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# 1 Acknowledgments

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## 2 Executive summary

This report summarises findings from research into water governance in Papua New Guinea. Research was undertaken in 2024 targeting national and subnational stakeholders, as well as community members involved in water policy and in setting up two of PNG's first District WaSH Committees (DWC's) in South Fly and Wewak districts. Through mapping the networks of water governance and key concerns of stakeholders and marginalised communities, the report identifies opportunities and challenges for improving the governance of water resources and WaSH service provision.

The research was guided by four key objectives:

1. Develop and undertake network governance analysis of district WaSH committees in two districts in PNG.
2. Identify those empowered and excluded from decision-making around water use and allocations.
3. Consolidate knowledge and support policy and practice to link WaSH and water resource management (WRM) governance at the local scale.
4. Consider how WRM could be further incorporated into subnational planning and decision-making.

The report finds that for over a decade the country's policymakers have focused their efforts in improving WaSH outcomes. This has resulted in what we label the 'WaSH era', a period of concentrated efforts to focus government attention to introduce new policies and increase resources for WaSH-related activities. At the centre of these efforts have been the introduction of DWCs, which have been piloted in 12 districts and are set to be rolled out across the country. However, as this report demonstrates, there are significant challenges associated with improving WaSH and water-related outcomes. The report finds that key water governance networks in PNG have become over-reliant on NGOs, and that more could be done to engage politicians and community members. Men and women face different water-related challenges; however, women said their concerns are often not reflected in governance fora, which can be dominated by men. While the recent 'WaSH era' has helped to focus attention onto one of the country's key challenges, there's much more that can be done to improve the management of the nation's water resources.

In turn, the report highlights the following recommendations which were supported by key national and subnational stakeholders; in particular, it argues for:

1. Improving funding and resources. This includes providing specific budgetary allocations for WaSH programs, building political will towards WaSH and broader water resource management, and increasing the number of dedicated WaSH-specific roles at the national and subnational levels.
2. Enhancing community engagement by ensuring that there are more opportunities for women, youth and other marginalised groups to directly engage at all levels of decision-making, but particularly within local level governments (LLGs).
3. Better coordinating between the local and national scales by empowering the government to gradually take over from NGOs in coordinating national and subnational efforts.
4. Better adaptation of policy prescriptions to the economic, social, cultural and environmental contexts in which they are being applied.

Running through these recommendations is the need for better collection and analysis of data on water use and funding. This is where future research efforts should focus.

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## 3 Background

Papua New Guinea is a land of abundant water resources, with a tropical climate, high rainfall, and a vast network of rivers, lakes, and groundwater systems. However, the country faces significant challenges in water and sanitation access, with only 50% of the population having access to basic<sup>1</sup> drinking water and 19% to basic sanitation (Joint Monitoring Program, 2023). Many rural communities rely on open wells, streams, and rainwater for domestic and small-scale agricultural use – which plays a key role in providing food security and livelihoods for most of the rural population (Dansie et al., 2024). The challenges hindering access to clean water and sanitation are exacerbated by climate change, pollution, limited infrastructure, and difficulties in mobilising resources to improve water infrastructure. Moreover, PNG is one of the most rapidly growing populations among Pacific countries, of which more than 86% reside in rural regions. Though the country is one of the least urbanised in the world, its urban centres are expanding and struggle to provide clean basic water and sanitation to citizens (UN DESA, 2019).

In response, the PNG government, along with donors and civil society organisations, have prioritised efforts to improve water resource management, with a particular focus on enhancing access to safe and sustainable water, sanitation, and hygiene (WaSH). This focus is exemplified by the National WaSH Policy 2015-2030, which was developed to guide policymakers and key stakeholders' efforts towards improving WaSH across the country. To implement this policy effectively, District WaSH Committees (DWCs) have been piloted in 12 districts to manage water resources at the subnational level (Department of National Planning and Monitoring, 2019). Guided by the National WaSH Policy and related planning documents, DWCs aim to improve coordination, governance, and decision-making amongst policymakers, particularly those within the country's District Development Authorities (DDAs), which have seen increased funding and administrative power over the past decade.

While they are currently only operating in a handful of districts, the PNG government plans to expand DWCs across the country. With the PNG government continuing to devolve power and resources to subnational governments, having dedicated committees that can channel government resources into WaSH projects is to be welcomed. This is particularly due to the paucity of funding available for WaSH and other water usage across the country: WaterAid estimates that annual spending on WaSH in PNG was just US\$2.31 per person in 2021 (Goff and Oza, 2023). By working at lower levels of government, there is also potential for these committees to empower communities – particularly the poor and marginalised – to direct resources to where they are needed. In coordination with ward development committees. DWCs are also designed to take on broader responsibilities in the future (Department of National Planning and Monitoring, 2019: 5), this could include planning, water source conservation and supporting water needs for agriculture. agriculture. This expansion could help address PNG's interconnected challenges of water management and agricultural productivity. However, there are also risks that these committees could collapse under the weight of expectations and competing priorities and fail to improve access to and management of PNG's water resources.

