

Infrastructure Asset Management for Sustainable Development

Massive Open Online Course
Syllabus

Based on the UN/DESA-
UNCDF Handbook, with
support from UNOPS

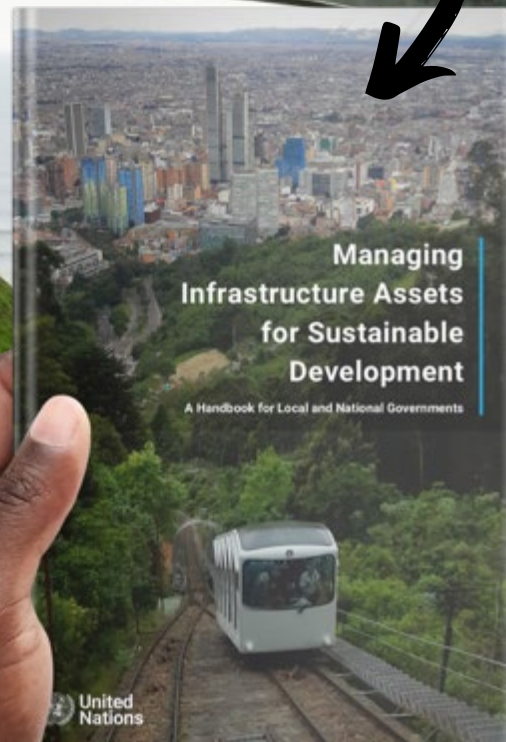


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Background

This Massive Open Online Course (MOOC) is a self-paced course developed by the United Nations Department of Economic and Social Affairs (UN DESA), United Nations Institute for Training and Research (UNITAR) and the School of International and Public Affairs (SIPA) at Columbia University. The course is based on the UN publication “Managing Infrastructure Assets for Sustainable Development: A Handbook for Local and National Governments” – the result of a joint collaboration of UN DESA, UN Capital Development Fund (UNCDF) and UNOPS.

The Handbook includes inputs from renowned experts from regional development banks, local government associations, relevant UN system entities as well as think tanks and academia. The Handbook provides local and national governments with a set of practical tools to improve infrastructure asset management as well as guidance on how to adapt these tools to the socio-economic and environmental challenges of our time.

It addresses a set of key questions:

- What assets do people need?
- How can these assets be made to last the longest and perform the best?
- How can their potential to save or generate revenue be maximized so as to unlock financial resources for other community needs, now and in the future?

In the answers to these questions lies the key to ensuring the reliability of public infrastructure and services at all levels.

This e-learning course aims to equip policymakers and government officials to find the answers in their specific national and local contexts. It makes a compelling case that ultimately, asset management is a way to align strategic planning with infrastructure and service delivery in the real world. It will equip the learner with a rich set of tools to promote sound, forward-looking asset management that enhances the resilience, sustainability, reliability, and financial viability of infrastructure investments for present and future generations.

Target audience

This MOOC is available to all interested participants. The main target groups, however, are the central and local government officials in developing countries in Asia and the Pacific, Latin America and the Caribbean and Africa. At the central government level, the target group includes officials from ministries of finance, ministries of local governments, relevant line ministries (e.g., water, health, education) and procurement authorities who are involved in designing asset management policies and regulations at the national level or allocating central government grants for capital investments to local governments. At the local government level, the target group comprises local officials who are responsible for infrastructure asset management, in particular technical experts from the finance, procurement, engineering, water and sanitation, health and education departments, as well as community members such as ward representatives and civil society organizations.

Overall course learning objectives

It is expected that, by the end of the course, participants will be better positioned to:

1. Describe the principles and dynamics of effective asset management, and how they meet in an asset management framework;
2. Explain the objectives of and be able to apply the UN Asset Management Diagnostic Tool;
3. Describe the design and implementation of Asset Management Action Plans (AMAPs) and be able to develop one in the respective national or local context;
4. Recognize the benefits of an effective asset management information system and outline the steps to develop and implement one;
5. Evaluate and adapt asset management practices for crises such as climate change and public health emergencies;
6. Explain how an enabling legislative and policy environment at the national level can support and sustain asset management at the local level.

Overall course structure

The course is divided into two parts: *Fundamentals: Infrastructure Asset Management for Sustainable Development* (Module 1-4) and *InFocus: Infrastructure Asset Management for Sustainable Development* (Module 5-8).

