PAVING THE WAY TO SUSTAINABLE INFRASTRUCTURE

AUGUST 2023 ISSUE

*Your biannual roundup of news and insights on **Infrastructure Asset Management (IAM)** from across the United Nations system and beyond. Part of the joint IAM initiative between the the UN Department of Economic and Social Affairs (UN DESA), UN Capital Development Fund (UNCDF), and the UN Office for Project Services (UNOPS).*

Windturbines in Costa Rica. CanvaPro license, photo from THEPALMER - Getty Images

HIGHLIGHTS

KENYA, THE GAMBIA, AND NEPAL EMBARK ON SUSTAINABLE ASSET MANAGEMENT TRAINING

On-site training to apply the UN toolkits on IAM for local and central government officials has been conducted in Kenya, Nepal, and The Gambia. Learn more about the workshops on page 2.

Overall, the UN IAM work in the field is now supporting 7 countries, including Nepal, Lao PDR, Kenya, The Gambia, Costa Rica, Tanzania, and Bangladesh. Past project countries also include Uganda and Somalia. Check out all our project countries by clicking on the map below.

MASTER'S PROGRAM ON IAM LAUNCHED IN UGANDA

Following a series of UN DESA-led capacity development activities in Uganda, Makerere University launched a curriculum for a Master's Degree in Public Infrastructure Management based on the UN Handbook on IAM. Learn more on page 3.

CAPSTONE PROJECTS AT COLUMBIA UNIVERSITY SUPPORT UN IAM PROJECT

Access more on these recent research projects on page 4.

WHAT ELSE IS INSIDE?

- Learn more about the importance of resilient IAM in the context of earthquakes on page 5.
- Meet some of our trainers on page 3.
- Learn more about the hybrid sensitization workshop in Lao PDR on page 6.

ON-SITE TRAINING OF TRAINERS

Before the on-site training of trainers, virtual sensitization workshops to introduce central and local government officials to the basics of IAM took place in The Gambia, Nepal, and Kenya in 2022.

THE GAMBIA

On 12-15 June 2023, a training workshop on sustainable and resilient IAM for central and local government officials took place in Banjul, The Gambia, with close to 60 leading officers from all eight local area councils attending the training. The four-day workshop gave ample of time for participants to understand the basic tenets on IAM, as well as to design Asset Management Action Plans (AMAPS) on road infrastructure, bore holes and waste management. Those AMAPS are now being submitted to local government leaders for endorsement

KENYA

Two training workshops have taken place in Kenya in December 2022 and May 2023. Over 120 participants took part representing nine county governments: Kakamega, Nakuru, Laikipia, Uasin Gishu, Nandi, Kisumu, Makueni, Migori, and Bungoma. The main focus of the training was on designing and refining AMAPS and agreeing on a road map for implementation between councils and the Kenya of Council of Governors.

NEPAL

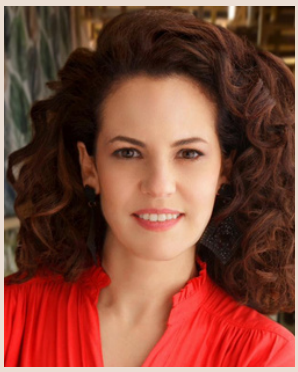
On 1-3 March 2023, the Town Development Fund (TDF) from Nepal, in partnership with the IAM UN Team, conducted a training workshop on applying UN toolkits on IAM for over 110 local and central government officials in Chitwan, Nepal. With the support of a dedicated team of UNV experts these toolkits have been adjusted and contextualized for the local level and are now being implemented.

Other in-person workshops in Lao PDR, Tanzania (Zanzibar), Bangladesh, and Costa Rica are scheduled in 2023.

Click here to learn more about the workshops

SUBMIT ANY COMMENTS, INQUIRIES OR IDEAS FOR CONTRIBUTION TO A FUTURE ISSUE HERE.

MEET THE TRAINERS



Michelle L. Oren is an adjunct lecturer and visiting researcher at the Technion - Institute of Technology's Faculty of Architecture - in Haifa, Israel where she earned her MSc and PhD in Urban and Regional Planning. Along her career, she has contributed to numerous local and regional development plans, assuming positions in both the private and public sectors, and leading municipal infrastructure development projects (PMO) through all stages of their life cycle. Her international experience includes knowledge exchange initiatives, the execution of tech- oriented projects (IoT, AI participatory design chatbots for large-scale urban development projects in collaboration with AAIRL), publications, consultancies, and capacity-building programs (Singapore, Korea, Kenya, Egypt, Israel, the EU, Colombia, Costa Rica, Peru, Canada). She is the author of the handbook "Promoting Local Innovation for Inclusion of People in Vulnerable Situations and Leaving No One Behind", developed by DPIDG/UNPOG as part of UN DESA's Handbook Series on *Innovative Local Governance for the Implementation of the Sustainable Development Goals*.

