



Climate Resilient WASH

Importance of finance and monitoring

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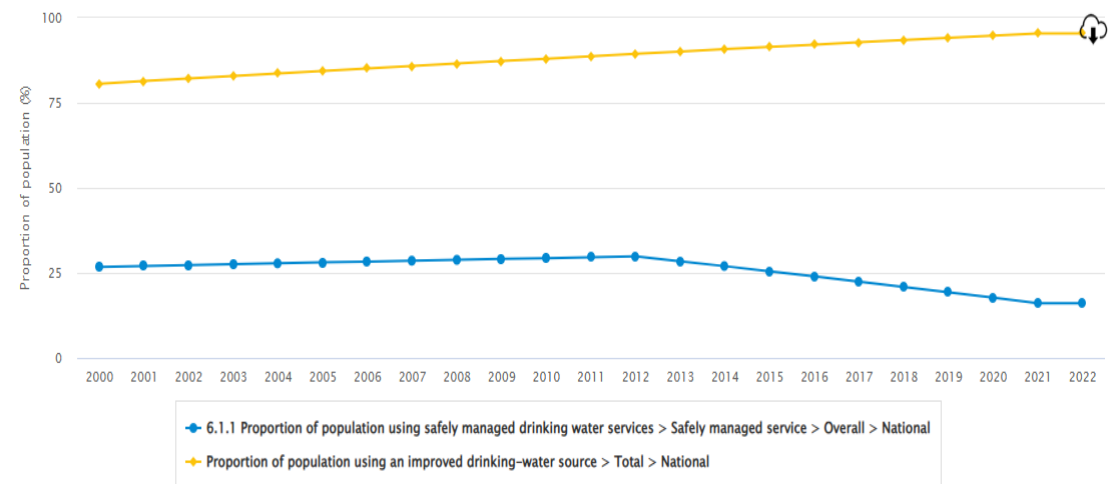
Nepal has made significant progress in access to water and sanitation services

Progress on SDG 6.1 – Drinking Water

Access to basic services has improved over time. **However, only 16% have access to safely managed water services.**

Drinking water

6.1.1 Proportion of population using safely managed drinking water services in Nepal, progress over time ⓘ



Data provider: WHO, UNICEF

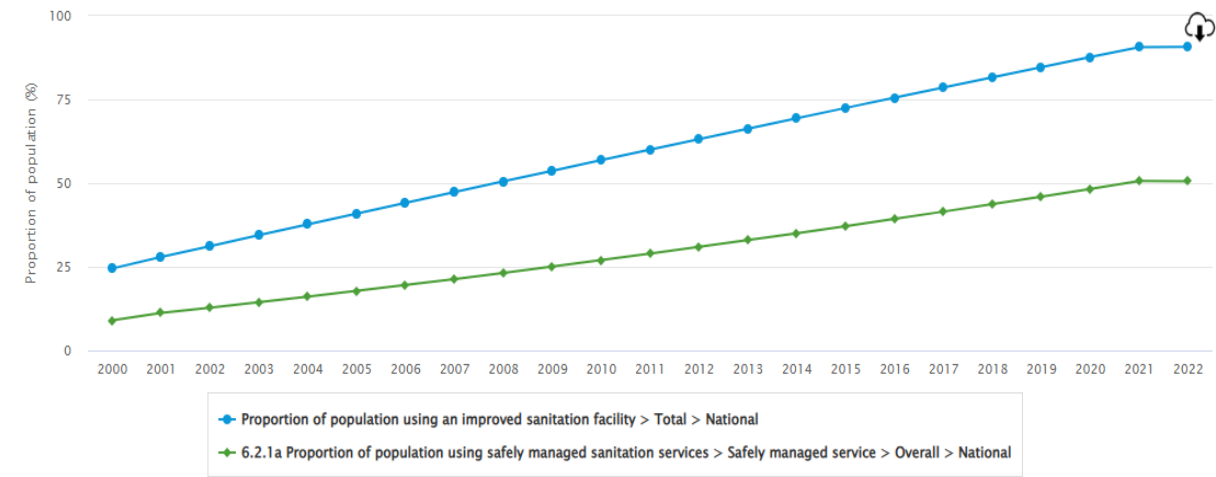
Progress on SDG 6.2 – Sanitation and hygiene

Nepal made impressive progress in eliminating open defecation and was **declared ODF in 2019.**

As per JMP (2022), ~50% population using improved sanitation facilities

Sanitation and hygiene

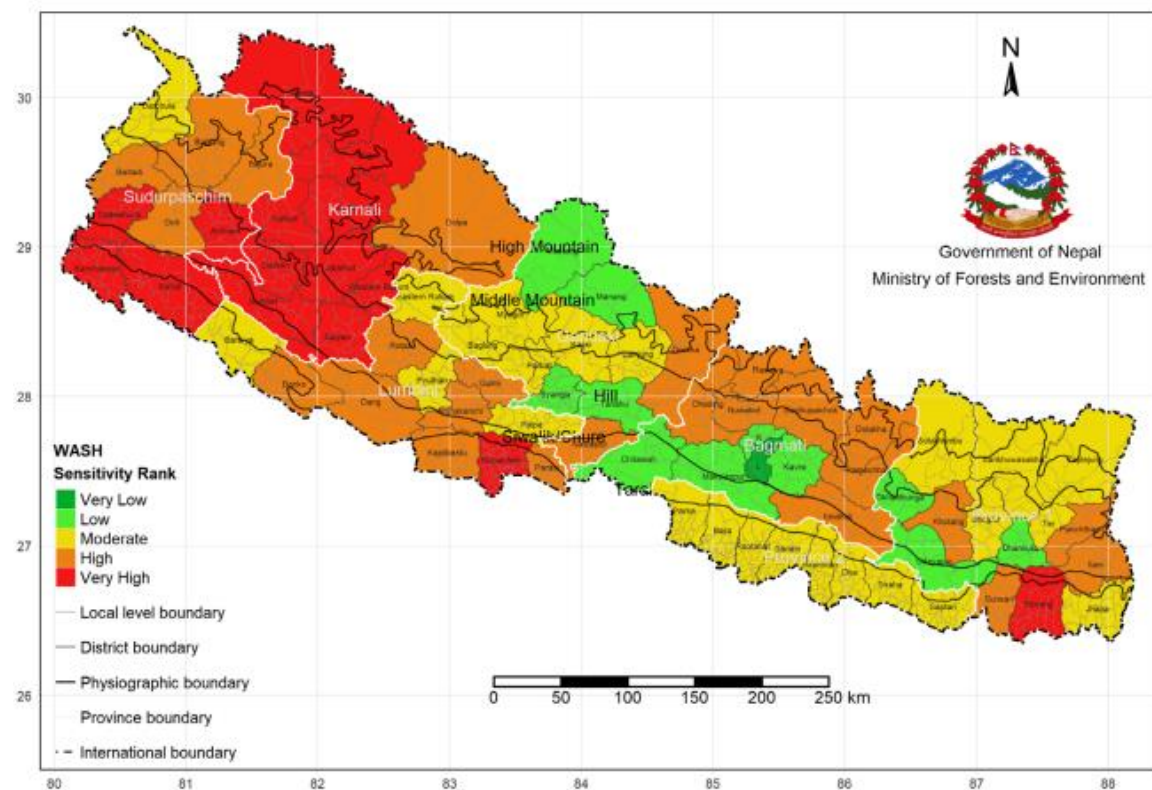
6.2.1a Proportion of population using safely managed sanitation services in Nepal, progress over time ⓘ



Data provider: WHO, UNICEF

Nepal is highly vulnerable to climate change and its impact on WASH

Nepal ranks as the 9th most-affected country impacted by climate-related extreme weather events on the Global Climate Risk Index (CRI) scale (Climate Transparency, 2020)



District level vulnerability in WASH sector

October floods and landslides disrupt water supply in Bajhang

Around 20,000 families are left without safe drinking water, which could lead to outbreak of diseases.



