org

FURTHER GIZ SUPPORTING PARTNERS

We gratefully acknowledge the financial and technical support by several key partners

SUSTAINABLE INFRASTRUCTURE AND CLIMATE CHANGE IN LATIN AMERICA AND THE CARIBBEAN

GIZ supports the Inter-American Development Bank (IDB) in developing and implementing its sustainable infrastructure agenda. As part of this cooperation, two experts from GIZ's programme on "Sustainable Infrastructure and Climate Change in Latin America and the Caribbean" are seconded to the IDB's climate change and infrastructure divisions. They contribute to the operationalisation of IDB's sustainable infrastructure strategy, the integration of sustainable infrastructure principles into national project planning, capacity development as well as regional and international cooperation on sustainable infrastructure.

G7 AND G20 DEVELOPMENT AGENDA POLICY SUPPORT PROJECT

The "G7 and G20 Development Agenda Policy Support Project" of GIZ supports the German Federal Ministry for Economic Cooperation and Development (BMZ) in anchoring topics of sustainable development in multilateral development policy and in the agendas of the G7 and G20 in particular. The project also supports dialogue with civil society actors in order to improve communication and integration of their views into the G7 and G20 processes.



**SUSTAINABLE
INFRASTRUCTURE TOOL
NAVIGATOR**



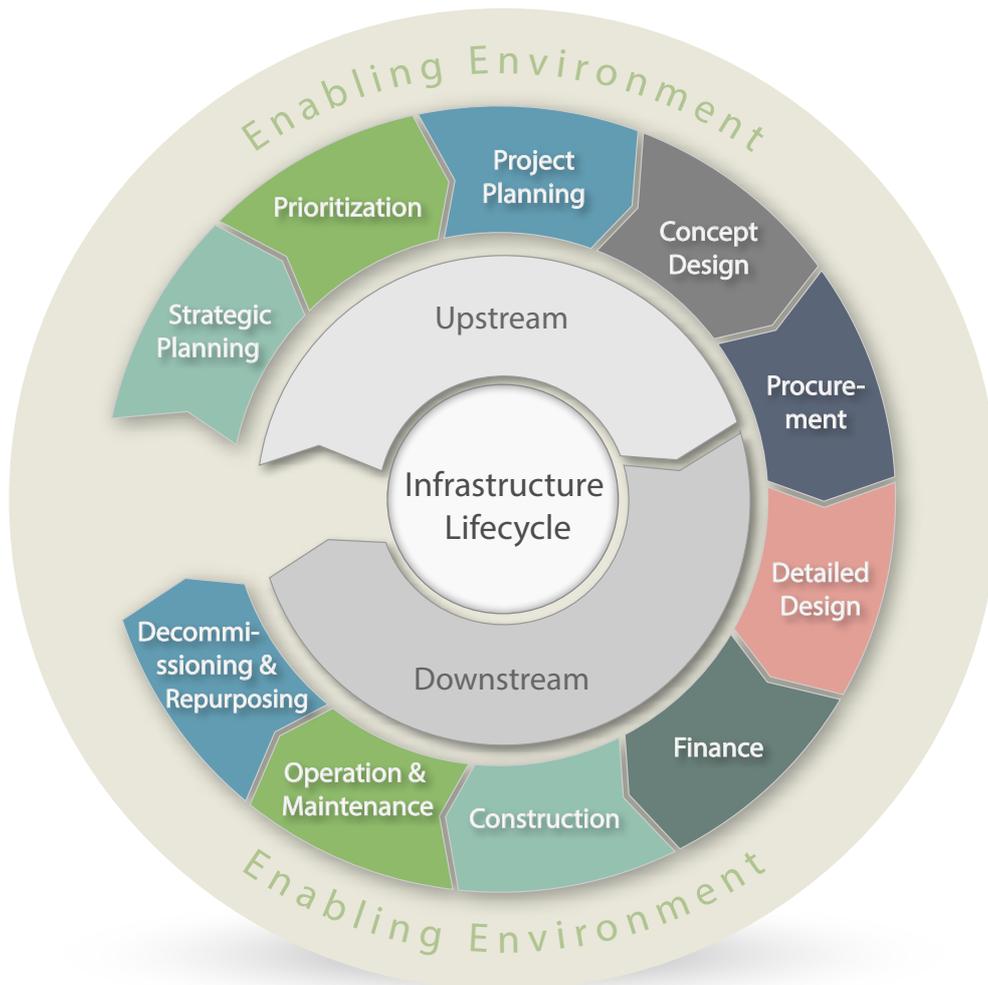
SUSTAINABLE INFRASTRUCTURE TOOL NAVIGATOR

Navigate 50+ Rating Systems, High-Level Principles & Guidelines

CORE FUNCTION & OBJECTIVES

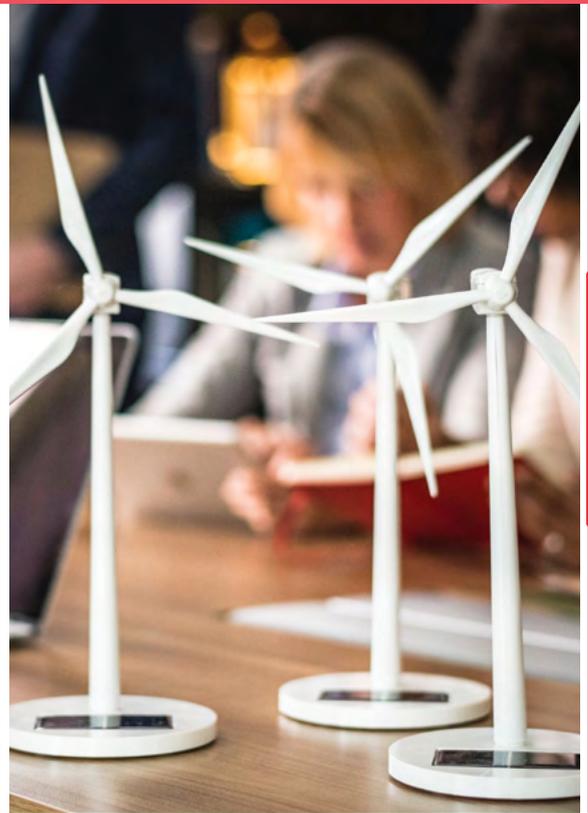
Over the last years, the universe of tools that seek to define and ultimately to govern sustainability considerations within infrastructure development has been growing constantly. To facilitate navigation within this ever more complex universe, the Navigator – a web-based platform – gives an overview of the most relevant sustainability tools. It supports a wide range of stakeholders involved in

infrastructure development in identifying the right tool to successfully integrate sustainability along the infrastructure lifecycle from amongst 50+ rating systems, high-level principles and benchmarks. The Navigator offers a detailed explanation of the different tools as well as a search function that allows to filter tools by the phases of the infrastructure lifecycle, sectors and target audience groups.



Please contact us at info@sustainable-infrastructure-tools.org if you wish to learn more about the Navigator.

To submit your sustainable infrastructure tool, visit: <https://sustainable-infrastructure-tools.org/submit-tool>



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<https://www.global-solutions-initiative.org>

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