Despite the potentially critical role they play, there is scant research on how DWCs operate and their ability to engage with issues beyond their current mandate. As these committees are slated to be rolled out across the country soon, now is the time to examine the way they operate, whose voices they reflect, how they engage with

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<sup>1</sup> Basic drinking water refers to drinking water from an improved source, provided collection time is not more than 30 minutes for a round trip including queuing.

stakeholders at various levels of government and their effectiveness. Of particular importance is understanding how women, youth, people with disabilities, and other marginalised groups are involved in decision-making processes, and how their priorities for water management might be improved. As DWCs are established across the country, research is necessary to map how these committees can address PNG's water resource management challenges. Given this, through mapping the networks of water governance and key concerns of stakeholders and marginalised communities, the report identifies opportunities and challenges for improving the governance of water resources and WaSH service provision.

This report will delve into these issues in detail through a literature review and analysis of findings from fieldwork carried out in PNG in 2024 involving a total of 147 participants representing a range of key stakeholders operating at the subnational and national scale. The research was undertaken through a partnership involving WaterAid, World Vision and the Australian National University. Research took place in the districts of South Fly and Wewak, where World Vision and WaterAid have been helping to support subnational WaSH planning processes. Researchers also engaged with national policymakers and other stakeholders who were mostly located in Port Moresby.

In the following section we outline the objectives of the study and then discuss the methodology, after which we highlight results emanating from a literature review and the fieldwork. We show the networks that shape water management, and who they exclude, along with the challenges and opportunities associated with water governance in the country. We also reflect on directions for future research before concluding and providing key recommendations. Through this analysis, we provide insights and recommendations for enhancing the effectiveness and inclusion of DWCs and comment upon their potential to expand to broader water management avenues over time.

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## 4 Objectives

This project's overarching aim is to identify opportunities for improving the governance of water resources and WaSH service provision in Papua New Guinea. It achieves this through policy relevant research, network analysis, stakeholder interviews and focus groups at the national and subnational levels. This subnational research took place in two districts: Wewak (East Sepik Province) and South Fly (Western province) districts in PNG – where World Vision and WaterAid are working with local partners to implement District WaSH Committees (DWCs). The project examined the effectiveness of efforts to improve the governance of water resources with the intention of developing 'best practices' for policymakers and practitioners, and identify areas for further research and monitoring. The project engaged with multiple stakeholders, paying particular attention to those who are often marginalised and excluded from decisions around water resources and allocations.

The project's key objectives are to:

1. Develop and undertake network governance analysis of District WaSH Committees in two districts in PNG.
2. Identify those empowered and excluded from decision-making around water use and allocations.
3. Consolidate knowledge and support policy and practice to link WaSH and water resource management (WRM) governance at the local scale. This will include drafting 'best practice' guidelines on how to improve policy making, coordination and implementation based on experiences from Wewak and South Fly. The guideline will be useful for other districts aiming to scale the approaches in PNG.
4. Begin to map out how further research might investigate how WRM could be further incorporated into subnational planning and decision-making.

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## 5 Methodology

The methodological approach deployed in this research project is shaped by our understanding of the nature of water management and use in Papua New Guinea. Filer and Kalim have labelled approaches to managing water in PNG as a “water management regime” which they define as a set of “values, policies, institutions and practices which are applied to the human consumption, management, conservation or exploitation of fresh water” (2003: 79). As described below, in 2015 PNG’s water management regime has been replaced by a WaSH regime. Like Filer and Kalim’s water management regime, the WaSH regime involves “complex processes of interactions between government agencies and other stakeholders, including local communities” (2003: 79). Capturing the strengths and weaknesses of these interactions can help policymakers and researchers to better understand the opportunities and challenges for better governing PNG’s water resources. We hypothesise that access to and management of water resources can be improved when informal and formal networks involved in governing water are understood and strengthened. This means our research sought to identify those included and excluded in decision-making, access and control over water resources, and map the dynamics of their interactions.

The research is, in turn, focused on: 1. Understanding the networked governance of District WaSH Committees in two districts (which is achieved through a network mapping exercise); 2. Identifying those included and excluded around water use and allocations (which is achieved through conducting individual interviews along with focus group discussions with subnational and national stakeholders); 3 supporting policy and practice to improve and link WaSH and water resource management (which is achieved through a workshop with key policymakers); 4. Understanding how WRM could be further incorporated into subnational planning and decision-making (which is achieved by asking policymakers, citizens, and others at the national and subnational scales about the potential for expanding the operations of DWCs). In this section we highlight how we went about framing our research approach, designing and undertaking the methods for collecting information from key stakeholders and data analysis. We first describe our research sites before outlining the methods used and participants involved. Finally, we explain how we analysed the data collected.

