A **Pocket Guide** to the Handbook

# Managing Infrastructure Assets for Sustainable Development

## A Handbook for Local and National Governments

United Nations

A **Pocket Guide** to the Handbook

# Managing Infrastructure Assets for Sustainable Development

**A Handbook for Local and National Governments**

Welcome to the **Pocket Guide** of *Managing Infrastructure Assets for Sustainable Development: A Handbook for Local and National Governments*.

With this **Pocket Guide**, we aim to provide local and central governments with a quick snapshot of the key messages of the Handbook on Infrastructure Asset Management as well as concise insights and infographics. In addition, we encourage our readers to access and disseminate all contents of our full publication, available on our website, to build together resilient infrastructure asset management for a sustainable future, in which no one is left behind.

Infrastructure systems provide essential services to our citizens every day— such as the roads they use to get to work, the buildings where they live or attend school, the parks where their children play and the water and sanitation facilities they use to stay healthy.

Nowadays, effective asset management has become as critical as ever across the globe and in the face of mounting pressures, such as limited resources, growing urban populations, shifting patterns of employment and land use, climate-related disruptions and health emergencies, including the COVID-19 pandemic. In this context, we intend to equip 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 socioeconomic and environmental challenges of our time.

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# Contents



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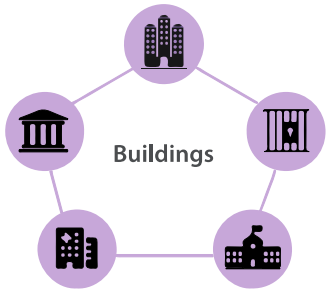
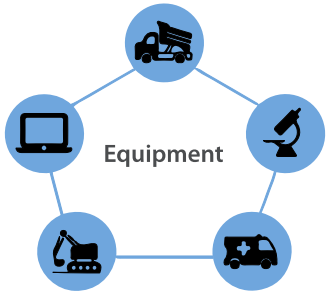
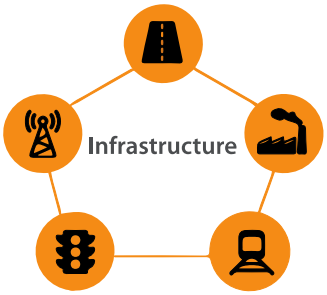
# Chapter 1: Basic tenets of asset management

- Asset management allows governments to maximize both the financial
  and the service value of physical assets, to the benefit of communities.
- A critical first step in the asset management journey is for governments to take stock of the assets they own and/or manage. Answering the 'six whats' will guide governments toward sound decisions that prioritize critical assets within a broader asset portfolio.
- Assets have to be managed adequately over their entire life cycles to ensure that initial investments in new infrastructure are sustained for present and future generations. Each phase of an asset's life cycle (planning, acquisition, use and disposal) requires policies and actions that draw on a unique set of human, material and financial resources.








What is an **asset**? The most basic definition of an asset is something that is of value to a person or an organization. But what do we mean by *value*? Assets provide a service to users, owners and the community. We call this the **service value**. Assets also have a **financial value**; they cost money to acquire. Both a public asset's service value and its financial value contribute to the community's overall wealth. Assets with a high service value and/or high financial value are called **critical assets**.

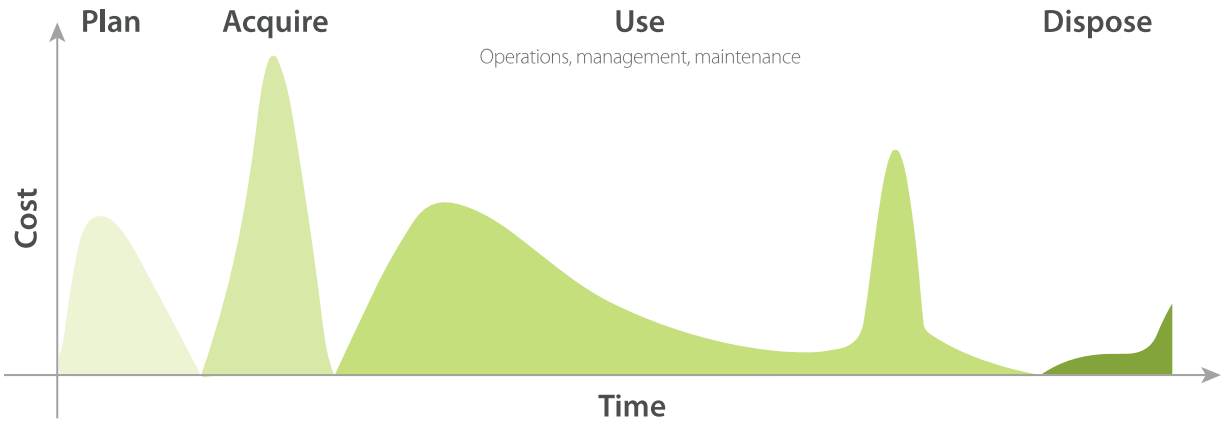
## Public assets

Public assets are all the physical assets that are essential to the delivery of basic public services and are owned or managed by a local or central government.

Handbook reference
pp. 3 – 10

The **life cycle** of a physical asset involves four phases: planning, acquisition, use and, when it no longer meets our needs, disposal. Each phase of the life cycle varies in length and costs. The life cycle cost of an asset is the total of all costs incurred throughout the four phases.

## The life cycle of a physical asset




- Planning is the most important phase in the asset life cycle as this is when performance and level of service requirements are defined. Even though planning usually does not incur high costs, it is seldom given the attention it deserves. Whereas every decision made during this phase will influence the cost of the asset as well as the service it provides to the community over its whole life cycle.

- Acquiring an asset is often the shortest phase in its life cycle. It is when we act on our plans and obtain new assets to meet increased requirements, enhance service provision or replace old assets that no longer meet the community's needs.

- The phase of use is usually the longest and costliest of the four phases. The costs incurred during this phase range from 60–80 per cent of the total asset life cycle cost and often include the replacement of major components to keep the asset functioning.

- The last phase of an asset's life cycle is disposal. It is important to plan for the disposal of assets as they can be a drain on resources if no longer used in their intended ways.

Getting good asset information is a key challenge at all levels of government. We cannot manage assets without adequate information about them. The information that provides the foundation of asset management is derived from six questions, commonly known as the 'six whats'.

Handbook reference
pp. 11 - 15

## The ‘six whats’ of asset management


Adapted from D.J. Vanier, p. 4, with select icons from the Noun Project

Being able to answer the ‘six whats’ entails having the following types of information:

- Physical data about assets
- Asset location and spatial connections to other assets
- Data about maintenance or asset replacement activities
- Asset performance data
- Asset condition data
- Asset financial data.

Gathering and recording this information is essential. It must be accurate, timely and, most importantly, relevant. Asset managers need to know the quantity and type of assets they own or lease to help plan for the future. They also need to know their value and condition in order to prioritize and plan for their renewal and repair.

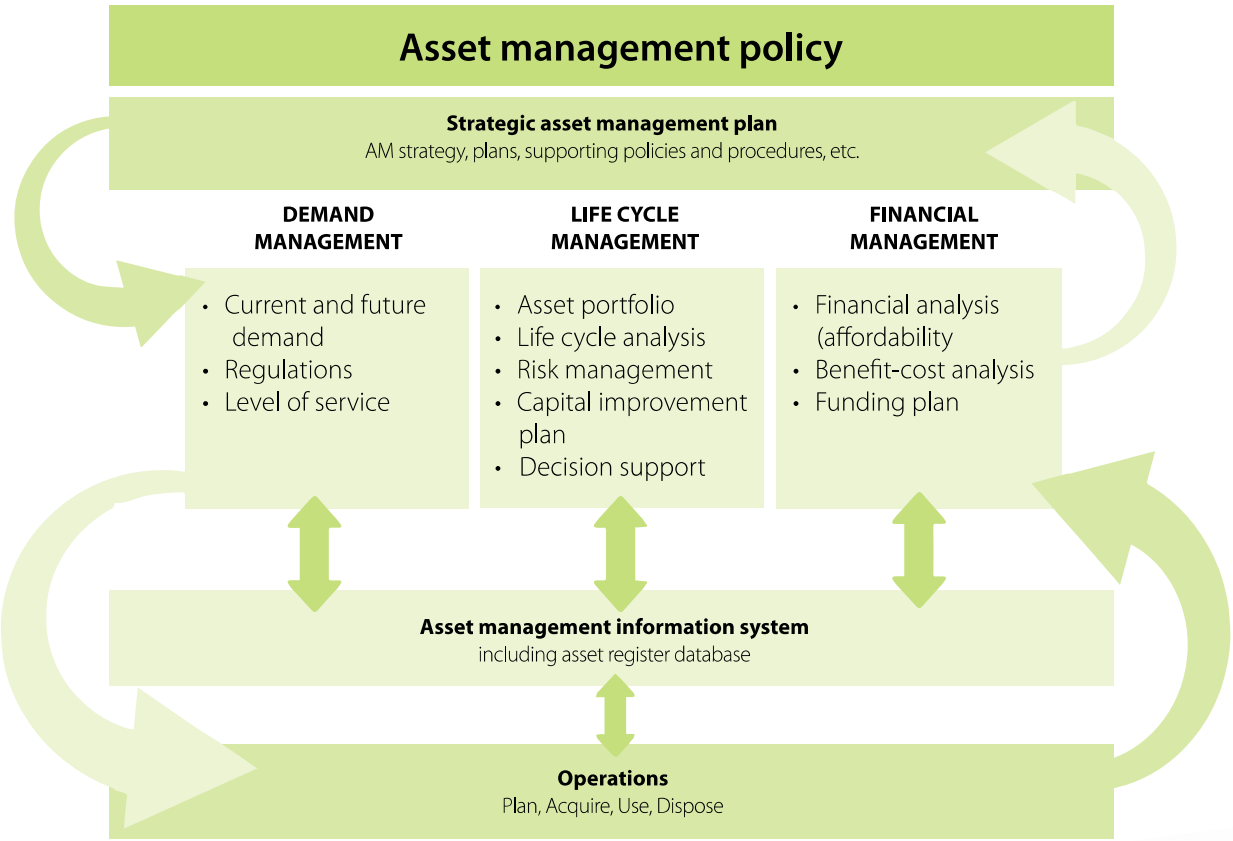
Maintenance we have not done but that we should have performed is called **deferred maintenance.** It is a liability as it means that an asset will not achieve its design service

Handbook reference pp. 16 - 18

# Chapter 2: The dynamics of asset management

- Asset management must be embedded in a framework based on clear principles and objectives that reflect community needs and national development priorities. Each pillar of the asset management framework (demand, life cycle and financial management) deserves equal attention by governments seeking to design and implement policies and strategies that will make infrastructure investments go further.
- Asset management must follow a portfolio approach that maximizes the benefit and value of an entire collection of assets. Growing interdependency among infrastructure systems deepens the need for governments to weigh long-term trade-offs and risks when making decisions.
- Designating an 'asset management champion' is necessary to lead improvement efforts, increase visibility and ensure there is political commitment to sustain asset management. Good asset management involves a change in the organizational culture over time.

## Asset management framework




Handbook reference pp. 25 - 34

# Portfolio management

In this approach, a government can understand its assets in context—across multiple infrastructure systems—and can make decisions that better serve the community from an economic, social and environmental perspective. Decision-making would be based on comparing alternatives across these portfolios; thus, maximizing benefits and minimizing costs.

## Asset management policy

An **asset management policy** identifies the objectives and principles that will guide asset management in an organization.

**Strategic asset management plan**
AM strategy, plans, supporting policies and procedures, etc.

The **asset management strategy** is a high-level, comprehensive action plan that guides *how* assets across the organization will be managed over time to ensure we meet our objectives.

Asset management direction is provided through an asset management plan and supporting policies, procedures and processes. The **asset management plan** further details the activities necessary to manage assets and is often broken down by service area (e.g. water provision, roads) or asset category (e.g. land, equipment).

We also need supporting policies and procedures that provide specific direction to asset management staff on how to implement the activities needed to support asset management in an organization. If we do not have these, our approach to asset management will be ad hoc, inefficient and ineffective.

# Demand management

**DEMAND MANAGEMENT**

- Current and future demand
- Regulations
- Level of service

We need to define, through a robust community consultation process, the **levels of service** we intend to provide and the customer's willingness to pay for the service. We also need to know what national policies and regulations we need to follow. It is important to regularly monitor levels of service to ensure that customer and technical performance targets (e.g. service disruptions and water leakage) are being met. These activities are not done sequentially. Understanding demand and levels of service is an iterative process.

Many factors can influence demand and, consequently, the assets we will need to meet that demand. Among these factors are national or local government direction, population growth, economic development, demographics, regulatory changes and technology.

The **level of service** (LOS) refers to the scale of service provided by an asset or group of assets to meet our goals. We have to consider what we must provide, what we want to provide and what we can afford to provide.