Over 60 water supply projects in Khatpat Chhanna Rural Municipality were affected.

Climate Change Amplified the Effects of Extreme Rainfall in Nepal

A new study indicates that rapid urbanization and deforestation also contributed to devastation caused by floods and landslides in 2024.



The city of Lalitpur, Nepal, was one of many affected by flooding associated with extreme monsoon rainfall in September 2024. Credit: iStock.com/JP. /istock

Nepal villages cope with climate-induced floods

Between droughts and deluges

Nepal has often witnessed deluges, unseasonal flash floods and landslides, long droughts and avalanches.



Farmers in the Nepal Tarai displaced by floods return, preparing their villages for the next disaster

It may not be enough to provide WASH infrastructure!

They need to be climate resilient to ensure reliable service provision during climatic shocks



**Building climate
resilient WASH
systems**



**Ensure functional
sustainability of
service delivery**



**Supported by
financing and
monitoring systems**

Measures for climate resilient WASH across the service chain



**DESIGN CLIMATE-RESILIENT INFRASTRUCTURE
TO WITHSTAND EXTREME WEATHER**



**FOCUS ON SERVICE DELIVERY
DURING CLIMATE EMERGENCY**



**IMPROVE EARLY
WARNING SYSTEMS**



**PROMOTE DECENTRALISED SYSTEM - RENEWABLE
ENERGY SOURCES ACROSS WASH OPERATIONS**

Selected
actions
as example

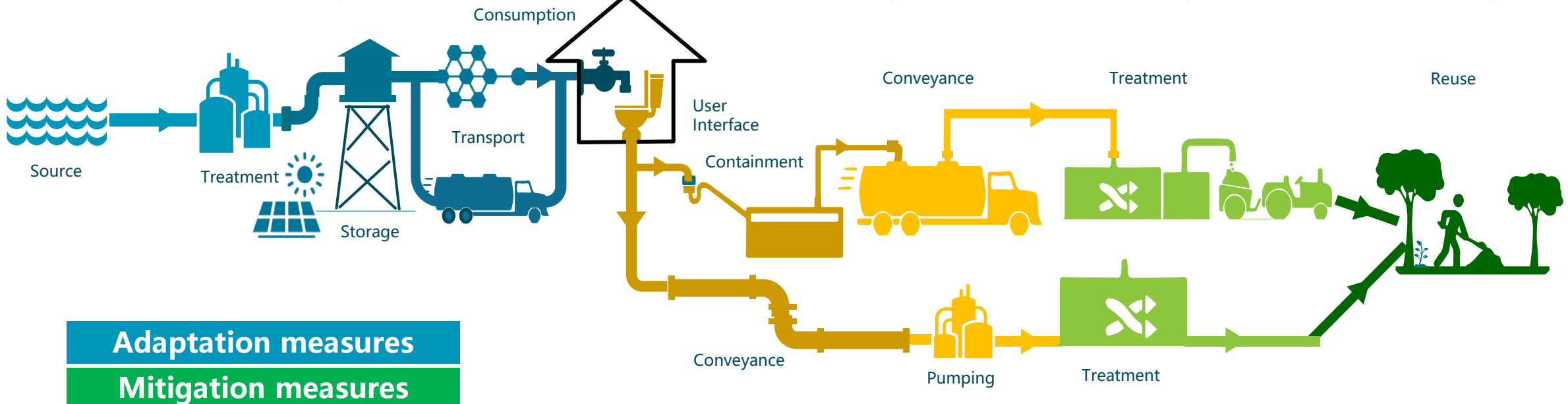
**Water source protection
and management
measures**

**Last mile
connectivity –
Access to water and
toilet at home**

**Reliable service
delivery for sanitation
and waste
management**

**Climate proof treatment
systems including methane
abatement measures**

**Promote reuse and
recycling – Urban forest**





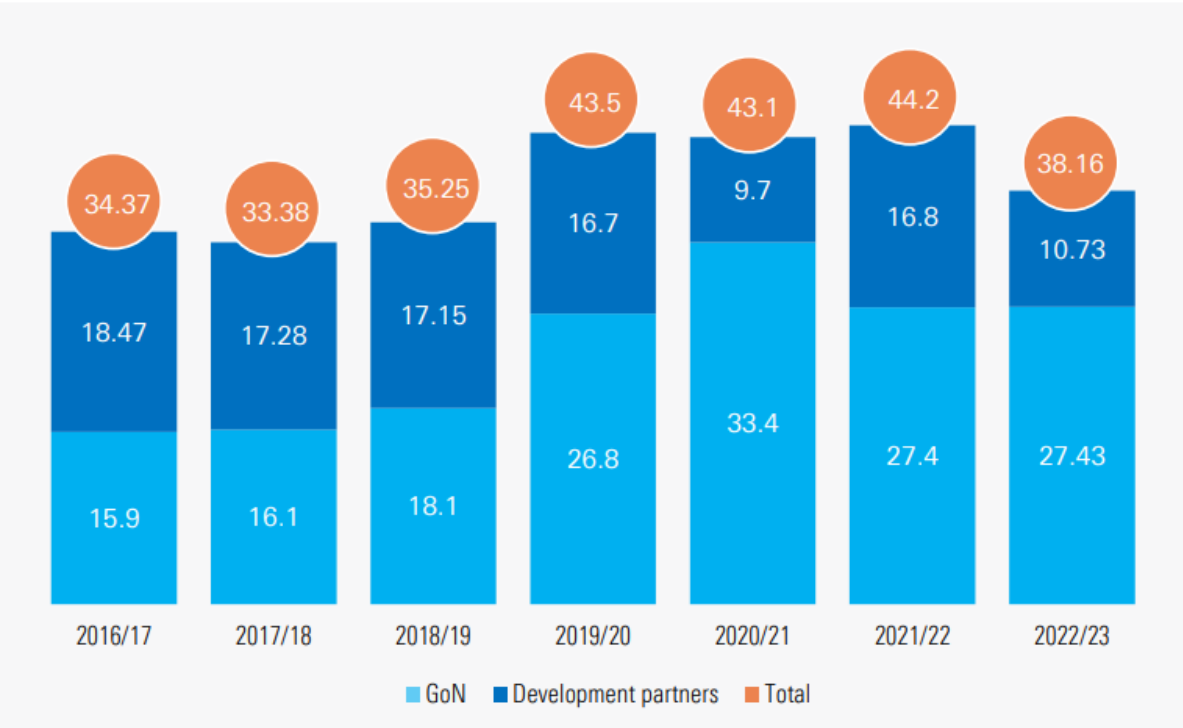
Financing climate resilient WASH

Picture Source: <https://development.asia/insight/investments-wash-can-help-nepal-reduce-climate-health-risks>

Nepal WASH financing requirements

SDG Targets: Draft WASH Sector Development Plan of Nepal has estimated a requirement of **NPR 1,641 billion**, excluding user’s contribution to meet SDG targets on WASH by 2030.

FIGURE 1: WASH budget allocations from the federal tier of government, FYs 2016/17–2022/23



- There is **shortfall of NPR 886 billion (USD 8 billion) as per MoWSS, 2018** to achieve SDG 6 target of achieving safe water and sanitation for all by 2030.
- There has been a **decline in allocations of GoN** federal budget to the WASH sector since 2019/20.