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### 5.1 Research sites

Primary research was conducted with respondents situated at two different administrative scales. The first group of respondents were predominantly working or situated at the national scale. As demonstrated in the following sub-section, these respondents worked on water-related policy, planning, budgeting and implementation. They worked for government departments, NGOs, and other related institutions. A total of 19 respondents fit within this category. National-level respondents provided important insights into national priorities and challenges, and how national stakeholders engage with subnational actors.

Most ‘national respondents’ were working in Port Moresby. As the capital of PNG, Port Moresby is home to national government departments, the national headquarters of international and national NGOs, and private businesses that service the WaSH and water management sector. Approximately 514,000 people reside in this city, including many of the country’s public servants, community workers and business owners and employees. A minority of respondents (particularly consultants) were, at the time of research, located in other parts of the world, including in Europe and the UK. As we describe below, these national-level respondents were interviewed through online platforms and face-to-face interviews.

The second cohort of respondents, comprising of 128 people (via individual interviews and group discussions), were predominately working and living at the subnational scale. To reach these respondents we undertook research within two districts: Wewak (in East

Sepik Province) and South Fly (in Western Province) – see Figure 5.1. These locations were chosen as they are two of the 12 districts that piloted DWCs and thus provide us with an understanding of how the DWCs operate, and how they work with a network of other key stakeholders. World Vision helped to establish and support the DWC in South Fly, while WaterAid helped to establish and support the DWC in Wewak. Given this, these sites represent established cases where WaSH policy and implementation is likely better than in many other districts in PNG.

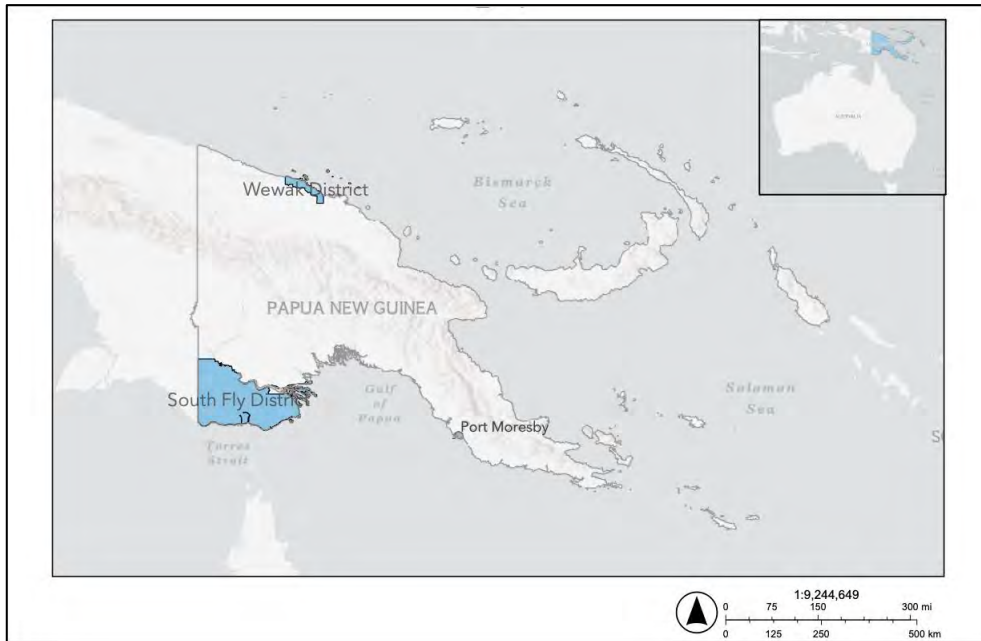


Figure 5.1 Primary research sites in PNG

To better understand subnational challenges, priorities and opportunities around water management, we deployed two methods. The first involved individual interviews with 29 respondents – 14 in South Fly District and 15 in Wewak. These respondents included key stakeholders who were engaged with DWCs and/or other key areas of water management in the district. The second method involved eight focus group discussions conducted within villages in local level governments within each of the districts: Oriomo-Bituri Rural LLG and Daru Urban LLG in South Fly district (Figure 5.2) and Turubu Rural LLG in Wewak district (Figure 5.3). Box 1 provides further information about both South Fly and Wewak districts.