Handbook reference
pp. 34 – 43

# Life cycle management

**LIFE CYCLE MANAGEMENT**

- Asset portfolio
- Life cycle analysis
- Risk management
- Capital improvement plan
- Decision support

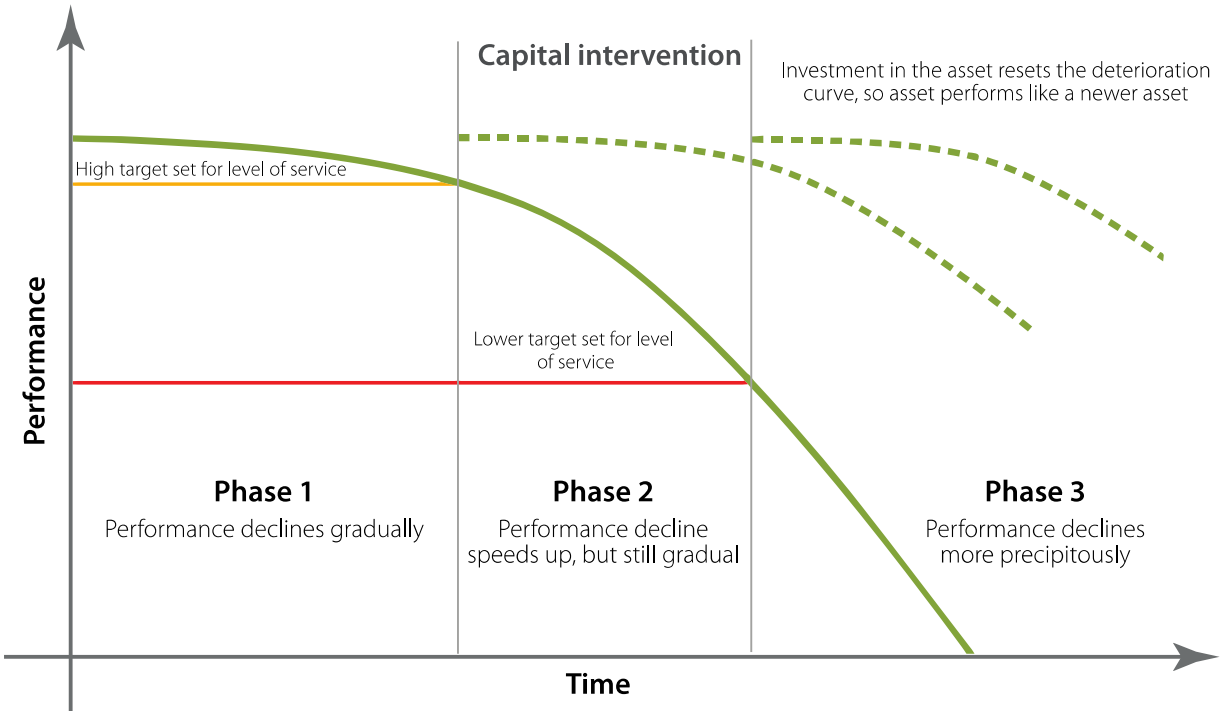
**Life cycle management** focuses on the specific activities we must undertake during all four phases of the asset life cycle: Plan, Acquire (or Build), Use and Dispose.

Assessing trade-offs is critical in life cycle management. We need to understand what we are giving up when we acquire a new asset or repair, renew or replace an existing one. Which choice is more cost-effective and can deliver more reliable levels of service in the long run?

In addition to costs, we need to evaluate and manage the short-, medium- and long-term risks associated with our decisions, then develop a plan to manage them. Understanding risk and how we deal with it is a key component of life cycle asset management. This process is called **risk management**, and its primary purpose is to prevent, mitigate or adapt as best we can to undesired effects so that we can still achieve the desired objectives and outcomes, in this case, of asset management.

## Capital planning

Regardless of their service life, all assets deteriorate over time. Most assets follow a typical pattern of deterioration, shown as a green curve.




Handbook reference pp. 44 - 50

## Risk management steps

### STEP 1
Understand the risk context

**Is the risk strategic, tactical or operational? What is the potential outcome (or outcomes)?**

- Strategic—compromises organization's principles, e.g. corruption
- Operational—leads to key services not being delivered or delivered adequately, e.g. power failure
- Tactical—results in cost overruns and/or project delays

### STEP 2
Identify the risk

**Is it natural, accidental or intentional? What does it impact on (safety, environment, performance)?**

- Natural, e.g. risk of physical damage and long-term environmental impact due to weather events such as storms, earthquakes or volcanoes
- Accidental, e.g. service disruption due to power failure or increased demand due to refugee influx
- Intentional, e.g. social unrest, protests

### STEP 3
Evaluate

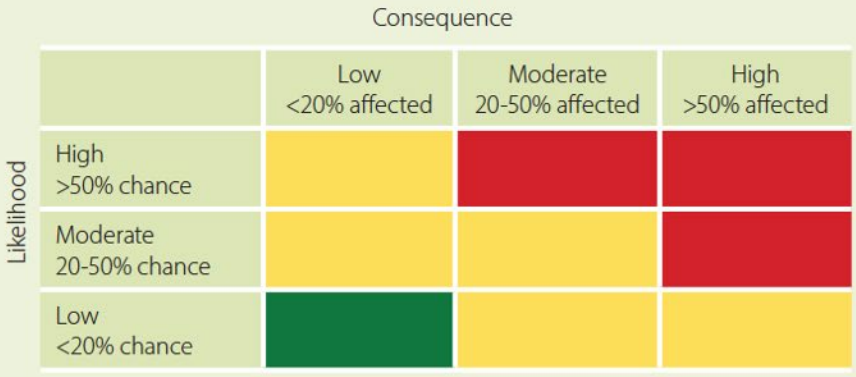
**What is the likelihood an event will occur, and what are the consequences if it does?**

**What and who will be affected?**

Consider public health and safety (e.g. hospitals, traffic lights) as well as financial implications for businesses. Also consider running different scenarios to understand how the impact of an event will scale, potentially causing cascading failure across multiple systems.

You can score from 1 (low) to 3 (high) or expand the scale to factor in more considerations (i.e. 1 to 5).

The resulting grid is used to determine the risk.




Remember that critical assets often have the highest risk levels.

For example, what is the risk of a power failure? First, we assess the likelihood. If we have not been properly maintaining the system, it will be moderate to high. The consequence will depend on how widespread the failure is, how long it lasts, who is affected and how many we anticipate will be affected. For a hospital or local businesses, this will be high; for homes, moderate to low.

### STEP 4
Manage

**How will you deal with the risk? (three options)**

a. Avoid the risk

b. Mitigate the risk by reducing or altering the consequences of a threat or hazard or, by reducing the likelihood of it occurring in the first place

c. Accept the risk

For example, we can mitigate the consequence of a power failure by having backup generators. We can also mitigate the likelihood through proper maintenance and inspection of the power equipment.

### STEP 5
Measure

**Did it work as well as hoped? What would you do differently?**

Handbook reference p. 48

# Financial management

**FINANCIAL MANAGEMENT**

- Financial analysis (affordability
- Benefit-cost analysis
- Funding plan

**Financial management** involves financial analysis and reporting and leads to the organization's funding or financial plan. The link between maximizing the financial value and the service value of an asset goes both ways. We cannot make good financial decisions without understanding asset portfolio requirements, and we cannot make good portfolio decisions without understanding the financial picture and implications. Therefore, it is essential that we integrate the financial management pillar with the first two pillars.

**Operations**
Plan, Acquire, Use, Dispose

# Asset operations

**Asset operations** refer to the day-to-day activities associated with planning, acquiring, using and disposing of an asset. Operations plans and strategies focus on service delivery. Maintenance plans and strategies, on the other hand, focus on how to keep assets functioning as required to meet service objectives.

## Elements of operational planning

### EMERGENCY MANAGEMENT

How we deal with immediate service disruptions due to natural disasters or unusual events.

### BUSINESS CONTINUITY

How we maintain critical services over the longer term when the functions that support them are disrupted. For example, the main transmission grid is damaged due to a major storm or vandalism.

### ENERGY MANAGEMENT

How we minimize energy usage by our assets, such as electricity, water and fuel. For example, our policy is to turn lights off in government buildings in the evenings.

### UTILIZATION

How we maximize the use of our assets so that they are close to capacity and we get the best return on our investment. Underuse costs us money and time. Even if a building is only partially occupied, we still pay to operate and maintain it as if it were fully occupied. Overusage will result in additional costs or possible early failure of an asset.

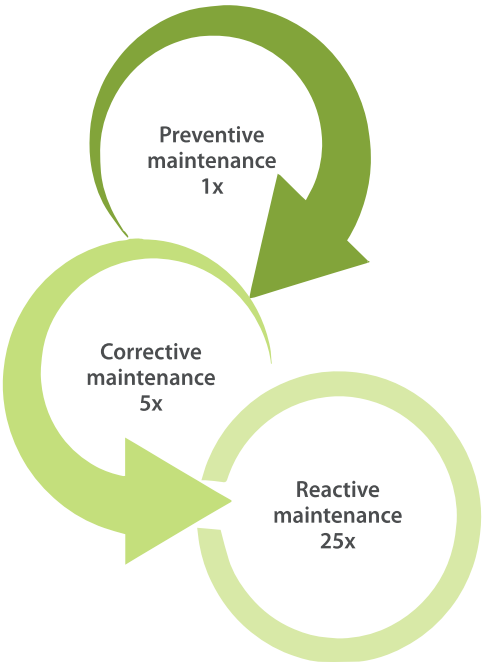
### SUSTAINABILITY

How we operate our assets so that we don't compromise service delivery through overuse. For example, overuse of a borehole could result in it running dry. Recycling is also an element of sustainability. We need to determine what we will recycle and how.

Handbook reference
pp. 56 - 64

## The ‘law of fives’— Deferred maintenance will cost you

For a given task, **preventive maintenance** (regularly scheduled inspections and minor maintenance activities, such as changing filters, lubricating equipment or cleaning sewers) costs less than **corrective maintenance** (repairs to defects or failure of minor components) and significantly less than **reactive maintenance** (responding after something has broken). Unfortunately, we do not see the immediate impact of *not* undertaking preventive and minor maintenance.




Consider a garbage collection vehicle. It needs regular oil changes, tire rotation and lubrication of moving parts. If we do not do any of these things, the vehicle will not break down today or tomorrow. We might start to see an increase in fuel consumption, we may not be able to drive it over poor roads, but it will not fail outright. Nevertheless, its service life is being shortened. The major components will eventually fail—the gearshift or an axle could break. Instead of lasting another ten years, it will last only five.

The **‘law of fives’** states that if you wait to perform minor repairs as part of preventive maintenance, they will become moderate repairs costing five times more, and if still left unattended to, will turn into major repairs costing another five times more. Maintenance turns from preventive to corrective to reactive.

Handbook reference
pp. 64 - 66

# Chapter 3: Assessing asset management needs and capacity

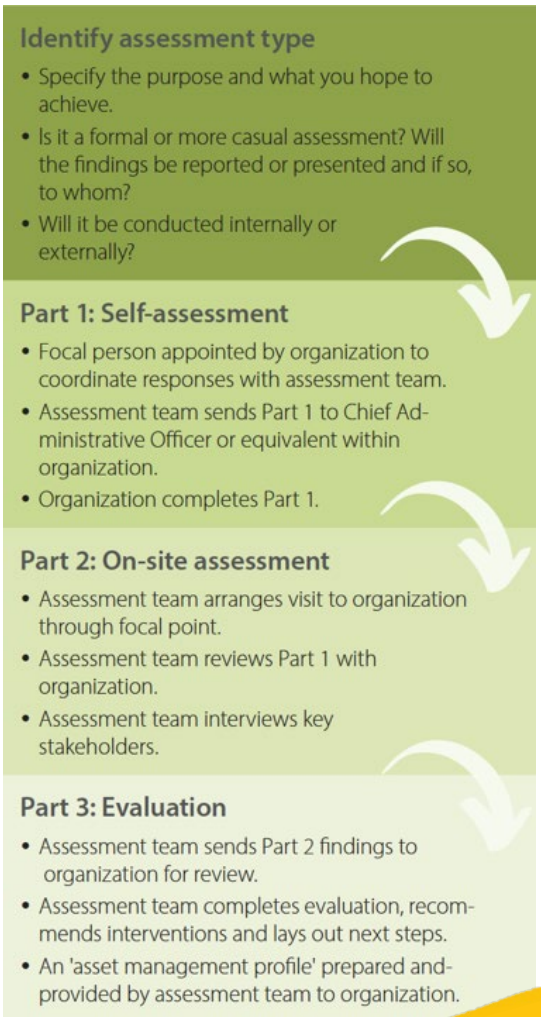
- A successful start to asset management requires a comprehensive assessment of current needs and challenges. The UN/DESA-UNCDF Asset Management Diagnostic Tool offers a simple way to do this.
- The three-part assessment takes into consideration the many factors and stakeholders involved in asset management. An evaluation against set criteria (defining 'Basic', 'Elementary', 'Progressing' and 'Advanced' levels) results in a summary of recommended areas for policy intervention.
- The main aim of the Diagnostic Tool is to measure and raise governments' awareness of asset management techniques. It is only the first step towards better asset management and should be followed by a concrete plan of action.

The Diagnostic Tool is available as an Excel® spreadsheet, which you can download from https://www.un.org/development/desa/financing/capacity-development/topics/ infrastructure-asset-management. The spreadsheet has a series of tabs for each part of the tool.

**Part 1** is a self-assessment. The purpose of Part 1 is to get a government organization to think about its goals, assets and challenges with regard to four main categories of physical assets: land, equipment, buildings and infrastructure.

**Part 2** is an on-site assessment using a series of 14 asset management questions that guide the assessment team and the organization. These questions refer to:

- Understanding and defining requirements:
  - Asset inventory data
  - Asset performance
  - Levels of service
  - Forecasting demand
- Life cycle decision-making:
  - Decision-making
  - Operational planning
  - Capital planning
  - Financial planning
  - Sustainability
- Asset management enablers:
  - Asset management leadership and teams
  - Asset management policy and process
  - Asset management information systems




Handbook reference pp. 86 - 109

- Service procurement
- Transparency.

