# WATER RESOURCES MANAGEMENT: DEVELOPMENT, INTEGRATION, AND IMPLEMENTATION

Climate Change Vulnerability Assessment and Guidelines
for Community-Based Sustainable Environmental Management in Lao PDR

GOAL WATERS

UNDP
Empowered lives.
Resilient nations.

UN HABITAT
FOR A BETTER URBAN FUTURE

WATER GOVERNANCE FACILITY

SIWI

**Prepared by UN-Habitat Lao PDR**

3rd Floor, UN House, Lang Xang
Avenue P.O. Box 345, Vientiane,
Lao PDR
Tel: +856 (0) 21 267 777

**ACKNOWLEDGEMENTS**

**Main Authors**
Celeste Espinazo, Marion Reinosa

**Contributors**
Moe Mashiko, Phouvannasinh Phongsa, James Leten, Lotten Hubendick, David Hebart-Coleman



*Cover photo / UN-Habitat Lao PDR*

## ABOUT THE GOAL WATERS PROGRAMME

The UNDP GoAL-WaterS (Governance, Accountability and Learning for Water Sustainability) programme supports equitable, efficient and environmentally sustainable use and protection of freshwater and marine resources. It helps identifying priorities and opportunities and addressing gaps and constraints in water and ocean governance by developing policy reform plans and action at national and local levels.

Building on UNDP's close working relationship with country governments and partners, GoAL-WaterS provides flexible support to national and local authorities and partners, supporting the 2030 Agenda with an emphasis on Sustainable Development Goals 6 to "Ensure availability and sustainable management of water and sanitation for all" and 14 to "Conserve and sustainably use the oceans, seas and marine resources for sustainable development."

GoAL-WaterS activities are implemented through UNDP Country Offices or partners and strategically coordinated by the UNDP-SIWI Water Governance Facility (WGF) at the Stockholm International Water Institute (SIWI). UNDP GoAL-WaterS constitutes Project Output 2 - "Freshwater and coastal resources management frameworks strengthened at local and national level" –of the Global Water and Ocean Governance Support Programme. The funding has been provided to UNDP by the Swedish International Development Cooperation Agency.

http://www.watergovernance.org/programmes/GoAL-WaterS/

# Purpose and scope of this guide

As water issues touch all segments of society and sectors, it is critical that this vital resource is properly managed. While many IWRM initiatives remain at the scale of national policies and river basins, with few benefits reaching vulnerable households[1], there is an urgent need to approach IWRM as a community-based and cross-sectoral process designed to replace the traditional, fragmented sectoral approach to water resources and management that has led to poor services and unsustainable resource use at local levels.

The main objective of this guide is to improve the management of water resources at the local level in Lao PDR through the promotion of Community-based Water Resources Management to increase climate resilience and ensure equal distribution to all. For this aim, this document seeks to support a comprehensive understanding of water resource challenges and needs that Lao PDR faces within its human settlements and provide guidance on Integrated Water Resources Management (IRWM) processes and methodologies to improve water resources management locally (districts, communities, sub-catchments).

In the current context of rapid urbanisation and vulnerability to the effects of climate change, improving the management of water resources using IWRM processes will help maximise the efficiency, effectiveness, and sustainable use of water resources for local socio-economic development while protecting and preserving the environment to mitigate climate change events and disaster risks. To this regard, this guide has been built based upon literature reviews and lessons learned from recent experiences in Lao PDR and around the world to strengthen the knowledge and capacity of decision-makers at national, provincial and district levels to better inform future activities and interventions, build accountability and include communities at every step of the process.

This guide is aimed at national and sub-national officials and technical staffs from relevant ministries in charge of environmental and water resources management in Lao PDR.

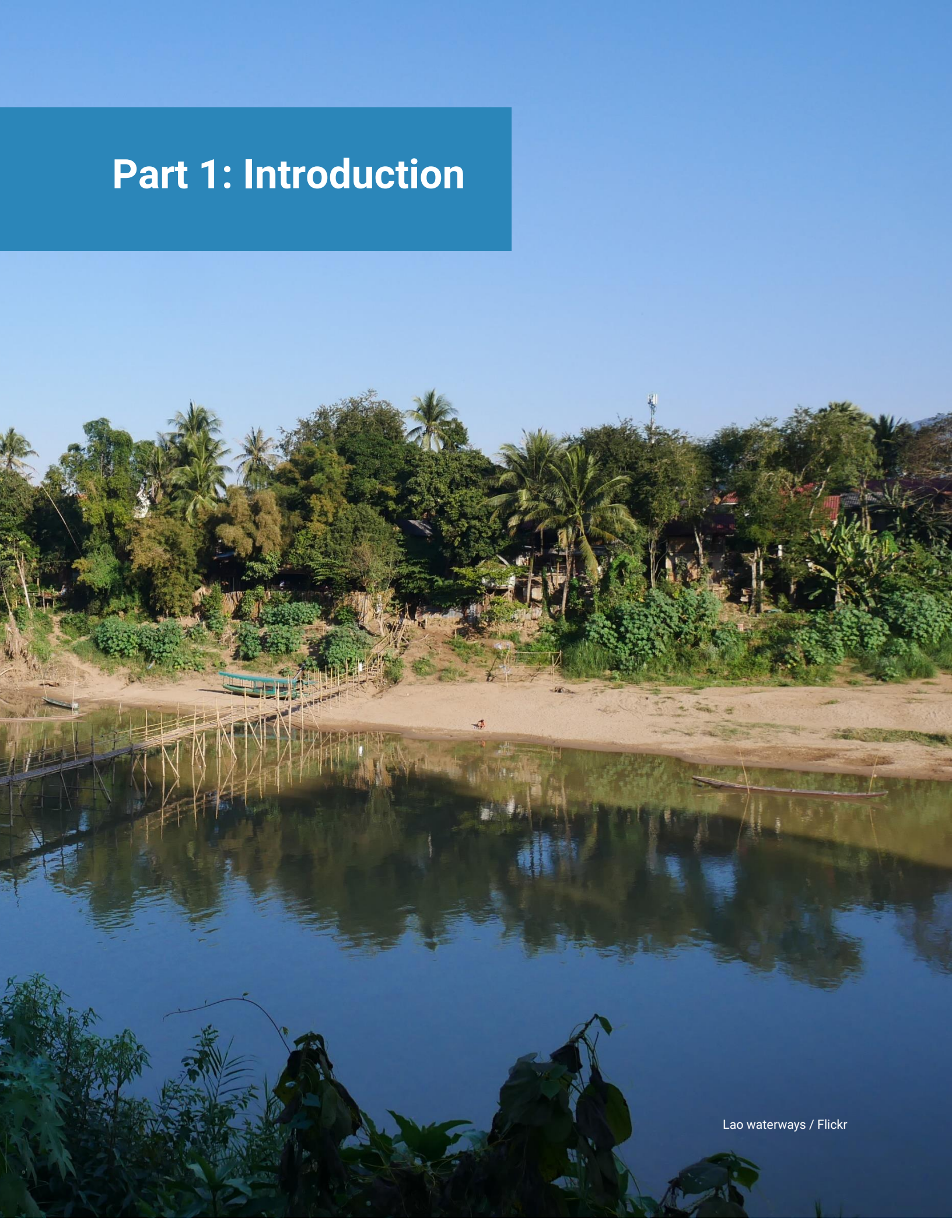
[1] OXFAM (2009). *Introduction to Community-Based Water Resource Management: A Learning Companion.*

# CONTENTS

# ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| **AMREF** | African Medical & Research Foundation |
| **AP** | Action Planning |
| **CbA** | Community-based Approach |
| **CBWRM** | Community-based Water Resource Management |
| **DoNRE** | District Office of Natural Resources and Environment |
| **EbA** | Ecosystem-based Adaptation |
| **ESS** | Environmental and Social Safeguards |
| **GEF** | Global Environment Facility |
| **GDP** | Gross Domestic Product |
| **GWP** | Global Water Partnership |
| **HRBA** | Human-Rights based Approach |
| **IAC** | Impact Assessment Committee |
| **ICM** | Integrated Catchment Management |
| **IFIs** | International Financing Institutions |
| **IWRM** | Integrated Water Resources Management |
| **M&E** | Monitoring and Evaluation |
| **MoNRE** | Ministry of Natural Resources and Environment |
| **MRC** | Mekong River Commission |
| **NGO** | Non-Governmental Organisation |
| **NSEDP** | National Socio-Economic Development Plan |
| **PoNRE** | Provincial Office of Natural Resources and Environment |
| **RBO** | River Basin Organization |
| **SDGs** | Sustainable Development Goals |
| **SFP** | Strategic Financial Planning |
| **SSWGs** | Sub-Sector Working Groups |
| **UNDP** | United Nations Development Programme |
| **UNEP** | United Nations Environnent Programme |
| **UNICEF** | United Nations International Children's Emergency Fund |
| **UN-Habitat** | United Nations Human Settlements Programme |
| **WRCC** | Water Resources Coordination Committee |
| **WREA** | Water Resources and Environment Administration |
| **WRM** | Water Resource Management |
| **WASH** | Water, Sanitation and Hygiene |
| **VRA** | Vulnerability and Risk Assessment |

# Part 1: Introduction



Lao waterways / Flickr

## 1.1. State of water resource management in Lao PDR

Human pressure on water resource and climate change is adversely impacting living environments at the global scale. From a recent UNEP report, results show that the world is not on track to achieve sustainable management of water and sanitation by 2030: 2.2 billion people lack access to safe drinking water, 4.2 billion lack access to safe sanitation, 2.3 billion live in water-stressed countries, only 24 out of 153 countries have all their transboundary waters covered by operational arrangements, water pollution is increasing, and freshwater ecosystems are rapidly declining.[2] Globally, water demands are increasing in order to feed growing populations, meet energy needs, service expanding urban areas and satisfy industrial needs. At the same time, climate change effects are modifying water variability, causing more frequent and extreme floods and droughts.[3]

Lao People's Democratic Republic (PDR) is a mountainous and water-rich country with heavy reliance on water resources for its economic activities and livelihoods. Ninety percent of the country's territory is in the Mekong River Basin, one of the world's largest river systems, and water resources per capita are around 55,000m$^3$ per year, which is considerably high compared to the neighbouring countries in the region.[4] Approximately 35 per cent of the annual flow of the Mekong River goes to tributaries in Lao PDR, while monthly river flow is around 80 per cent during the flood season and approximately 20 per cent during the dry season.[5] Over 90 per cent of the rural population lives on subsistence farming, and agriculture contributes half of the Gross Domestic Product (GDP) and 40 per cent of foreign exchange earnings. Subsistence fishing is also estimated to constitute approximately 30 per cent of GDP from the livestock sector. By 2001, hydropower constituted 30 per cent of foreign exchange earnings, which has continued to grow significantly as it is seen as a potential area for both domestic use and export to neighbouring countries.[6]

In parallel, **the country is highly vulnerable to various water-related issues**. In the context of a rapidly growing and urbanizing population[7], unequal distribution of water resources and management becomes more critical at the local level. Delivering proper Water, Sanitation and Hygiene (WASH) practices and services remain a challenge in many communities. The World Bank data indicates that only 10.8 per cent of the rural population in Lao PDR has access to safely managed drinking water services.[8] Moreover, according to UNICEF, approximately 24 per cent of the population still practices open defecation, while only 66 per cent of primary schools have both water supply and latrine facilities across the country.[9] Inadequate WASH facilities and services exacerbate the impact of a pandemic such as Covid-19 among those already vulnerable due to pre-existing socioeconomic factors. Human pressures are also increasing the unsustainability of water resources management, with local contexts facing specific challenges such as the reduction of aquifers.

---

[2] UNEP (2021). *Progress on Integrated Water Resources Management. Tracking SDG 6 series: global indicator 6.5.1 updates and acceleration needs.*
[3] *Ibid.*
[4] MONRE (2015). *Water Resources Management in Lao PDR.*
[5] *Ibid.*
[6] *Ibid.*
[7] UN-Habitat (2020). *Urbanisation: A Rapidly Emerging Development Issue for Lao PDR.*
[8] World Bank (2019). *People using safely managed drinking water services*. Available at: People using safely managed drinking water services (% of population) | Data (worldbank.org)
[9] UNICEF (2019). *Water, Sanitation & Hygiene and Climate Change Resilience: Safe water, sanitation and good hygiene practices*, UNICEF Lao PDR. Available at: https://www.unicef.org/laos/wash

Finally, associated with anthropic actions, **the country is considered as one of the most vulnerable countries to climate change,** with recent experience of frequent extreme climate events such as floods and drought. In the near future, considering climate models results, projections show a trend of consistent warming and an increase in the intensity of heavy precipitation periods and extreme events, disproportionally affecting Laotian provinces and communities.[10]

Since disasters are often felt more heavily in poor areas, existing weak and sectoral water resources management creates adverse ripple effects, increasing the vulnerability of already marginalised communities. In a nutshell, appropriate management of water resources is crucial in Lao PDR as it represents both the potential for economic growth and poverty alleviation, as well as an opportunity to overcome socioeconomic, environmental and climatic challenges.

