Introduction

Infrastructure is a part of the foundation of everyday life, underpinning the systems and services that support health care, education, energy, transportation, telecommunication, water and sanitation, markets and economic activity to name a few. Infrastructure is among the building blocks for progress in development. Yet, infrastructure is increasingly under frequent threat of disruption, functional and structural failure with the rising incidence and intensity of natural and man-made hazards. The damaging effects of disasters on critical infrastructure can have significant negative impacts on the welfare of households and communities, the function of key services and the economy, and on development progress.

The International Recovery Forum 2020 (“IRF20”) addressed good practices and emerging strategies, while reflecting on lessons learned on the theme of “Building Back Better through Resilient Infrastructure”. IRF20 convened recovery decision makers and infrastructure experts from across the public and private sectors, academia, and international organizations to share analysis and experiences, and discuss solutions for resilient infrastructure and recovery. The IRF20 welcomed 172 participants hailing from 24 countries. The IRF20 addressed the theme through three substantive sessions, including a keynote session featuring two keynote addresses, and two sessions with expert panel discussions.

Mr. Jared MERCADANTE, Chair of the IRP Steering Committee and Disaster Risk Management Specialist at the World Bank, opened the Forum, followed by welcoming remarks from Mr. KANAZAWA Kazuo, Vice Governor of Hyogo Prefecture, and

Mr. MURATE Satoshi, Deputy Director-General for Disaster Management in the Cabinet Office of the Government of Japan. The opening session speakers commemorated the 25th memorial of the Great Hanshin-Awaji Earthquake. They reflected on the instrumental role of infrastructure in recovery from the earthquake and the importance of building back better to become a more disaster-resilient community.

Keynote Session: Lessons from the Great Hanshin Awaji Earthquake and a Vision for Disaster Resilient Infrastructure

The IRF20 opened the main substantive sessions with two distinguished keynote speakers. Mr. MUROSAKI Yoshiiteru, Dean, Graduate School of Disaster Resilience and Governance, University of Hyogo, opened the keynote session by reflecting on lessons that can be drawn from the Great Hanshin Awaji Earthquake recovery experience. Mr. Muroasaki looked back on the last 25 years of the community’s recovery as a remarkable success. He noted that the rapid recovery of lifeline infrastructure played an instrumental role, enabling the reconstruction of communities and supporting the community’s “creative recovery” approach. He noted that infrastructure failure had in
some areas compromised response and recovery efforts, which underscores the need to build disaster resilient infrastructure. Finally, he emphasized the need to think systematically about resilience, which requires not only consideration of hard infrastructure but also the importance of soft infrastructure for recovery, such as disaster education, recovery preparedness, mutual support systems for recovery between communities, and the resilience of the workforce and their families to name a few.

Mr. Kamal Kishore, Member, National Disaster Management Authority, Government of India, delivered the second keynote speech. Mr. Kishore argued that societies have built disaster resilient infrastructure for centuries, but the world is rapidly transitioning toward new challenges and opportunities for infrastructure resilience. He noted that rapid urbanization creates opportunities for economies of scale. However, he cautioned that it also creates unique challenges and risks, including risk to infrastructure, but also risk from infrastructure. He remarked on the growing interdependence of infrastructure. Impacts to infrastructure can cause cascading failures across other infrastructure sectors, when a disaster occurs. Moreover, as the scale of infrastructure needs grow with urbanization and development, new infrastructure investments must build resilience, and should avoid creating and locking-in new risk. Infrastructure investments should be carbon efficient, low-carbon, or carbon-neutral. He observed that the cost of infrastructure disruption or failure has been catastrophic, even in the cases of small- and medium-scale disasters, and recovery processes have been further challenged due to infrastructure disruptions.

Mr. Kishore proposed several new approaches and key areas of work toward greater infrastructure resilience. He advocated for developing a risk management framework for infrastructure development. He urged new thinking that looks at infrastructure resilience in terms of systems of systems, rather than the resilience of individual infrastructure. Systems thinking requires that decision makers consider interdependencies, interconnections, and territorial and regional planning approaches to systematic risk and to infrastructure resilience. He also suggested greater consideration of nature-based solutions and ecological infrastructure, giving examples of ecological infrastructure that contributes to broader societal resilience. He suggested that a better framework is needed for assessing disaster risk to and from infrastructure, that accounts for future risk from changes in climate and societies. He argued that infrastructure standards and regulations should be set up to evolve with our understanding of risk. He argued that infrastructure financing should incentivize resilience rather than risk. Finally, he closed by urging that recovery must be used as an opportunity to build back better with greater infrastructure resilience.

Panel Session One: Enabling Recovery Readiness with Resilient Infrastructure

The first theme was addressed by a panel moderated by Mr. Jared MERCADANTE, who opened the session with a presentation sharing the results of the World Bank’s recent infrastructure research. Panelists included Ms. Camille Crain, Section Chief, Building Resilient Infrastructure and Communities, Federal Emergency Management Administration (FEMA), Government of the USA; Mr. TAKAIISHI Masaya, Counsellor, National Resilience Promotion Office, Cabinet Secretariat, Government of Japan; Mr. Brendan MOON, Chief Executive Officer, Queensland Reconstruction Authority, Government of Queensland, Australia; and Mr. TADA Shinya, Director, Technology Planning Division, Hyogo Prefectural Government. While annual infrastructure losses from disasters were reported in the panel to be as much as $30 billion USD per year, the cost to economies and households that result from infrastructure damage and disruption is significantly higher: between $391-647 billion USD. The presentations and discussions highlighted innovative initiatives and new approaches to significantly reduce losses and improve recovery outcomes along several common themes.