Part 3, which aims to pinpoint strengths, weaknesses and areas of potential improvement, is to be completed last and consists of evaluating the responses from Part 2. Each response is given a score reflecting the level of current awareness within the organization. Part 3 also provides an option to identify target scores considered by an assessment team to be appropriate for the organization to achieve within 2-3 years, and to recommend actions to achieve them.

For the full Diagnostic Tool, see Handbook: pp. 97-103

## Conducting interviews

The interview is the most important part of the assessment as it is our opportunity to discuss the answers from Part 1 with the local team. It is also when we gather all the information needed to complete the evaluation in Part 3. Before we begin, we need to ensure that we will be interviewing the right people.

As the intent of the Diagnostic Tool is to get a snapshot of asset management in the organization, the most efficient method is to have the head person from each of the key groups present. If necessary, individuals who have specific information can be interviewed or consulted later to provide supporting information or to validate what was gathered from the interview(s).

It is very important to probe the responses to fully understand what is being done (or not). It is also important to ask for physical evidence to support the responses as this will be needed to complete Part 3.

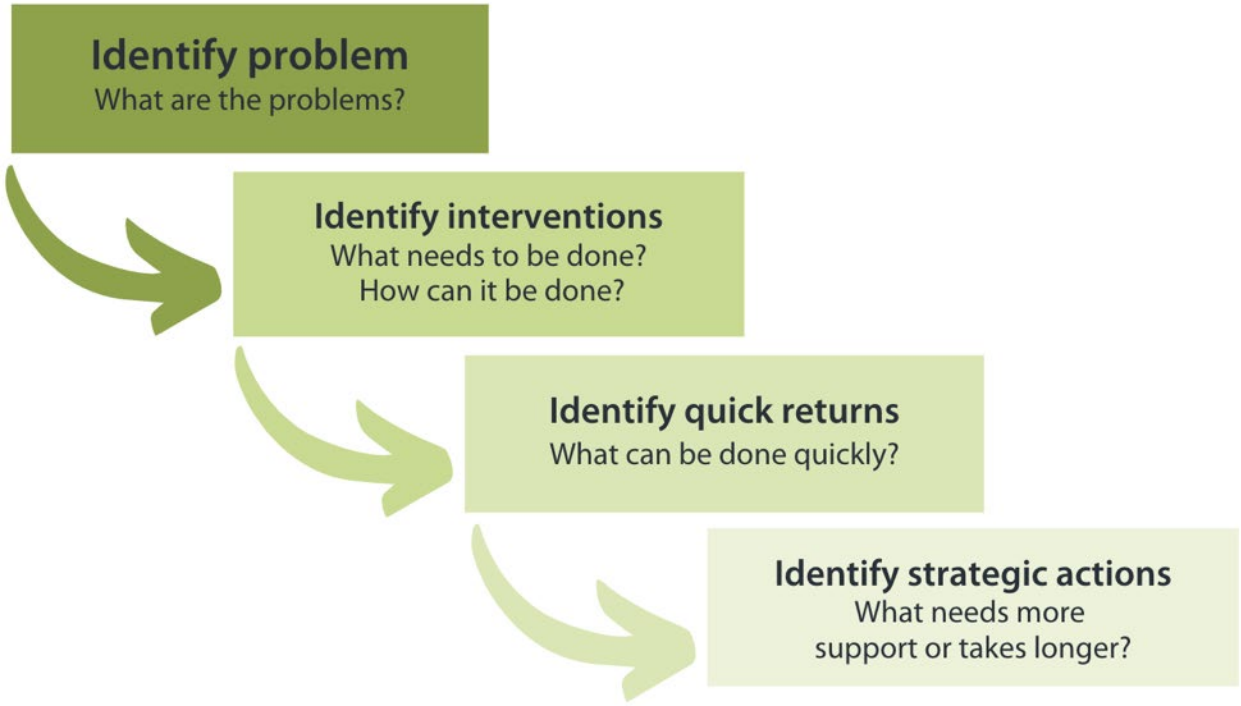
Probing works best with open questions, that is, those that cannot be answered with ‘yes’ or ‘no’. To do this, we begin our probing with words such as:

- *Tell me about …*
- *Describe how …*
- *Explain how …*

Handbook reference
pp. 109 - 116

The Diagnostic Tool concerns itself with awareness because it is the necessary starting point: one must be aware of what asset management activities need to be done before one can undertake them. If the organization's implementation capacity is constrained, this will become evident and will need to be addressed so that the ability to implement asset management is at least equal to the need. Conversely, even unlimited capacity will be of no use to an organization if it lacks awareness of what must be done.

## Steps to recommend interventions



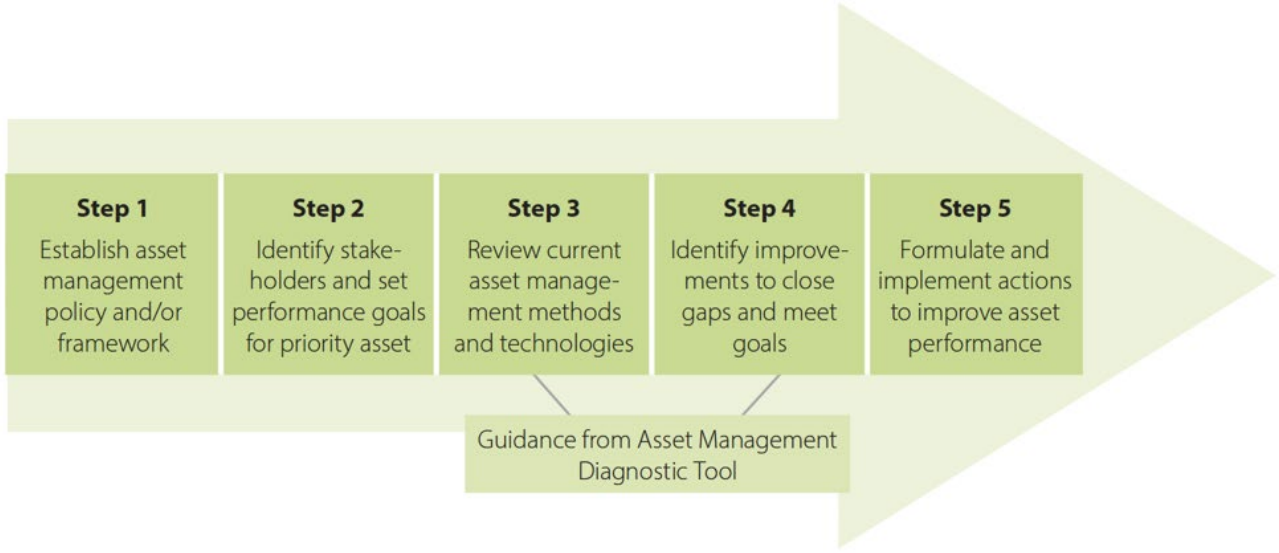

Handbook reference
pp. 117 - 118

# Chapter 4: Taking action with asset management action plans

- Governments can use the UN/DESA-UNCDF Asset Management Action Plan (AMAP) to lay out a clear and comprehensive map of actions and measures to improve the performance of priority assets.
- Creating an AMAP entails a series of steps, including stakeholder analysis, performance projections, gap assessment and corrective actions, to ensure follow-through and sustainability of improvement efforts.
- Having AMAPs in place for priority assets is an indication of a transparent and financially responsible government and can help attract additional public and private investment in sustainable development.

An asset management action plan (AMAP) is a way to compare an organization's present asset management knowledge, practice and documentation against good asset management practices. It helps in identifying gaps in the asset management practices and pinpoint specific actions to close those gaps, thus, improving asset management.

## Asset management action plan (AMAP) steps




Handbook reference
pp. 126 - 130

**Step 1**
Establish asset management policy and/or framework

Establishing a framework or policy is the first step in the AMAP process. Begin by asking two questions.

1. Do we have an asset management framework or policy?
2. Do we have an asset management strategy or plan?

Answering 'no' to one or both questions does not prevent one from embarking on the AMAP process. The template requires the inclusion of several objectives and main principles that will guide the AMAP analysis, priorities and actions. These will form the basis of the asset management framework, policy and strategy.

### Example of an asset management objective (*Sustainability*) and related principles

Sustainability

- We will encourage water harvesting and conservation schemes to counter erratic rainfall.
- We will manage our natural assets to conserve resources and give attention to long-term solutions rather than short-term affordability or convenience.
- Proper valuation of our environmental assets, such as lakes, rivers and groundwater will allow land and other assets to retain value.

**Step 2**
Identify stakeholders and set performance goals for priority asset

This is the most important step in the AMAP process. Improvement of the asset management is impossible unless the most important assets are first identified. Without identifying the key stakeholders in these assets, we cannot determine if they have what they need or if they are using the best methods or tools. And unless we clearly define our goals, we cannot identify the gaps that prevent us from achieving them.

## Determining priority assets

Critical assets are those that have a high service and/or financial value. **Priority assets** are the critical assets that are most important to delivering the local government's objectives. These assets need close attention, as neglecting them carries a significant risk to the local government and community.


Handbook reference pp. 130 - 142

**Step 3**

Review current asset management methods and technologies

In order to identify opportunities for improvement, it is important to understand what methods and tools are used by the active stakeholders to manage the priority asset, and whether or not they are effective.

The information gathered regarding the stakeholders—what information they need (and whether they have it), and what methods and the tools active stakeholders use in managing the priority assets—will help us identify where our current processes fall short of the requirements set out in our performance goals. These are our potential areas for improvement.

**Step 4**

Identify improvements to close gaps and meet goals

A **gap analysis** is an assessment of the current asset management practices, tools and technologies against our stated goals and objectives to identify gaps and areas for improvement.

After we have identified our gaps, we need to determine the most practical and suitable actions for all relevant stakeholders to address the identified gaps. This can be done as a brainstorming exercise among the AMAP team and key stakeholders.

Upon looking at each gap, we ask "So what?" This reinforces thinking about what needs to be do and how should it be done.

## The "So what?" exercise—water provision example


**Step 5**

Formulate and implement actions to improve asset performance

We may have identified many gaps and actions, but it would not be practical to include them all in the final AMAP because limited resources would likely result in failure to close all the gaps. We should choose the best actions for all relevant stakeholders who can address the identified gaps, and link our proposed actions to improve the management of the asset to the current and medium-term municipal budget. The next step will help in prioritizing those actions. Only those that are achievable in the short- to medium-term (less than three years) and those that will have the greatest impact should be included in the AMAP. This becomes an Action Plan.

Handbook reference
pp. 142 - 150

## Actions and resources required

| Actions required | Owner | Resources required | | | Funding and source |
|---|---|---|---|---|---|
| | | People | Training/mentoring | Tools | |
| | | | | | |
| | | | | | |
| | | | | | |

## Our AMAP priorities

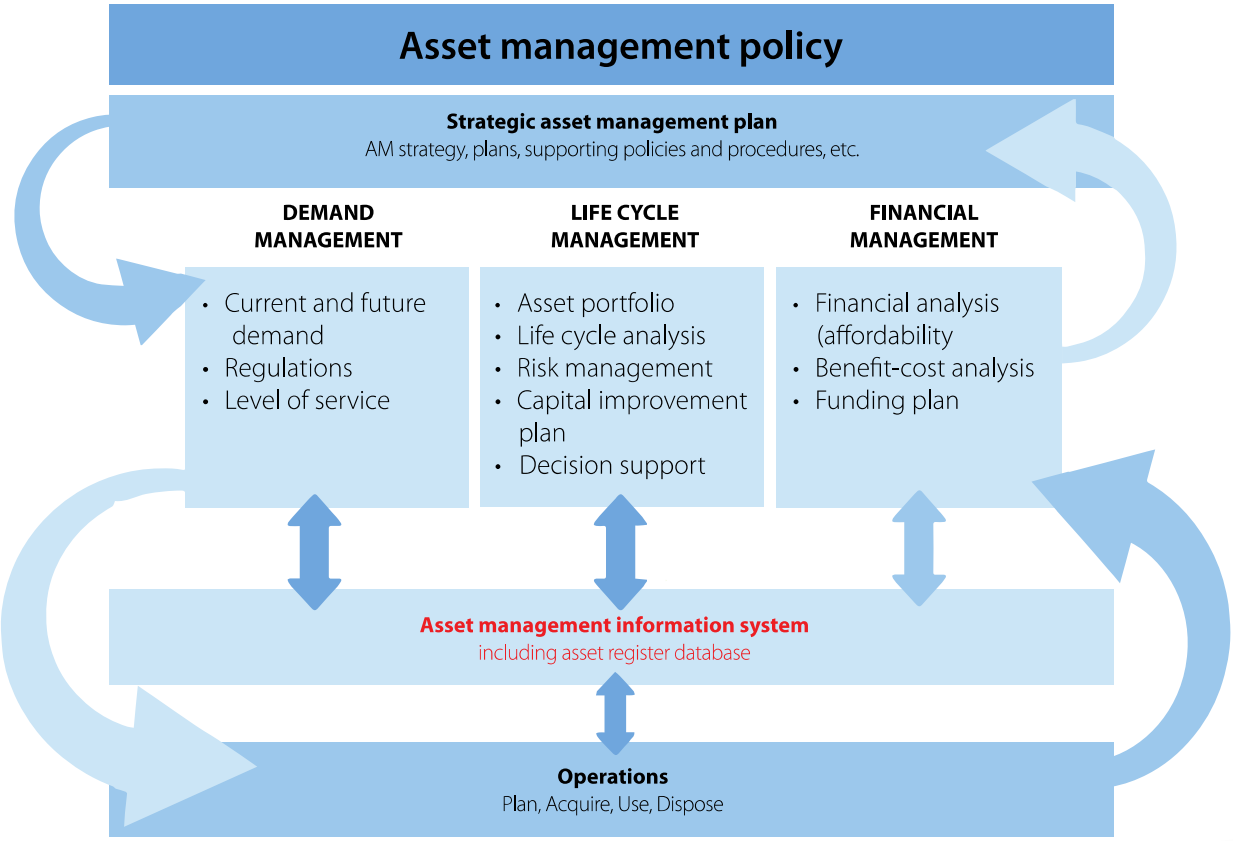
| Priority rank | Priority action | Related actions | Summary of resources needed | Target date for completion | Funding and source |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

An AMAP is a living document. Responsibility for review and update lies with the asset management focal point and the key stakeholders. It requires a follow up on progress with all action owners at least every six months.