In this context, the Government of Lao PDR has committed to tackling environmental management comprehensively, whilst reducing poverty and the effects of natural shocks and climate change through a more sustainable natural resources management. To accomplish this, the government has established priorities in its 9th National Socio-economic Development Plan (2021-2025) (9th NSEDP), especially to advance 3) Good Living Condition and Liveable Society, 4) Environmental Protection and Risk Reduction, and 5) Build Resilient Infrastructure and Promote Linkages and Connectivity in All Levels. With water-related hazards likely to increase in frequency and intensity, a significant challenge is to allow communities to more equally access natural resources, adapt, protect existing infrastructure, deliver resilient new infrastructure and adjust land use planning and management in a way that will withstand future floods, droughts and storms and promote holistic development. Improving water management in the context of climate change using multi-sectoral and participatory approaches is therefore critical to advance local resilience and build water integrity throughout the country.

## 1.2. The need to engage communities into water resources management processes

Worldwide, more than one billion people do not have proper access to clean and safe water, with negative impacts on domestic use (drinking water and sanitation) and productivity (inadequate provisions to sustain crops or livestock).[11] Combined with climate change effects and development patterns, water availability and scarcity is today a critical concern to address to preserve health, food security, economic activity and environmental sustainability.

Institutional arrangements alone are not enough to ensure that institutions deliver results on the ground. Enabling local communities to manage their water resources is also critical to reduce the risk of disasters and to adapt to climate change. In water-related disaster prone areas, communities frequently remain excluded from basic capacity building activities and decision-making processes. As a result, community water management often still focuses on management of water assets rather than wider concerns, with decision makers not always providing

[10] World Bank and Asian Development Bank. (2021). *Climate risk country profile: Lao PDR.* https://www.adb.org/sites/default/files/publication/709846/climate-risk-country-profile-lao-pdr.pdf

[11] OXFAM (2009). *Introduction to Community-Based Water Resource Management: A Learning Companion.*

communities with information concerning water resources availability.[12] This vertical vision of water management contributes to the fragmentation of water management with the lack of connections between water resource availability, groundwater recharge and sound stewardship often to the detriment of local users and failing to address local needs.

Involving communities in water resource management can support the improved **assessment of water use and risks to water quantity and quality**, and therefore enable better prioritization of the use of water to better meet the needs of all stakeholders when distributing water resources and advancing local resilience and sustainable development. Promoting community-based approach to water management is essential to change management paradigms and tackle water challenges in a comprehensive manner.

At the same time, engaging communities is also essential to **build accountability and advance water integrity**; an effective entry point for improving an institution's service delivery performance.[13] As water is considered as a **common good**, working on accountability for water management aims at building trust and holding decision makers and all stakeholders accountable. It is built on transparency and participation. In this respect, ensuring community participation is largely contingent on a transparent system, in which local communities or groups have access to the appropriate information to allow them to be effectively engaged within the decision-making process.[14]

### Box 1. Key definitions on accountability

**Accountability in action** *refers to* sets of controls, counterweights, and modes of supervision that make public- and private-sector officials and institutions answerable for their decisions and actions — or the lack of these. There must be a legal framework and other mechanisms in place to ensure that sanctions are applied against poor performance, illegal acts, and abuses of power.

**Accountability in water resources management** *refers to* the principle whereby elected officials and those who have a responsibility in water resources management and related aspects (such as land use and environment) account for and answer for their actions

**Responsibility** *refers to* the need of authority officials to have clearly defined duties and performance standards, enabling their behaviour to be assessed transparently and objectively.

**Answerability** *refers to* public officials and institutions provision of reasoned justifications for their actions and decisions to those they affect, including the public at large, voters who invest public officials with authority, and institutions mandated to provide oversight.

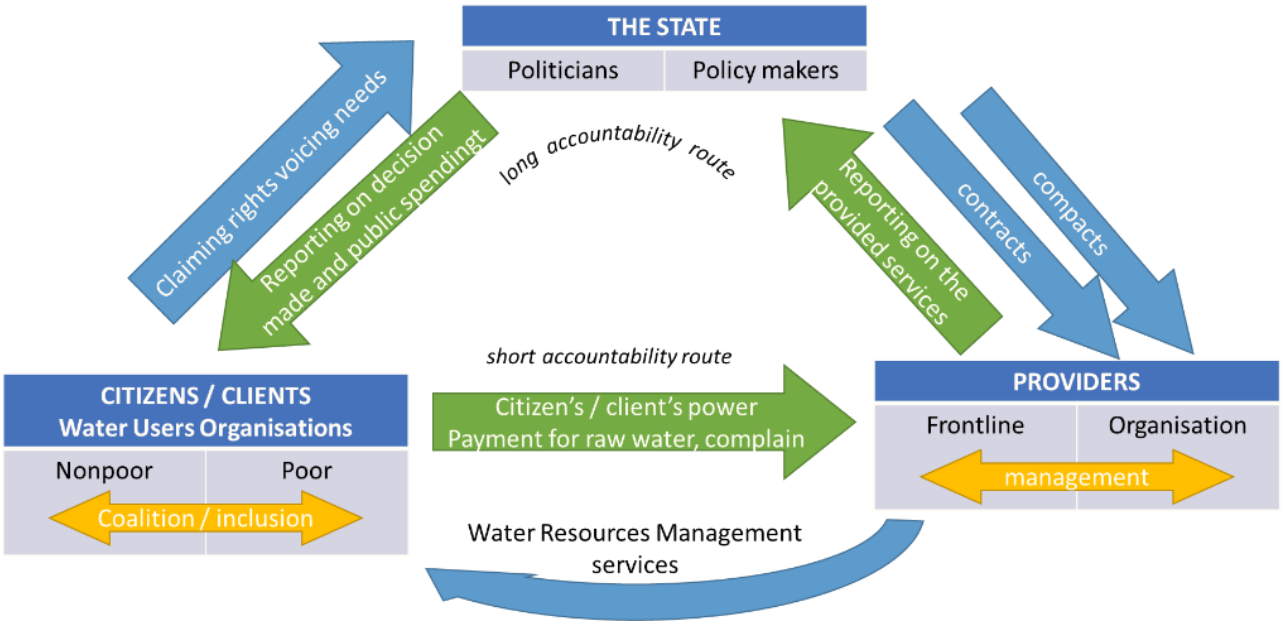
**Enforceability** *refers to* institutional mechanisms in place to monitor the degree to which public officials and institutions comply with established standards, impose sanctions on officials who do not comply, and ensure that appropriate corrective and remedial action is taken when required.

[12] Day, St. (2009). Community-based water resources management, in *Waterlines 28*, p. 47-62.
[13] SIWI (2022). *Accountability in Water Resources Management.*
[14] *Ibid.*

## 1.3. Community-based Water Resources Management as a resilience and water integrity tool

In line with the need to involve communities in building accountability, **human rights-based approaches (HRBA) provide further critical tools to ensure national and local authorities take responsibility for their actions (responsibility), answer for them by explaining and justifying them to those affected (answerability), and to be subject to some form of enforceable sanction if their conduct or explanation for it is found wanting (enforceability)**.[15] This kind of approach sets a framework to ensure that human rights are integrated and mainstreamed into interventions, placing responsibility on all stakeholders involved to operationalize human rights. Requesting transparency and access to data obliges institutions to be accountable, perform effectively, and address corruption. Developing community-based processes can allow local communities to voice their needs and priorities with regards to the water sector and other natural resources which they depend on, whilst also giving them an opportunity to set expectations for other parties. This is particularly critical in the context of a changing climate where traditional patterns of water supply and demand will be affected.

**Figure 2.** *Accountability triangle in water resources management.*
*(Source: SIWI, 2022. Adapted from World Bank (2004). World Development Report: Making Services Work for Poor People. Washington, DC: World Bank.)*




As discussed in the "*Climate Community-based Vulnerability Assessment and Action Planning*" guide, a community-based approach (CbA) to climate change planning is "**a community-led process, based on communities' priorities, needs, knowledge, and capacities, which should**

[15] UNDP-SIWI Water Governance Facility & UNICEF (2015). *WASH and Accountability: Explaining the Concept*. Accountability for Sustainability Partnership: UNDP-SIWI Water Governance Facility and UNICEF. Stockholm

**empower people to plan for and cope with the impacts of climate change**".[16] Overall, CbA aims to enable communities to understand and integrate the concept of climate risk into their daily lives in order to cope with and respond to immediate climate variability and long-term climate change. This approach allows local communities to determine the objectives and identify means of adaptation practices, it is based upon a participatory assessment of the risks posed by climate change, and emphasizes the development needs of vulnerable communities.[17]

Although CbA projects may look quite similar to livelihood development projects, CbA uses **climate and environmental local and scientific knowledge to anticipate and understand the potential impact of climate change on communities' vulnerability and livelihoods and then builds on human rights-based methods** to harness the information and experience that communities have in dealing with climate variability through a cost-effective approach.[18] CbA targets the most vulnerable people and fully includes them in all levels of adaptation planning and implementation, with communities and the social component of sustainable development remaining central to planning and action.[19]

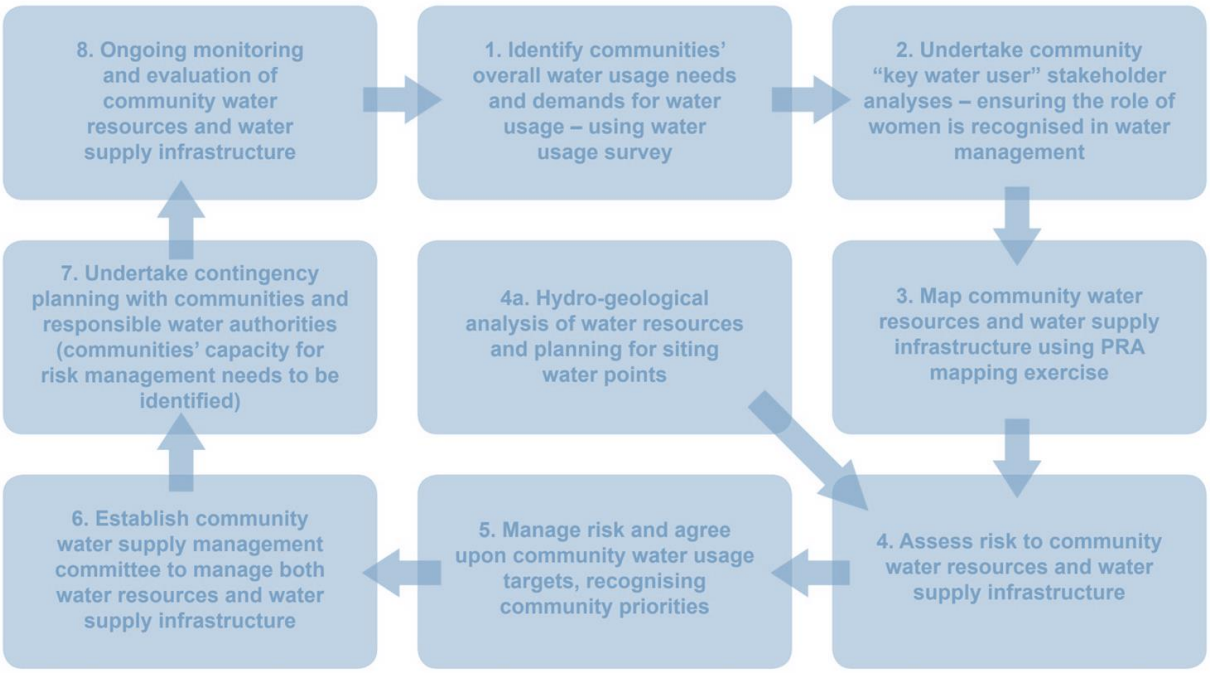
Considering water management, **Community-based Water Resources Management (CBWRM)** focuses on facilitating communities to assess and manage the risk of water scarcity using flexible and adaptative approaches anchored in the local context (e.g., approaches based on water resources and dynamics observation, flexible groundwater policies , hybrid decision-making processes).[20] In other words, **CBWRM is a valuable way to ensure community water supplies remain sustainable as it places emphasis on assessing and monitoring available water resources by communities themselves**. In this respect, water resource management at the community level aims at reducing vulnerability and building people's capacity to adapt to multiple and complex risks, by identifying and understanding how water scarcity affects water availability, access and demand at household level, so that communities' and households' adaptive capacities can be strengthened through planning.

Such approaches are highly relevant to the Laotian context as they:

- Support the local implementation of national water resource management policies;
- Identify risks related to water resources and water supply systems while analysing climate change effects and climatic variability;
- Integrate the understanding of local-level hydro-geological and climatic contexts into development programmes;
- Involve practical engagement at the community and district level, enabling advocacy at regional and national levels; and,
- Support the integration of gender relations and marginalized communities needs and perspectives to ensure CBWRM initiatives do not harm or excluded vulnerable groups and help redress any existing gender imbalances as informed by the Dublin Principles.[21]

[16] Reid et al. (2009). Community-based Adaptation to Climate Change: An Overview, in *Community-based Adaptation to Climate Change*, Participatory Learning and Action (PLA) Series, no. 60, International Institute for Environment and Development, 11-33.
[17] WIREs Climate Change (2013). *Community-based adaptation: a review of past and future challenges*. Available at: https://wires.onlinelibrary.wiley.com/doi/epdf/10.1002/wcc.231
[18] Reid, H., (2016) Ecosystem- and community-based adaptation: learning from community-based natural resource management, *Climate and Development*, 8:1, 4-9.
[19] *Ibid.*
[20] OXFAM (2009). *Introduction to Community-Based Water Resource Management: A Learning Companion.*
[21] IUCN & Oxfam (2018). *Gender and Water Governance in the Mekong Region*.