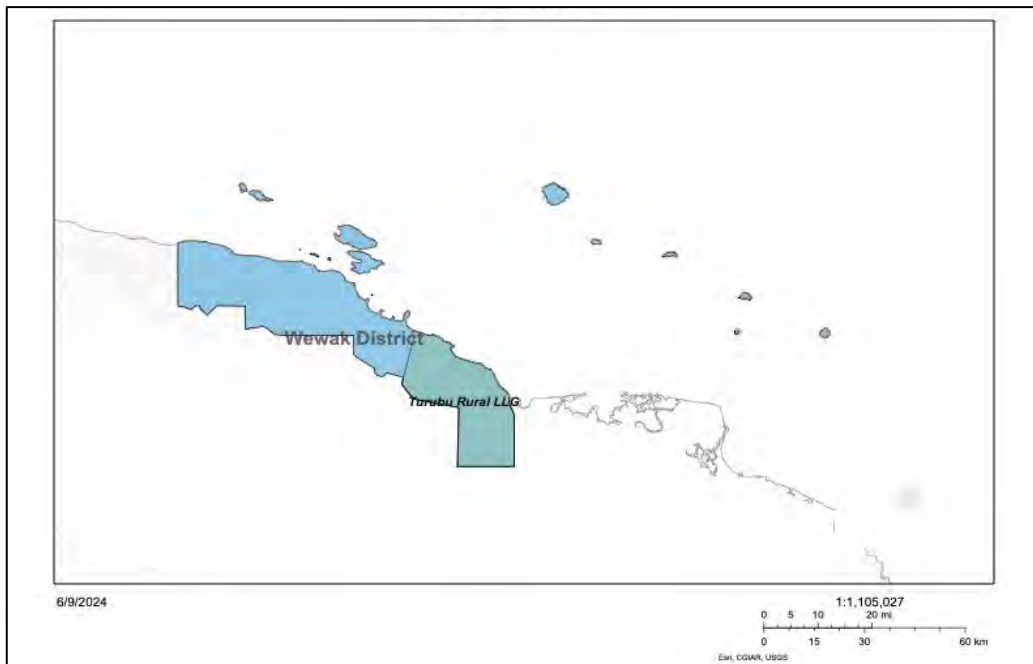


Figure 5.2 Turubu Rural LLG in Wewak district

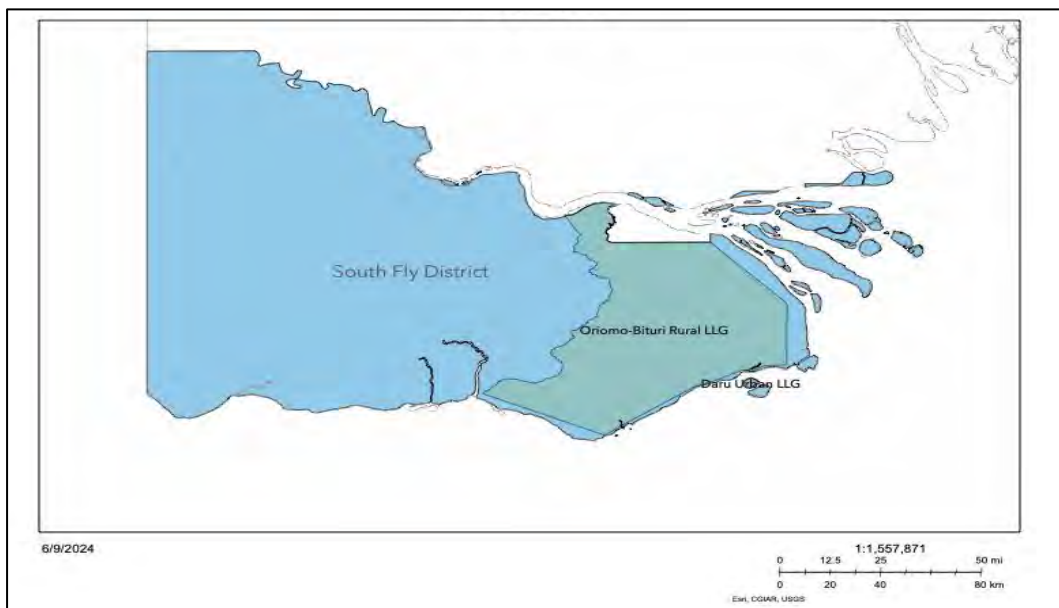


Figure 5.3 Oriomo-Bituri Rural LLG and Daru urban LLG in South Fly district

**Box 1: Background of South Fly and Wewak Districts**

**South Fly:** South Fly is one among the four districts in Western province (Figure 5.3). The district has a population of around 60,000 who live across five Local Level Governments (LLGs): Daru Urban (including the town of Daru, the capital of Western Province), Morehead Rural, Forecoast Rural, Oriomo-Bituri Rural, and Fly Kiwai Rural (South Fly District Development Authority 2022). South Fly experiences the monsoon season from November/December to April/May. The wet season follows an extensive dry period from May to November/December. South Fly is in a region threatened by El Nino, the rainfall patterns are unpredictable, and the district is highly susceptible to drought conditions. During La Nina, extreme wet weather results in flooding, displacement and destruction of crops. The district lacks resilient water supply infrastructure thus, depends on rainwater harvesting, shallow hand-dug wells and surface water (South Fly District Government 2022). These sources are not resilient enough in drought and can be negatively affected by flooding (South Fly District Development Authority 2022). 43% of rural communities in the South Fly District were reported to have access to a secure water supply (South Fly District Development Authority, 2021).

**Wewak:** Wewak is among the six districts in East Sepik province (Figure 5.2). The district has a population of around 80,000 of which more than 70% live in rural regions (NSO, PNG Census 2011). In Wewak, the various coastal and inland landscapes are exposed to unique climate and water security threats, including escalated rainfall intensity resulting in flash flooding, coastal flooding and storm surges, heightened groundwater salinity, drought, heightened erosion, landslides and ocean level rise. Moreover, in rural areas of the district, inland and coastal flooding from the Sepik River and its tributaries can cause significant damage to property, cause displacement, disrupt supply chains, and contaminate drinking water. Communities are at greater risk when they are less prepared, and more remote. These threats are exacerbated by socioeconomic challenges including low incomes, limited rural connectivity, poor infrastructure, territorial disputes, and weak water management. 37% of rural communities in Wewak District were reported to have access to a secure water supply (Wewak District Development Authority, 2019).

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## 5.2 Methods and Data Collection

The research informing this project centred around primary data collection involving individual interviews and focus group discussions. The individual interviews allowed us to map out water governance networks and understand the key challenges associated with WaSH and water resources. Focus group discussions allowed us to better understand the issues facing communities in South Fly and Wewak. We also reviewed the relevant literature, including policies, legislation, reports and scholarship to understand the context within which policymakers are operating (this is the focus of Section 7). We also held a key stakeholder workshop in October 2024, where policymakers responded to initial research findings – this allowed us to check the relevance of our findings for policy implementation. Below we explain each of these methods in greater depth.