Handbook reference
pp. 150 - 151

# Chapter 5: Capturing and utilizing the right data and information

- A systematic, methodical approach to data collection will result in a more effective and robust asset management information system that delivers reliable information necessary for sound decision-making and, ultimately, for improved service performance.
- Having adequate data on the location, condition, performance and finances of assets allows governments to anticipate the resources that need to be set aside for repair, renewal and replacement over the long term, particularly for critical assets.
- Ensuring the accuracy, quality and quantity of asset information is a collective effort. However, the costs of collecting, validating and maintaining data should not exceed the value of information.




Handbook reference
pp. 160 - 161

Maintaining up-to-date information on public infrastructure assets can help diagnose hidden problems before they cause serious service disruptions or something worse. Limited budgets and increasing demands for higher levels of service further add to the urgency of harnessing timely, reliable data for more efficient and effective asset management.

A robust information system is also necessary to support an efficient and appropriate allocation of funds to top asset management priorities. Lack of reliable information about assets, such as about their performance or value, can make it difficult for governments to justify expenditures for maintenance, renewal and replacement of assets, if they are even aware of the need to begin with. Without good data, the government cannot anticipate what requires attention and funds, and with what level of urgency. And once a community is hit with a problem, resources may not be readily available to deal with it.

**DATA**

For any fixed asset that your local government owns, you should have the following:

- Physical data
- Location
- Condition data
- Performance data
- Financial data

**INFORMATION**

From the data, you can derive real-time information about:

(Each asset)

- Where is it located?
- What is it worth?
- What is its condition?
- What is its remaining service life?
- What is its deferred maintenance?
- What is its probability of failure?

(All assets)

- What should we fix first?
- What are our most critical assets?
- Which assets require improved maintenance?
- What are our expenditure needs for the repair, renewal or replacement of future assets?

**DECISIONS**

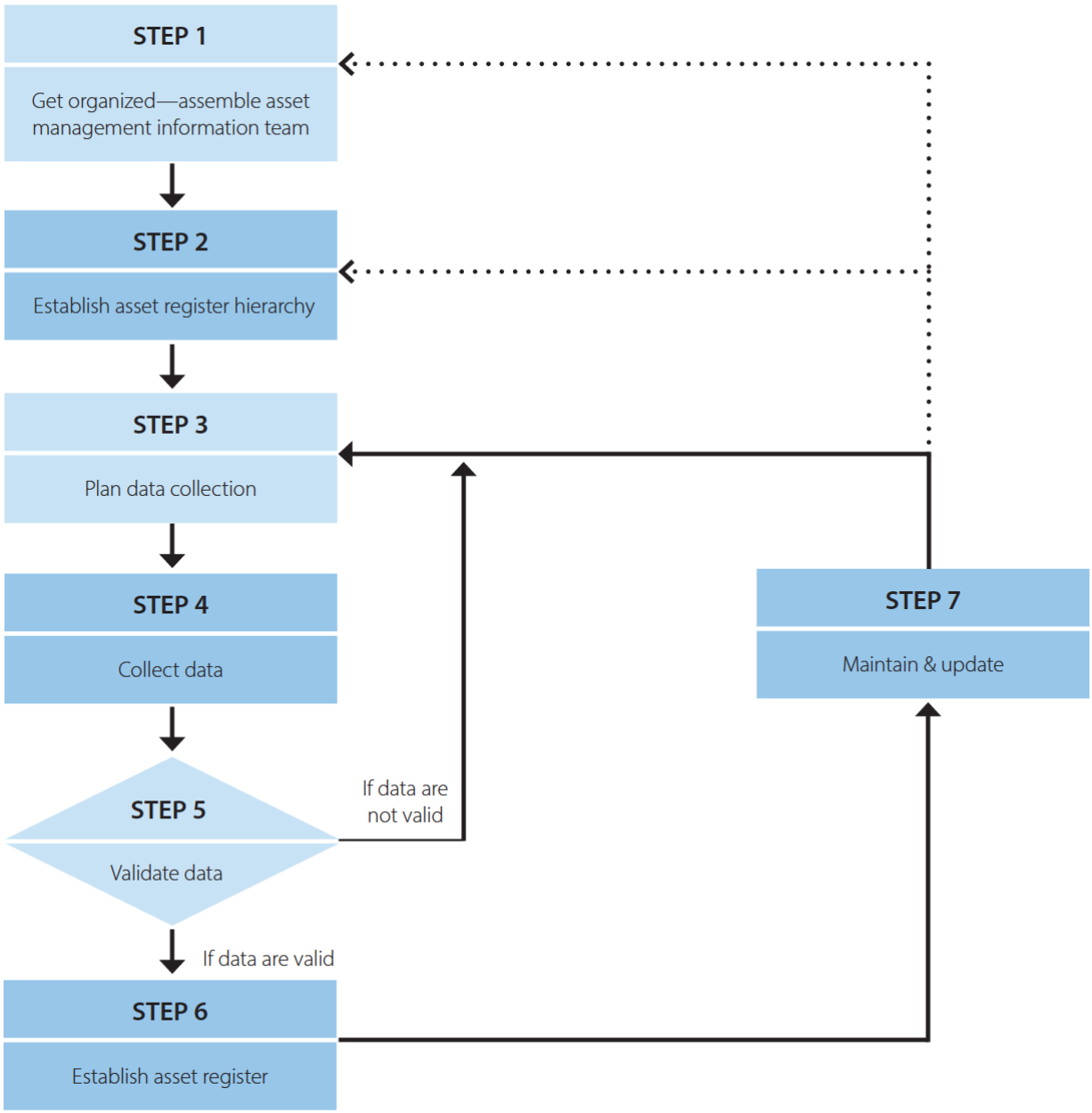
- Meet strategic objectives and customer demands
- Meet local management needs
- Better control of operation and maintenance activities, in line with government regulations

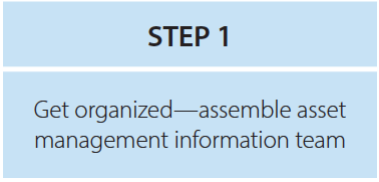
## Data, information and decisions

The primary purpose of an asset register database is to generate timely, relevant and accurate information on all the assets we own and manage, including their structure and condition. A local authority with such information should be able to make strategic and sound decisions.

Handbook reference
pp. 161 - 165

# Asset register database process



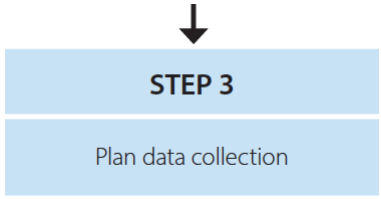




The **asset management information team** is tasked with defining the data requirements, helping implement those requirements and then providing training to others on the asset register database.

Handbook reference pp. 166 - 167


Establishing an **asset register hierarchy** will help ensure that an asset register database follows a clear and logical breakdown of assets.

Since data collection can be a rather expensive and time-consuming process, we should carefully consider the scope and detail of data needed in the asset register database. Not every asset system has to be represented down to an atomic level, nor is it practical to do so. The extent of representation necessary will depend on how we intend to use the data.




Once we have set up or improved upon the structure of the asset register database, we need a plan for collecting data to fill that database and support a variety of asset management needs. Before collecting any data, we should carefully review our critical assets—or determine them if we have not already—so that we can prioritize resources on the infrastructure services that most impact a chosen community and face higher risks of failure or disruption.

There are different types of collectable data: location, condition, performance, maintenance and financial data.

The physical condition and functionality of the assets should be periodically evaluated as a minimum after gathering location data. We may initially assess the condition of most publicly owned assets based on staff knowledge and experience. For some older assets, we might benefit from historical data on past failures. However, it is crucial to always try to visually assess condition through on-site visits or specific tests, especially for assets with a high risk of failure or whose performance must meet minimum levels of service demanded by the community. Knowing the condition of an asset is not useful unless it is tied to performance. An asset performance assessment will tell us whether the asset effectively supports the needs of a chosen community.

Going back to the second ‘what’ of the ‘six whats’ of asset management: what is it worth? To allow the financial team to access the data it needs when valuating assets, we should update the financial value of all of the assets in our asset register on an annual basis. A simple way to do so is to plan how much money is written off each year and project the book value of the asset. The book value is calculated according to the government’s accounting policies and refers to the original cost of the asset minus depreciation. For financial reporting purposes, there are five common methods to calculate depreciation, each with varying complexity and accuracy.

So which method to use? Most local governments begin with the straight-line depreciation method given its simplicity. As a rule of thumb, sum of units of production is most appropriate for vehicles, pumps and equipment. Sum of years will work well for most other asset types.

Handbook reference
pp. 167 - 189

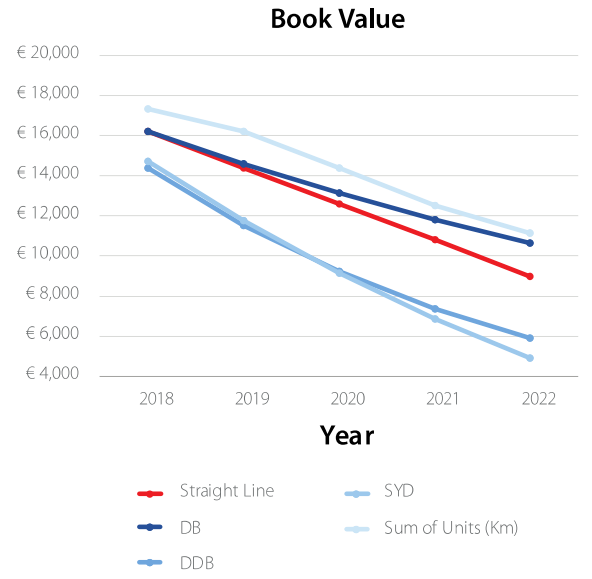
Knowing the **expected service life** (ESL) of the assets is key to tracking and responding to their condition. Assets that are closer to the end of their ESL will generally be in poorer condition than newer assets, such that older assets may require more immediate attention or regular check-ups. The following data collection process that can be applied to more complex and multifaceted assets, such as bridges, wastewater plants or bioreactors. In this example, the lower the score, the better the condition:

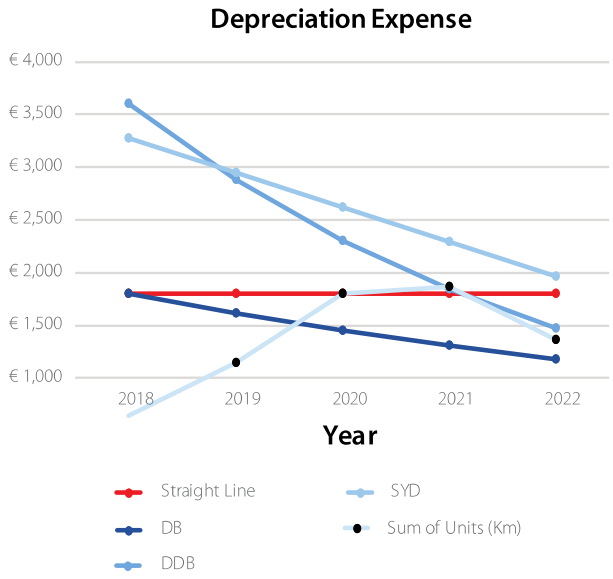
## On-site condition assessment rating guidelines