**Figure 3.** *Community-based Water Resource Management process*




## Box 2. Successful CBWRM projects

Successful CBWRM projects are based on:

1. **Understanding of how climate variability**, droughts and floods affect water availability and access, and how this might change in the future due to climate change ;
2. **Identifying and managing risks to water resources**;
3. Working towards **comprehensive contingency planning**;
4. **Analysing gender relations and inequalities** to ensure CBWRM projects take into account the different needs and perspectives of men and women;
5. **Understanding** of the **links between food security and water security at community level**;
6. **Improved water resource assessments and hydrological analysis** when siting water sources (wells and boreholes);
7. **Engaging and collaborating with both communities and local authorities** from the outset of the project;
8. **Continuously monitoring water resources** to enable programme re-examination and adjustment;
9. **Budgeting for basic groundwater monitoring equipment and rain gauges**, flow meters for boreholes, groundwater dipper tapes, staff gauges to measure surface water levels;
10. **Ensuring project staff have the skills and training required** to implement CBWRM or know where to go to receive support; and
11. **Advocating for communities to have access to and influence upon higher-level institutions and decisionmakers**.

## 1.4. The potential of Integrated Water Resources Management (IWRM)

Defined as **a process that promotes the coordinated development and management of water, land and related resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems**[22]**,** IWRM aims at creating a paradigm shift in water resources management in complex social and political contexts. Particularly relevant in rapidly developing situations, IWRM sets out to reconcile multiple, competing uses for water, with legitimacy attained through community participation, and with coordination and technical competence. Based on three principles: social equity, economic efficiency and environmental sustainability, IWRM processes have the potential to enable the achievement of many Sustainable Development Goals (SDGs).

IWRM is explicitly identified under **SDG 6** through ***target 6.1: "By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate",*** and **indicator 6.5.1** tracking the degree of integrated water resources management (IWRM) implementation, by assessing the four key dimensions of IWRM: enabling environment, institutions and participation, management instruments and financing. Sustainable, integrated water resources management is vital for long-term social, economic and environmental well-being – the three pillars of the 2030 Agenda – and helps to balance competing water demands from across society and the economy. [23]

At the global scale, IWRM has been recognised as the mechanism for managing water and land resources since the 1990s and the guiding Dublin Principles (1992) based on the following statements:

- Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
- Water development and management should be based on a participatory approach, involving users, planners and policy makers at all levels.
- Women play a central part in the provision, management and safeguarding of water.
- Water has an economic value in all its competing uses and should be recognized as an economic good, taking into account of affordability and equity criteria.

Considered as a broad and complex process that requires full government support and political will, widespread communication among all stakeholders, and multistakeholder partnerships, IWRM needs to increase accountability and acceptance at local levels to become effective at addressing local-level issues.[24] In this respect, to become effective, IWRM needs to move from national level policies to regional and state level decentralization.[25]

[22] International Water Association (website). *Integrated Water Resources Management: Basic Concepts.*
[23] UNEP (2021). *Progress on Integrated Water Resources Management. Tracking SDG 6 series: global indicator 6.5.1 updates and acceleration needs.*
[24] OXFAM (2009). *Introduction to Community-Based Water Resource Management: A Learning Companion.*
[25] Day, S. (2009). Community based water resources management, in *Waterlines* Vol. 28, January 2009.

As well as the broader challenges, IWRM processes still face key implementation challenges such as:

- lack of coordination and alignment of policies and institutional collaboration between water-related sectors and stakeholders, and between national, subnational and basin levels;
- insufficient financing, including poor coordination between water-related initiatives, and lack of capacity to absorb and disburse fund;
- weak capacity of institutions to enforce legislation, and of water professionals to develop and implement cross-sector programmes;
- insufficient monitoring, and data- and information-sharing in practice;
- outdated or ineffective legal frameworks;
- lack of appreciation of the value of implementing IWRM among water related sectors and across government ministries, including those responsible for national planning and financing.

# Part 2: IWRM - Conceptual Framework, light IWRM and Lao experience

Village in Sekong province, Lao PDR / UN-Habitat Lao PDR

## 2.1. Evolving Concept of Water Resources Management (WRM)

According to the World Bank, **Water Resources Management (WRM)** is the process of planning, developing, and managing water resources, in terms of both water quantity and quality, across all water uses.[26] WRM involves a wide range of institutions, sectors, infrastructure, incentives, thematic areas and information systems that support and guide water management. A literature review on the subject suggests that traditionally WRM aimed at continually improving the development and utilisation of water resources to meet increasing socioeconomic water demands based on technical approaches.[27] In recent years, however, the scope and complexity of water resources management have broadened as the issues associated with rapid economic development, population growth, urbanisation, and industrialisation have demonstrated the inadequacy of traditional water management at the sector level.

**Successful management of water resources is now seen as a complex and interdisciplinary issue.** It concerns all essential aspects of human lives such as health and well-being, agriculture and food security, aquaculture, business, climate change and disaster risk reduction, hydropower energy, WASH services, and urbanisation. At the same time, water scarcity is becoming more severe, pollution is worsening, and natural ecosystems are under growing pressure. Therefore, successful WRM today also requires multiple interdisciplinary actors, including the governments, agencies and organisations, private and business sectors, and local communities to work in a well-coordinated manner at international, national, regional, and local levels.

Recognising the complexity and interdisciplinary nature of today's water resources management, the concept of **Integrated Water Resources Management (IWRM)** was adopted at the 1992 Earth Summit. While there are several definitions for IWRM, Global Water Partnership (GWP)'s definition is one of the most accepted ones, which describes IWRM as "**a process which promotes the coordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems**".[28] The IWRM principles adopted at the International Conference on Water and the Environment in Dublin, Ireland, in 1992, are known as the Dublin Principles, which remain the standard for consideration of the issues surrounding water resource use and protection.[29] The implementation of IWRM supports all goals across the 2030 Agenda, particularly the **Sustainable Development Goal (SDG) 6:** "Ensuring availability and sustainable management of water and sanitation for all."

[26] World Bank (2017). Water Resources Management. Available at: Water Resources Management Overview (worldbank.org)

[27] See, for example, Fan He, Yongnan Zhu, and ShanJiang (2020). Chapter 13 - An exploration of China's practices in water conservation and water resources management, in *Water Conservation and Wastewater Treatment in BRICS Nations*. Technologies, Challenges, Strategies and Policies.

[28] WaterAid (2011). Water resource management: Integrated planning and management at community level. Available at: Water resource management: integrated planning and management at community level - training manual (wateraid.org)

[29] Dublin principles are as follows: Principle No. 1: Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment; Principle No. 2: Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels; Principle No. 3: Women play a central part in the provision, management and safeguarding of water; Principle No. 4: Water has an economic value in all its competing uses and should be recognized as an economic good. See, The Dublin Statement on Water and Sustainable Development. Adopted January 31, 1992 in Dublin, Ireland. The Dublin Statement on Water and Sustainable Development - UN Documents: Gathering a body of global agreements (un-documents.net)

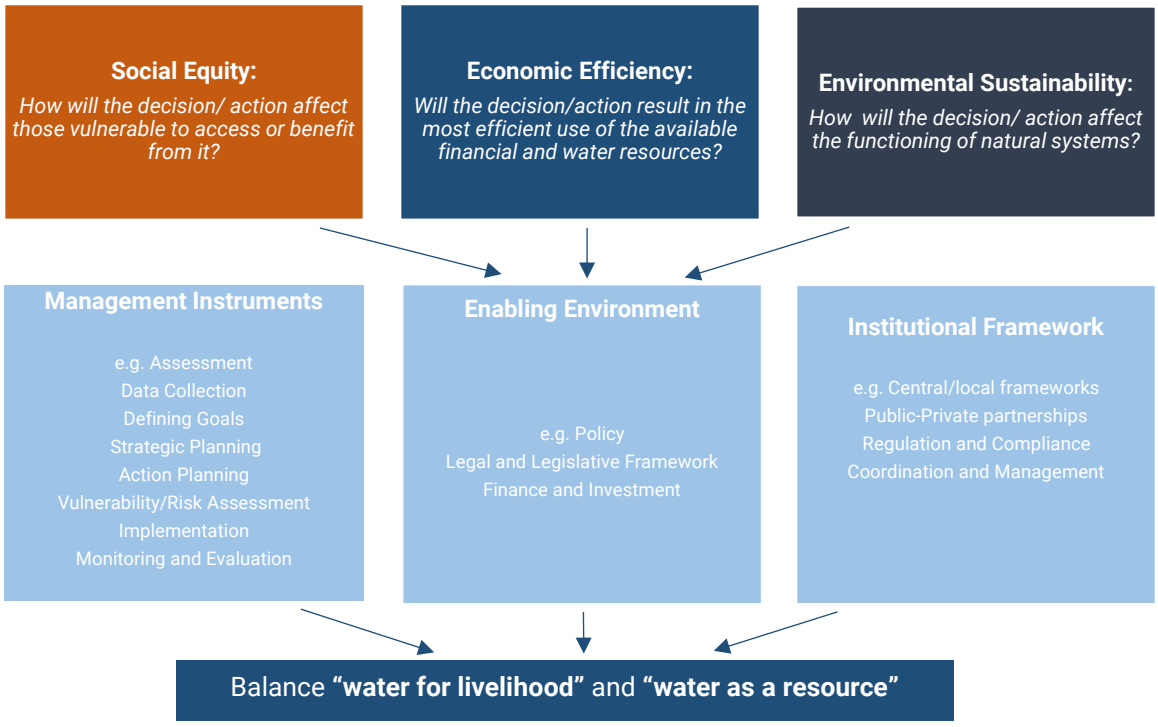
In sum, the fundamental guiding principles of IWRM are as follows:

- ***Social Equity:*** Ensures the right of equal access to an adequate quantity and quality of water to sustain human well-being for all users, particularly vulnerable and marginalised populations such as women and girls, elderly, disabled and ethnic minorities.
- ***Economic Efficiency:*** Ensures the most economically efficient water use and management option, considering current and future social and environmental costs and benefits instead of the economic face value.
- ***Environmental Sustainability:*** Requires that aquatic ecosystems are acknowledged as users and that adequate allocation is made to sustain their natural functioning, including the appropriate use of land and agricultural activities to prevent negative impacts on the environment.

Based on these principles, IWRM generally consists of:

1. **Management instruments** such as data collection and assessments and instruments for water allocation that facilitate better decisions;
2. **Institutional arrangements** for cross-sectoral and multilevel coordination, and stakeholder involvement; and,
3. **Enabling environment** of policies, laws, and plans.

**Figure 4.** *IWRM: Key principles and pillars (source: UNESCO, 2021 [30]).*




[30] UNESCO (2021). *Valuing Water*, The United Nations World Water Development Report. Available at: UN_Valuing Water2021.pdf

### Box 3. Key terms

**Climate change** is any change in climate that persists for decades or longer, arising from human activity, that alters the composition of the atmosphere (i.e., greenhouse gas emissions).

**Climate variability** describes natural variations in the climate that are not caused by climate change (e.g., it rains more in some years and less in others).

**Domestic or household use of water** refers to supplies consumed or used within the home to meet basic health, sanitation and hygiene needs.

**Groundwater Wells and aquifers** (underground rock layers containing water resources) which yield water from beneath the earth's surface are referred to as groundwater sources. In arid environments, groundwater is an attractive option for water supply as it is often cheaper to develop relative to other alternatives, aquifers offer more natural protection from contamination, and groundwater offers more reliability of supply against climate change and existing climatic variability.

**Productive use of water** refers to supplies utilised to sustain crops, livestock or for manufacturing, which produce an income.

**Vulnerability** refers to the characteristics and circumstances of a community, system or asset that make it susceptible to the harmful effects of a hazard – in this case, reduced availability of water. The main determinants of vulnerability are the social, economic, political, governance, environmental and ecological factors that characterise how well people can adapt to, prepare for, cope with and recover from stresses or shocks.

**Water scarcity** results when available water resources are insufficient to meet the household and productive demands of the communities they support.

**Water stress** Households or communities which are vulnerable to water scarcity can be said to be experiencing water stress.

As described by the International Water Association[31]: "operationally, IWRM approaches involve applying knowledge from various disciplines as well as the insights from diverse stakeholders to devise and implement efficient, equitable and sustainable solutions to water and development problems". As per this approach, **IWRM is a comprehensive, participatory planning and implementation tool for managing and developing water resources in a way that balances social and economic needs, and that ensures the protection of ecosystems for future generations**. An IWRM approach is an open, flexible process, bringing together decision-makers across the various sectors that impact water resources, and bringing all stakeholders to the table to set policy and make sound, balanced decisions in response to specific water challenges faced.