Prior to commencing primary research, we obtained ethics clearance from the Australian National University. The ethical aspects of this research were approved by the ANU Human Research Ethics Committee (Protocol 2023/1250). This meant that each participant provided full and informed consent before participating in the research. All the interviewees and their answers were anonymised in this research, and research teams took care to ensure the security of the data collected.

### 5.2.1 Literature review

We conducted a literature review to better understand existing knowledge about and policies framing water governance in PNG. This included research from the academic scholarship which focused on water governance in PNG, along with relevant reports, policies and acts. To better understand the policy landscape, we conducted a comprehensive review of a total of 40 relevant policy documents. This included 26 government documents which included policies, legislation, plans and reports that were linked to water (13) and water adjacent issues like climate change (3), agriculture/food (3), and other (health, gender, environment and development (7)). We also collected and analysed multiple (14) NGO and consultant reports on water-related issues in PNG.

### 5.2.2 Individual interviews

To inform our analysis we conducted a total of 48 key informant interviews. As shown in Table 1, this comprised of a total of 19 respondents working at the national scale, and 29 at the subnational scale (made up of 14 individuals from South Fly and 15 from Wewak district). Table 1 shows that respondents represented a range of organisations at different administrative scales<sup>2</sup> (for a full list of the types of organisations and departments interviewers engaged with see Appendix Table 4). It shows that most respondents worked with or for district administration, were engaging at the national level and were male. This gender discrepancy reflects the male dominated nature of formal water governance in PNG, with previous research noting that the country's public service is dominated by male employees (Haley, 2016) though that is changing in some sectors, such as education (see Howes et al. 2014). As explained below, we countered this distorted gendered profile by including more women in our focus group discussions.

**Table 1: Category and location of individual interviews by gender**

	Women			Men			Total
	National	South Fly	Wewak	National	South Fly	Wewak	
Consultant				4			4
District Government		3	3		2	3	11
Donor	2			1			3
Local Government			1		4	4	9
NGO	1	2	1	2	1		7
National Government				6			6
Provincial Government					1	5	6
Private sector				1	1		2
<i>Total</i>	2	5	5	14	9	12	48

To identify potential respondents, we drew on a snowball sampling technique, whereby interviews are conducted with key stakeholders who then recommend potential respondents. This began by World Vision and WaterAid identifying 15 potential respondents who worked at the national level, and 10 at each district level. This selection

<sup>2</sup> Note that researchers found it difficult to access provincial officials in South Fly as many were unavailable at the time of fieldwork.

technique aimed to represent diverse relevant sectoral actors in water management in PNG. This approach is particularly relevant when setting out to ensure relevant and diverse respondents (Kirchherr & Charles, 2018), and when the boundaries for collaboration across scales and sectors are fluid (Muñoz-Erickson, 2014).

