POLICY BRIEF | JULY 2024

Future proofing a basic social service: climate resilient rural water supply

Policy brief attachment 1

Recommendations for monitoring climate resilience of rural water supply systems

This document provides specific recommendations for national monitoring based on the research project "*Future proofing a basic social service: climate-resilient community-based rural water supply*" (2023-2024), led by University of Technology Sydney, Centre for Policy, Regulation and Governance, Universitas Indonesia and Universitas Gadjah Mada.

The intended audience for this document is Ministry of Public Works and Housing, particularly the PAMSSANIMAS team and those responsible for the development of the SIMAMAD/SIM including sustainability modules.

This research comprised:

(i) a country profile of climate risks for rural water supply

(ii) piloting of a Rural Water Supply Climate Resilience Monitoring Tool (RWS-CRMT) in 34 locations in 7 provinces (Sintang (Kalimantan Barat), Sumba Timur (Nusa Tenggara Timur), Sleman (Special Region of Yogyakarta), Cianjur (Java Barat), and Dumai (Riau)) as well as 56 further locations online with selected verification by the research team

(iii) application of a Rural Water Supply Climate Resilience Assessment Tool (RWS-CRAT) in 7 locations, including on-site inspections

(iv) an institutional analysis involving policy and regulatory review and an in-depth case study

The pilot processes demonstrated the utility of the monitoring and assessment tools. Application of the tool by local government agencies can inform targeted action to improve climate resilience. This was demonstrated through workshops focused on research findings, supporting action plans by district government.

1 Why is monitoring climate resilience important?

Water supply systems are at risk of climate impacts. Monitoring tools can be deployed for large-scale monitoring of rural supply systems to better inform decision-makers about specific vulnerabilities (particularly GEDSI related) and responses. By monitoring rural water supply systems, climate hazards such as droughts, floods, or extreme weather events can be identified, and the appropriate response can be administered at the local level (both district and village) by improved preparedness and planning. Monitoring tools help future-proof and ensure inclusiveness of water services.

2 Levels of monitoring

Monitoring and assessment of climate resilience of PAMSIMAS systems

- **National monitoring:** The monitoring questions for SIM include recommended questions to add to the SIM to monitor climate impacts on rural water systems and climate resilience.
- **Monitoring by regency governments:** The Climate Resilience Monitoring Tool (RWS-CRMT) monitors twelve dimensions of climate resilient water supply by 31 closed format questions.
- **Assessments by regency governments:** The Climate Resilience Monitoring Tool (RWS-CRAT) assessment tool includes open-ended questions, covering topics such as system design, availability of documentation, information on recent climate events and their impact, community-based management arrangement and asset ownership.

3 National monitoring of climate resilience of RWS

Based on this research project, we recommend that the following questions are added to the PASIMAS SIMAMAD/Sustainability modules of the SIM:

- Has the quality, quantity, or continuity of water from the PAMSIMAS scheme been negatively impacted by [tick all that apply] drought/flooding/intense rainfall/landslide/sea-level rise/storm in the last 12 months" (Y/N)
- If yes [separately, for each of above options of different climate hazards], was the disruption to the system Quantity? (Y/N), Quality? (Y/N), Continuity? (Y/N)
- For what length of time? (X days/months/years)
- Optional addition: *Did you (the KPSPAMs/CBO) have enough funds to cover those damages and repair the system? (Y/N)*

Water resource dimensions should also be added, since the SIM includes functionality and cost-recovery dimensions, but no 'environment' dimensions:

- **Water resources management:**
  - Are water sources protected and conserved in accordance with PAMSIMAS standards?
- **Have backup water resources:**
  - If PAMSIMAS does not work, do people have other alternative sources of water?
  - Is there an alternative water source that can be used by PAMSIMAS if PAMSIMAS' main source is damaged or cannot be used?
- **Conserve and manage water resources:**
  - Do KPSPAMS explain efficiency and water savings for its customers?
  - Has KPSPAMS monitored water quality regularly in the last year?
  - Has KPSPAMS monitored the quantity/amount of water regularly in the last year?
  - Does KPSPAMS have activities /programs for protecting water sources and catchment areas?

Other potential questions to monitor climate resilience:

- **Preparedness for response:** Does KPSPAMS have an emergency response plan (whether documented or not)?
- **Financial resources for response:** Are there any reserve funds from KPSPAMS / SPAM Management to carry out repairs if PAMSIMAS experiences serious damage?

4 Regency level monitoring climate resilience of RWS

The monitoring tool uses a closed questioning approach for twelve dimensions and provides valuable insights to users of the tool, such as research teams and district government officials.