[31] International Water Association (website). *Integrated Water Resources Management: Basic Concepts.*

**Table 1.** *Relevance of IWRM for development issues (source: UNESCO, 2009; UNESCO, 2021)*

| Development issues | Why IWRM is important |
|---|---|
| **Aquaculture** | • Supports the maintenance of environmental flows and ecological reserves |
| **Climate Change Adaptation** | • Assists appropriate planning of water use, conservation, and the protection of surface water and groundwater with better resilience and/or larger safety margins |
| **Disaster Risk Reduction (e.g. floods and drought)** | • Assists Ecosystem-based Disaster Risk Reduction (Eco-DRR), which reduces flood and gully erosion risks, enhancing community livelihoods and disaster preparedness.[32] |
| **Food Security** | • Assists the efficient production of food crops in irrigated agriculture. |
| **Gender** | • Support social equity and equal access to water for vulnerable groups such as women and girls. |
| **Health** | • Reduces health risks, including water-borne diseases, through the management of water quality. |
| **Hydropower** | • Optimises the link between water and energy for economic development and poverty alleviation. |
| **Water, Sanitation and Hygiene (WASH)** | • Ensures provision of safe drinking water and basic sanitation and hygiene, which reduces health risks. |

## 2.2. Light Integrated Water Resource Management

IRWM packages often include the development of national water policies, the establishment of apex agencies for water management, and the creation of basin agencies typically with some element of stakeholder participation.[33] However, based on numerous experiences, successful IWRM approaches are highly context specific, requiring a strong emphasis on the Social Equity pillar. In this regard, as a counterpoint to the typical IWRM approach shifting from a national water sector reformation approach to a decentralized process, the concept of light IWRM was developed to implement IRWM in practice.

Light IWRM is focused on delivering water-based services to people. It encourages the application of IWRM principles at the local level (district, community, sub-catchment), invariably delivered through either local water authorities or civil society groups and the approach is best suited to where decentralization is lacking and water legislation is weak as light IRWM approaches can be implemented easily using flexible settings.[34] Considering the Lao context, this approach seems to be relevant in a very fragmented governing system with limited decentralisation and cross-sectoral coordination. This approach appears also more viable to adequately localize water supply systems into micro watersheds, often serving isolated rural community villages. As Day recalls, "ideally the framework of light IWRM should provide a support buffer for community-based water resource management initiatives, which focus on equitable water supply and appropriate abstraction by key water users".[35]

[32] See, for example, UNEP (2016). *Applying ecosystem-based disaster risk reduction (Eco-DRR) in Integrated Water Resource Management (IWRM) in the Lukaya basin, Democratic Republic of the Congo*. Available at: River Partners: Applying Ecosystem-based Disaster Risk Reduction (Eco-DRR) in Integrated Water Resource Management (IWRM) in the Lukaya Basin, Democratic Republic of the Congo | UNEP - UN Environment Programme
[33] Moriarty, P., Batchelor, C., Laban, P., Fahmy, H. (2010). *Developing a Practical Approach to 'Light IWRM' in the Middle East*. Water Alternatives 3. Available at: https://www.researchgate.net/publication/41391446_Developing_a_Practical_Approach_to_'Light_IWRM'_in_the_Middle_East
[34] Day, S. (2009). Community based water resources management, in *Waterlines* Vol. 28, January 2009.
[35] *Ibid.*

Considered as a more incremental process, light IWRM is often viewed as an approach that is less formulaic and is predicated on improved communication, information-sharing, and negotiation among local water users. In contrast to the normal top-down IWRM package, light IWRM aims to be pragmatic, problem-focused and adaptive. The intended outcome of applying light IWRM is a system of managing water services and resources developed over many years in response to real demand and, as a result, better adapted or tailored to the political economy of a given area, and highly suitable in climate change adaptation due to modularity and flexibility.[36]

## 2.3. Community-based approaches for successful IWRM

As introduced earlier, while IRWM is frequently discussed at global and national levels, many studies and experiences point out several distinct advantages of engaging in community-based water resource management.[37] For example, according to Day, local water users often possess detailed indigenous knowledge related to water resources, water needs and historical change. At the same time, they also recognise that water is a fundamental component of their subsistence-based livelihoods, and the communities are able to monitor agreed water usage on a daily basis as part of their daily activities.[38] On the contrary, the Government often fails to provide communities with information concerning their available water resources, such as water resource availability, groundwater recharge and sound stewardship, to the detriment of end water users. This is significant because the most pressing water needs often occur at the local or village level, particularly in drought-prone environments. In addition, there is often a failure to outline projected impacts of climate change on local water resources, instead projects rely on existing knowledge at the national level without preparing for change. It is therefore critical that IWRM is decentralised, and for relevant national and provincial authorities to help develop basic contingency plans with local authorities or relief agencies as a backstop to provide support during periods of acute hardship to assist the communities in need.

At national levels, IWRM principles are used to integrate water demand from different sectors of society and to balance this demand with water availability and to coordinate up-stream with down-stream uses. This is preferably done through consultative processes involving multi-sectorial stakeholders. At the local level, IWRM can also link water demand, water supply and water resources management in a sustainable way, involving communities in the decision-making process. The principles of IWRM applied at local-level require a participatory community-driven approach where all water uses and water sources are considered and prioritised by the communities. Vertical integration between national and local-level water management can then happen through the national planning processes, informed by these bottom-up planning processes.

In this regard, tools such as Community-based Vulnerability and Risk Assessment and Action Planning as described in the first guide developed under the Lao PDR GoAL Waters programme are essential to involve communities into decision-making and implementation processes.

[36] Moriarty, P. et al. (2010). *Developing a Practical Approach to 'Light IWRM' in the Middle East*. Water Alternatives 3.
[37] Day, S. (2009). *Community based water resources management*, in Waterlines Vol. 28, January 2009.
[38] *Ibid.*

**Community engagement strategies** are also complementary tools to engage with locals. In Lao PDR, where there is limited experience of community-based consultation methods and weak engagement between local governments and communities, village chiefs and civil organization leaders such as members of the Lao Women Union play a key role in facilitating community engagement and participation. Their engagement at all steps of IWRM initiatives is therefore critical in the Lao context. Experience from the World Health Organization in Lao PDR during the COVID-19 pandemic shows that other strategies such as community engagement workshops using games and specific exercises such as community mapping encouraged people to develop teamwork skills and understand what links them together, while creating a positive atmosphere which helps participants to debate and reflect on the existing strengths of the community.[39]

### Box 4. Example of relevant community engagement strategies in Lao PDR

- Community-based Vulnerability and Risk Assessment
- Engagement through village chiefs and civil organisations
- Community workshops using games, community mapping exercises
- Engagement through schools

The IWRM principles of undertaking water management at the lowest appropriate level and the participation of especially women in water management are central to local-level and light IWRM. The primary aim is to improve livelihoods of poor small-scale water users. As sustainable access to water for both domestic and productive uses is weakest among the poor, improvement in access to water through infrastructure development is often their priority. Local-level IWRM capacitates communities to manage their water resources in an environmentally sustainable manner and to co-design and implement water infrastructure development according to their own needs and priorities. The resulting ownership of infrastructure is the single most important condition for its financial, institutional and environmental sustainability. Thus, local-level IWRM integrates participatory water supply and water resource management for sustainable livelihood improvements.Local-level IWRM approaches open up important new opportunities to effectively improve multiple dimensions of wellbeing, in particular health, the alleviation of the domestic chores of water fetching, food production and income generation. Sustainable benefits from water are further augmented by integrating land use, water quality, health and hygiene education, agricultural extension or marketing in the interventions.

One of the successful cases of community based IWRM, for example, is called “Water for the Maasai” [40] project, which was initiated in 1997 in the Kajiado Country of Kenya for a period of ten years, supported by the Water Supply Company Drenthe (The Netherlands) in partnership with the African Medical & Research Foundation (AMREF) and Flying Doctors, an NGO. The first five years focused on the rehabilitation of boreholes for agricultural and domestic use, while the next five

[39] WHO (25th October 2021). *Connecting communities in Lao PDR for better health during COVID-19 and beyond.* Available at: https://www.who.int/laos/news/feature-stories/detail/connecting-communities-in-lao-pdr-for-better-health-during-covid-19-and-beyond
[40] Langendijk, W. & Brakel, G. (2013). *Water for the Maasai*, Kenya Case #140. GWP. Available at : https://www.gwp.org/globalassets/global/toolbox/case-studies/africa/kenya.-water-for-the-maasai-140.pdf

years focused on financing, operation, maintenance and establishing an association to take over the management and maintenance process after the completion of the project. All activities were implemented in close cooperation between the Maasai, the donor and the NGO, including participation, education, training, and long-term guidance. In less than ten years since the start of the project, more than 40 villages joined the project, and over 60,000 people with over 100,000 cattle, goats and sheep gained access to a source of good quality groundwater at relatively short distances. Through training, the Maasai men became capable of repairing boreholes, women joined committees to influence decisions, and children, especially girls, gained more time to go to school instead of fetching water. Considering financing this initiative, the Maasai paid a contribution to the association, starting at 12 per cent of the project cost in the first year, building up to 100 per cent over subsequent years and eventually gaining the ownership of the project after ten years. Today, the Maasai grow corn and vegetables on a large scale and sell them in markets to generate income.

Other examples of community-based IWRM can be found below; they also illustrate how a focus on a key challenge can be used to leverage multiple other co-benefits:

- **Case study on India**: "Equity and access: community-based water management in urban poor communities: an Indian case study" B. Poricha & B. Dasgupta. WIT Transactions on Ecology and The Environment, Vol 153 (2011). Microsoft Word - WS11 Sections.doc (witpress.com)
- **Case study on El Salvador**: "Analysis of water decentralisation in El Salvador. Community sustainability model of rural potable water systems" Selma García (2008). FUNDACIN CENTROAMERICANA (gwp.org)
- **Case studies on Sierra Leone and Ghana**: "Managing water locally: An essential dimension of community water development" The Institution of Civil Engineers, Oxfam GB and WaterAid (2011). Managing Water Locally: An essential dimension of community water development (openrepository.com)

## 2.4. Legal and Institutional Frameworks in Lao PDR

The Government of Lao PDR has accelerated its efforts to revise and update legal and regulatory frameworks on water resources and management in the last decade. IWRM is, therefore, a relatively new concept in Lao PDR, and the Government has not had much experience with it. The country's first formal legislation regarding water resource management was introduced by the Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin in 1995 and the Water & Water Resources Law in 1996. In 1998, the Water Resources Coordination Committee (WRCC) was established at the national level.

The most recent restructuring took place in June 2011, when the National Assembly approved MoNRE, which replaced its predecessor, the Water Resources and Environment Administration (WREA). The current structure of MoNRE consists of 14 concerning departments, including the

Department of Water Resources, and four main institutes, such as Institute of Social and Environmental Impact Assessment, Natural Resources and Environment Data and Information Centre, Institute of Natural Resources and Environment, and Lao National Mekong Committee and others. [41] The Water & Water Resource Law was revised in 2017, and a Water Resources sub-sector working group was also established. Later on, the National Water Resources Strategy 2025 and Action Plan 2016-2020 were developed. At a smaller scale, the Nam Ngum IWRM Plan 2016-2020, Nam Ngum sub-basin plans, and Integrated Watershed Management Plans have been put in place to better manage water resources across the country.

Considering the relatively new introduction of water laws and reforms concerning the management of water resources, more improvements need to be made to maximise the use of the country's water resources toward socioeconomic and environmental gains. In general, more emphasis on multi-sector collaboration is required as each water-related sector, such as hydropower, agricultural, and urban development currently manages water independently in the absence of an overall planning framework. Improved mechanisms such as equipment and tools to collect data, analyse information, and monitor the situation, financial resources, as well as sound legislations and guidelines to enforce and implement the activities are necessary. It is also equally critical to improve the knowledge and capacity of concerned staff, such as those at relevant ministries at national, provincial and district levels, and encourage public engagement by raising awareness on IWRM.

## 2.5. Potential and Challenges

The abundant water resources in Lao PDR have the potential to support socioeconomic development, especially hydropower and irrigation sub-sectors. The hydropower potential of Lao PDR is high compared to other countries in the Lower Mekong River Basin, which provides an opportunity to earn much needed foreign income, particularly in times of pandemic when other industries, such as tourism and hospitality, have been devastated. Similarly, since more than a third of GDP and 75 per cent of employment comes from subsistence agriculture that is dependent on rainfalls[42], protection of water resources and sustainable use of land through sustainable irrigation systems can also bring economic development and improved food security system, which could contribute to poverty reduction.

However, being one of the least developed countries, the most critical challenges are the weak institutional, legal, and management capacities. It remains particularly challenging to :

1. **Strengthen the legal framework** for an effective and harmonious IWRM management for socio-economic development in line with the national priorities;
2. **Enhance and consolidate the existing systems** to operate, maintain and rehabilitate facilities safely, reliably, and efficiently; and,
3. **Build capacity to enhance organisational capacity** and effectiveness of the water resources coordination system.[43]

[41] These include: The Cabinet, Administration and Human Resources, Monitoring, Planning and Cooperation, Policy Development, Land Allocation and Development, Land Management, Water Resources, Environmental Protection, Pollution Control, Forestry Management, Geology and Mining, Meteorology and Hydrology, and Climate Change and Disaster

[42] Phonechaleun, N. & Souvannalath, S. (2004). *People-centred approaches to water and environmental sanitation: Water resources management in Lao PDR*. 30th WEDC International Conference, Vientiane, Lao PDR.

[43] *Ibid.*

# Part 3: Management instruments

Kids playing with water in Sekong province, Lao PDR / UN-Habitat Lao PDR

## 3.1. Advancing IWRM in Lao PDR

In order to advance the implementation of IWRM in Lao PDR, and considering the local context, the following recommendations have been made by several development agencies:

1. **Strengthening of political will at all levels**, including sub-national, to unite all stakeholders through advocacy and communication and move processes forward. This can be achieved by clearly communicating and demonstrating the value of implementing IWRM for achieving multiple SDGs to key stakeholders at all levels and across sectors. Engaging various actors is also essential to move political will, gain sectoral support and ease public pressure for IWRM implementation.