Individual interviews comprised of structured open- and close-ended questions. Question categories included: background and demographic information; frequency and type of engagement with key stakeholders engaging in water management; ease of collaboration; who should be included in decisions about water; and key challenges around water management and how they can be overcome. Responses to these questions allowed us to map out the people and organisations involved in water management networks, and to gauge the key challenges and opportunities for improvement.

The research instrument was developed through collaboration between World Vision, WaterAid and the Development Policy Centre, Australian National University (ANU). To ensure validity, we conducted two rounds of testing before we undertook fieldwork. The first round included detailed discussion with all research partners; this involved testing the instrument with a variety of World Vision and WaterAid staff in PNG. A second round of testing involved interviewing government officials in Port Moresby and Wewak.

Interviews were conducted by staff from WaterAid, World Vision and ANU. Interviews were undertaken in English – the official language of government – with those working at the national scale. All individual interviews with those working with/located at subnational administrations were conducted in Tok Pisin, PNG's lingua franca. Each interview lasted approximately 45 minutes to an hour and were conducted face-to-face, in an online meeting or on the phone. All interviews were audio-recorded with participant consent and later transcribed or translated by staff from Divine Word University in Papua New Guinea and ANU.

### 5.2.3 Focus Group Discussions

To better understand the views of local people, particularly those traditionally marginalised, from accessing and managing water resources, we conducted focus group discussions (FGDs) with key subnational stakeholders and communities. Researchers conducted a total of eight FGDs, though we have only been able to analyse findings from seven (the recording and notes from one FGD undertaken in Wewak were lost). In turn, we analysed findings from four FGDs in South Fly and three in Wewak<sup>3</sup>. In total, 99 people participated in FGDs and Figure 5.4 shows the gender of participants along with their location. Plate 5.1 shows a focus group in Wewak.

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<sup>3</sup> In South Fly, three village-level FGDs were conducted in Kodoro village and Redpoint villages (two included only women and one included community leaders) and one in Daru. Kodoro village is in Oriomo-Bituri LLG, Ward 17 with a population of about 506. Red Point is within the Daru Urban LLG, Daruwaru ward with a population of about 1338. Three FGDs were conducted in Wewak. Two FGDs (one only women and one mixed) were conducted at Sereng Community, Turubu LLG. One FGD was held at the district headquarters with various actors working with the District WaSH committee.



Plate 5.1 A focus group discussion in Wewak

Each group discussion included 4 to 14 people, with most carried out in Tok Pisin. The FGDs were facilitated by two trained local staff members who followed pre-prepared semi-structured guidelines. Guidelines were tested for clarity, and social and cultural sensitivities by WaterAid and World Vision staff members. Questions focused on water use; challenges on managing water; traditional management approaches; differences between male and female decision-making around water management; and options for improving water management. All FGDs were audio recorded with consent and the recordings were transcribed into English for analysis. Detailed notes were also taken.

To ensure diversity of voices and adequate space for various perspectives, each FGD included people who broadly shared similar demographic characteristics. For example, one FGD was with local community leaders; another FGD was with only women; and where possible, a separate group discussion was held with disability group leaders.