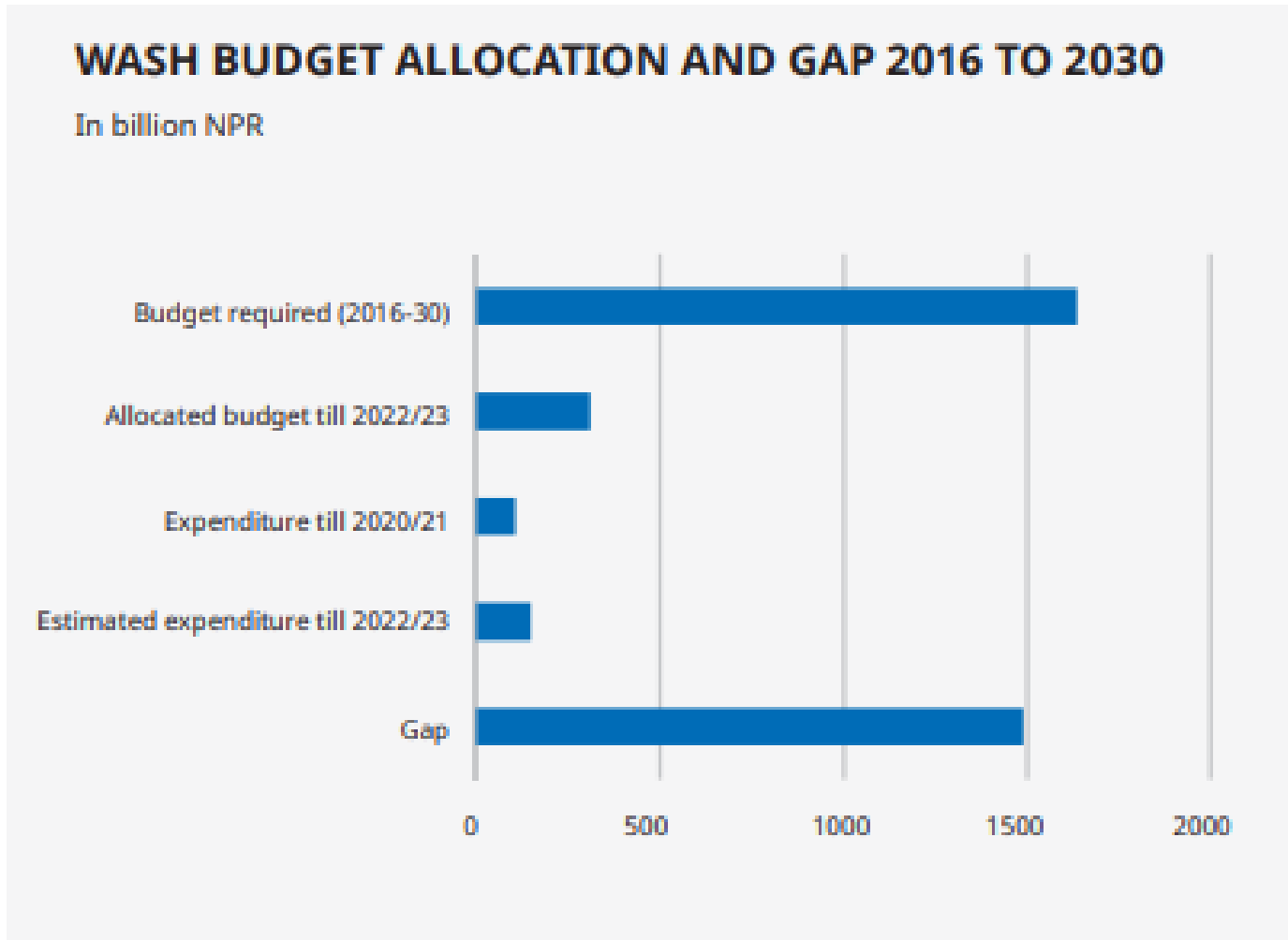
TABLE 1: WASH allocations in comparison to allocations to other social sectors, as % GDP (2018–2022)

FY	Social Protection	Education	Health	WASH
2018/19	3.41	3.48	1.69	0.91
2019/20	3.22	4.02	1.96	1.12
2020/21	3.71	4.03	2.51	1.01
2021/22	3.91	3.71	2.92	0.91
2022/23	3.68	3.56	2.23	0.69

Source: MoF Redbook (various years), NRB (2022), and WaterAid (2023)

Source: <https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/financing-factsheet-for-wash-in-nepal-2019-20.pdf>; https://clearinghouse.unicef.org/sites/ch/files/ch/sites-PD-WASH-WASH%20Knowledge%20unicef-Nepal%20WASH%20Budget%20Brief%202024_Sneha%20Pradhananga-4.0.pdf

WASH Budget Gap for Nepal



WASH Budget Gap of **NPR 1500 Billion till 2030** in Nepal

The climate resilient systems will need additional funds

How can this funding gap be met?

Source: WASH FINANCING IN NEPAL 2022/23 CONTEXT: SEVEN YEARS TO SDGs 2030; https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/financing-factsheets-for-wash-in-nepal-2022-23_0.pdf

Financing mechanisms for climate resilient WASH

Public sector Financing

- National budget allocations through Ministry of Water Supply
- Local government WASH funds
- National development banks
- National climate funds

International climate funds

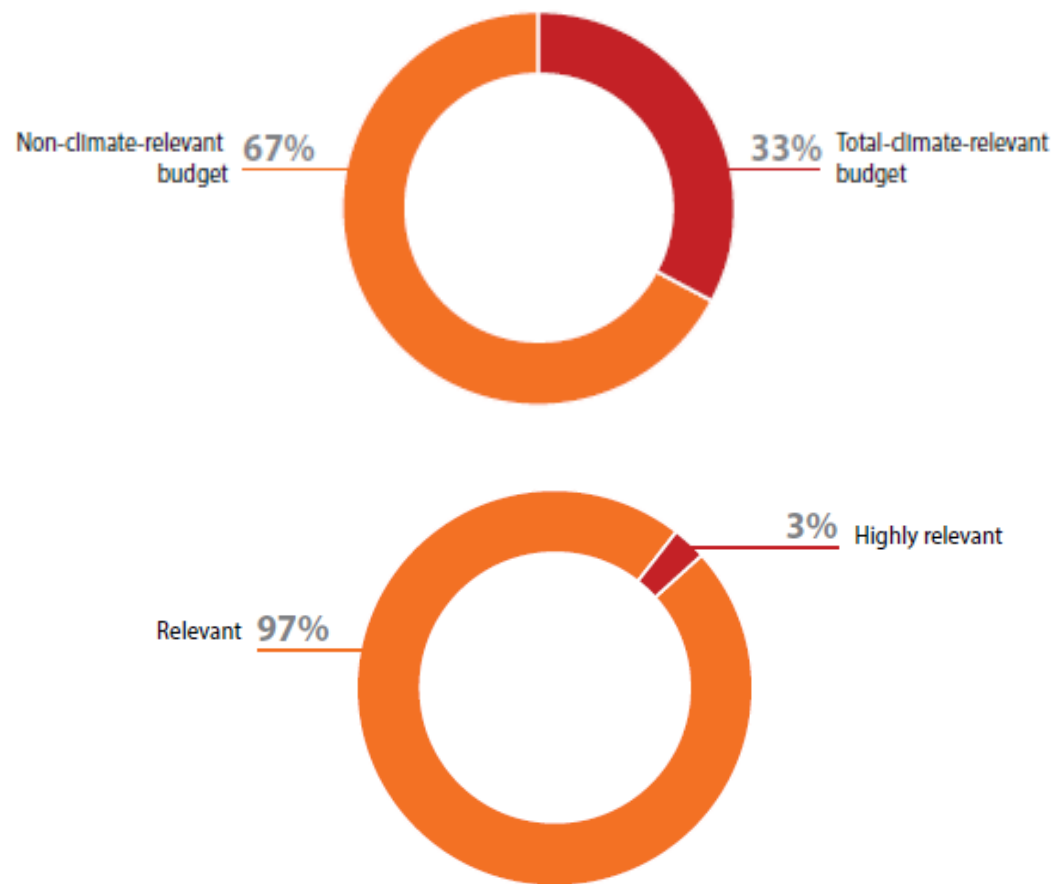
- Climate funds (Green Climate Fund, Adaptation Fund)
- Multilateral and bilateral funds (World Bank, ADB)