2. **Action planning:** In order to move from planning to implementation, the country should develop IWRM Action Plans, or similar management instruments such as Water allocation plans, in order to focus, prioritize and coordinate efforts. As water is a shared resource, water rights should be flexible in terms of allocation in order to accommodate changes. For example, preparing a master plan that reflects individual sector plans can facilitate the coordination among various sectors and advocate the most appropriate utilization of a basin's resource.

3. **Coordination and alignment:** Overall, coordination within the water sector and with related sectors needs to be prioritized and strengthened. This can be achieved by adopting integrated approaches to policies related to investments and management of water supply, wastewater treatment and reuse, water use and water-use efficiency in agriculture, industry and energy production, ecosystem protection and restoration, and water-related disasters. At the same time, enhancing coordination through participation and coordination mechanisms can also foster information-sharing and exchange. Initial sharing of general basin-wide data and information, and further sharing of more specific information, will assist the self-sustaining system.

4. **Financing:** Financing is another issue identified in Lao PDR as IWRM implementation needs financial sustainability, and this is required to address other recommendations for advancing IWRM. Several experience suggest various options to address this challenge: increasing direct central government investment backed by good policy; raising revenue from traditional and non-traditional water and ecosystem services; transparency, anti-corruption and accountability; and leveraging opportunities from recovery support packages (COVID-19, natural disasters), using IWRM coordination mechanisms and stakeholder participation approaches as a tool for coordinating multiple interventions across sectors.

5. **Basin and aquifer management:** Prioritizing the development of basin and aquifer organizations with clear mandates and strong links to relevant local government departments and agencies is another critical point. Such structures will require specific technical capacity to monitor water resources and their use, while securing funding. At the same time, improving basin management needs a clear vision and management plan.

6. **Capacity development:** Identifying and addressing capacity gaps within and between key institutions to create incentives and retain qualified staff and encourage gender balance is also another key challenge to be addressed at the local level. The aim should be long-term institutional capacity development, aligned with clear institutional mandates.

7. **Data and information management:** Filling the data gap is another issue identified in Lao PDR, especially for water resources management. In this respect, several actions can be taken to advance information management such as developing an online national information system (or similar) for IWRM, compiling and standardizing relevant data and information on water use and allocation; securing funding for establishing harmonized monitoring networks, making use of modern technology and approaches where appropriate; encouraging national and international partners to share water data that may be of national interest; and, ensuring that information is accessible and easily understandable to all relevant stakeholders.

   At the local level, good knowledge of the natural resources present in the basin is also critical and community engagement is a key entry point to fill this gap, especially as the community often holds important indigenous knowledge. At the same time, including scientists as water resource managers can help maintain and accrue sound knowledge of the natural resources.

   Finally, comprehensive monitoring and evaluation are essential for ensuring that the current management of water resources is properly implemented, and to identify the needs for adjusting management strategies, for effective performance both of local and central water management.

8. **Inclusive participation:** As indicated in previous sections, promoting inclusive stakeholder and communities' participation is critical to build accountability, and ensure the fairness and sustainability of water management and use are context specific.

9. **Legal frameworks:** Well-defined flexible and enforceable legal frameworks and regulation: It is necessary to assemble and review the full range of existing laws and regulations that apply to water-related activities and determine how existing legislation adapts or can be better adapted to accommodate sustainability and integration with regard to water resources management. In this respect, developing or updating laws to reflect progressive, coordinated water resources management approaches, and ensuring policy alignment between existing or new legislation related to the use of water is essential.

10. **Transboundary cooperation:** Finally, as per the specific geography and hydrology of the country, there is a need to promote the value of transboundary cooperation to national and riparian counterparts to ensure political backing and resources. A useful approach can be to draw upon regional and global frameworks, to enhance political buy-in at the basin and aquifer level.

## 3.2. Management tools

Management instruments refer to specific methods such as data collection, issue/situation assessment, analysis on demand and supply, user behaviour and efficiency and monitoring that enable decision-makers to make rational and informed choices in IWRM and to tailor their actions to specific country context and situations. This section will introduce some simple tools that can be immediately used to enhance the capacity of the policymakers within the existing legal and institutional frameworks.

**Figure 5.** *Management instruments (source : UN-Habitat Lao PDR, 2021)*

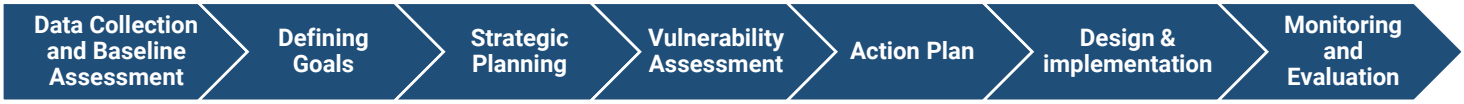
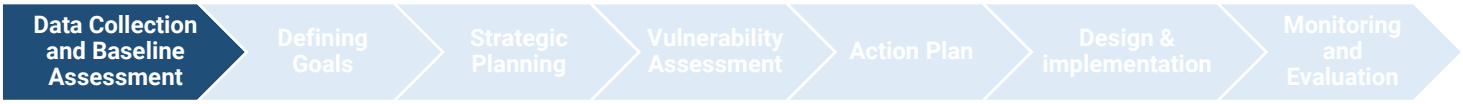



**Table 2.** *Steps and stakeholders involved (source : UN-Habitat Lao PDR)*

| Steps | Stakeholders involved |
|---|---|
| **Step 1. Data Collection and Baseline Assessment** | • MoNRE, PoNRE, DoNRE<br>• Lao Statistics Bureau<br>• Local governments<br>• Public organisations, universities, research institutions, private consultants<br>• Communities and water user groups<br>• Civil society organisations |
| **Step 2. Defining Goals** | • Line Ministries (MPTW, MoNRE, MPI)<br>• Local governments<br>• Communities and water user groups<br>• Civil society organisations |
| **Step 3. Strategic Planning** | • MoNRE, PoNRE, DoNRE<br>• Local governments<br>• Relevant line ministries<br>• Communities and water user groups<br>• Civil society organisations<br>• Service providers |
| **Step 4. Vulnerability Assessment** | • PoNRE, DoNRE (technical staffs and enumerators)<br>• Local governments<br>• Community facilitators (village chiefs, civil society organisations)<br>• Communities and water user groups |
| **Step 5. Action Plan** | • PoNRE, DoNRE<br>• Local governments<br>• Community facilitators (village chiefs, civil society organisations)<br>• Communities and water user groups |
| **Step 6. Design & Implementation** | • PoNRE, DoNRE<br>• Local governments<br>• Community facilitators (village chiefs, civil society organisations)<br>• Communities and water user groups |
| **Step 7. Monitoring and Evaluation** | • |

## *Step 1: Data Collection and Baseline Assessment*




Data collection is the very first step to establish a comprehensive knowledge base that outlines the current water management status of the target area. In Lao PDR, while mandates are not always clearly defined, MoNRE and its provincial and district offices are responsible for collecting sound and reliable data on water resources management.

This step helps understand not only the physical state of local water resources and infrastructure, but also relevant legislation, existing policies, and current management activities. The process also helps establish the underlying causes of existing problems that are evidence-based and retrievable for future reference and further analysis. Thus, data should be obtained from a wide variety of multidisciplinary sources such as hydrology, hydraulics, environmental sciences, system engineering, legal sciences, sociology, and economics, to name a few.

To improve data collection at the local level, capacity building is critical to ensure technical staff have the relevant knowledge, while being trained to technics for communities' engagement. At the same time, engaging communities to mix scientific knowledge and social sciences data is essential. This later point is vital to build trust. From recent experience, community meetings, engagement through civil organisations and villages chiefs, as well as community games and mapping exercise were successful to ensure all groups, even marginalized ones, can equally participate.

Baseline assessment needs to be conducted by well trained staff by utilising appropriate tools such as computer programmes that can convert data into information and knowledge useful to the decision-making process and in working with communities. From past experience in Lao PDR, the use of tablets with open-sourced software such as KoboToolbox has been a successful and cost-effective way to gather local-level data involving directly communities by training and assisting them for data collection, and crossing collected data with geographic and hydraulic information.

It is also important to establish a knowledge repository that is easily accessible and retrievable for the general public, and to create a platform where relevant stakeholders can participate in exchanging professional opinions. The development of online database can therefore set the basis for managing local data.

Data collection can be done in collaboration with various organisations, such as universities, research institutions and private consultants who can also assist with information analysis. While data collection and assessment can be done in many ways, it should usually include the following information[44]:

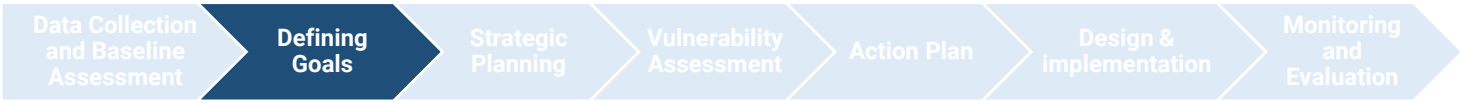
- The water resources situation of the target area (e.g. village, district, province or country), including the assessment of the quantity and quality of the local surface

[44] ICLEI (2008). Part III Engaging in IWRM – Practical Steps and Tools for Local Government, in *Local Government and Integrated Water Resources Management (IWRM)*. ICLEI Africa Secretariat.

and groundwater sources, rainfall rates, water flow rates, evaporation rates, average and peak demands, and the condition of water infrastructure, etc.;

- Relevant water legislation, such as water laws, acts and licensing practice;
- Key stakeholders concerned, such as relevant Government bodies at national and subnational levels, as well as individuals and representatives of relevant organisations who will be part of the development and implementation of the action plan, for example, Ministry of Natural Resources and Environment, Department of Water Resources, Mekong River Commission, UN agencies, bank institutions, etc.
- Key completed and ongoing projects or other water management activities that impact the IWRM of target areas; and
- Identification of sources and focal persons required for further information and follow-up actions

## *Step 2: Defining Goals*



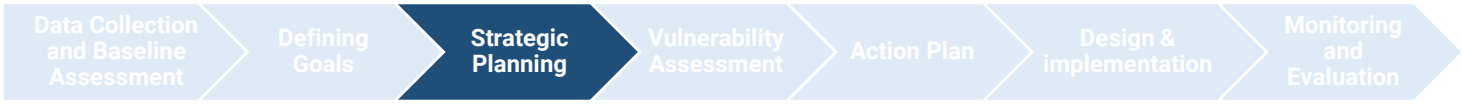

Goals are an agreed medium and long-term projection of what the water resources situation will ideally be in 10, 20 to 30 years' time. Defining goals will help to visualise the information that has been gathered to make evidence-based decisions, provide the overall direction that the strategy and action plan should follow.

For this purpose, it helps to use specific tools such as Geographic Information System, Stakeholder Analysis, Shared Vision Planning, and Decision Support Systems. It is equally important to build a consensus among relevant stakeholders concerned, including communities, and gain their buy-in through coordinating workshops to discuss the goals and long-term visions. The defined goals also need to be aligned with the national and local socio-economic development plans. Examples of goals at national, provincial, and local levels are summarised in the table below:

**Table 3.** *Examples of IWRM Goals (source: UN-Habitat Lao PDR, 2021).*

| Level of the Government | Example of Goals |
|---|---|
| **National** | • Reduced rural-urban gap regarding the access to safe water, basic sanitation, and hygiene services as defined in 9th NSEDP and WASH strategy and policy of Lao PDR<br>• Increased GDP generated by hydropower<br>• Increased access to water and WASH facilities |
| **Provincial** | • Increased agricultural productivity and irrigation systems<br>• Establishment of an Eco-DRR plan with appropriate water use, conservation, and the protection of surface-water and groundwater |
| **District** | • Establishment of community-level piped water systems in vulnerable communities<br>• Improved access to safe water, basic sanitation, and hygiene services among vulnerable groups such as women and girls |

## *Step 3: Strategic Planning*




The development of a strategy is necessary to define a consistent and multisectoral approach to the action plan, help maintain the overall direction of policies to achieve the identified goal and provide a framework for planning future actions.

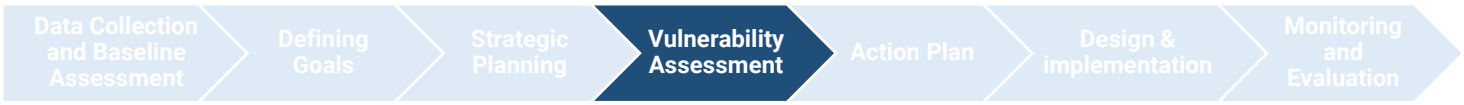
It can also help identify the areas or scenarios where it may be necessary to reach outside the Government boundaries to gain financial or technical support. It is therefore important to establish a steering committee, under the guidance of MoNRE and its provincial entities, with a clear Terms of Reference to develop a draft strategy with objectives, which are specified through targets and indicators. Examples of objectives, targets and indicators are explained below.