Fundamentals:

- Module 1. Basic tenets of asset management
- Module 2. The dynamics of asset management
- Module 3. Assessing asset management needs and capacity
- Module 4. Asset Management Action Plans (AMAPs)

In Focus:

- Module 5. Capturing and utilising the right data for effective asset management
- Module 6. Improving climate resilience within asset management systems
- Module 7. Strengthening public health emergency preparedness and response in asset management systems
- Module 8. Building a national enabling environment for asset management

Learning methodology

This e-learning course is developed in English and consists of eight modules. Each module is developed around the overall learning objectives, as well as second-level learning objectives specific to each module.

Each module combines interactive slides with instructional videos narrated by a Chief Instructor. Throughout the lessons, learners are presented with formative “test your knowledge” questions to check comprehension of the concepts, examples and tools presented. The modules are further enriched by a diverse layer of real-world testimony provided through expert interviews. Experts hail from municipal governments, universities, development banks, local government associations and across the UN system. The modules also comprise open-ended exercise questions (not graded) offered through the lesson section of the learning platform to reflect on the topics and share their experiences.

To assess the effectiveness of the course and the knowledge and skills acquired, each module will have ex-ante and ex-post summative assessments. Learners will answer 3-4 questions at the start of each module to help get a baseline of the learner’s knowledge level to be able to compare with results after taking the module. These will not be graded, nor will there be feedback.

Following the module, they will take a 10-question graded assessment that includes the questions they encountered at the beginning. (see more under ‘Certification and feedback’)

For this course to be the most rewarding and to teach you lessons that can be applied in your daily work, we recommend that you do not rush through the modules and complete a module in one sitting. Rather, you will better absorb the material by spending at least 1-2 days per module and stretching out the course over 3-4 weeks.

Module 1. Basic tenets of asset management

Module 1 introduces the fundamental principles of infrastructure asset management and its broad social, economic and environmental benefits. It explains the meaning of “infrastructure assets”, presents the asset life cycle and the considerations for each distinct phase, and covers the ‘six whats’ of basic asset information. The estimated net study time is 1.5 hours.

Learning objectives

Following the completion of the module, participants will be able to:

1. Explain the objective of asset management;
2. Describe the elements of good asset management;
3. List the benefits and challenges of asset management;
4. Describe the asset life cycle and each of its phases; and
5. Ask the right questions to obtain asset information.

Module 2. The dynamics of asset management

This module builds on Module 1, starting with the big picture of setting local asset management in its national context. It further describes how to establish an asset management framework and delves into the practices of three key pillars – demand, life cycle and financial management – that determine whether that framework succeeds. The estimated net study time is 2.5 hours.

Learning objectives

Following the completion of the module, participants will be able to:

1. Describe how national and local asset management intertwine;
2. Define the asset management framework and its components and pillars;
3. Describe the portfolio approach to asset management;
4. Explain how to evaluate the risk and prioritize infrastructure projects;
5. Indicate asset operations, including maintenance and performance evaluation; and
6. Identify the human and technological factors that enable asset management.

Module 3. Assessing asset management needs and capacity

Module 3 introduces UN Asset Management Diagnostic Tool, which is based on international best practices and has been refined through practical experience. This awareness-raising tool is used to better understand and measure asset management needs and capacity, revealing organizational gaps and concrete room for improvement. Although the Diagnostic Tool is primarily intended for local asset management, it can be adapted for use by national authorities. The estimated net study time is 1.5 hours.

Learning objectives

Following the completion of the module, participants will be able to:

1. List 4 main objectives for using the UN Diagnostic Tool;
2. State the format of the tool and where it is located;
3. Describe and apply the three parts of the tool;
4. Describe the general assessment process;
5. State the stakeholders required during each part of the process; and
6. Apply the process.

Module 4. Asset Management Action Plans (AMAPs)

This module introduces the Asset Management Action Plan (AMAP) and the full process of developing, implementing and following through with an AMAP, which involves buy-in from senior stakeholders as well as ongoing consultations. Governments can use an AMAP to tangibly improve the management of a priority asset, with the strategic aim of building a more systematic framework for sustainable, inclusive public service delivery. The estimated net study time is 1.5 hours.

Learning objectives

Following the completion of the module, participants will be able to:

1. Describe the purpose of the Asset Management Action Plan;
2. Outline the 5 steps in the full AMAP process, including revision and senior leadership approval;
3. Use the AMAP template to complete the AMAP; and
4. Outline the 5 steps in writing the AMAP;
5. Identify priority assets, stakeholders, performance goals and priority actions in the AMAP.

Module 5. Capturing and utilising the right data for effective asset management

This module provides guidance on the development and implementation of a basic asset management information system, covering all the key steps and employing methods that are simple, accessible and not dependent on advanced technology or software. The estimated net study time is 2.5 hours.