Innovative financing options

- Microfinance for household WASH solutions
- Green bonds/ municipal bonds
- Blended finance

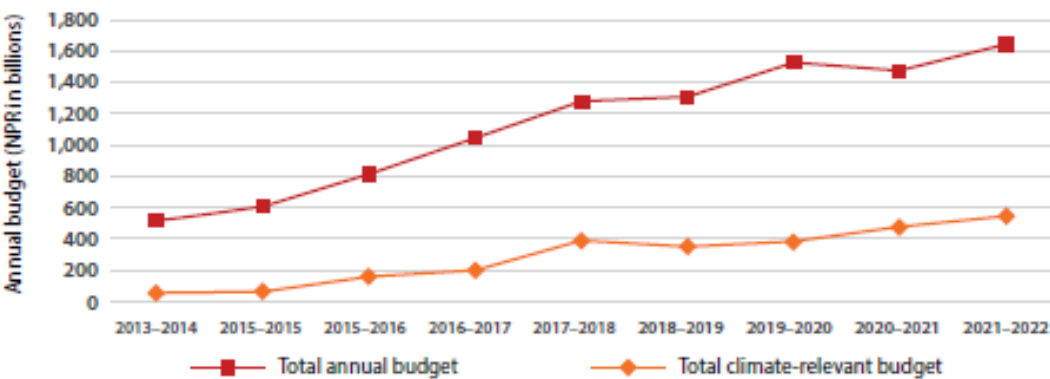
Increase public spending on climate finance

Allocation of climate-relevant budget in Nepal in 2021–22



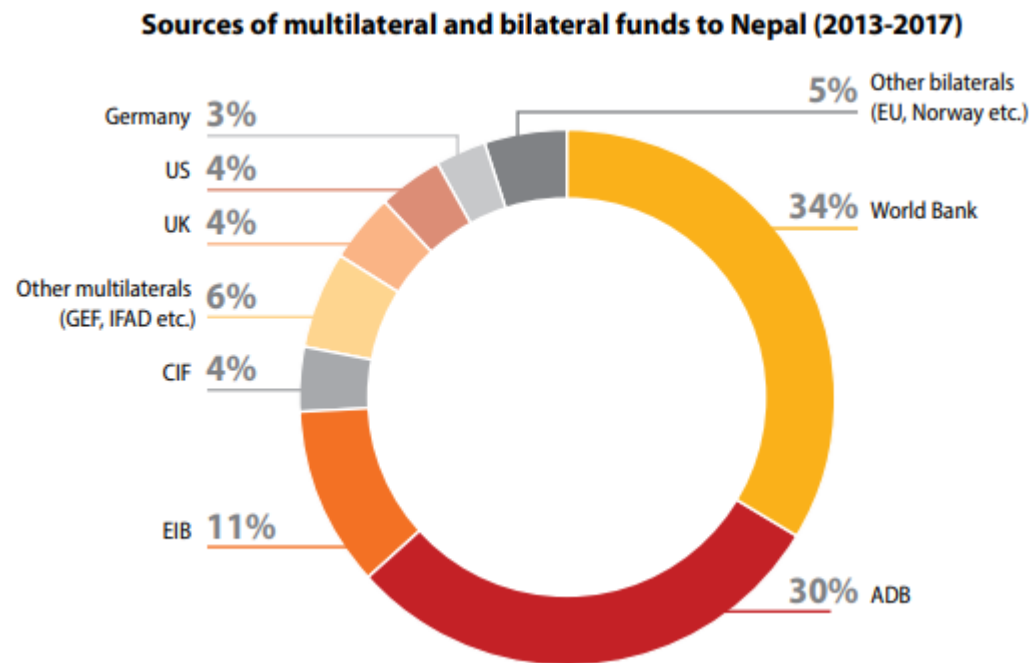
Highly-relevant', indicate that the projects and programmes will spend more than 60% of the total budget allocation on climate-related activities

Allocation of climate-relevant budget from 2013–2021 in Nepal



Almost 32% of the climate change budget is allocated to local and provincial governments

International climate funds in Nepal (1/2)



World Bank (WB) and the Asian Development Bank (ADB) are the two largest donors of Nepal’s climate finance projects

 **WORLD BANK GROUP**

[Trending Data](#) | [Around 700M live on less than \\$2.15 daily, the extreme poverty line](#)

[Who We Are](#) / [News](#)






PRESS RELEASE | AUGUST 29, 2022


Nepal and World Bank Sign \$100 Million Financing Agreement to Support Nepal’s Green, Resilient, and Inclusive Development

Nepal secures \$288M from ADB for climate resilience

The ADB funding aims to bolster green growth, and drinking water security.

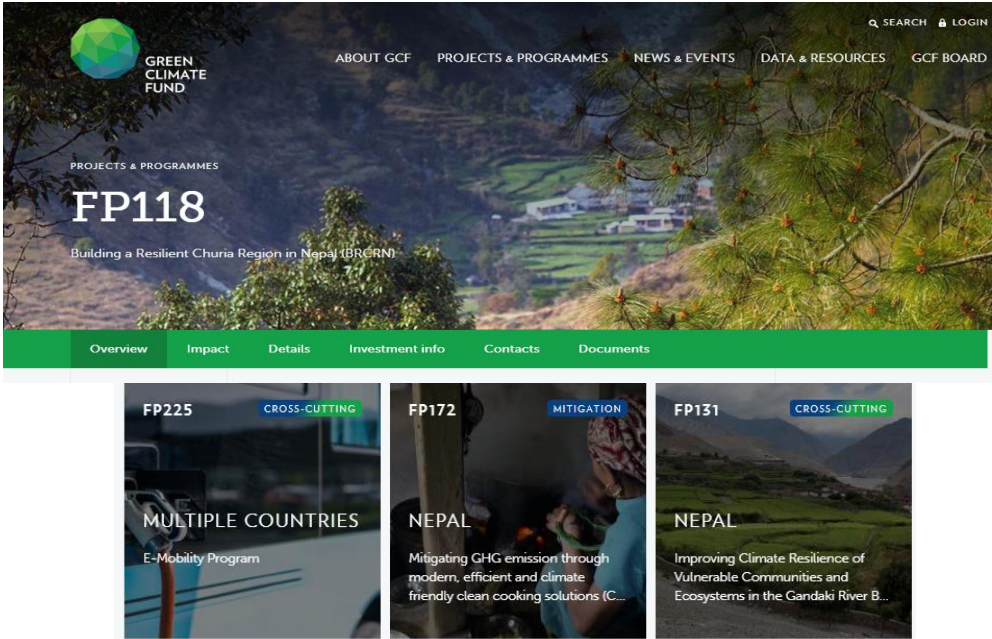
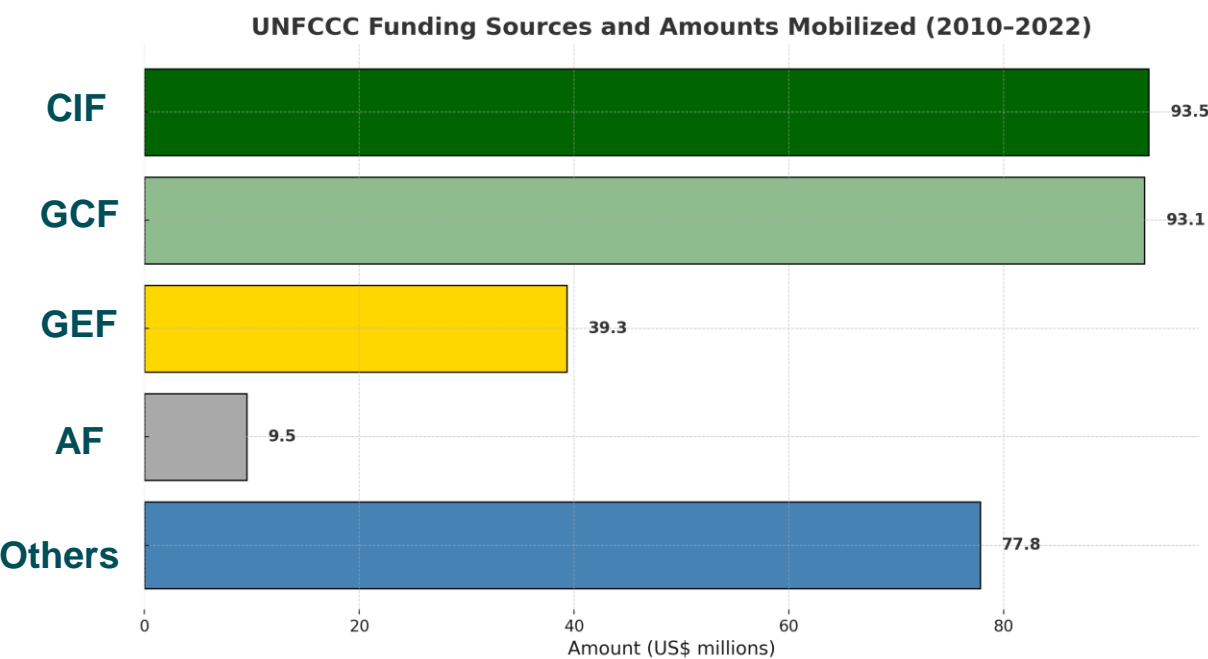
THEPRINT TEAM 14 November, 2024 02:48 pm IST