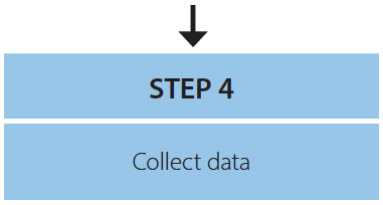
| Score | Description of condition | Remainder of ESL |
|---|---|---|
| 1<br>Like new | Asset is like new, fully operable, with maintenance procedures and training completed, and performs consistently at or above current standards. No further action required. | 95–100 per cent ESL |
| 2<br>Excellent | Asset is in excellent condition, fully operable, well maintained, and performs consistently at current standards. No wear shown and no further action required. | 90–95 per cent ESL |
| 3<br>Very good | Asset is in very good condition and well maintained but may be showing some signs of wear. Delivering full efficiency and no performance deterioration. Maintenance is planned and preventive in nature. At worst, only minor repair might be needed in the near term. | 83–90 per cent ESL |
| 4<br>Good | Asset is sound and regularly maintained but showing minor signs of wear. Delivering good efficiency with minor performance deterioration. Minimal repair is needed in the near term. | 75–83 per cent ESL |
| 5<br>Moderate | Asset is sound and well maintained but may be showing some signs of wear. Delivering almost full efficiency but with some performance deterioration. Yearly regular maintenance is planned and preventive in nature. Minimal repair is needed. | 65–75 per cent ESL |
| 6<br>Fair | Asset is functionally sound, showing normal signs of wear relative to use and age. May have minor failures or diminished efficiency and some performance deterioration. Likely showing modest increased maintenance and/or operations costs. Repair is needed. | 50–65 per cent ESL |
| 7<br>Poor | Asset functions but requires a sustained high level of maintenance to remain operational. Shows deterioration. Corrective maintenance is common. Near-term scheduled rehabilitation or replacement needed | 35–50 per cent ESL |
| 8<br>Very poor | Near to end of physical life. Substantial on-going maintenance with short maintenance intervals required to keep the asset operational. Frequent need for replacement of spare parts or asset components. Renewal or replacement is required. | 25–35 per cent ESL |
| 9<br>Failing | Effective service life nearly exceeded and/or high maintenance costs incurred. High risk of breakdown or imminent failure with serious impact on performance. Urgent replacement needed. | 10–25 per cent ESL |
| 10<br>At the end of service life | Effective service life exceeded and/or extreme maintenance and operational costs incurred. Very often is out of service. No service life expectancy; not reparable. Disposal needed. | 0–10 per cent ESL |

Handbook reference
pp. 177 - 181

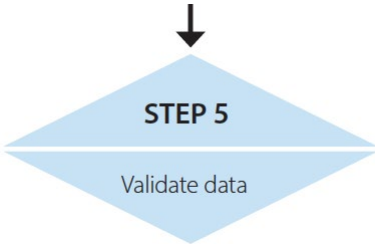
## Book value and depreciation expense over time based on example in Handbook



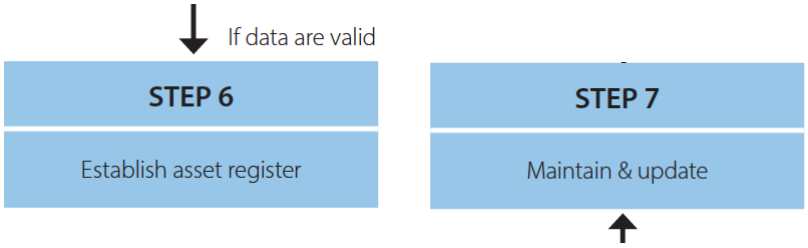




On-site surveys provide the most accurate method of filling data gaps. While software tools and spreadsheets can help assess the validity, completeness or consistency of the data, technology alone cannot confirm the accuracy of data on the ground. Therefore, on-site visits remain critical for gathering and verifying data for asset management.




Now that the data have been collected, they must undergo a proper, expert-led review to ensure they are consistent across the entire database, comply with the relevant quality standards and are representative of the underlying assets.




As with all other asset management activities, the costs of data collection should always be weighed against the value added of the data collected (or to be collected). When validating the data in the database and planning for future data collection, we should pay attention to the *relevance, appropriateness* and *affordability* parameters; otherwise, we could be diverting resources from other beneficial activities.

The asset management information team must periodically assess whether the received information is adequate to meet local government officials' requirements for effective decision-making. The assessment should also check whether the results of their decisions are delivering the expected outcomes.

Handbook reference
pp. 189 - 196

# Chapter 6: Improving climate resilience

- Climate change threatens local services and the assets they rely on, jeopardizing the quality of life of residents. Local governments are closest to the lives of residents, so they play an essential role in adapting to climate change.
- Climate risk assessments provide information needed to make climate resilience a part of government operations through asset management practices. Publicly available climate information is often sufficient to conduct a high-level climate risk assessment.
- The economic value of climate resilience is enormous. By reducing service and asset vulnerability to climate impacts, local and national governments can reduce the costs of disaster events, while acquiring greater value from infrastructure investments.

## Benefits and costs of climate-resilient assets

| | |
|---|---|
| Ensuring that assets are climate-resilient offers a range of possible benefits, including: | **More reliable services:** Climate-resilient assets experience fewer, less severe disruptions when they have their operational threshold exceeded during natural events. |
| | **Increased asset life:** Building and operating assets to tolerate a changing climate will extend their life cycle. |
| | **Reduced cost:** Designing assets to endure climate conditions that may arise later on in their life cycle can avoid the need for costly retrofits and reduce the risk that the assets will become prematurely obsolete. |
| | **Co-benefits:** Some climate-resilient assets, particularly natural infrastructure, can provide the services the community needs along with co-benefits such as urban cooling, biodiversity conservation, recreational opportunities and climate change mitigation.. |
| While there are clear reasons to ensure that the assets communities rely on are prepared to perform under certain climate conditions, there are also several barriers to consider: | **Lag time between costs and benefits:** Given the long lifespan of most types of local assets, the bulk of the benefits of increased climate resilience will occur beyond the timelines, election terms or budget cycles that decision-makers typically consider. |
| | **Uncertainty:** No one can say for certain what climate change will mean for each community. Estimates are based on numerous factors that can affect how much and in what ways the climate changes... |
| | **Lack of awareness and information:** Awareness of the risks of climate change rests largely on climate data such as detailed local climate projections. These may not be available readily or in a usable format to inform design decisions. |
| | **Lack of local capacity:** Additional capacity may be needed to support decision-making that takes into account the complexity and uncertainty of climate change. This expertise entails additional costs and may not be available in every region. |
| | **Policy misalignments:** Existing regulatory decisions and policy frameworks may not support decision-making that takes climate change into account. |
| | **Fear of change:** People accustomed to performing tasks in a certain way are hesitant to change. Overcoming this hesitancy requires a dedicated effort. |

Handbook reference
pp. 206 - 207

# Overview

**Climate change** refers to changes in the global climate that result from increasing average global temperatures over multiple decades. Climate change creates hazards for communities around the world, and their impacts on infrastructure assets are serious and wide-ranging. Meanwhile, communities often overlook and underuse natural infrastructure, which provides some of the most cost-effective ways to manage the impacts of climate change and deliver public services.

**Natural infrastructure** refers to existing, restored, enhanced or simulated combinations of land, water and vegetation. Recognizing the value of natural infrastructure and managing it effectively can allow municipalities to increase the quality and resilience of services at lower costs. While engineered assets must be replaced once their useful lifespan ends, natural infrastructure—if managed correctly—can provide services indefinitely, along with benefits not available from engineered assets. Natural infrastructure can even become more valuable and effective over time, with monitoring, maintenance and restoration.

| Benefits of natural infrastructure | |
|---|---|
| • Urban heat island reduction<br>• Flood risk mitigation<br>• Improved biodiversity<br>• Improved air quality<br>• Water filtration<br>• Groundwater recharge<br>• Improved stormwater management | • Increased lifespan of engineered assets such as pipes, roads, etc.<br>• Noise reduction<br>• Reduced energy consumption and GHG emissions<br>• Improved physical and mental health of residents<br>• Opportunities for local food production |

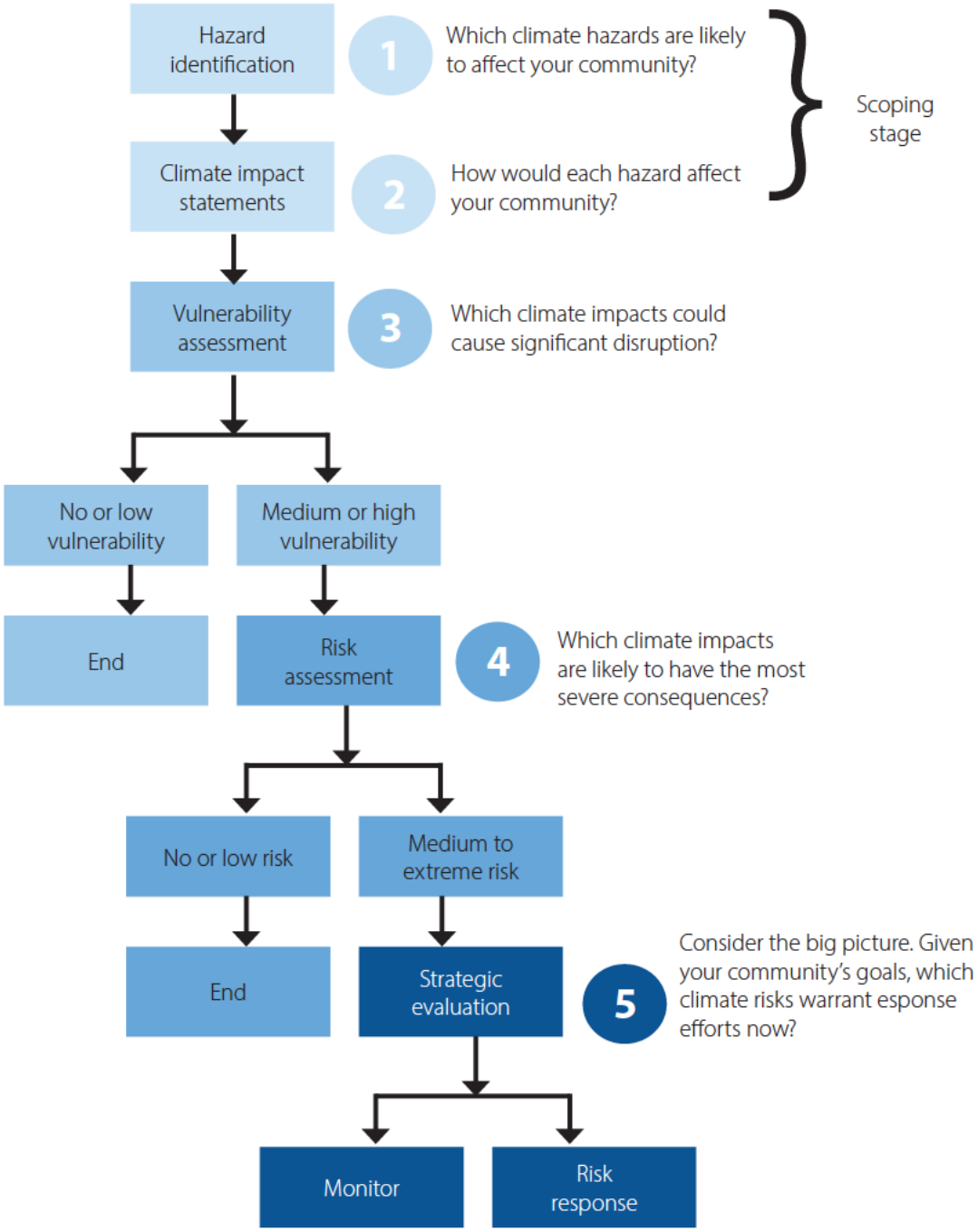
Adapted from Lilauwala and Gubert, pp. 18-22.

# Climate risk assessment process

Climate risk assessments are a way to identify potential hazards from climate-related projections and events. The results are used to develop strategies to avoid or manage risks. The climate risk assessment process involves a number of distinct steps, among which the first three help in selecting the most serious climate risks for in-depth analysis:

1. **Hazard identification** uses climate projections and consideration of past disaster impacts to identify the specific climate hazards that are likely to affect the community.
2. **Climate impact statements** articulate how each hazard will translate into an impact on the community.
3. A **vulnerability assessment** determines which climate impacts have the potential to cause a major disruption to the community.
4. Following this screening exercise, any climate impact statements deemed serious are subjected to a more comprehensive **risk assessment**, where consequences are measured against five criteria to determine severity.
5. The resulting risk score is subject to a **strategic evaluation** that balances identified risks with community objectives to determine which risks warrant risk responses in the form of adaptation strategies.

Handbook reference
pp. 207 - 216




Adapted from British Standards Institution, pp. 8-14.



Handbook reference p. 217

## Vulnerability assessment

**Vulnerability** is a function of the exposure and adaptive capacity of a particular service or asset to suffer harm from hazard events.

**Exposure** refers to the degree to which a given system may be directly or indirectly affected by changes to climatic conditions (e.g. average summer temperature) or a specific climate change impact (e.g. a heatwave).

| If the climate impact were to occur, would it affect service delivery? | | | | |
|---|---|---|---|---|
| 1 – No impact on service delivery | 2 – Sporadic or minimal decline in service delivery | 3 – Service delivery is likely to noticeably decline | 4 – Reductions in the capacity to deliver services | 5 – Ability to deliver services is severely compromised |

**Adaptive capacity** is a measure of a system's existing resilience to shocks or changes. It assesses how capable an asset, system or service is of accommodating stresses before adaptive interventions are required to maintain the service level, which is currently provided.

| Can the service area respond to the climate impact with minimal cost, resources and disruption? | | | | |
|---|---|---|---|---|
| 1 – Response will require very high costs ($$$$$), new skills and significant staff interventions. | 2 – Response will require high costs ($$$$), new skills and staff interventions. | 3 – Response will require some costs ($$$), staff interventions and possible new skills. | 4 – Response will require slight costs ($$) and staff interventions. Existing skill base likely sufficient. | 5 – Response will require little to no cost ($) or staff intervention. |

Adapted from ICLEI, pp. 16–19

**Consider the following scoping questions when assessing vulnerability for each service area:**

1. Do current climatic events cause disruptions in services? Are disruptions geographically dependent or clustered?
2. What existing pressures are exerting stress on the ability to deliver services?
3. Will service disruptions induce the need for additional services (e.g. cooling stations or areas, desalinization plans due to depleted drinking water supply)?
4. Are services flexible enough to accommodate changing resource, staffing or policy demands?
5. Are climate-related impacts factored into decision-making today? How?
6. Are there any risk management strategies in place to protect previously affected systems from future occurrence of that hazard?
7. To what extent can other assets fill gaps produced by the failure of one asset within the system? Are there situations where asset failures have no implications and point to redundancies?
8. How reliant is the service on the effective delivery of other service areas?