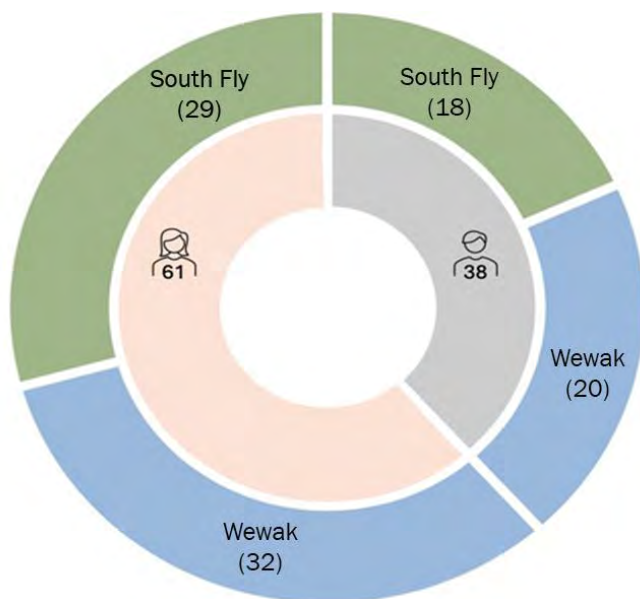


Figure 5.4: Number of participants involved in of FGDs by gender and district

### 5.2.4 Key stakeholder workshop

To better understand the applicability of initial findings we also conducted a half-day sharing of results and consultation workshop which included about 45 key stakeholders and was held in Port Moresby on 16 October 2024. Participants included provincial authorities from Western Province and East Sepik Province, more than five District Administrators or Deputy District Administrators (from Wewak, South Fly, Delta Fly, Bougainville, and Markham, Rabaul, and Pomio), community representatives, women's and disability group representatives, rights holder organisations, local NGOs, and international NGOs (including World Vision, WaterAid and others). After being presented with initial research findings, respondents were asked to provide feedback on the findings and, in particular, how the findings could shape policy and practice.

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## 5.3 Data analysis

Data analysis comprised of three components. First, we conducted a content analysis to systematically examine the collected grey literature related to water issues in PNG. Using the qualitative analysis software MaxQDA, we developed a comprehensive coding scheme aligned with the research objectives and additional themes. Our coding process involved systematically applying these categories to each document, recording frequency of theme occurrences, and noting insightful quotes or passages (Neuendorf, 2017). We conducted a qualitative analysis of the patterns, trends, and gaps in the literature.

Second, we analysed the quantitative findings from the 48 individual interviews to map water governance networks. Using network visualisation software Gephi (Bastian et al., 2009), we created visual representations of the connection between different sectors. Network maps illustrate the actors (circle) interaction direction (inwards and outward arrows on lines) and the strength of these relationships (line width). The actors identified and involved were anonymously categorised based on their position and department/organisation with which they work (for more information see Nelson and Grubestic, 2018; Althor and Witt, 2020; see Appendix 1 for technical definitions).

Third, again using MaxQDA software, we analysed the qualitative responses emanating from the FGDs and the individual interviews. We coded these responses and quantified some of the qualitative data. This allowed us to quantitatively compare the responses to some of the key questions asked in both the FGDs and individual interviews.

## 6 Achievements against activities and outputs/milestones

The project comprised of 12 outputs, which helped to ensure the four objectives guiding the research were met. Table 6.2 shows how each of these outputs/activities relate to the four objectives outlined in Section 4 and the partners primarily responsible for the activities associated with them. Table 6.3 shows how these outputs/activities were achieved.

**Table 6.2: Linkages between project objectives (Objectives [O]1-4) and outputs**

Output/activities	O1	O2	O3	O4	Responsible partner
Literature review	x	x		x	ANU and WaterAid
Networked water governance research methodology	x			x	ANU
Research training	x	x		x	ANU, WaterAid, World Vision
Fieldwork in two provinces and at the national level	x	x		x	ANU, WaterAid, World Vision
Learning note for PNG WaSH and water resource sector stakeholders			x	x	ANU, WaterAid, World Vision
Publication of two blogs for devpolicy.org			x	x	ANU
Regional media approached for republication of blogs and other findings			x		ANU
Dissemination: sharing findings with key research stakeholders (incl government officials), through the national WaSH Taskforce and at PNG Update conference 2024			x	x	World Vision and WaterAid
The research will develop a framework to guide the writing up of one article for publication in an internationally recognised and highly ranked academic journal. ANU will work on finalising and getting it published after the project is completed			x		ANU
Internal workshop facilitated by WaterAid and World Vision in South Fly and Wewak to examine the findings and how these relate to operations			x	x	World Vision and WaterAid
Stakeholder workshop in Port Moresby which will allow key stakeholders to collectively shape the report before it is published. Local sharing of research findings with participants in Wewak and South Fly for their feedback			x	x	ANU, World Vision and WaterAid
Stakeholder meeting with politicians, public servants, civil society members, members of the public in South Fly and Wewak to discuss findings and implications			x	x	World Vision and WaterAid