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International climate funds in Nepal (2/2)

Nepal is currently receiving climate funds from the Adaptation Fund (AF), Global Environmental Facility (GEF) and Green Climate Fund (GCF), which all serve as climate financing mechanisms under UNFCCC.



ADB project to strengthen climate resilience and water management

Climate-Resilient Landscapes and Livelihoods Project (2024)

ADB Funding
\$ 30 million

Grant
\$ 20 mn

Loan
\$ 10 mn

- 24 municipalities of Karnali and Sudurpashchim provinces
- To prepare catchment management plans to ensure effective water resources management and water security.

Project components



Small-scale gravity fed drinking water systems



Water and soil conservation measures



Soil erosion, surface runoff control, and infiltration structures



Slope and stream bank stabilization



Land cover improvements including agroforestry

Nepal recently launched first green bond for sustainable growth

💰 **\$60 million** investment in sustainable projects

🏢 **Issuer:** NMB Bank Investment

Lead Investors: International Finance Corporation (IFC), British International Investment (BII), and MetLife

Significance: First green bond and first private placement by international investors for a local issuer in Nepal



🌱 Focus on **green economy**: electric vehicles and solar energy

👤💼 **8,000+ jobs** expected over 5 years

This green bond issuance marks a significant step in Nepal's commitment to sustainable development and showcases the potential of green finance in emerging markets.

Green, Resilient, and Inclusive Development (GRID) Program for Nepal

💰 **\$288 million** investment by ADB for making Nepal green, resilient, and inclusive and to address risks due to climate change and geophysical events.

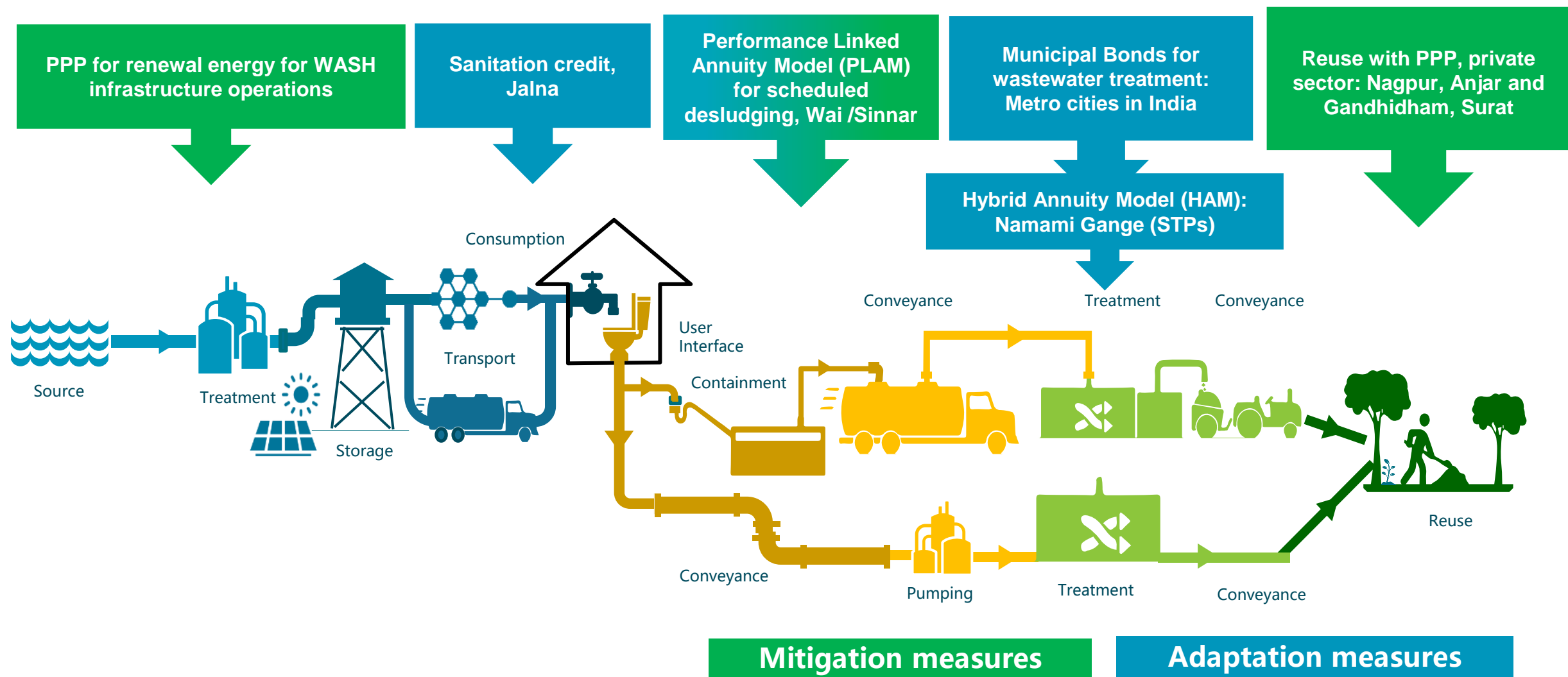
- **Policy loan under the Green, Resilient, and Inclusive Development (GRID) Program** to conserve nature, climate adaptation, resilience, disaster risk management, and gender and social inclusion at scale
- **The Kathmandu Valley Water Supply Improvement Project:** Construct climate- and disaster-resilient urban water supply infrastructure and strengthen systems to deliver year-round potable water supply to the Kathmandu Valley.

