UNOPS

Panel Discussion:

Developing resilient infrastructure to support DRR and the SDGs

Monday 26 August 12:30pm - 2pm (light lunch will be provided)
The Theatre, UNESCAP Building, Bangkok
Rajadamnern Nok Avenue Khwaeng Bang Khun Phrom, Khet Phra Nakhon, Krung Thep Maha Nakhon 10200

This panel discussion supports the overall theme of the **Disaster Resilience Week**: *"Building disaster resilience through empowerment, inclusion and equality"*, and serves as a platform for dialogue and peer learning to support the implementation of the Sendai Framework and Sustainable Development Goals and targets relating to resilience and disaster risk reduction.

Details:

Audience	**This is an open event - you are welcome!**
Purpose & Objectives	• Bring together a variety of experience in resilient infrastructure from across Asia • Understand resilient infrastructure in the context of DRR and the SDGs • Share knowledge, experience, and specific examples
Key Themes	• Sustainable and Resilient Infrastructure • Urban planning with links to infrastructure planning • Inclusion and Equality in infrastructure • Knowledge and information - evidence on which to base infrastructure decisions - includes hazard information and associated risk assessments • Innovative solutions and approaches
Intended outcomes	• Shared knowledge and experience on the application of infrastructure resilience in support of the SDG targets in different contexts • Help enrich the deliberations of the ESCAP Committee on Disaster Risk Reduction (CDRR) — the key platform for regional dialogue and intergovernmental collaboration on disaster risk reduction
Format	• Moderated Panel Discussion - 5 minute introduction from each panelist followed by Q&A and open discussion
Panelists	1. **Simonetta Siligato** - Regional Advisor, United Nations Office Project Services (Moderator) 2. **Dr. Somkiat Apipattanavis** - Planning & Projects, Thailand Office of National Water Resources 3. **Ajay Suri** - Regional Coordinator, Cities Alliance 4. **Mr. Walfredo Jr. Dimaguila**, Mayor, Binan, Philippines [TBC] 5. **Thaung Htut Aung** - Director, AIT Solutions, Thailand 6. **Jason Simpson**, Country Director, Arup, Thailand

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Background:

Sustainable and resilient infrastructure is the cornerstone of modern society. It facilitates the flow of goods, and provides access to critical services such as health, education, governance, livelihoods, and rule of law, enabling society to function, grow and prosper. According to OECD research, countries with a high capacity to plan, deliver, and manage infrastructure produce high-quality services which greatly benefit constituents by enhancing economic growth, reducing inequalities, and furthering social progress (OECD, 2017).

The important role of infrastructure has been recognized in the Global Agenda 2030, in particular the Sustainable Development Goals (SDGs), UN-HABITAT New Urban Agenda and the Sendai Framework for Disaster Risk Reduction. If we look at one, in particular, the Sustainable Development Goals – the main theme of the Global Engineering Congress, infrastructure is critical to their achievement. In fact, out of the 169 development targets that make up the 17 Sustainable Development Goals, 92%, are either directly or indirectly linked to the development of infrastructure.

However, sustainable and resilient infrastructure not only enables development it is also critical in protecting lives and development gains in the aftermath of hazard events. For example, an earthquake is not a disaster, it is a natural event. It only becomes a disaster when infrastructure fails in a way which results in loss of life and/or livelihoods. The development gains (both in terms of assets and in terms of socioeconomic development) are therefore lost or reduced, and will take time and financial investment to rebuild to meet the previous level of development. However, if the appropriate investment is made to construct the infrastructure to withstand the anticipated shock of a hazard (such as an earthquake), or fail in a predictable manner, then development losses would be far less and the country's development trajectory would not be severely disrupted.