Alireza Mohammadi, PhD., P. Eng., is a civil engineer since 2002 with extensive experience working in infrastructure design, procurement, construction, and asset management. He is also a course instructor and researcher in infrastructure asset management. His research goal is to objectively optimize maintenance, rehabilitation, and replacement investments for infrastructure to improve the level of service as well as enhance sustainability and human development indicators. Alireza has received numerous awards and honors in recognition of his achievements. His work was featured by the media multiple times. He is also co-author of a recently published textbook titled "Asset Management Decision-Making for Infrastructure Systems".

Click here to access the UN IAM Handbook

MASTER'S PROGRAM ON IAM LAUNCHED IN UGANDA

The new curriculum will extend UN DESA's tools and knowledge products on IAM to future generations of public sector officials tasked with IAM. It follows a series of UN DESA-led capacity development activities in Uganda, including diagnostic assessments of local government, capacity development workshops for local government officials, and Training of Trainers on IAM during 2017-2022.

Click here for more information about the program.

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CAPSTONE PROJECT - COLUMBIA UNIVERSITY FOR UN DESA

Main supporting facility for domestic waste classification and regional environmental improvement in Hainan Province, retrieved from https://www.alba.com/news/the-expansion-project-of-alba-in-haikou-china-received-eia-approval/

The Capstone Project enables students from Columbia University to conduct research on IAM in collaboration with the FSDO/UNDESA.

This year's study aimed to identify innovative and sustainable financing solutions for municipalities to support IAM throughout its entire lifecycle. The effectiveness of these solutions is addressed through the examination of the following four case studies:

- Rio de Janeiro, Brazil's enhancing of Public–private partnerships (PPP) financing and scope to finance the Smart City project
- Beijing, China's PPP findings and sustainable management of Metro Line
- Pune, India's implementation of the Expressway Intelligent Traffic Management System (ITMS)
- Haikou, China's franchising of food waste disposal by introducing foreign advanced technology.

Mango test field for water-saving irrigation system in Egypt, retrieved from https://www.seetao.com/details/140005.html

Last year, students looked at case studies to analyze the potential of smart-city technologies in improving IAM at the sub-national level in developing regions. The project focused on smart city technologies in four different cities:

- Izmir, Türkiye's open data portal to improve wastewater management
- Cairo, Egypt's application of data infrastructure to facilitate peer-to-peer knowledge sharing and help farmers increase yields and public water usage efficiency.
- Bhubaneshwar, India's utilization of a unified data architecture to improve traffic and air quality management
- San Juan, Puerto Rico's potential adoption of digital monitoring systems to increase climate resilience.

Click here to access the final reports.

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INTERVIEW- What is resilient IAM?

Stefan Kohler is the Senior Infrastructure and Project Management Advisor in the UNOPS Europe and Central Asia Region.He has 37 years' experience in delivering infrastructure across multiple sectors in developed and developing countries. In his role as Program Manager for the UNOPS Disaster Risk Reduction for Resilience Program he was responsible for positioning UNOPS participation in the Sendai conference for Disaster Risk Reduction and the role of infrastructure in building resilience.

Q: Do you believe the concept of resilience is well understood by those responsible for managing infrastructure?

A: Among many managers of infrastructure assets, there seems to be a lack of understanding of the difference between risk and resilience. These terms sometimes become synonymous in that the focus on making assets resilient focuses on the 'hardness' of the asset and strengthening the asset to withstand shocks or stresses using classical risk-based approaches. However, this approach does not actually address the issue of resilience which goes beyond risk. Resilience encompasses the two important dimensions of recovery and learning from the event. In essence it asks how quickly we can restore the assets so that they can resume the delivery of services and what we have learned that can improve or adapt the system to deal with future events and reduce their impact. The cause of the disruption (shock or stress) is not the primary driver here, but rather the restoration of service and increasing resilience of the assets through adaptation.

Q: How does this play out in respect of IAM and using IAM to build resilience?