🌱 Focus on **green and climate resilient project through asset modernization and promoting IT enabled monitoring system**



Source; eqmagpro.com/adb-financing-to-promote-green-development-drinking-water-security-in-nepal-eq/?utm_source=chatgpt.com

Blended Finance for climate resilient WASH across the service chain



Nepal requires scaled-up, predictable and sustained international climate finance backed by earmarking of green funding under fiscal decentralisation

Table 7: Climate Finance for Nepal 2021-2030 (Needs vs. Pledges)

Target (USD in billions)	Pledges from IDPs (USD in billions)	GRID (USD in billions)	UNFCCC Window (USD in billions)	Potential from International Climate Window (USD in billions)	Nepal's Private Sector (USD in billions)	GoN (Projected) (USD in billions)	Gap (USD in billions)
46	5.167	4.191	0.53	1.31	0.22	8.6	25.982
	11.2 %	9.1%	1.2%	2.8%	0.5%	18.7%	56.5%

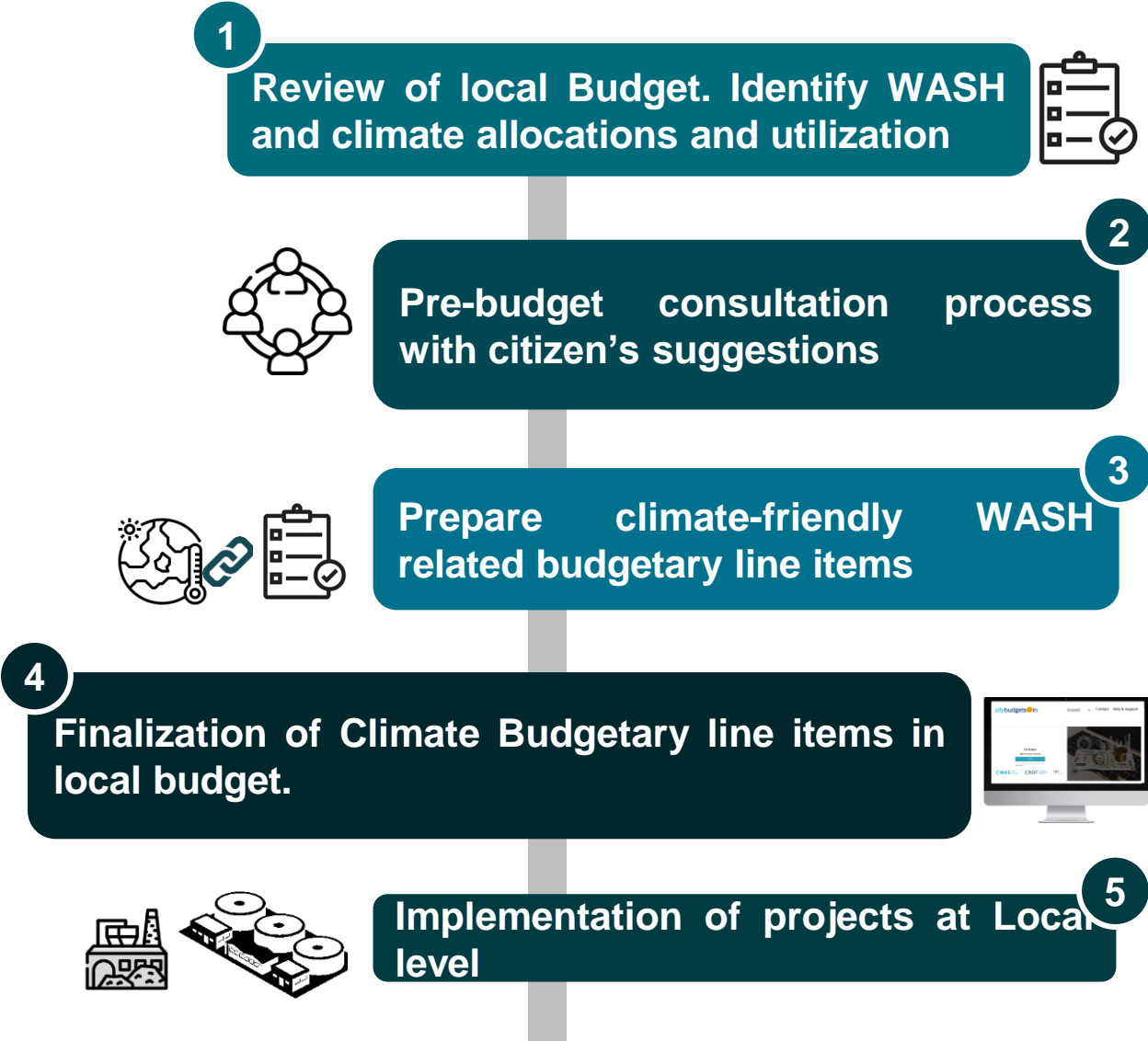
Earmarking of green funding under fiscal decentralisation

- Share of IGT from GoN to local government is NPR 283 billion for 2021-22, i.e ten times the budget of MoWS i.e. NPR 25 billion.
Need to explore possible fiscal incentives earmarked for green finance for local government to promote climate resilient finance for WASH

Need to ensure climate analysis in local budgets



Key step towards green climate finance



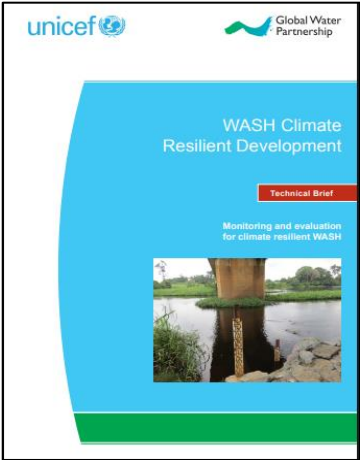


Monitoring systems for climate resilient WASH

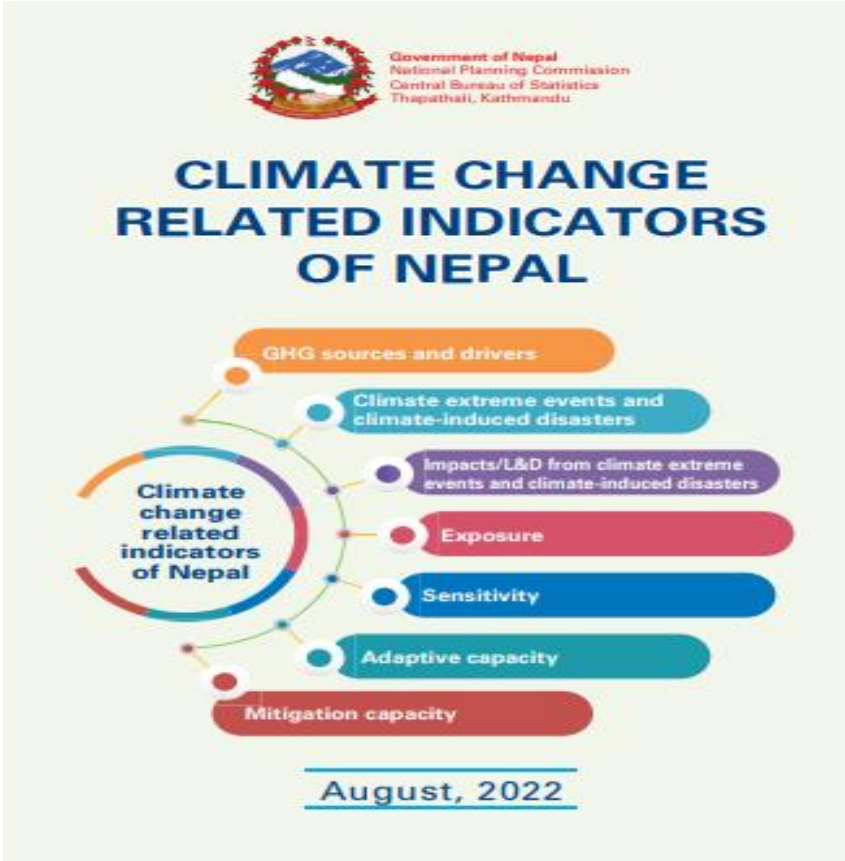
Developing climate-resilient WASH monitoring framework