Considering IWRM at the local level, planning should be *participatory*, and planning teams should be accountable so that detailed information about the environment and activities (and their local-level impacts) are accounted for as indicated in previous sections. In this respect, it is critical that this strategic planning step utilises community engagement strategies such as community workshops and consultations to ensure that the defined approach is anchored into the local context and considered local needs. Consultation activities should include focus groups discussions, fun games to engage community members, liaison with villages chiefs and civil organizations members, practical exercises such as community mapping.

**Table 4.** *Examples of objectives, targets, and indicators (source: UN-Habitat Lao PDR, 2021).*

| | What | Examples |
|---|---|---|
| **Objectives** | Objectives are what the plan intends to achieve by the end of the project, which can include deliverables and assets, or more intangible aims such as increased accessibility, productivity, or distribution. Objectives must be attainable, time-bound, and measurable. | • Ensure all members of the community have equal access to water resources.<br>• Improve community-based water resource management<br>• Improve the accessibility of WASH facilities among most vulnerable settlements and communities in Lao PDR. |
| **Targets** | Targets are more specific and measurable commitment than objectives to achieve goals, defined in numeric terms, level of improvement to be achieved, and by when and who. | • At least, 80% of remote communities have access to water resources<br>• Community-based water resource management is mainstreamed into local level action plans<br>• At least 20,900 people in most vulnerable communities, including women, girls, and elderly, have gained accessed to improved WASH facilities. |
| **Indicators** | Indicators provide a valuable basis from which to assess progress and carry out the situation analysis, measure performance against a target to evaluate the effect of policy actions and identify areas for increased attention. | • Percentage of water access coverage in remote communities<br>• Number of districts integrating community-based water resource management processes<br>• Number of WASH facilities improved, rehabilitated, or built. |

## *Step 4: Vulnerability and Risk Assessment*




Following the development of a strategic plan, it is important to integrate environmental, social and economic aspects of water management on different scales to ensure that the action plan will not cause detrimental effects on the social structures, ecosystems, environment, or the economy. For example, UN-Habitat's guide on "Community-based Vulnerability Assessment (CbVA) tool for increasing resilience" introduces several practical steps and tools to conduct vulnerability assessment at community level. The guide seeks to strengthen capacity of government officials at all levels involved in climate change and infrastructure planning to mainstream climate resilient actions as part of existing or new programmes, and diagnose particular situations at the local level to support local climate action.

Based on the aforementioned document and also developed under the Goal Waters activity in Lao PDR, UN-Habitat has produced a "Climate Community-Based Vulnerability Assessment and Action Planning" guideline. This guide offers a step-by-step guidance for designing and implementing a community vulnerability assessment as well as action planning process, covering the entire life cycle of adaptation interventions.

### Box 5. Basic steps for the Vulnerability Assessment

- **Step 1: Planning and getting organized for the assessment**
  Prior to the data collection, a strong planning process is needed to build solid basis for an effective and accurate assessment. In this respect, the assessment team will plan the way forward based on the initiative's objectives and resources available through the definition of the following:
  - **The level at which data should be collected** (community level, household level or both);
  - **The most appropriate data collection methods/tools to use** in the given context, capturing diverse dimension of vulnerabilities; and,
  - **The order in which these methods/tools will be applied**, which could be used consecutively or in parallel.

- **Step 2: Engaging with the community**

  Enabling the communities to participate in adaptation begins with making them aware of environmental and climate change issues. **It is important to develop engagement strategies that ensure full and equal participation throughout the process since the uneven distribution of impacts and vulnerabilities to climate change results in some groups being impacted more severely than others**. These groups are not only particularly vulnerable but also traditionally underrepresented, especially throughout decision-making processes. To address the issue of underrepresentation during stakeholder consultations, gender and youth-oriented participatory approaches must be used. This may be accomplished by holding separate and mixed gatherings of male and female community members to ensure processes are capturing local realities, social dynamics and perspectives.

- **<u>Step 3:</u> Collecting data**

  It is suggested to **create a community profile** through the collection of data on a set of characteristics which are: population, spatial and urban use, natural resource-based production, critical point facilities and lifeline utilities. Then, **hazard mapping** is needed to complete the assessment. Although household survey is suggested as a tool for collecting specific data, in Lao PDR it is common practice to collect the information through village chiefs and community representatives, since remote villages are hard to reach, and these focal points are able to provide reliable and up-to date data.

  - **Step 3.1: Community screening**

    *The **community screening** involves secondary sources, interviews and validation processes to verify that the data received– from individuals or organisations external to the community, is accurate and updated. This stage is integral to the CVA process. It will enable the assessment team, as a facilitator, to get the best out of the process in terms of enhancing participation, analysis, and action planning during each subsequent stage.*

  - **Step 3.2: Community-level data collection**

    *The assessment team can approach the community using diverse participatory methods and tools to **capture a diversity of aspects of socio-environmental characteristics**. While the transect walk can be conducted in person, other techniques can be employed using virtual means of communication. Below are some of the tools used by UN-Habitat in Asia and the Pacific:*

    a. ***The transect walk***
    b. ***The participatory hazard and exposure mapping exercise***
    c. ***Focus Group Discussions (FGD)***

- **<u>Step 4:</u> Documenting and reporting the analysis**

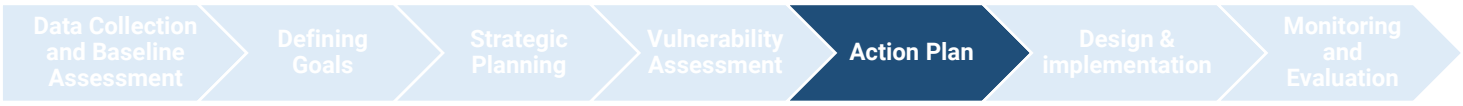
  Once all the analysis is completed and finalized, the expert team will need to document it in the VRA report (*the reporting format for the VRA report is outlined in Annex 1*). As mentioned, it may include information on the most significant climate hazards faced by the community and related impacts, information on vulnerable population groups (e.g., poor, elderly, youth, people with chronic disease, unemployed, etc.) that are expected to be most affected by climate change, hazards occurred in the past, etc. For displaying assessment findings, maps, diagrams, and graphs are useful and effective tools. This information will help in prioritizing the adaptation actions.

  The analysis should also be documented in a **concise report that summarizes the key findings and options for planning**.

For detailed methodology see:

- UN-Habitat (2020). *Climate Change, Vulnerability and Risk.*
- UN-Habitat Lao PDR (2021). *Climate Community-Based Vulnerability Assessment and Action Planning.*

## *Step 5: Action Plan*

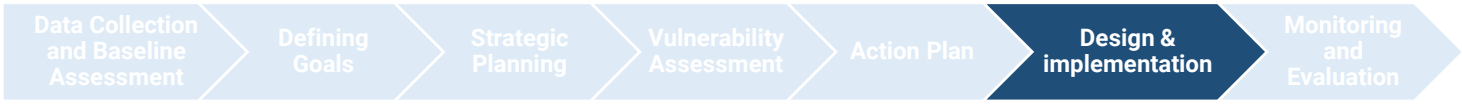



Developing an action plan at the local/community level is necessary to initiate practical measures for changing the *status quo*, ensuring that all actions are coherent and suitable for following the strategy to achieve the identified goal, with the clearly identified role of stakeholders in the implementation process. This is also critical to build accountability and transparency. Therefore, the development of such action plan must be initiated by local institutional entities in collaboration with communities, water group users, and service providers. An action plan can target a particular situation, such as urban water management or disaster risk management, or projects and measures to achieve the objectives, such as sensitisation campaigns to improve WASH practice, or specific engineering projects, such as the construction of improved drainage channels. It is also important to consider if the actions included in the plan are appropriate and feasible within a realistic timeframe and with the financial resources available. Potential obstacles and risks to the implementation of an action should be assessed when deciding if it is worth pursuing the action or not.

**Table 5.** *Action Planning process (source: UN-Habitat Lao PDR, 2021).*

| | Step description |
|---|---|
| **Step 1. Identifying Issues** | Adaptation requires a flexible and continuous process of analysis, planning and action over time, informed by climate information. In order to identify issues, it is critical to get feedback from the community after presenting the main findings of the conducted CbVA. By using community meeting or FGDs, vulnerable spots and assets can be identified, and issues captured. This process will also enable communities to rank their priorities and focus on particular challenges. |
| **Step 2. Setting Objectives** | After the identification of critical issues, participants can be split into groups or asked to individually write down objectives. After that, the objectives can be discussed with the whole group, pointing out those goals that are shared and emphasizing whether they enhance and support a collective vision. |
| **Step 3. Prioritising actions** | Issues and objectives identified can now be prioritized through a participatory, bottom-up approach to ensure the full ownership of communities in activities that they have engaged, and consequently the sustainability of developed initiatives. As indicated, it is always critical to ensure that community meetings and FGDs are representative of the diversity of the settlement to leave no one behind. |
| **Step 4. Defining Action Plans** | Through this last step of the Action Planning definition, participants will be asked to propose climate-resilience options which related to the previous identified objectives, and considering possible co-benefits related to these actions. All actions need to be captured, which facilitators may go over them with the community. At this point, any actions that are not climate-related or relevant will be eliminated or set aside for further consideration. |

## *Step 6: Intervention Design and Implementation*



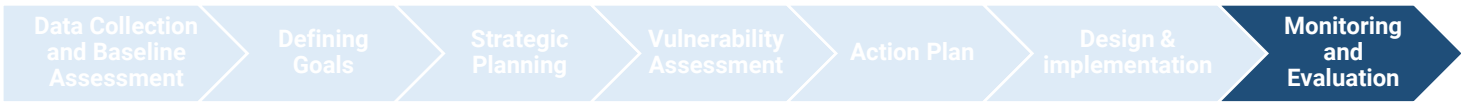

Prioritised actions should lead to the design of different projects to enhance IWRM. These interventions can be either soft or hard, small or large depending on the goal that intervention aims to achieve. All interventions must be appropriately contextualised and geographically specific to make sure that they respond to the issues identified along the process. The results of **Vulnerability Risk Assessment (VRA)**, **Environmental and Social Safeguards (ESS)**, as well as gender and youth and other crosscutting issues, should be mainstreamed into the design process for all projects and sub-projects.

Implementation is the execution of the project activities identified in the action plan, which is an inevitable step to put the action plan into operation and achieve tangible change and improvements. It is important for the implementing agency to take the lead to ensure that the implementation progresses as agreed within the prescribed timeline. It is also critical to harness the necessary partnerships with relevant stakeholders who could provide additional support, where necessary, to enable the successful implementation of projects, including the management of the budget and funds.

**Table 6.** *Intervention Design and Implementation process (source: UN-Habitat Lao PDR, 2021).*

| | **Step description** |
|---|---|
| **Step 1. Intervention Design** | Prioritized actions will lead to the design of different projects that enhance climate resilience. All interventions must be appropriately contextualized and geographically specific to make sure that they respond to the issued identified along the process. The engagement of communities during this step is also critical for maximum impacts. In this respect, inviting community members to prioritize their needs and brainstorm on possible interventions is conditional to the development of any initiative.<br><br>**Environmental and social safeguards, risks and opportunities**, as well as gender and youth and other crosscutting issues, should be mainstreamed into the design process for all projects and sub-projects. In addition to the execution of in-depth cost-benefit analysis, possible project-related risks should be recognized and analyzed from the beginning to avoid drawbacks at the time of implementation. |
| **Step 2. Implementation** | Implementation of projects, sub-projects and adaptation actions may occur individually or collectively. Review and adjustment of plans is part of the process and should take place periodically to ensure that projects/initiatives are updated and relevant for the community. Since actions can be either implemented by government entities or communities, execution characteristics will vary from case to case. It is important to seek for technical support when needed, to avoid increasing risk and vulnerability through the execution of planned activities. In the same line, it is recommended to strengthen local and regional networks to leverage resources and increase the impact and create new opportunities for projects up-scaling. |

## *Step 7: Monitoring and Evaluation*




Monitoring is crucial for documenting the impacts and causes of all water-related issues and determining whether the implemented projects are achieving their intended targets or not. Monitoring can be done in many ways, for example through the measurement of a variety of data, collection of specific information from the local community, and comparisons made with conditions prior to action implementation. Monitoring should take place on a regular basis and in line with the timeline set out in the action plan.

The results of monitoring must be evaluated, with the participation of stakeholders and through analysis and interpretation, using data from the baseline assessment as a reference point where appropriate. The evaluated results must be used to report progress as well as shortcomings, first internally to senior levels of the administration, then externally to donors, stakeholders, and the public concerned to decide on the course of action to bring necessary changes to achieve the identified goals.[45]

In short, monitoring and evaluation of implementation are necessary to ensure that agreed objectives and targets are achieved, identify shortcomings, decide on a revised course of action if measures are found ineffective, and maintain accountability to donors, beneficiaries, and general public. The implementing agency/entity should carry out aspects of monitoring and evaluation internally, where appropriate and feasible, and coordinate monitoring activities to ensure that the responsibilities for collecting relevant information are clearly outlined. Evaluation can be done externally, for example, by relevant institutions, organisations or private consultants. Monitoring and Evaluation should also be strongly connected to the action plans.