A: The fundamental principle of IAM is to derive the maximum value from an asset over its lifespan. In the infrastructure world this is not so much about the asset itself, the school or the airport or the hospital,but the service that the asset delivers – education, transport or healthcare, for example. Taking a resilient IAM approach requires us to adopt systems thinking. Firstly, we need to think of the asset as part of a system comprising the asset itself and the resources (people, skills, knowledge, finance) required to manage it. Secondly, the assets are all interconnected. If one fails it could lead to failure of other assets resulting in multiple services being lost. Coming back to the concept of resilience the speed with which services are restored is thus not only a function of the hardness of the assets but also the ability of the asset manager to re-instate the assets if they were damaged which requires knowledge, skills and financial resources. The approach requires managers to understand the linkages in the system and across systems and the role the assets play in the system.

Q: Could you be more concrete? For example, how can resilient IAM help countries that are impacted by natural disasters like earthquakes

A: As we have seen in the recent earthquake in Turkiye and for that matter in other countries prone to earthquakes, the nature of the shock of an earthquake is such that it can damage or destroy a significant number of infrastructure assets in a very short space of time across all infrastructure systems. The example in Turkiye clearly illustrates how the 'hardness' of assets and their ability to resist shocks is an important factor in resilience. Using a resilient IAM approach must ensure the planning,design and construction of the assets complies with relevant codes and standards as this is fundamental to ensuring adequate performance of the assets. There are other complex choices to be made. For example, the level or degree of hardness of assets is a conscious choice. Those choices can be complex. We must decide what magnitude earthquake will the asset be designed to withstand.Moving beyond the hardness of assets the next question should be 'What happens if the asset is damaged or destroyed and can no longer deliver the service it was designed to deliver?'What do we need to have in place to restore the services as quickly as possible? This is clearly not the responsibility of emergency services who primarily focus on saving lives and reducing further loss of life. Rather, it is responsibility of the asset owner/manager to restore the service delivery of the asset as quickly as possible. Resilient IAM in this context also means having in place the planning and resources to deal with service disruptions. Succinctly speaking,IA managers must always be thinking about how to build resilience into their assets and systems, rather than just taking risk-based approaches to deal with specific shocks and stresses.

GLOBAL IAM NEWS

INFRASTRUCTURE ASSET MANAGEMENT PRACTICES IN UGANDAN SMALL TOWNS - Theory and Practice

Infrastructure asset management framework for water utilities usually offer linear approaches for managing infrastructure assets but in reality, resource-constrained contexts are more complex than suggested in those frameworks. Musiimenta, Tutusaus, and Schwartz (2023) conducted seven case studies to examine asset management practices for water utilities in seven small towns in rural Uganda. The results show that everyday practices deviate considerably from the steps identified in many of those linear asset management frameworks as asset managers must come up with more creative ways to navigate limited resources and capacity. One common practice, for example, is asset stripping, in which assets are sold to pay for infrastructure improvements. While conceptual frameworks can be helpful in guiding asset management practices, the article concludes that contextual factors must also be taken into account in rural areas and small towns in developing countries.

Musiimenta, B., Tutusaus, M. and Schwartz, K. (2023). The practice of integrated asset management in Ugandan small towns. Water Policy 25(4), pp. 237-252, https://doi.org/10.2166/wp.2023.213

Drilling well in rural Uganda. Canva Pro license. Photo from Gil Gildner - Getty Images

ONTARIO AT THE FOREFRONT OF ASSET MANAGEMENT

In 2012, Ontario was the first province to require its municipalities to complete asset management plans. Since 2022, these plans must address all core assets and their current levels of service and corresponding maintenance costs. In 2024, municipalities must have approved asset management plans for all municipal infrastructure assets.

Ontario's Regulatory Registry, retrieved from https://www.ontariocanada.com/registry/view.do?postingId=37568&language=en

HYBRID SENSITIZATION WORKSHOP IN LAO PDR

Co-organized by the Lao PDR Ministry of Home Affairs (MoHA), UN DESA, UNCDF, and UNOPS, a virtual introductory hybrid training session on infrastructure asset management for local and central government officials in Lao PDR was held on 27-28 March 2023 in Vangvieng, Vientiane Province. The main objective of this workshop was to increase the capacity among central and local government officials on the implementation of IAM toolkits of the UN Handbook on infrastructure asset management in support of sustainable development. Participants gathered for two days and were instructed virtually by trainers, with on-site support from the national consultant, UNCDF and UNOPS.