## Risk assessment

Climate impacts that rank as either moderate or high vulnerability for at least one service area can be carried forward to the risk assessment process. Through this process, we analyze the likelihood and consequences of the impacts.

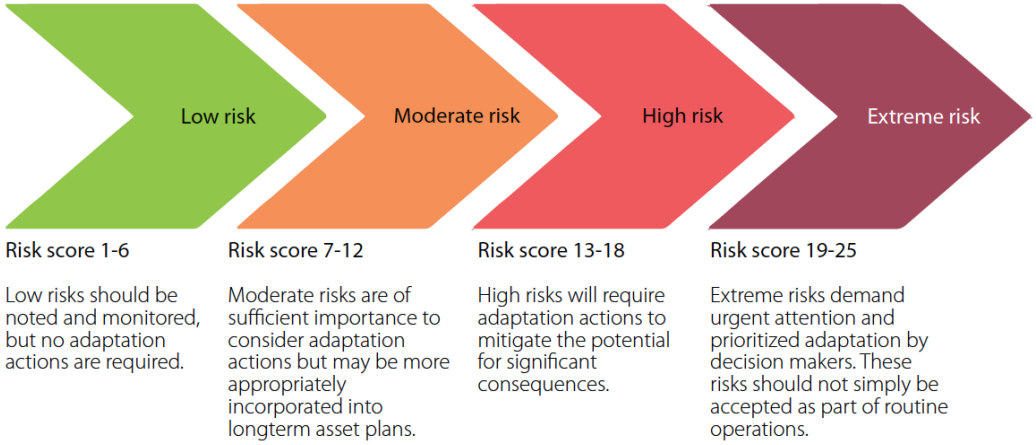
Handbook reference
pp. 220 - 224

| Type of event / Likelihood | 1 – Very low | 2 – Low | 3 – Moderate | 4 – High | 5 – Very high |
|---|---|---|---|---|---|
| **Acute event** | Not likely to occur in period | Likely to occur once between 30–50 years | Likely to occur once between 10–30 years | Likely to occur at least once per decade | Likely to occur once or more annually |
| **Chronic event** | Not likely to become critical in period | Likely to become critical in 30–50 years | Likely to become critical in 10–30 years | Likely to become critical within a decade | Will become critical within next 5 years |

Consequence analysis example:

| Impact statement: Riverine or overland flooding, resulting in disruption or damage to city-owned assets (e.g. buildings, roads, underground infrastructure) | | | | | |
|---|---|---|---|---|---|
| **Degree / Factor** | **Risk evaluation factor** | | | | |
| | **Public safety** | **Environmental harm** | **Service interruption** | **Financial impact** | **Asset damage** |
| **1 – Very low** | | | | | X |
| **2 – Low** | X | | X | | |
| **3 – Moderate** | | | | X | |
| **4 – High** | | X | | | |
| **5 – Very high** | | | | | |

Risk level interpretations:



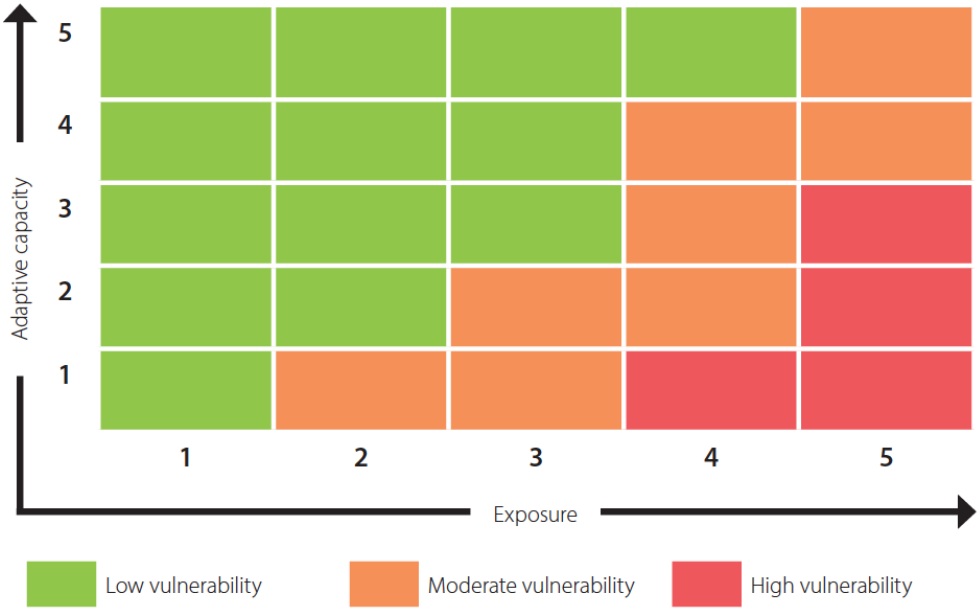

## Risk and vulnerability

It is important to note that vulnerability is not the same as risk, where a score is determined by multiplying the determining factors together. A higher exposure score is equivalent to higher vulnerability, while a higher adaptive capacity score is equivalent to lower vulnerability. Therefore, multiplying these scores together is not a useful measurement. Instead, we can determine vulnerability based on the placement of each impact statement on the vulnerability matrix.



Handbook reference
pp. 226 - 230

Sample vulnerability matrix:




## Strategic evaluation

Generally, response strategies can be reduced to two primary options:

1. Monitor without intervention
2. Intervene with a risk treatment option

Typically, risks with lower prioritization levels can be maintained with existing controls and monitored over time. If circumstances change or significant progress is made on addressing high-priority risks, it is always possible to work one's way down to risks for which ongoing monitoring is occurring and consider their treatment options. Adaption strategies need to mitigate the impact of prioritized risks that require an intervention.

Using the attributes laid out in the Asset Management Action Plan, we can move from climate-resilient planning to operationalizing by specifying the *Action, Rationale, Time frame, Ownership, Resources* and *Funding* for each priority adaptation measure.

**Climate-resilient adaptation measures include:**

- Building new assets
- Increasing the capacity of assets to accommodate climate-induced changes in demand
- Increasing system redundancy for increased resilience should one component of the system fail
- Adapting existing by-laws, codes, regulations, policies, development plans, and operating and maintenance practices to increase resilience
- Updating capital plans to reflect asset capacity or vulnerability, or system risk
- Incorporating natural assets in asset management processes to ensure their effective operations
- Designing and managing assets to offer multiple resilience benefits.
- Adopting an adaptive design approach that allows the original design to be modified over time to address changes in climate change scenarios, while keeping capital expenditure to a level that is lower than that required for the asset useful life.

Handbook reference pp. 224 - 235

# Chapter 7: Strengthening public health emergency preparedness and response

- Aligning emergency operations plans and procedures with asset management strategies strengthens institutional preparedness for disasters, shocks and emergencies, but it is not enough; key stakeholders need to build operational readiness to act accordingly in times of uncertainty.
- Proactive asset management provides a first line of defense. When faced with situations of unanticipated scale and immeasurable impact, governments can use Emergency Response Asset Management Action Plans (ER-AMAPs) to mobilize key assets and resources for quicker, more effective response and containment.
- A strong and inclusive recovery requires revisiting the local asset management framework and identifying the measures and interventions that will maximize public infrastructure investments and community wellbeing for generations to come.

Assets play an important role in achieving disease prevention and broader health outcomes at the individual, household, community, city and national levels. Some government assets, like water treatment plants, sealed water supply reservoirs and wastewater treatment facilities, are vital to preventing exposure to biological hazards and toxic chemicals that threaten community health. Governments may also share operational responsibilities and financial obligations with other stakeholders, like in the private sector, for the basic assets involved in infectious disease prevention and control. These assets can include health care facilities, testing equipment, vaccine storage, early warning systems and the specialized treatment facilities for medical waste.

## Increasing infectious disease preparedness

**Infectious disease preparedness** is defined as actions taken in advance of an outbreak or epidemic to ensure adequate control measures that prevent the worst impacts, facilitate fast and effective relief, and create a path of recovery from immediate public health, economic and social consequences. There are six basic steps to introduce or improve infectious disease preparedness in the asset management system.

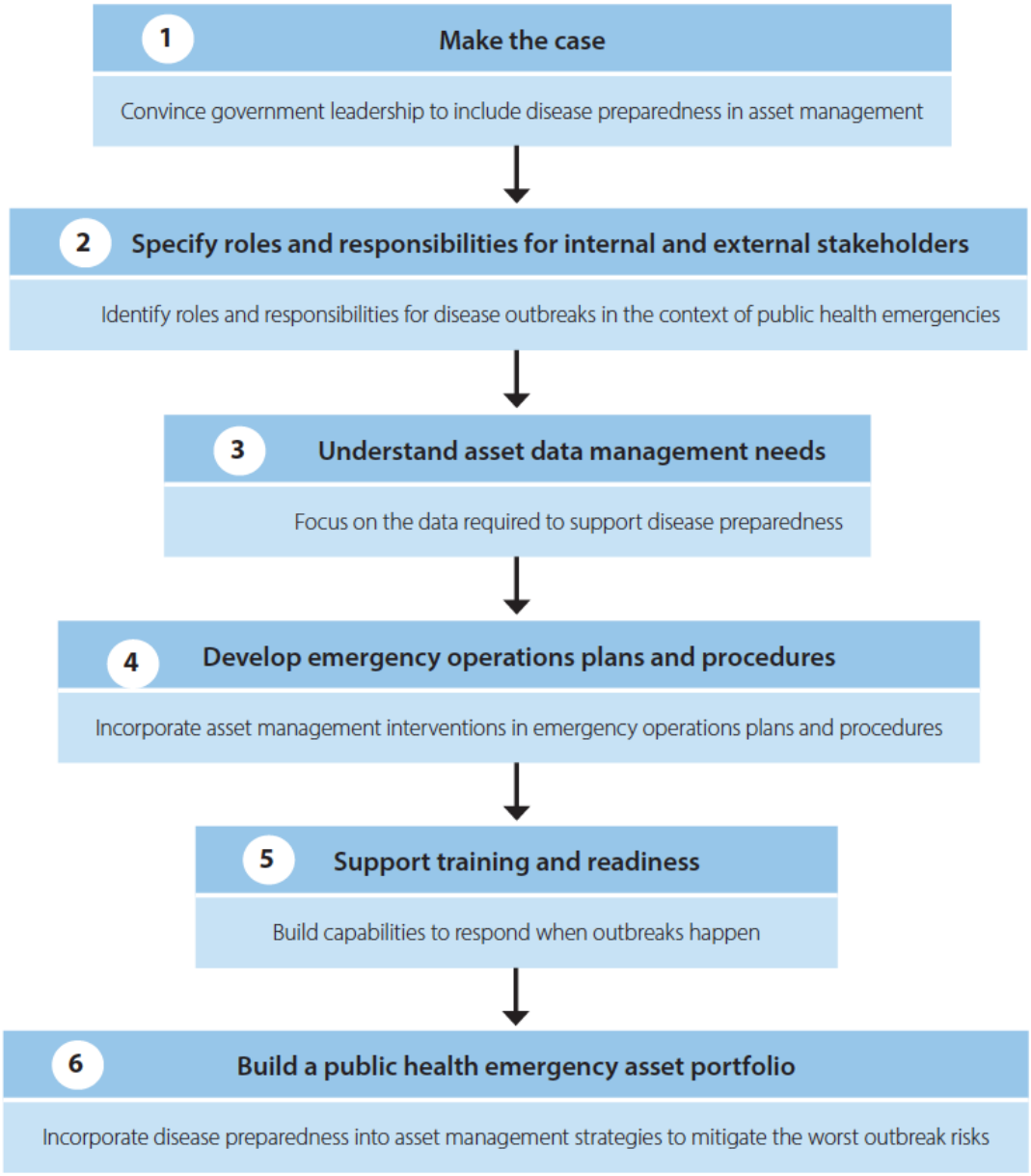
Photo © Henitsoa Rafalia/World Bank

Handbook reference
pp. 260 - 261

### Emergency Operations Plans

The tangible outcome of strengthening infectious disease preparedness is **emergency operations plans (EOPs)** and procedures, along with training and education for local leaders, asset managers, service operators and other internal and external stakeholders. EOPs are formal plans that identify and coordinate standard precautions and measures to be taken, the resources required and who is responsible for what actions in the event of an emergency in an effort to reduce room for failure, anticipate potential scenarios and minimize the degree of impact.

## Six steps to increase infectious disease preparedness






Handbook reference
pp. 261 - 262

1 Making the case should therefore focus on how preparedness planning can help improve asset management performance, reduce vulnerability in local populations and mitigate the worst social and economic consequences of local disease outbreaks. These are standard goals in broader public health emergency management, but they can be easy to disregard.

2 National governments are not always best placed to conduct local asset management. However, in many areas of infectious disease control and emergency response, it is essential to rely on technical, financial and personnel inputs and resources from national authorities. International health regulations confer many responsibilities and requirements for pathogen surveillance on health ministries and specialized agencies in national governments.

3 A key initial step in supporting the development of an emergency operations plan and related procedures is updating asset condition data to the fullest extent possible. Regular physical inspection of local assets is expensive and might exceed a typical operations budget, but it is important for developing an emergency operations plan and procedures.