[45] *Ibid.*

## Box 5. Case study
## Community water resource management framework development in Darfur[46]

A recent initiative trialled in Darfur focused on the utilization of a water resource management framework to encourage wider community participation in managing both water resources and water assets. The framework was derived from water safety plans but included a number of key elements not traditionally adopted within community water management schemes. The approach was designed to encourage communities to become 'partners' for managing water supply, rather then remaining passive beneficiaries. The process consisted of eight key stages all of which were designed to be 'common sense' approaches for water and sanitation practitioners that encourage end user participation from the very beginning:

- **Stage 1** concentrated in undertaking a 'water usage' survey with community members. This exercise helped watsan practitioners and communities to identify current water usage trends and priorities. The survey process identified how communities prioritize their water usage seasonally and any inequity within the water supply system.
- **Stage 2** encouraged the identification and participation of key water users, which, depending upon the context, typically may include farmers, pastoralists, brick makers, community leaders and women.
- **Stage 3** required the identification and assessment of both existing community water assets and the potential for expanding and developing additional water resources to increase diversity within drought-prone or water-stressed environments through a community-led "water mapping" exercise.
- **Stage 4** focused on the development of a joint assessment of risk associated with each water asset or resource (groundwater abstraction, recharge, water quality, access, security, equity and technology choice).
- **Stage 5** recommended an agreement between all users on water prioritization, abstraction and management based on the risk analysis conducted earlier. The process encouraged multilateral agreement between water users to better ensure improved equity and access for all, promoting a community-level self-regulation of water usage and management.
- **Stages 6** established a community-level water management plan including the management of water resources and assets. The objective of this step was to identify how water usage fits into people's lives, rather than imposing a series of management or monitoring duties, which were not realistic in terms of communities' daily lives or interests.
- **Stage 7** furthered the development of a water management framework by including contingency plans for drought. Through this exercise, water security mapping initiative were designed to identify the most vulnerable water sources and early warning monitoring systems, in which communities conduct their own basic level of groundwater monitoring and rainfall measurement. The aim of this step was to improve access to alternative water sources during acute dry spells, which could include the establishment of alternative relief boreholes as a contingency.
- **Stage 8** focused on the development of a continual monitoring and evaluation system shared and agreed by communities and watsan practitioners.

[46] Day, S. (2009). *Community based water resources management*, in Waterlines Vol. 28, January 2009. Available at: https://www.ircwash.org/sites/default/files/Day-2009-Community.pdf

## 3.3. Capacity Building

Along the development of management instruments, capacity building is an important means to further IWRM principles and improve the overall quality of water governance structures at all levels – societal, institutional, and individual. Integrated water resource management requires a minimal level of capacity at all levels, including that of decentralized local governments. Functional community-level capacity builds resilience to hazards, and facilitates the use of knowledge and technologies, innovation and education, thereby creating a culture of safety and resilience at all levels. In this regard, capacity building can a twofold process: 1) understanding the challenges and obstacles that prevent the people, organisations, or other elements of an institutional framework from fully realising their goals; and (2) finding the applicable mechanisms in overcoming these identified challenges and achieving better and more sustainable results.

Capacity building can therefore be delivered in two ways. First, it can aim at raising awareness on the holistic IWRM approach by providing some guidance on management instruments, institutional arrangements, and enabling environment, which is what this guide aims to achieve. Second, capacity building can also be thematic to focus on key critical challenges to water security and introduce dimensions of IWRM which can bring solutions to the specific issues. An example of this type of capacity building includes Eco-DRR through IWRM to reduce flood and gully erosion risks in disaster-prone communities.[47]

[47] UNEP (2016). *Applying ecosystem-based disaster risk reduction (Eco-DRR) in Integrated Water Resource Management (IWRM) in the Lukaya basin, Democratic Republic of the Congo*. Available at: River Partners: Applying Ecosystem-based Disaster Risk Reduction (Eco-DRR) in Integrated Water Resource Management (IWRM) in the Lukaya Basin, Democratic Republic of the Congo | UNEP - UN Environment Programme

# Part 4: Medium to Long-term interventions

Family in Sekong province, Lao PDR / UN-Habitat Lao PDR

## 4.1. Institutional Arrangements

Interdisciplinary nature of IWRM requires multiple institutional actors involved in the management of water resources, including citizens, organisations and private entities, to work with common purpose and direction. Therefore, good governance is necessary, with clear legal frameworks, comprehensive water policies, enforceable regulations, functional institutions, citizen-based/participatory mechanisms to enhance accountability, as well as strong interconnections between these entities. Considering the relative foreignness of the concept of IWRM in Lao PDR, making changes to the legal and institutional structure will take time. The following sections can be considered as a reference for medium to long-term interventions.

### 4.1.1. Regulations and Compliance

Regulations and compliance provide different organisations and actors with strategies and guidance to attain their mandates and goals. Regulation and enforcement of water resources can take different forms for both quantity and quality, while the functions of regulatory and compliance bodies can also be guided by a range of principles depending on their mandate. For example, if the mandate of the institution is to provide public water supplies, regulatory and compliance agencies need to be transparent in their decision-making processes, promote stakeholders' involvement, demonstrate accountability and be open to internal or external demands for institutional reform. One of the most important ideas behind the principles of regulation and compliance is that an institution cannot be the regulatory body for itself.[48]

**Impact Assessment Committees (IAC)** can be established as *ad hoc* organisation to ensure regulations and compliance in this regard. IACs to be independent and technically capable entities comprised of specialists, which usually lead to sub-contracting engineering consultancy firms, academics, and civil servants. Some infrastructure projects may be required by law to establish IACs, while it depends on the size and the anticipated environmental and socio-economic disruptions caused by the proposed project. The effectiveness of enforcement also depends on national policies around IWRM, roles and involvement of local-level authorities, and information provided by monitoring and evaluation.

### 4.1.2. Coordination and Facilitation

Coordination and facilitation play an important role in articulating and harmonising the actions and visions of the numerous entities concerned with IWRM. It is because socio-political structures are traditionally established according to specific institutional functions, while the nature of water issues is increasingly complex and requires multifaceted solutions. Strong coordination and facilitation therefore become crucial for the variety of concerned actors to share a vision and coordinate their actions to achieve a collective goal. Some examples of different entities are as follows[49]:

[48] Global Water Partnership (GWP) (2021). *What is the Network*. Available at: What is the Network? - GWP
[49] *Ibid.*

- **Transboundary organisation** such as MRC develops the confidence and experience to enable transboundary water resource management and collaboration by promoting common dataset and knowledge about the water resource issues and sharing visions about the future of the resource among the member states.
- **River Basin Organisations** (RBOs) are designed to help bring about IWRM and improve water governance in transboundary water basins. These organiations are becoming increasingly significant in all regions of the world. Historically, shared rivers were governed through treaties at the international level, or interagency compacts at local or state levels. These forums enable governments that share rivers to come together to coordinate activities, share information, and develop integrated management approaches. RBOs are the most common expressions of transboundary environmental/water governance.
- **National apex bodies:** consist of a range of entities such as high-level steering groups within national governments, inter-agency taskforces for specific purposes such as water pollution control, and international consortia for the management of water resources. They formulate a national roadmap or a nation-wide action plan, orient and facilitate reform processes and build discussion forums among relevant stakeholders and donors. In the context of Lao PDR, Sub-Sector Working Groups (SSWGs) are the key coordination platforms for social, economic and environmental thematic area of development in Lao PDR's Round Table Process. The Water Resource Sub-Sector Working Group is led by the Government and includes development partners, civil society organisations and representatives from the private sector.
- **Civil Society Organisations (CSOs):** can be a good platform where the public can become a central partner in IWRM. By effectively engaging with CSOs, the public can ensure that the needs of the population are transmitted to other relevant parties, especially to the government, and vice-versa. In Lao PDR, the role of civil society in the development of the country, while being supported at the broad policy level, is still being defined, and collaboration and implementation mechanisms are only at a very early stage of development.[50] As described by Delnoye, independent Lao CSOs are at an early stage of development. Before April 2009, local CSOs were registered through various *de facto* means, usually through a personal connection to a government line agency or technical department. These included commercial and professional associations, growers and producer groups, water users' associations and other Community-based Organisations, charity foundations, and a limited number of development associations.[51]
- **Water User Groups** in Lao PDR means any water user group established (whether or not established under law) to collectively manage the water resource allocated to a specific community. Considering community based IWRM, these groups are critical as they will be the primary implementors at the local level.

[50] Delnoye, R. (2010). *Survey on Civil Society Development in the Lao PDR: Current Practices and Potential for Future Growth*. Vientiane. SDC Mekong Region Working Paper Series. No. 2.

[51] ADB (2011). Civil Society Briefs. Lao People's Democratic Republic. Available at:https://www.adb.org/sites/default/files/publication/28968/csb-lao.pdf

Strengthening coordination, facilitation and information flows among these different agents can be challenging in any country. It may be helpful to establish a working group, for example, comprising of Government bodies at all levels, transboundary organisations, CSOs, expert groups, research institutes and universities to convene regular meetings to provide updates and jointly solve issues as they arise. The mechanisms of coordination and facilitation also need to be highly compatible with the legal frameworks that are currently in place, as well as the with policies for water and related resources.

## 4.2. Enabling Environment

A proper enabling environment establishes the rights and assets of all stakeholders, while ensuring for socioeconomic and environmental quality. The enabling environment therefore consists of policies, legislative frameworks, and financing and investment structures to achieve a sustainable balance between the social, economic, and environmental needs for water. It takes time and strong commitment by all Government bodies concerned and many other relevant actors to bring changes to enhance the enabling environment. This section will therefore briefly outline what it entails for future consideration.

### 4.2.1. Policies

Policy development gives an opportunity for setting national objectives for the management of water resources and water service delivery, water use, protection, and conservation. In this regard, every country should have a National Water Resources Policy with well-formulated set of goals and objectives for the management of water resources at the national scale. A national policy may include matters of jurisdiction and delegation, including the division of labour between the different levels of government (e.g. the extent of which management is decentralised or consolidated), the use of economic incentives, capacity building to meet institutional challenges, and monitoring and compliance system to reduce environmental degradation.[52] Whereas policies should aim for sustainable changes in the long run, reforms and restructurings may be incremental in recognition of changing political and resource priorities, as has been the case for Lao PDR. In a nutshell, sustainability of policies and space for flexibility are both important features of well-designed water policies.

### 4.2.2. Legal Frameworks

Legal and legislative frameworks are critical as they define and identify the legal rights and obligations of public and private water users and provide prescriptive parameters for resource development and management. Legal and legislative frameworks also ensure the continuous integrity of governance structures, mechanisms for monitoring, evaluation and facilitating compliance, dispute prevention, and settlement. Examples of the components of a national legal framework is provided below:

[52] *Ibid.*

**Table 2.** *Examples of components of a national legal framework on water governance (source: IUCN, 2009)*[53]

| Legal Instrument | Scope | Type of Regulation | Purpose |
|---|---|---|---|
| **National Constitution** | • Fundamental and organic law of a State<br>• It can provide the conception, principles, and general framework of the water policy | • Right to water<br>• Rights connected to water such as health and sanitation, environment, food and social security<br>• Establishment of specific framework principles | • Stable<br>• Ensures clarity and coordination between different governance levels<br>• Regulate the interface between customary and statutory law |
| **International Treaties** | • Agreement formally signed and ratified between sovereign states | • Water and diplomacy<br>• Regulation of States' rights and duties over shared freshwater resources | • Creates obligations for the signing parties which commonly have to be implemented through national legislation<br>• Definition of river basin, development of international law principles (e.g. equitable utilisation and the duty not to harm other States) |
| **National Laws** | • Set rules and principles crafting water policy as mandatory/obligatory terms<br>• Set out institutional framework for implementation | • Development of principles for IWRM and water management<br>• Rules on pollution, prevention and control<br>• Rules on water conservation | • General approach and country/state-wide application<br>• Can set a general framework to be completed afterwards, or be issue-specific (water, coasts, river basins) |
| **Bylaws and regulations** | • Rules that fulfill and execute provisions contained in water and related laws<br>• Issued normally by the executive represented by an administrative agency | • Environmental flows<br>• Groundwater abstraction limits<br>• Pollution limits<br>• Irrigation quotas | • Issue-specific<br>• Easier to adopt/change than laws |
| **Customary Law** | • Practices and customs accepted as obligatory rules | • Non-written/not available in every country<br>• Rules about use, conservation and management of water by different users | • Recognition of customs and traditional practices in the management, use and conservation of water resources<br>• Practices and beliefs that are a vital part of social and economic systems |

[53] IUCN (2009). *Rule: Reforming water governance.*

### 4.2.3. Financing and Investment Structures

Effective investment and financing structures are required to allocate adequate financial resources to meet increasing water needs including for the newly formed institutions. Water projects tend to be indivisible and capital-intensive, often requiring construction of large-scale infrastructure, which makes it difficult to attract funding compared to other sectors such as such as transport, telecommunications, energy, or power. Thus, countries need strategic national and international financing approaches and appropriate incentives to achieve development goals.

**Strategic Financial Planning (SFP)** for water is one of the commonly recognised approaches that matches national water policy to availability of local resources, capacity, and finance.[54] SFP brings planning and financing – which are typically done separately – onto convergent tracks, so that spending ambitions are more compatible and realistic with available financial resources. Conversely, financing strategies can be tailored to what is actually needed, which improves the prospects of getting funding from external donors.