Need to adopt a simpler framework aligned with country systems

JMP/GLAAS indicators for climate-resilient WASH



Climate indicators developed by Nepal National Planning Commission



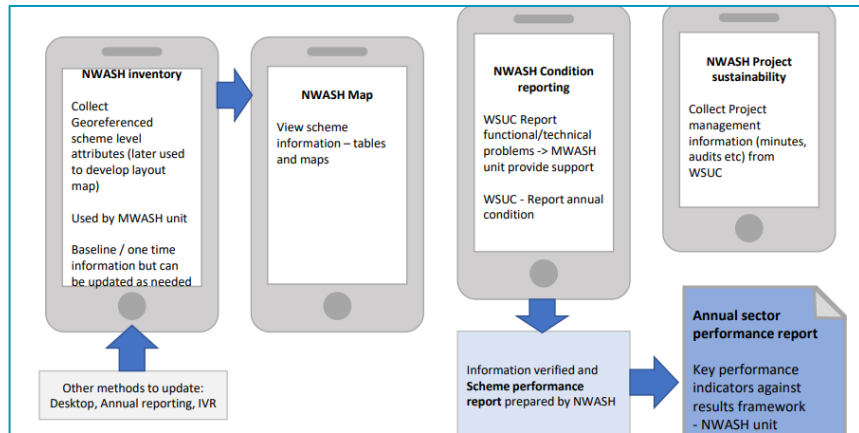
UNICEF monitoring of climate-resilient WASH



Source:
https://unstats.un.org/unsd/envstats/compendia/Nepal_ClimateChangeRelatedIndicatorsofNepal_2022.pdf;
<https://www.who.int/teams/environment-climate-change-and-health/water-sanitation-and-health/monitoring-and-evidence/monitoring-of-climate-resilience>

WASH Sector Monitoring in Nepal

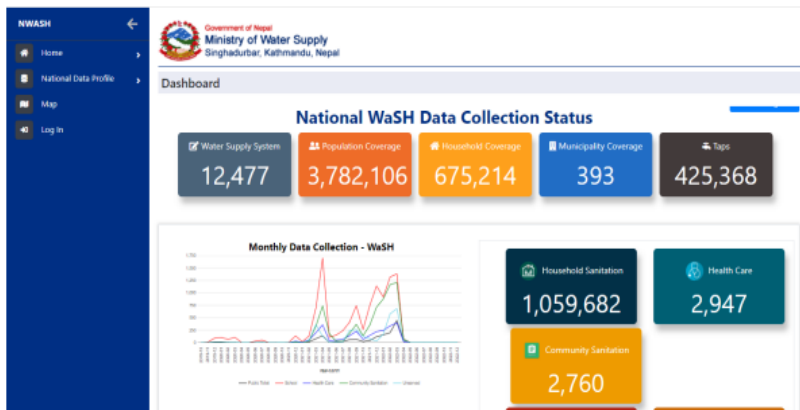
- **NWASH – A web based digital platform is being used to monitor and track WASH sector development by DWSSM of MoWS**



Strengthening NWASH monitoring systems

- Current monitoring system focuses mainly on functionality of water supply system
- NWASH needs to capture operations/performance related information for WASH operations
- Efforts being made to strengthen use of NWASH MIS by capacity building efforts of institutions

NWASH can capture climate indicators for WASH



From measurement to improvement: Fifteen years of the Performance Assessment System for monitoring urban water and sanitation in India

NATIONALLY OWNED FRAMEWORK

Four sectors → 5 themes → 32 key performance indicators
→ 100 local action indicators

FRAMEWORK SUITED TO LOCAL CONTEXT

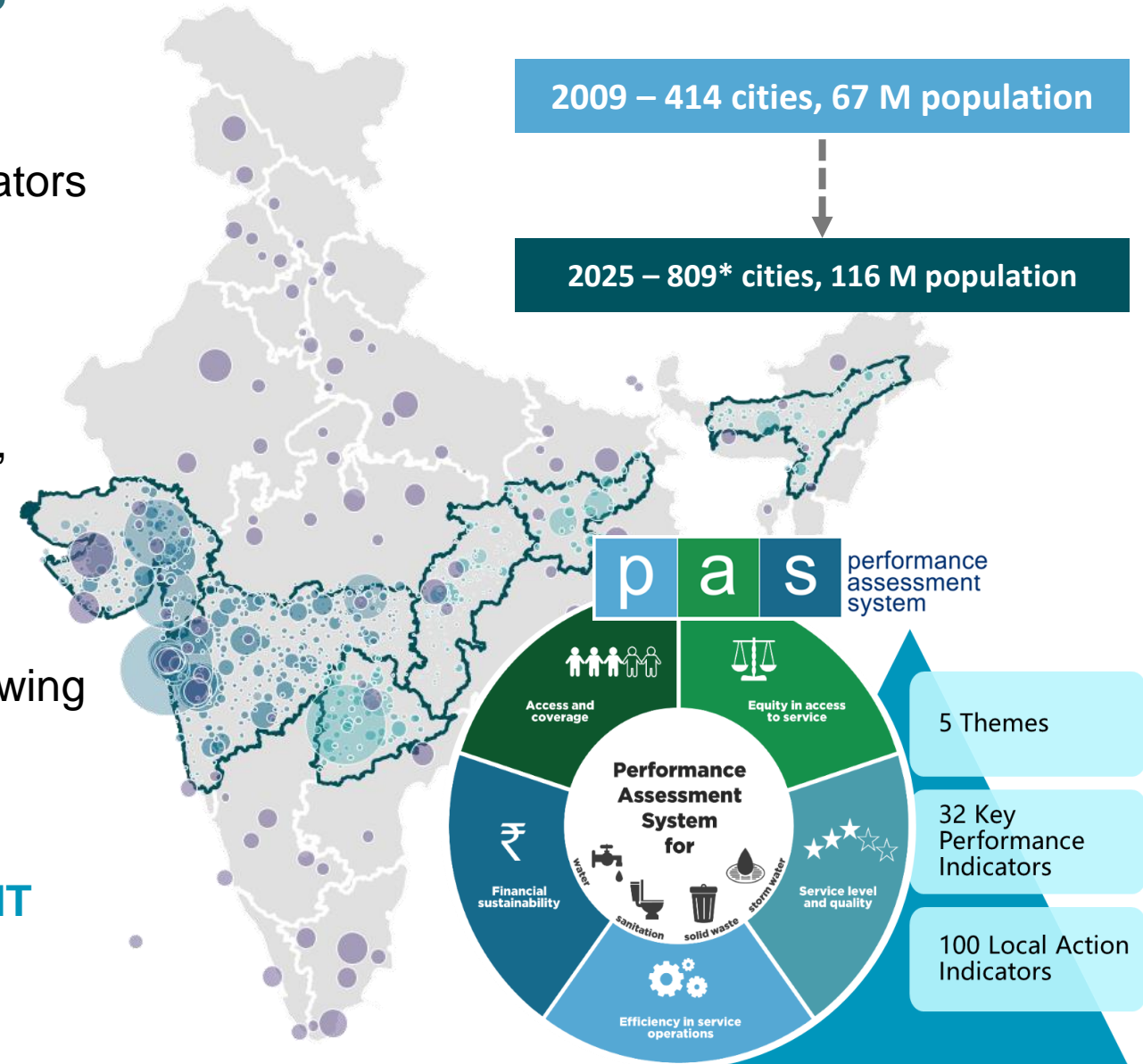
Focus on efficiency and service quality + equity, slums, onsite sanitation system and now climate resilient