## Minimum data required for emergency operations planning

| | |
|---|---|
| Emergency medical and health facilities. These facilities involve those physical assets considered critical to disease prevention and outbreak control. These assets are formally recognized as falling under the local health care system. | |
| Emergency medical services—number and location | Ambulances |
| | Response vehicles |
| Critical health facilities—number and location | Hospitals and clinics |
| | Emergency first-response |
| | Coordination control hubs |
| | Local emergency services sites |
| | Morgues and burial grounds |
| | Water treatment and distribution points and facilities |
| Community resources and utility assets. Depending on the severity of the outbreak, you may need to rely on and repurpose public buildings and land in the vicinity to provide surge-level emergency health services. For instance, you may need to increase or prohibit access to locations or facilities where transmission risk is high, depending on the relationship between crowding and the mode of disease transmission. | |
| Community resources—number and location | Schools |
| | Public buildings |
| Utility assets—location | Roads and bridges |
| | Water treatment plants |
| | Wastewater collection, conveyance and treatment assets |
| | Solid waste management facilities, in particular medical waste |
| | Power lines, generation and transmission facilities |
| Population mobility and human settlements. Preparedness for health emergencies requires special sensitivity to vulnerable populations, such as those with special needs or those living in neighborhoods or locations that can be more susceptible to vector-borne diseases. Highly contagious diseases like cholera, severe acute respiratory syndrome (SARS, MERS, COVID-19) and Ebola focus attention on population data around more dense informal settlements where it might be difficult to comply with physical distance and quarantine regulations. | |
| Population data | Population distribution within city |
| | Residential property concentrations |
| | Commercial property concentrations |
| | Timing and movement—where people work, live and crowd |
| | Location of special needs populations are in relation to critical assets |



Handbook reference
pp. 262 - 266

4 National emergency or disaster policies and regulations typically define what must be included in an emergency operations plan. Requirements might include:

- People and agencies involved in the response to a disease outbreak
- A list of predetermined responsibilities and actions
- Threshold conditions that activate when and where specific responsibilities and actions take effect.

5 To increase operational readiness, work with relevant internal and external stakeholders may be necessary to plan drills or exercises to practice emergency procedures and test the effectiveness of the emergency operations plan. The overall objective of training and education is to increase familiarity with emergency plans and procedures and reduce the level of uncertainty during an actual disease outbreak or epidemic event.

6 The purpose of a public health emergency portfolio is to identify operational, tactical and strategic asset management options that can be implemented collectively across the physical assets that would be required to prevent or contain a major disease outbreak and recover faster and more equitably. The portfolio is likely to comprise assets from different infrastructure systems, e.g. solid waste and water supply and sanitation, along with the healthcare facilities themselves.

# Sound decision-making amidst uncertainty

*Context assessment* focuses on the environment in which the outbreak event takes place. Core members of the local asset management team are more likely to be involved with context assessment. Scientists, disease specialists and public health officials involved in the hazard and exposure assessments will request specific information on local assets depending on the characteristics. Four general questions related to local assets can guide context assessments:

## Measuring the role of local assets through context assessments

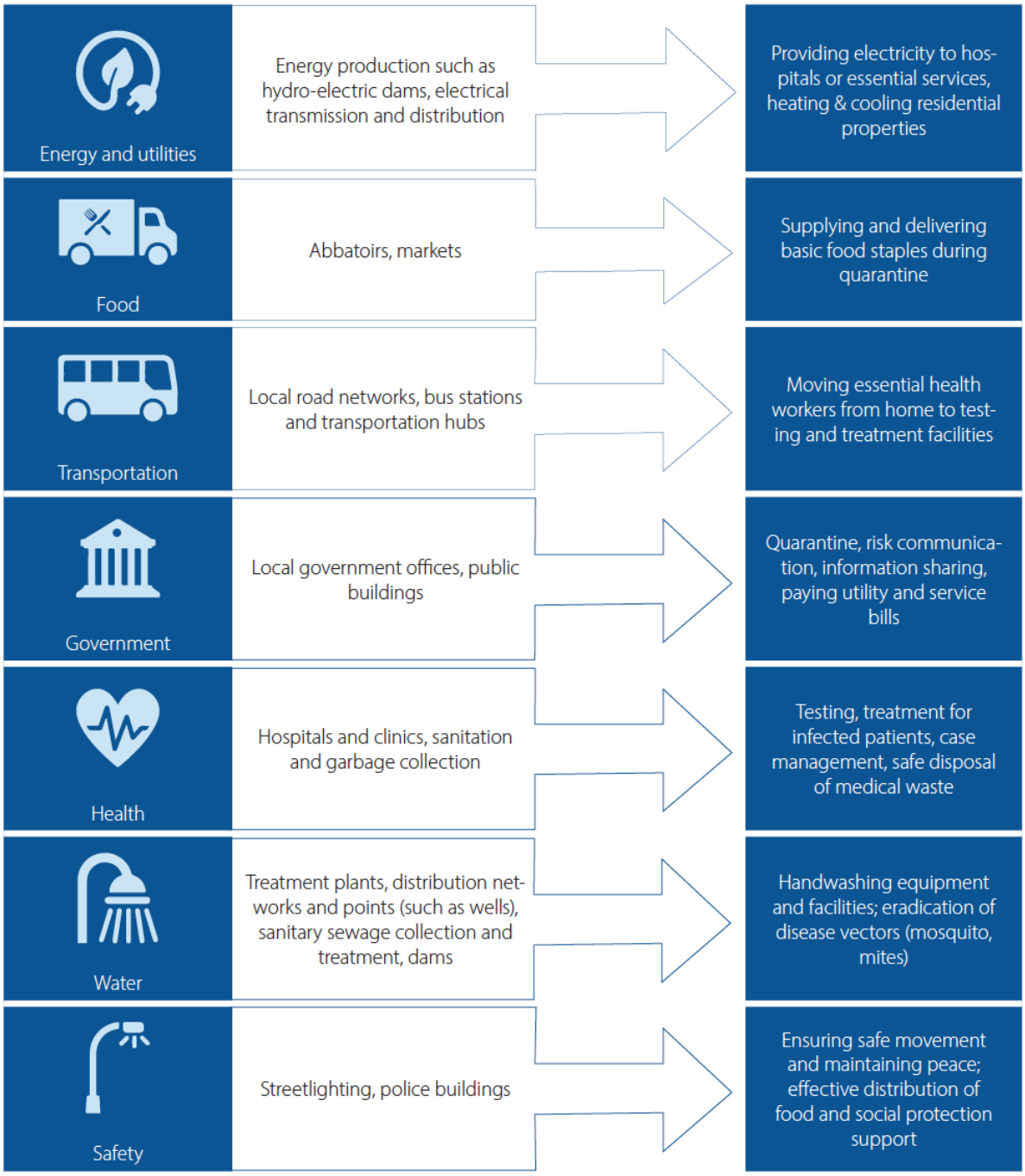
| Question | Sample responses |
|---|---|
| What factors associated with local assets under government control increase the local population's vulnerability? | • Crowded market spaces<br>• Lack of sanitation and handwashing facilities |
| Are there local assets that can be used to help identify suspected cases? | • Use of public land for testing sites<br>• Local hospitals with testing kits<br>• Public health communication equipment (mobile SMS) |
| Do any factors associated with local assets under government control reduce the local population's risk of exposure? | • Quarantine sites and accommodation<br>• Mobile food distribution networks<br>• Water supply system and treatment facilities<br>• Sanitation systems<br>• Solid waste removal and containment |
| What is the availability and accessibility of government assets to support effective prevention measures and other non-pharmaceutical interventions? | • Traffic management<br>• Public land to provide space for mobility<br>• Insecticide spray equipment |

Handbook reference
pp. 266 - 276

Context information provided by asset managers and service operators is important for health officials to adequately characterize what is an acceptable level of risk. Doing so will provide useful information to guide an emergency asset response.

It is important to remember that assets make possible a range health and emergency response services.

## How assets can enable health and emergency response services

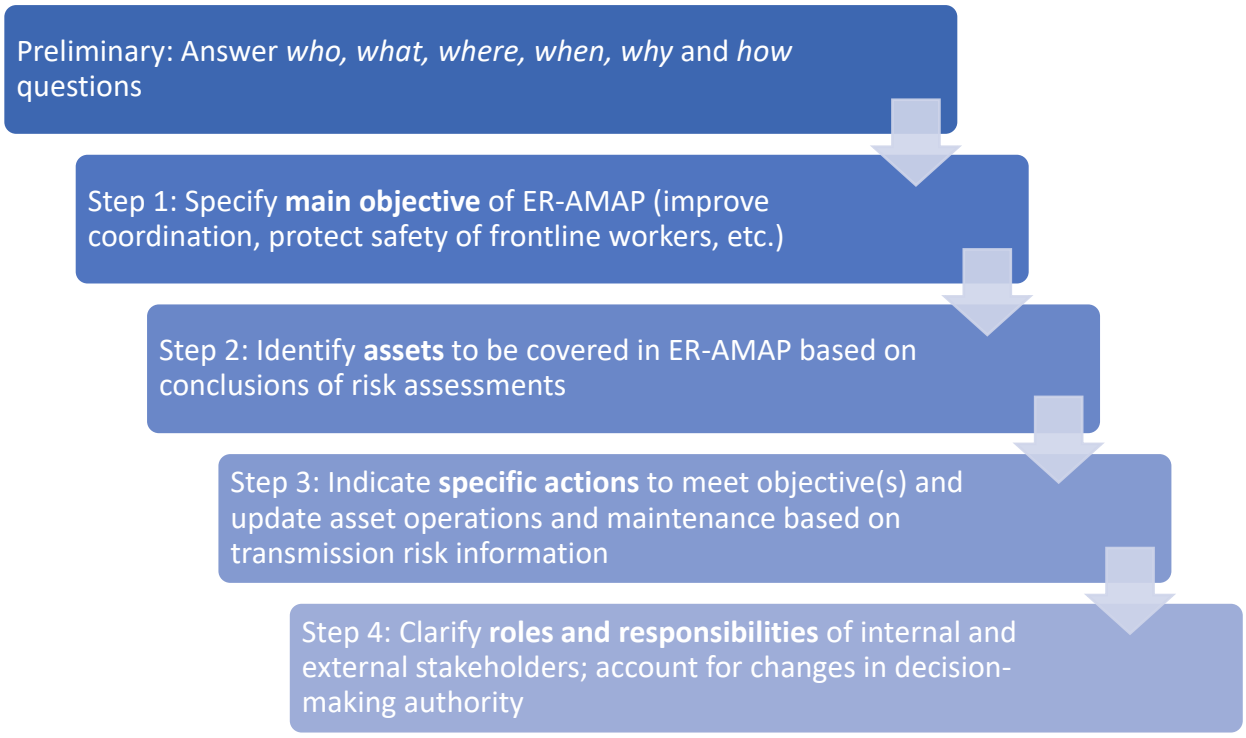





Handbook reference
pp. 276 - 278

# Implementing the asset response

Asset management action plans (AMAPs) are a way to close the gap between an organization's present asset management knowledge, practice and documentation against good asset management practices. A more streamlined version fit for the purposes of fast response under emergency conditions is the **emergency response asset management action plan (ER-AMAP)**. The ER-AMAP helps emergency responders and key decision-makers achieve high performance on key functions of emergency response when information is incomplete and levels of uncertainty are high.




ER-AMAPs should be used to fill in the gaps where an emergency operation plan covering relevant assets is missing, outdated or cannot be activated and put to use.

If the outbreak is severe, health authorities at the international, national or regional level might mobilize financial resources and materials to create a central command or operations center to guide the response. Emergency declarations often shift the authority for decisions upwards away from local officials, meaning the decisive parties over the assets must be updated within the ER-AMAP.

Handbook reference
pp. 278 - 279

# Proactive operational planning to contain outbreaks

The emergency response asset management action plan (ER-AMAP) helps in implementing and monitoring reactive maintenance at the onset of the major disease outbreak. Bringing the outbreak under control, however, might require more extensive asset management changes at the operational level.

Photo © Tobin Jones/UN Photo

Proactive operational measures entail retrofitting facilities and increasing asset performance. They can include:

- Regulating the use and operation of public facilities and land to surge levels of health care testing, vaccination and treatment.
- Increasing the availability of and access to water, sanitation and hygiene stations throughout the community.
- Retrofitting public buildings and transit facilities and equipment to minimize touching.
- Controlling road, logistics, transit hubs and warehouse facilities to guarantee delivery of medicines, food supplies and other basic goods.
- Repurposing and modifying public (community centers, emergency shelters) and private buildings (stadiums, offices) to provide temporary quarantine spaces, housing for homeless populations and childcare for essential workers.
- Modifying access to sidewalks, public parks and public land to control or limit crowding and provide additional space for safe forms of mobility.

# Including local assets in social and economic recovery programs

Physical assets play an important role in reversing the damages and broader societal impacts of public health disasters. These are often the main goals of economic and social recovery programs. Local assets like roads, clinics, and streetlights enable activities geared towards recovery. Public buildings can display risk information. Local assets can be tactically integrated as options for new spending and investment to increase local employment, improve livelihoods and introduce new technology that makes towns and cities more resilient. Following a major disease outbreak event, it is important for asset managers to consider how older planning and investment decisions should be revised to support economic and social recovery programs.