Build Capacity for Resilient Communities. The panelists emphasized the need to engage communities and infrastructure users, and to build their capacities in order to achieve more resilient outcomes. Speakers noted the importance of engaging communities, in order to understand their needs and the criticality of infrastructure assets to the community. Community engagement should be used to clearly communicate about risks, and to set expectations about infrastructure vulnerability. This kind of engagement is necessary to prioritize investments in infrastructure resilience. It builds community resilience, and recovery preparedness. National level programmes should build the capacities of communities to invest in, and
A Systems Approach. Building disaster resilient communities depends on a clear understanding of the interconnections, interdependencies, and criticalities within and between infrastructure systems. Panelists presented national, regional, state, and municipal-level approaches that systematically assess infrastructure vulnerability and criticality to plan for community resilience. They presented data-driven approaches that use historical infrastructure performance and impacts and combine that data with predictions of future impacts accounting for climate and societal changes. The Government of Japan shared that at the national level, this kind of analysis has supported the development of a national resilience plan. They analyzed scores of worst-case disaster scenarios, and could plan for national-level, interagency investments and programmes in infrastructure resilience. The panel presented state-level, regional approaches using data to guide precise local investments in infrastructure resilience and in building back better from disasters. The panel also presented an approach to investments in a regional system of natural hazard countermeasures. The system was designed to resist tsunamis where possible, but where it is not possible, the system works to manage flood risk. It was also noted that building redundancies into infrastructure systems is an essential measure to reduce losses, and to enable recovery from disasters. Building redundancies into infrastructure systems can enable the continuity of critical infrastructure and infrastructure services that can support societal and economic recovery.

Panel Session Two: Resilient Infrastructure Recovery and Building Back Better

The second forum theme was addressed by a panel moderated by Mr. Krishna VATSA, Recovery Advisor, Crisis Bureau, United Nations Development Programme (UNDP), who delivered opening remarks, setting the stage for the panel presentations and discussion. Panelists included Ms. Nadia ADRİÃO, Senior Coordinator, Post-Cyclone Reconstruction Cabinet (GREPOC), Government of Mozambique; Mr. OCHI Kengo, Counsellor, Construction of Infrastructure Section Reconstruction Agency, Government of Japan; Mr. Abdul Malik SADAT IDRIS, Director, Institution for Water Resources Infrastructure, National Development Planning Ministry (BAPPENAS), Government of Indonesia; Mr. Davut ŞAHIN, Group Leader, Department of Recovery, Disaster and Emergency Management Presidency (AFAD), Government of Turkey; and Mr. KAWASE Nobuyuki, Managing Executive Officer and General Manager, Osaka Main Office, Toyo Construction Co., Ltd.

While the first panel had focused on ex-ante investments and planning to build resilience and recovery preparedness, the second panel focused on the post-disaster context, with discussions on infrastructure recovery and building back better. Panelists presented reflections on infrastructure recovery experience from six disaster contexts, followed by a robust discussion led by Mr. Vatsa, and with Mr. Kishore serving as a discussant. The panel discussions coalesced around several key lessons for decision makers and thought-provoking issues for further exploration.
Building back better requires building resilience against future risk. The panel suggested that in order to build back better, it is not enough to replace damaged infrastructure assets with stronger infrastructure. Rather, panelists argued that reconstruction is an opportunity to “future-proof” infrastructure. In the recent recovery efforts in Palu, Indonesia, and in the recovery from the Great East Japan Earthquake, panelists shared their experience with recovery planners running numerous simulations of hazard scenarios to develop the right infrastructure solutions for future risk.

Planners need to account for dynamic social and economic change. Panelists reflected on the challenges of building resilient infrastructure in recovery in the context of aging societies, and depopulation of rural areas. They cautioned that planners must consider the implications of these kinds of social changes, and should work with communities to envision what building back better means in the future. Panelists discussed the case of the recovery from the Great Hanshin-Awaji Earthquake. The reconstruction of the port was a partial success story – reconstruction that should have taken two years was completed in six months and was a catalyst for revitalizing the local economy. However, the panelist suggested that norms and regulations have changed in the time since the earthquake, and that he wished they had formulated a plan for longer-run sustainability and viability.

Build back better by innovating with existing assets. Although the panel had discussed “future-proofing” infrastructure in recovery, they also highlighted the need to effectively use existing tools and assets better. In Turkey and Mozambique, the panelists noted that better use and enforcement of existing building codes and land use regulations could significantly mitigate future disasters. They remarked on the experience in Palu, where planners chose not to stand up any new recovery governance bodies. Rather, they demonstrated effective coordination through existing governance structures and mechanisms, including coordination and managing clear roles and responsibilities between international partners and domestic government bodies. They also decided to build back better by innovating with nature-based solutions. They recognized the risk reduction value of the ecological infrastructure that was already there, and sought to balance natural infrastructure with new technology.

Closing Session

Ms. ISHIGAKI Kazuko, Director for Public and International Relations, Disaster Management Bureau, Cabinet Office, Government of Japan, gave closing remarks for the Forum, on behalf of the Co-Chair of the IRP Steering Committee. She commemorated the 25th anniversary of the Great Hanshin-Awaji Earthquake, and recalled that the notion of creative reconstruction used in recovery from the earthquake became the modern notion of building back better. Building back better is our collective responsibility, to build more resilient societies. She closed by noting that in order to fulfill this promise, we must learn from past disasters, and continue to share our experiences and knowledge.