Let's look at an example of two cities, Kumamoto, Japan and Port au Prince, Haiti. Both cities received the shock of a 7.0 earthquake but the results of the quakes were vastly different. As we can see, in Kumamoto Japan only 50 people died while in Haiti estimates range around 200,000 deaths due not only to the actual earthquake but also due to the failure of services provided by infrastructure that the people had relied on prior to the earthquake. Furthermore, the earthquake also set Haiti back in terms of development. According to the World Bank, the 2010 earthquake caused an estimated $7.8 billion dollars in damage, a sum greater than Haiti's GDP in 2009, severely setting back the country's development trajectory requiring years to rebuild to get it to the point prior to the earthquake (World Bank, 2010).

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One of the main reasons that there was such a big difference between the two cities is that risk within the built environment was managed differently with higher standards of construction in Japan so that infrastructure would not fail, thus protecting development gains.

We can define resilience as an outcome state that must be monitored and maintained over the full lifecycle of an asset and not be a one off action in the design and construction phases. Simply put, resilience means the degree to which infrastructure assets can absorb the impact of shocks and stresses during their life span and continue to function and facilitate the delivery of services at optimal and sustainable levels.

Figure 1: The importance of resilient infrastructure in supporting critical services for the long-term

Adopting a Systems Approach:

Infrastructure is often considered as a physical asset. A systems approach recognizes that considering infrastructure from this narrow perspective fails to acknowledge the many other critical dimensions required for achieving and maintaining the operating environment and resilience of assets, over their lifecycle. In this context, we might consider a systems approach from three dimensions:

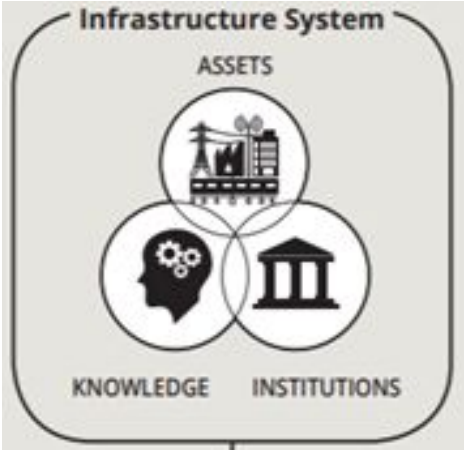

Figure 2: The key elements of an infrastructure system

Assets – The physical components of the system, comprising both the primary facilities and the links that exist between them. These should be planned, coordinated, designed and constructed to achieve resilience proactively to the shocks and stresses they may face over the course of their lifespan.

Knowledge – The human resource that is required to plan, create, operate and maintain the physical assets retrospectively and service provision efficiently during their respective life spans.

Institutions – The key bodies that provide regulations, policies, financing, and legal frameworks to support assets and the service provision. This requires the ability to understand and manage the synergies with other sectors, other assets, other institutions, and other services that will define the level of dependency between one and other.

In considering this holistic approach to infrastructure as a system of assets within their context of knowledge and institutional governance, we can start to address the challenges to strengthen each element of the system to achieve more resilient systems of service delivery.

Planning, delivering, and managing infrastructure is a complex process involving many actors and spanning multiple ministries. Furthermore, there is generally a focus on infrastructure delivery rather than planning or management. Infrastructure systems, and the services they support, depend on multiple sector infrastructure systems to function effectively. For example, health infrastructure systems depend on energy infrastructure systems which depend on road and communications infrastructure systems. If one system fails, there can be a cascading impact of failure of services, which can leave communities particularly vulnerable in the aftermath of hazard events.

What is needed therefore is a comprehensive understanding of infrastructure planning, delivery, and management across multiple infrastructure systems to identify where improvements could be made to assets, knowledge capacity and institutional governance, to make infrastructure more sustainable, and resilient to shocks and stresses.

Key Messages:

1. **Planning Planning Planning** - integrated, coordinated consideration of infrastructure needs across multiple sectors, to support long term service provision in the face of shocks and stresses;

2. Assets are just one part of an infrastructure system. The knowledge and skills of those that operate and maintain them and the compliance systems designed to support their longevity and effectiveness as a service facilitator, are critical.

3. Physical assets are often exposed to the full forces of nature. Their ongoing resilience must therefore, be monitored, managed and maintained continuously, during the life-time of the asset;

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