SFP would normally have the following elements[55]:

- **Scenarios** (10-20 years or even longer) of investment and service plans for the sub-sector (e.g. water supply and sanitation, irrigation, wastewater), including estimated costs for capital investment and recurrent Operation and Maintenance (O&M);
- **Projections** of feasible sources of finance for both the initial capital investment and the recurrent costs of operating services, including cost recovery from tariffs and other user charges, subsidies from government budgets, loans from International Financing Institutions (IFIs) and other sources;
- **Comparisons** of financial requirements implied by the above scenarios with the projections of finance likely to be available; and
- **Iteration** in the event of a financing gap, to match the compatibility of the spending and financing scenarios. For example, spending plans would be adjusted to make them more realistic by adopting less ambitious targets, while more rigorous assumptions, such as higher tariffs, increased loans from IFIs, would be made about financing sources.

[54] Global Water Partnership (GWP) (2021). *What is the Network*. Available at: What is the Network? - GWP
[55] *Ibid.*

Another globally accepted consensus is that water is paid for by tariffs from water users, subsidies from national taxpayers, or through grants/transfers from external sources such as IFIs. These three sources make up the basic revenues, known as the **"3Ts" approach**, as elaborated below[56]:

1. **Tariff revenue:** Tariff revenue is the foundation of cash flows for household, commercial and industrial water services, and is normally the main source of funding for recurrent O&M expenses. In sizeable urban areas, tariff revenues from user charges should contribute to recovering investment costs, while affordability is an important issue. Some countries frown on charging for water, while others provide water for free based on the human rights to water approach or cover the water bills of low-income households from social security payments or through subsidies.
2. **Tax-funded subsidies:** Tax-funded subsidiaries are often based on political decisions targeted at funding specific purposes or to support specific groups of deserving consumers, to reward actions that promote water security and mitigate the impacts of policies, which are often unfavourable for the poor and other underprivileged groups. For example, tax-funded subsidies are used to promote water efficiency by households, farmers or companies by subsidised loans or product prices for conversion to improved practices such as drip irrigation.
3. **Transfers:** Transfers usually originate from external Official Development Aid (ODA), which is often supplemented by contributions by IFIs or bilateral donors. In many developing counties, including Lao PDR, ODA is crucial for not only funding capital investment in the water sector but also channelling through national budgets to support recurrent costs. However, ODA remains controversial as many donors tend to be selective and make short-term commitments when there is a significant lack of technical capacity and more long-term commitments are needed to ensure sustainability of the project.

[56] *Ibid.*

# References


ADB (2011). Civil Society Briefs. Lao People's Democratic Republic. Available at: https://www.adb.org/sites/default/files/publication/28968/csb-lao.pdf

ADB (2014). *Lao People's Democratic Republic: National Integrated Water Resources Management Support Project*. Available at: https://www.adb.org/sites/default/files/project-document/189960/43114-012-tacr-02.pdf

AHA Centre (14 October 2019) Situation Update: Tropical Storm Podul and Tropical Depression Kajiki MONRE (2015). Water Resources Management in Lao PDR.

Day, S. (2009). *Community based water resources management*, in Waterlines Vol. 28, January 2009. Available at: https://www.ircwash.org/sites/default/files/Day-2009-Community.pdf

Delnoye, R. (2010). Survey on Civil Society Development in the Lao PDR: Current Practices and Potential for Future Growth. Vientiane. SDC Mekong Region Working Paper Series. No. 2

García, S. (2008). *Analysis of water decentralization in El Salvador: Community sustainability model of rural potable water systems*. Available at : https://www.gwp.org/globalassets/global/toolbox/case-studies/americas-and-caribbean/el-salvador.-analysis-of-water-decentralization-131.pdf

Global Water Partnership (GWP) (2021). *What is the Network*. Available at: https://www.gwp.org/en/About/who/What-is-the-network/

He, F.; Zhu, H.; Jiang, J. (2020). Chapter 13 - An exploration of China's practices in water conservation and water resources management, in *Water Conservation and Wastewater Treatment in BRICS Nations*. Technologies, Challenges, Strategies and Policies.

International Water Association (website). *Integrated Water Resources Management: Basic Concepts*. Available at: https://www.iwapublishing.com/news/integrated-water-resources-management-basic-concepts

ICLEI (2008). Part III Engaging in IWRM – Practical Steps and Tools for Local Government, in *Local Government and Integrated Water Resources Management (IWRM)*. ICLEI Africa Secretariat.

Institution of Civil Engineers (the), Oxfam GB and WaterAid. (2011). *Managing water locally: An essential dimension of community water development*. Available at: https://oxfamilibrary.openrepository.com/bitstream/handle/10546/165794/bk-managing-water-locally-091111-en.PDF;jsessionid=BA2A5AED9487EF7A74A9F130A43FB864?sequence=1

IUCN (2009). *Rule: Reforming water governance.*

IUCN & Oxfam (2018). *Gender and Water Governance in the Mekong Region.*

Langendijk, W. & Brakel, G. (2013). *Water for the Maasai*, Kenya Case #140. GWP. Available at : https://www.gwp.org/globalassets/global/toolbox/case-studies/africa/kenya.-water-for-the-maasai-140.pdf

Lefevre, A. S. (18 August 2013). *Floods in Laos kill 20, damage rice crops*, Reuters. Available at: https://www.reuters.com/article/us-Lao%20PDR-floods/floods-in-Lao%20PDR-kill-20-damage-rice-crops-idUSBRE97R0BB20130828

McCartney, M. & Brunner, J. (2021). *Improved water management is central to solving the water-energy-food trilemma in Lao PDR*, International Journal of Water Resources Development, 37:4, 619-639.

Moriarty, P., Batchelor, C., Laban, P., Fahmy, H. (2010). Developing a Practical Approach to 'Light IWRM' in the Middle East. Water Alternatives 3. Available at: https://www.researchgate.net/publication/41391446_Developing_a_Practical_Approach_to_'Light_IWRM'_in_the_Middle_East

MONRE (2015). *Water Resources Management in Lao PDR.*

OXFAM (2009). *Introduction to Community-Based Water Resource Management: A Learning Companion*. Available at: https://www.oxfamwash.org/water/cbwrm/Oxfam%20CBWRM%20Companion,%202009.pdf

Phonechaleun, N. & Souvannalath, S. (2004). *People-centred approaches to water and environmental sanitation: Water resources management in Lao PDR*. 30th WEDC International Conference, Vientiane, Lao PDR.

Poricha, B., & Dasgupta, B. (2011). *Equity and access: community-based water management in urban poor communities: an Indian case study*, in WIT Transactions on Ecology and the Environment, 153, 275-285.

Reid H., et al. (2009). Community-based Adaptation to Climate Change: An Overview, in Community-based Adaptation to Climate Change, Participatory Learning and Action (PLA) Series, no. 60, International Institute for Environment and Development, 11-33.

Reid, H., (2016) Ecosystem- and community-based adaptation: learning from community-based natural resource management, Climate and Development, 8:1, 4-9.

Sanitation and water for all (2019). *Lao PDR country brief, Sector Ministers' meeting 2019*. Available at: https://www.sanitationandwaterforall.org/sites/default/files/migrate_default_content_files/Laos_Country_Brief.pdf

SIWI (2022). *Accountability in Water Resources Management.*

UN Waters (2018). *High-level political forum on sustainable development.*

UNDP-SIWI Water Governance Facility & UNICEF (2015). *WASH and Accountability: Explaining the Concept. Accountability for Sustainability Partnership*: UNDP-SIWI Water Governance Facility and UNICEF. Stockholm

UNEP (2016). *Applying ecosystem-based disaster risk reduction (Eco-DRR) in Integrated Water Resource Management (IWRM) in the Lukaya basin, Democratic Republic of the Congo*. Available at: https://www.unep.org/resources/report/river-partners-applying-ecosystem-based-disaster-risk-reduction-eco-drr-integrated

UNEP (2021). *Progress on Integrated Water Resources Management. Tracking SDG 6 series: global indicator 6.5.1 updates and acceleration needs*

UNESCO (2009). *Integrated Water Resources Management in Action*, Dialogue Paper.

UNESCO (2021). *Valuing Water*, The United Nations World Water Development Report.

UNICEF (2019). *Water, Sanitation & Hygiene and Climate Change Resilience: Safe water, sanitation and good hygiene practices*, UNICEF Lao PDR. Available at: https://www.unicef.org/laos/water-sanitation-hygiene-and-climate-change-resilience

UN-Habitat (2020). *Urbanisation: A Rapidly Emerging Development Issue for Lao PDR.*

UN-Habitat (2020). *Climate Change, Vulnerability and Risk.*

UN-Habitat (2021). *Climate Community Based Vulnerability Assessment and Action Planning*, UN-Habitat Lao PDR.

WaterAid (2011). *Water resource management: Integrated planning and management at community level.* Available at: https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/water%20resource%20management%20integrated%20planning%20and%20management%20at%20community%20training%20manual.pdf

Water Resources Coordination Committee Secretariat (2003). *Integrated Water Resources Management in Lao PDR.*

WHO (25th October 2021). *Connecting communities in Lao PDR for better health during COVID-19 and beyond.* Available at: https://www.who.int/laos/news/feature-stories/detail/connecting-communities-in-lao-pdr-for-better-health-during-covid-19-and-beyond

World Bank (2017). *Lao People's Democratic Republic - First Phase of Mekong Integrated Water Resources Management Project*. Project Appraisal Document 2093.

World Bank (2017). *Water Resources Management*. Available at: https://www.worldbank.org/en/topic/waterresourcesmanagement#1

World Bank (2019). *People using safely managed drinking water services*. Available at: https://data.worldbank.org/indicator/SH.H2O.SMDW.ZS

World Bank and Asian Development Bank. (2021). *Climate risk country profile: Lao PDR.* https://www.adb.org/sites/default/files/publication/709846/climate-risk-country-profile-lao-pdr.pdf

# ANNEX 1: IWRM Projects in Lao PDR

In Lao PDR, there are many major recent and ongoing IWRM projects supported by international and multinational organisations, as well as bilateral donors, mainly at national and basin levels. One of the latest examples is "Mekong Integrated Water Resources Management Project of Lao People's Democratic Republic (2012-2021)", which is a US$ 51 million project supported by the World Bank in partnership with the Mekong River Commission (MRC), the Ministry of Natural Resources and Environment (MoNRE), and the Ministry of Agriculture and Forestry. The project aims at improving water resource and fisheries management in selected areas of the Lower Mekong Basin, including Vientiane, Khammouane, Savannakhet, Champassak, and Attapeu. Three main components of the project are: 1) support the MRC facilitate IWRM dialogue with neighbouring Mekong Basin countries and establish environmental impact risk and disaster risk assessments at the national level; 2) strengthen the institutional and technical capacity through law and regulation, water quality and aquatic ecosystem monitoring, and water resource analysis; and 3) improve the management of key river basins through sustainable irrigation, flood, and fisheries management.[57]

MRC also implemented some bilateral transboundary projects in recent years. The "Mekong and Sekong Rivers Fisheries Management Project (2014-2019)" aimed at improving fisheries management in the bordering provinces of Stung Treng and Kratie in Cambodia and Champasak and Attapeu in Lao PDR by establishing a joint fishery monitoring system and management action plan. The "Xe Bang Hieng and Nam Nam River Basins Wetland Management Project (2013-2018)" fostered knowledge sharing and community-level learning to improve wetland management in Xe Bang Hieng in Lao PDR and Nam Kam River basins in Thailand. These projects are the products of the **Mekong IWRM Project (M-IWRMP)** established in 2009 to promote more coordinated IWRM practices in planning and management, use of technical tools on water use planning, data sharing and flow monitoring among the member countries. M-IWRMP has so far implemented five bilateral transboundary projects, two of which focused on Lao PDR.

the National Integrated Water Resources Management Support Program (NIWRMSP) was implemented from 2011 to 2015 with the support of the Asian Development Bank (ADB), and the Governments of Australia and Spain. The project developed appropriate institutional arrangements in Lao PDR based on local conditions in selected pilot river basins, intending to integrate river basin plans into government planning and investment decisions.[58]

UNDP in cooperation with the Department of Water Resources, MONRE, is implementing the 'Integrated Water Resource Management and Ecosystem-based Adaptation (EbA) in the Xe Bang Hieng River Basin and Luang Prabang City' project, funded by GEF ($5,000,000). This four-year project (2021-2024) aims to promote integrated management of sites in the Mekong River Basin for increased climate resilience of communities vulnerable to floods and droughts in Savannakhet Province and Luang Prabang. The objective will be achieved through three inter-related components which will: i) develop national and provincial capacities for Integrated Catchment Management (ICM) and integrated urban Ecosystem-based Adaptation (EbA) for climate risk reduction ; ii) implement EbA interventions within this ICM framework, with supporting protective infrastructure and livelihood enhancement; and iii) promote knowledge management and monitoring and evaluation (M&E), to ensure that the lessons learned and best practices for ICM, flood management and EbA are collected and disseminated to inform the upscaling of these interventions across Lao PDR.

[57] World Bank (2017). *Lao People's Democratic Republic - First Phase of Mekong Integrated Water Resources Management Project*.
[58] ADB (2014). *Lao People's Democratic Republic: National Integrated Water Resources Management Support Project*.

UN HABITAT
FOR A BETTER URBAN FUTURE



**Prepared by UN-Habitat Lao PDR**

3rd Floor, UN House, Lang Xang
Avenue P.O. Box 345, Vientiane,
Lao PDR
Tel: +856 (0) 21 267 777