NO PILOTS... OPERATE AT SCALE

Achieving scale in India since 2009, sustained and growing

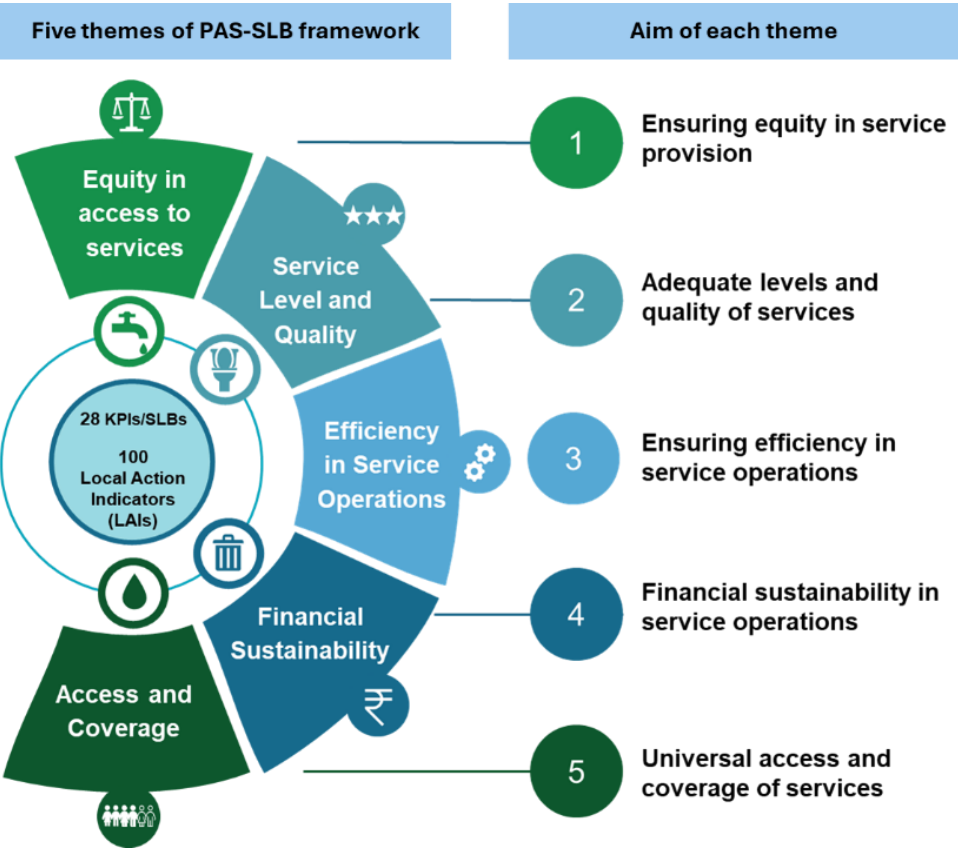
ONE OF THE LARGEST TIME SERIES DATA

USED NOW FOR CREDITWORTHINESS ASSESSMENT AND ESG ASSESSMENTS



Exploring integration of climate indicators in PAS framework

PAS-SLB framework – Used for monitoring WASH services in India



WASH-climate indicators –key themes
Efforts for integration in PAS-SLB framework ongoing



Source: [https://cwas.org.in/resources/file_manager/GSAC2025_T1.1\(02\)_Monitoring%20Climate%20Adaptation%20and%20Mitigation%20in%20WASH%20Integrating%20with%20PAS.pdf](https://cwas.org.in/resources/file_manager/GSAC2025_T1.1(02)_Monitoring%20Climate%20Adaptation%20and%20Mitigation%20in%20WASH%20Integrating%20with%20PAS.pdf)

Use of AI and digital tools for climate resilient WASH monitoring

Remote sensing and IoT Integration

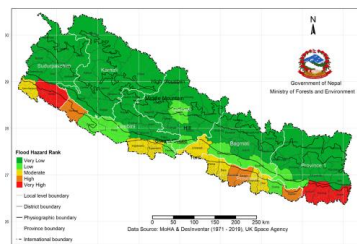
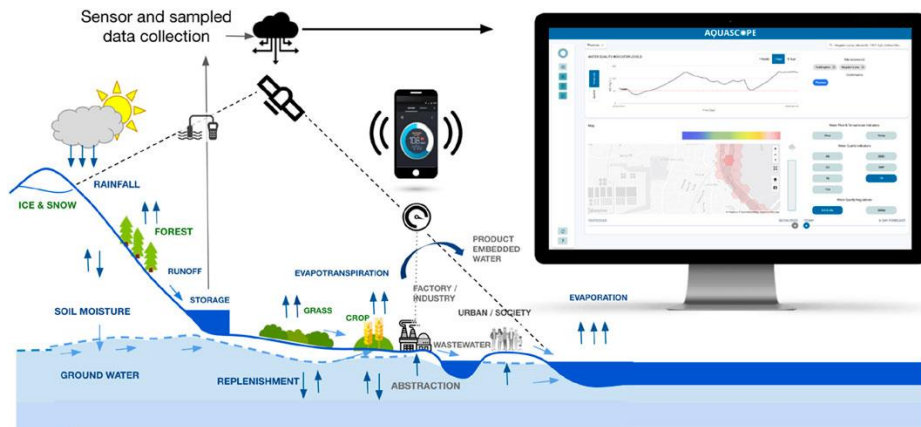


Figure 11: Flood Hazard Rank

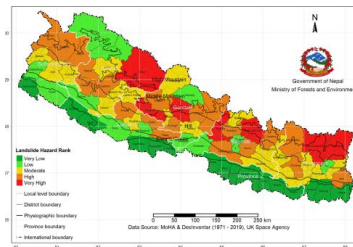


Figure 12: Landslide Hazard Rank

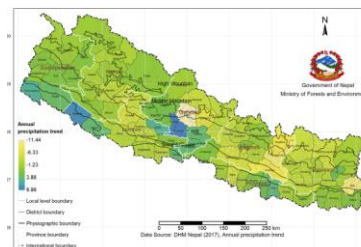


Figure 8: Annual precipitation trends in Nepal

MOFE (Ministry of Forest and Environment) Nepal is doing Vulnerability and Risk Assessment Sectoral Report Water, Sanitation and Hygiene (WASH)

Early warning systems and AI systems

Landslide warning sensors

Flood warning sensors



Climate sensors

Strengthening monitoring of climate resilient WASH

- **Need for a nationally agreed set of key performance indicators:** The proposed framework should suit to the local context and should enable to assess the city level performance
- **Encourage institutionalization of local level monitoring to ensure universal coverage of local governments.** This should be supported by appropriate incentives - fiscal incentives and recognition for local governments for regular WASH monitoring and reporting
- **Need for reporting progress at the local government and provincial levels.** This is critical to track progress over time with local/provincial/national level monitoring dashboards.
- **Integrate specific WASH indicators in climate related indicators developed by Nepal National Planning Commission with NWASH**

In summary

Nepal will need more funds to meet its SDG 6 goals and climate resilient WASH

Need to tap new funding sources and ensure local monitoring framework

Blended finance models
can help **leverage private
funding sources** to
mobilize investments

Supported by

**Earmarked green
funding under fiscal
decentralisation**

Use of **results-based
funding (RBF)**
mechanisms will be key
as funders look to ensure
climate resilient
outcomes.

Both **governments and
bilateral /multilateral
funders** use RBF

Nationally adopted
**climate resilience
WASH monitoring
framework**

Integrate with NWASH

**Incentive mechanisms
for local government**

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Thank you

About us

The Center for Water and Sanitation (CWAS) is a part of CEPT Research and Development Foundation (CRDF) at CEPT University. CWAS undertakes action-research, implementation support, capacity building and advocacy in the field of urban water and sanitation. Acting as a thought catalyst and facilitator, CWAS works closely with all levels of governments - national, state and local to support them in delivering water and sanitation services in an efficient, effective and equitable manner.



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