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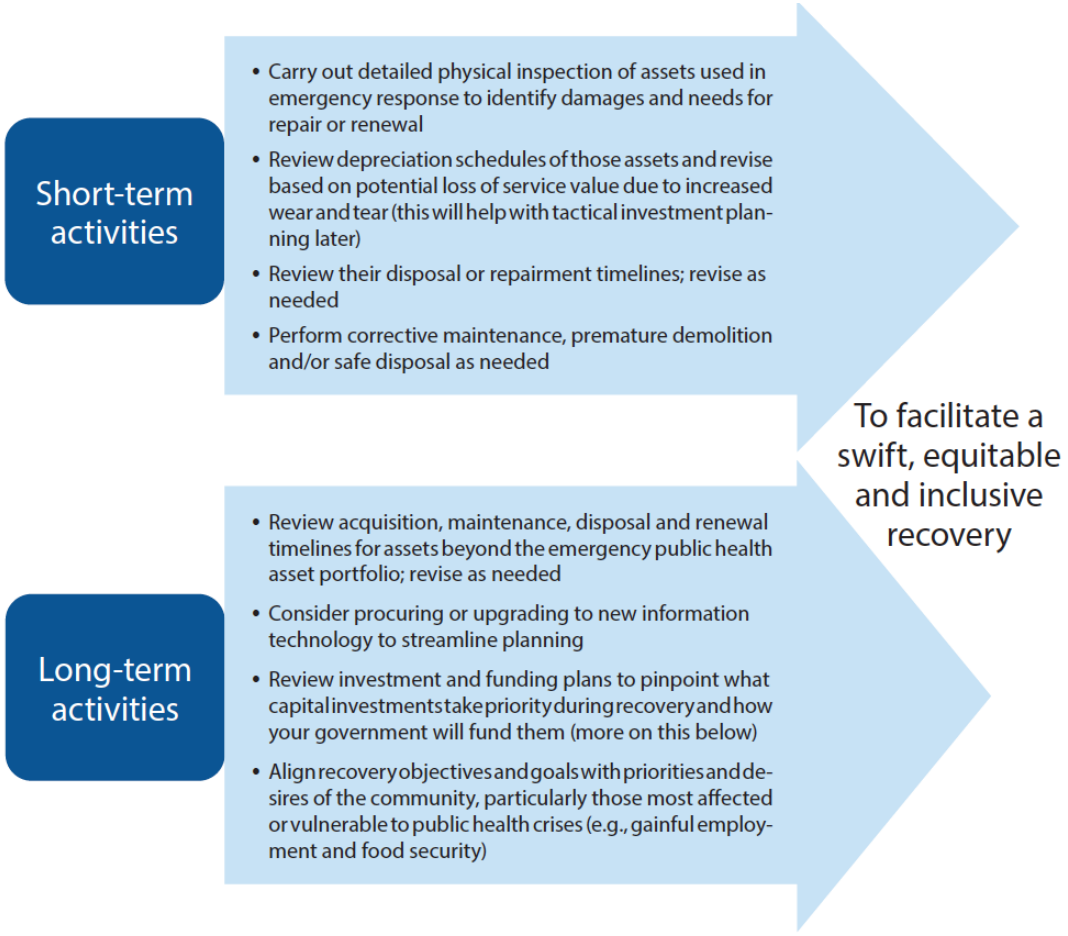
Economic and social recovery entails many different activities carried out along two general timelines: short-term and long-term. Short-term recovery activities begin with an assessment of damages and needs, along with emergency treatment, shelter and income support, and resumption of social service provision. Meanwhile, tactical planning decisions that are part of a 2- to 5-year recovery timeline are an opportunity to align the ideas and desires of those most affected by the disease outbreak with recovery goals and projects.

## Short- and long-term activities for public health crisis recovery



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The local or regional government's economic and social recovery objectives will be a key influence over tactical planning within the asset management framework. This might require to go beyond the emergency public health asset portfolio to examine where the resources are allocated and whether old acquisition and disposal timelines for other assets are still relevant. For instance, the COVID-19 pandemic has encouraged many local governments to prepare plans to move more local administrative and other public services online. This requires prioritizing information technology and procuring new hardware and software, along with updating asset registry databases. This is a major undertaking by all local governments.

If the economic impact of the outbreak will negatively impact local budgets, special consideration at the tactical planning level should be paid to revenue-generating assets. Options to consider around tactical planning for revenue-generating assets include:

- Assessing revenue collection administration procedures and performance across different revenue-generating assets to identify underperforming assets.
- Redeveloping underused land to generate more revenue and increase financial value for the community
- Investing in digital payment infrastructure that reduces in-person contact and retrofitting local payment sites to reduce crowding.

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# Chapter 8: Establishing and sustaining a national enabling environment

- An enabling national legislative and policy environment can unlock the benefits that flow from good stewardship of public assets. Such an environment consists of legislation, policies and programmes that not only reflect but reinforce the commitment and support of senior local and national stakeholders.
- National policymakers should keep in mind the assorted priorities, objectives and compositions across a local government sector to ensure that country-wide asset management policies and interventions align with the actual needs of local governments, who stand at the forefront of service delivery.
- Convening a multi-stakeholder technical advisory committee can guide and sustain the efforts of national and local officials to establish a supportive environment for asset management.

Around the world, central governments influence how assets are managed. For example, they establish baseline levels of service by establishing design and operational standards. They also guide local infrastructure investments through, for example, national urban policies. In addition, central governments typically provide capacity-building support in the form of written guides, toolkits, grants, training and pilot studies.

Central governments usually retain the ultimate legislative and financial authority. Their involvement in asset management decision-making at the local level is guided by the principle of **subsidiarity**. The principle holds that decisions should be made closest to where their effects will be felt. As UN Member States declared in 2016, in their *New Urban Agenda*: "We will take measures to establish legal and policy frameworks, based on the principles of equality and non-discrimination, to enhance the ability of governments to effectively implement national urban policies, as appropriate, and to empower them as policymakers and decision-makers, ensuring appropriate fiscal, political and administrative decentralization based on the principle of subsidiarity."

## Enabling environment approaches

A common goal of central governments in supporting local asset management is to maximize the value of past, present and future investments through good stewardship of assets so that they provide reliable and affordable services to the entire population.

An important first step in developing an enabling environment is to establish clear central government objectives. These express and reinforce the central government's motivation to

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support long-term positive change across the local sector. The objectives not only build a strategic rationale for asset management but help local governments shape their own objectives and operational principles.

The legislated enabling environment formalizes central government expectations that are necessary for local action. The legislation should include direction that makes local officials, such as mayors, accountable for asset management. Accountability means that asset management is more than a compliance exercise. For example, AMAPs being written to comply with national direction but not implemented for lack of involvement by local elected officials is a result of low accountability for asset management. This behavior likely will not advance the achievement of local or national development goals.

Creating an enabling environment for local governments of all structures and sizes depends on building in the right incentive mechanisms and engaging in strategic collaboration with stakeholders:

## Elements of success

| Align funding incentives | Involve stakeholders | Keep asset management multidisciplinary | Make asset management accessible |
|---|---|---|---|
| Align incentives with local priorities and principles of local decision-making and long-term planning. | External stakeholders can contribute to creating and implementing an enabling environment. | Asset management can benefit from integrating a broad spectrum of skills, perspectives and professional backgrounds. | Long-term adoption of asset management entails different strategies for local governments with different capacities. Each strategy comes with its own tradeoffs and benefits. |

In its intergovernmental transfer programmes, the central government should consistently encourage local governments to take a long-term, strategic approach to their investments in line with their AMAPs. These programmes should demonstrate an ongoing commitment to community-driven work that aims to place the majority of funding decisions in the hands of local governments. It can be achieved by:

1. Building asset management into the assessment criteria for intergovernmental transfers.
2. Scaling expectations for local asset management according to the size and financial position of individual local governments.



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# Enabling environment development phases

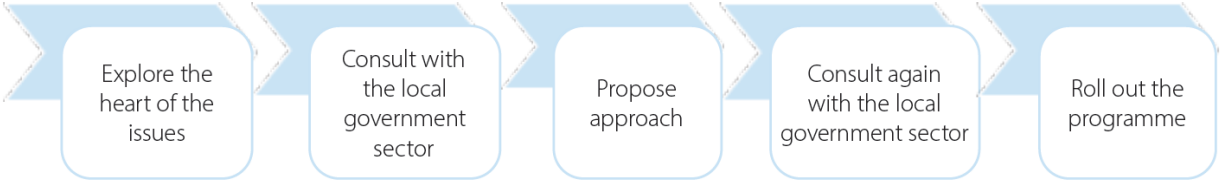

To create an enabling environment best suited to a certain country, we need input from stakeholders who can help promote asset management and put it into practice across the local government sector. Assembling a technical advisory committee of experts will prove essential to this.

### Establishing a technical advisory committee

A technical advisory committee can help establish common terminology, objectives and processes that all units of levels of government can understand and share.

Working with such a committee is the best way to identify gaps and capacity development priorities for asset management within a country's local government sector. These committees can prove pivotal in determining the approach and mechanisms for creating an enabling environment. Subsequently, they can advise on ways to measure progress within the enabling environment. They also help ensure that the enabling environment actually meets the asset management needs of the local and central levels of government.

The development of an enabling environment consists of five key steps:




While completing the five steps, there should be follow-up meetings between senior central government officials and practicing local governments to ensure the work continues to align with the set goals for local asset management. This can sustain support from the central government and give it opportunities to provide direction at key moments where decisions about next steps are needed.

Feedback from senior government officials should not focus on methods—the how—for developing the enabling environment or advancing local asset management. Rather, their input should focus on the desired outcomes—the what—of the enabling environment. Senior officials will lead most effectively by keeping everyone's attention on the goal, not by unilaterally determining policy options.

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Consultations with the local government sector will serve to validate the committee's assessment and, more importantly, to get broader and deeper insight into local asset management challenges and gaps. One way to get these valuable inputs is to host a series of consultations with various regional groups across the jurisdiction to get a broad view of the issues and give local asset management more visibility. This also is a valuable opportunity to meet local elected officials, administrators and staff, and to get their perspectives directly. These exchanges can take the form of consultations with local governments and agencies from a given region and talks with networks of local associations and industry groups.

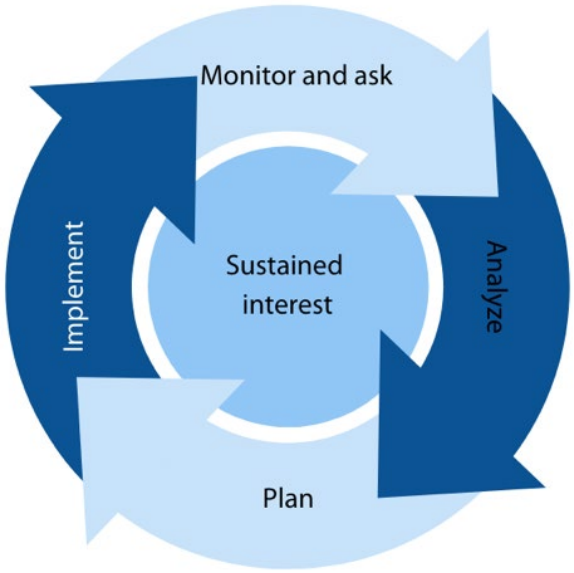
Most of the exchange with these stakeholders should focus on the challenges they experience in managing local assets and delivering services. Presenting the committee's conclusions helps in focusing the conversation.

### Sustaining political support

People involved in developing or implementing the enabling environment might change roles while the local government sector is still adopting local asset management. This change can negatively impact the enabling environment. Changing central government priorities can also lead to a loss of funding and reductions in programme staff. This is why it is important to maintain buy-in for asset management across the political spectrum and among all political parties without letting politics influence the work of asset management.

### Sustaining individual and group interest

After a few years, one may find that local governments have improved their methods as they adopt asset management. Even so, interest in asset management can diminish as other urgent matters take hold. Feedback loops can minimize this risk by enabling communities of practice and central governments to be responsive to the needs of local government.

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Related Initiatives of UN/DESA:

# The SDG Investment (SDGI) Fair

Introduced in 2018, the SDG Investment (SDGI) Fair is a platform for scaling up investment in sustainable development by facilitating direct interaction between representatives of governments of developing countries, private sectors, and multilateral financial institutions.

- DESA aids countries in the selection of projects which are both bankable and supportive of the SDGs, and the presentation of those projects to investors. Staff collaborate with RCOs/country teams and representatives of the investment marketing and development agencies and bodies in member states to facilitate development of bankable investment pipelines.

- Building upon the success of the April 2021 Fair edition, the September 2021 Fair focused on increasing interaction between investors and participating countries. Two new countries will have a chance to present their projects to potential investors. A participant from the April Fair provided an update on investment conditions and projects since April. The Fair promotes awareness of government investment projects that advance the SDG agenda.

- The Fair has transformed from an annual event to a year-round program. Activities between Fair events include matchmaking, knowledge sharing, and capacity building. DESA convenes meetings with countries and GISD members to provide feedback on investment projects and is embarking on developing a series of workshops to increase capacity related to project preparation.

- The Fair collaborates closely with UNDP to support the development of the SDG Investor Platform by encouraging countries to enter their investment project information in the platform.

**To learn more visit:** www.un.org/development/desa/financing/sdgifair

"Failing to deliver what people need most, including basic services, drives mistrust, regardless of how open institutions are to public participation. […] I urge investment in public systems and ensuring quality public servants, as the main point of contact between the State and people."

United Nations Secretary-General, 2021. ***Our Common Agenda***

## Further information

For further information on the Handbook and UN system support on infrastructure asset management **please visit us here:** https://bit.ly/UN-IAM

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