Learning objectives

Following the completion of the module, participants will be able to:

1. Explain the difference between data and information;
2. Explain the importance of maintaining up-to-date, structured and reliable information on public infrastructure assets;
3. Describe the benefits of implementing an effective asset management information system;
4. Outline the steps to develop and implement an effective asset management information system; and
5. Describe how key performance indicators (KPIs) and IT tools can be used to support the management of assets.

Module 6. Improving climate resilience within asset management systems

Module 6 examines climate change concerns in the context of asset management and the interconnected systems that are at risk of climate-related failures affecting service delivery, public safety, the environment, among other factors. It explains how to access and interpret publicly available climate data, and outlines the process of developing a climate-resilient asset management action plan with adaptation and mitigation strategies that are based on clearly delineated impacts of climate hazards. The estimated net study time is 2.5 hours.

Learning objectives

Following the completion of the module, participants will be able to:

1. Explain climate change;
2. Explain the purpose of climate-resilient asset management;
3. Complete a climate risk process assessment;
4. List climate hazards and their impact on assets and their services;
5. Describe the value of natural infrastructure assets in managing impact of climate change;
6. Outline key adaptation measures and strategies; and
7. Create a climate-resilient asset management action plan.

Module 7. Strengthening public health emergency preparedness and response in asset management systems

This module applies the key tools, processes and lessons from previous modules to the challenge of strengthening crisis preparedness and emergency response within asset management systems. The estimated net study time is 1.5 hours.

Learning objectives

Following the completion of the module, participants will be able to:

1. Define the relationship between public health resilience and effective asset management;
2. Outline the 6 steps to introduce or improve infectious disease preparedness in an asset management system, including asset-based emergency operations plans (EOPs);

3. Complete an Emergency Response – AMAP or an ER-AMAP; and
4. Contribute to social and economic recovery programmes through improved short- and long-term asset planning.

Module 8. Building a national enabling environment for asset management

Module 8 describes how an enabling legislative and policy environment at the national level can unlock the benefits that flow from good stewardship of public assets at the local level. It outlines steps to create and sustain such an environment for a local government sector in which priorities, capacities and size can vary widely. Unlike the previous modules, much of this module addresses considerations and actions at the national level. For this reason, it is particularly useful for practitioners and policymakers in central government. To the local-level reader, this module aims to provide information and insight that can be used to engage with national-level counterparts. The estimated net study time is 2 hours.

Learning objectives

Following the completion of the module, participants will be able to:

1. Compare the roles played by the central government and local government in asset management;
2. Explain how a central government, through a combination of five different approaches, can assist local governments in the advancement of local asset management;
3. Identify the key elements of success in advancing asset management across a diverse local government sector; and
4. Describe the three phases in the asset management enabling environment process.

Certification and feedback

The summative assessment following each module is used to test the participant’s understanding of core content. It consists of multiple choice, fill in the blank, ‘select all that apply’ and other types of questions. Five attempts are allowed per assessment. The attempt with the highest score is retained as the grade for the module. Each attempt proposes 10 questions that include 3-4 ex-ante questions, with the remaining drawn randomly from a question bank. Each question is equally weighted. For each question, the correct response(s) add up to 1 point. Participants need to obtain a minimum of 7 points out 10 points (70%) on each of the 8 assessments to fulfill the requirements for certification.

Participants meeting the criteria above for Module 1 to Module 4 will receive a **Certificate of Completion for Part 1: Fundamentals: Infrastructure Asset Management for Sustainable Development** (Modules 1-4). Upon completion of the criteria for Module 5-8, a participant will be awarded with a **Certificate of Completion for Part 2: In Focus: Infrastructure Asset Management for Sustainable Development** (Modules 5-8). Participants completing both parts will receive a **Certificate of Completion for the whole course**.

Participants will be requested to complete a feedback form which can be accessed through the link in the ‘Course Evaluation’ section on the course home page.

Technical requirements

Browser:

- The course works best with Firefox 3.6 or higher (download for free at <http://www.mozilla-europe.org/en/firefox>)
- It is **not recommended** to use Internet Explorer or Google Chrome for technical reasons
- Note JavaScript & Cookies must be enabled

Software:

- Adobe Acrobat Reader (download for free at <http://www.adobe.com/products/acrobat/readstep2.html>).
- Adobe Flash Player (download for free at <http://get.adobe.com/flashplayer>)
- Microsoft Excel (Windows or Apple version) or Open Office version (download for free at <http://www.openoffice.org>)

Platform: Windows 95, 98, 2000, NT, ME, XP or superior; MacOS 9 or MacOS X

Hardware: 64 MB of RAM, 1 GB of free disk space

Modem: 56 K