4.1 The twelve dimensions assessed as part of the monitoring tool

1. Able to assess climate risk
2. Aligned with climate and disaster initiatives
3. Access to climate-related expertise
4. Access to responsive funding
5. Climate literate personnel
6. Located away from climate hazards
7. Strong and secure structure
8. Back up water
9. Conserve resources
10. Emergency services plan
11. Inclusive community characteristics
12. Have access to institutional support

4.2 Pilot Outcomes – Monitoring Tool

The monitoring tool allows comparison of relative climate resilience in different locations, across districts or within districts, by assigning a percentage to each indicator measured (see Figure 2).

The 31-question monitoring tool is short, taking approximately fifteen minutes to complete, however, the tool requires adequate expertise to understand the relevance of each question to clear up any misunderstandings and to verify responses.

The pilot found that the monitoring tool must be administered by a trained individual with a good understanding of climate resilience and the tool. Self-administered questionnaires were not found to be reliable, due to misunderstanding of the questions. The tool is not suitable for use by KPSPAMs either at scale or filled out independently due to complexity and a tendency to either under- or over-report. Rather, the tool is best applied face-to-face and the accuracy of the KPSPAMs responses should also be verified by asking follow-up questions or visiting the relevant water system.

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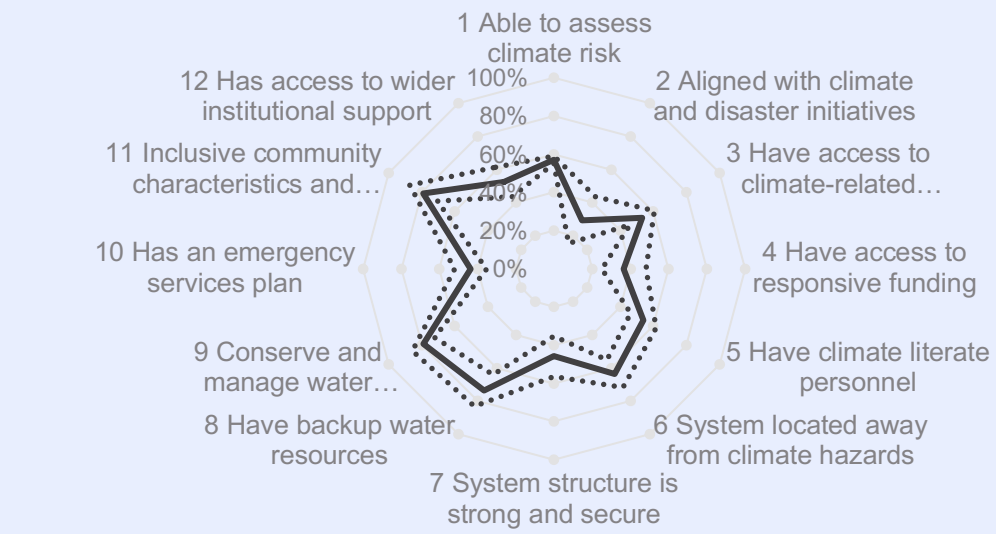

Figure 1: Twelve indicators used in the monitoring tool

Indicator	Avg Sleman	Avg Cianjur	Avg Sumba	Avg Sintang	Avg Dumai	Avg Indonesia
1 Able to assess climate risk	60%	56%	54%	63%	52%	57%
2 Aligned with climate and disaster initiatives	60%	67%	13%	0%	7%	29%
3 Have access to climate-related expertise	60%	33%	63%	39%	72%	53%
4 Have access to responsive funding	80%	33%	16%	17%	37%	37%
5 Have climate literate personnel	70%	67%	63%	36%	34%	54%
6 System located away from climate hazards	80%	83%	50%	41%	64%	64%
7 System structure is strong and secure	60%	50%	50%	6%	64%	46%
8 Have backup water resources	90%	100%	50%	72%	56%	74%
9 Conserve and manage water resources	100%	89%	63%	72%	72%	79%
10 Has an emergency services plan	60%	56%	21%	56%	26%	44%
11 Inclusive community characteristics and processes	93%	89%	88%	78%	47%	79%
12 Has access to wider institutional support	80%	67%	38%	44%	34%	53%

Figure 2: Comparison of relative climate resilience indicators by percentage

5 Assessment tool for regency governments

The assessment tool (open-ended questions and physical observations) can be used by district government to understand at a more detailed level, the risks and constraints to climate resilience of rural water supply at community level.

5.1 Pilot Outcomes – Assessment Tool

The assessment tool captures more details about climate events and responses. It takes approximately 1 hour to complete by the relevant KPSPAM when accompanied by observation of the water system.

During implementation of the tool in 5 locations, information was collected about type and frequency of climate events, impacts and responses, as well as background information about system design, weak points, capacity

of KPSPAMs to repair or undertake preventive action, gendered aspects of scheme management and inclusion outcomes. The pilot found that the application of the tool by local government agencies could inform targeted action to improve climate resilience.

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https://www.uts.edu.au/isf/explore-research/international-development/water-sanitation-and-hygiene-wash/climate-change-and-wash

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