**Table 6.3: Achievement of project outputs**

Output/activities	Status	Notes
Literature review	Achieved	The literature review is outlined in Section 5 (Methodology), and the literature review itself is outlined in Section 7.1. The literature review was mostly undertaken between October and November 2023, with additions to the review conducted throughout the project.
Networked water governance research methodology	Achieved	The methodology is outlined in Section 5. The project established an oversight group involving key staff from ANU, World Vision and WaterAid in October 2023 which helped guide the methodology and subsequent fieldwork. This involved a formal agreement between partners and contracting relevant staff. Regular (approximately monthly) meetings were held throughout the project to guide the research.
Research training	Achieved	In preparation for data collection, WaterAid and World Vision undertook training on data collection processes based on the research methodology provided by the ANU research team. The training focused on research ethics, informed consent, research background and familiarisation with the research objectives and focus group and key informant interview guides and data storage and privacy.
Fieldwork in two provinces and at the national level	Achieved	The research teams developed and tested research tools in November and December 2023, with the research teams developing a plan for research around the same time. Logistical arrangements were organised, and fieldwork was undertaken between February and May, 2024.
Learning note for PNG WaSH and water resource sector stakeholders	Achieved	The team has produced two separate policy briefs, which can be used by key stakeholders to understand the findings and what they mean for policy. The first is entitled: <i>How can water governance networks in Papua New Guinea be strengthened?</i> The second is entitled: <i>How can WaSH policymakers engage more constructively with women's experiences and priorities in PNG?</i> The project has also contributed to another policy paper entitled: <i>"Forming an inclusive and Climate Resilient 5-year District WASH plan"</i> (see section 10.2).
Publication of two blogs for devpolicy.org	Achieved	The team has also compiled two blogs. The first is entitled: <i>From WRM to the WaSH Era: The Changing landscape of water governance in PNG</i> . The second is entitled: <i>What women want: water access, representation and development in PNG</i> . As approved by Klara Sarnovski these will be published once the report is finalised to maximise awareness of the report. (see section 10.2)

Regional media approached for republication of blogs and other findings	Will be achieved	Once the blogs above are published the Development Policy Centre media team will distribute them to PNG and the Pacific media.
Dissemination: sharing findings with key research stakeholders (incl government officials), through the national WaSH Taskforce and at PNG update conference 2024	Achieved	On behalf of the team, Safa Fanaian presented initial findings on 22 August at the PNG Update during the panel "Infrastructure and development" which was attended by around 60 participants from civil society, government, and the private sector. As outlined in Section 5 (methodology) Grant Walton and Safa Fanaian also presented to over 300 key stakeholders at the 2024 National WaSH Symposium (see Section 5, 7 and 8.4).
The research will develop a framework to guide the writing up of one article for publication in an internationally recognised and highly ranked academic journal. ANU will work on finalising and getting it published after the project is completed	Achieved	As discussed further in Section 8, the project has provided a framework that will guide the write up of two articles for publication in highly ranked journals. The two primary authors of this report are currently drafting these articles for two high-ranking journals: <i>Political Geography</i> and <i>Cambridge Prisms Water</i> (Part of Cambridge University Press)
Internal workshop facilitated by WaterAid and World Vision in South Fly and Wewak to examine the findings and how these relate to operations	Achieved	WaterAid have had internal discussions as part of regular program meetings, and have held an internal webinar to disseminate research findings. World Vision leveraged the recently held Business WaSH Plan development workshop held from the 3 <sup>rd</sup> – 7 <sup>th</sup> March 2025 to socialise the findings of the Improving Water Governance research. Daru Area programme team cascaded this information down to their teams as they prepare to incorporate these discussions into the upcoming District WaSH Plan review workshop held in the last week of March 2025. This information was enthusiastically received and has shaped the review and implementation plans.
Stakeholder workshop in Port Moresby which will allow key stakeholders to collectively shape the report before it is published. Local sharing of research findings with participants in Wewak and South Fly for their feedback.	Achieved	Safa Fanaian and Grant Walton also presented to over 300 key stakeholders at the 2024 National WaSH Symposium (see Section 5 and 7), which was organised by Turea Wickham and the team from World Vision. This included presenting research findings to separate groups of national and subnational stakeholders from Wewak, South Fly and other districts who have or are about to implement DWCs (see Section 5 for further details).
Stakeholder meeting with politicians, public servants, civil society members, members of the public in South Fly and Wewak to discuss findings and implications	Achieved	Key stakeholders from Wewak and South Fly districts attended the subnational stakeholder workshop in Port Moresby in October 2024 and participated in discussions on the research findings. In addition to this, research findings were discussed in Wewak as part of the quarterly district WaSH committee meeting in February 2025. Further discussions will be held upon finalisation of the research learning note. A socialisation workshop of the research findings was undertaken in South Fly in the final week of March 2025, to coincide with the review of the District WaSH Plan. Members of the District WaSH Committee, DDA members and key government stakeholders were in attendance. Feedback from participants was positive: results were

		considered useful for helping to augment plans to better govern water resources through the WaSH committee and led to commitments to better reach out to marginalised communities.
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## 7 Key results and discussion: water governance in PNG

This section presents key findings from the literature review, individual interviews and focus group discussions (FGDs). In line with the first two key objectives of the research, it examines the networks that govern water resources and identifies those excluded from decision-making around water use and management. In addition, this section shows what respondents thought about the key challenges associated with water governance, and how these might be overcome.

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### 7.1 Literature review: water policy and practice in PNG

In Papua New Guinea water is used for a range of personal, domestic, agriculture, navigational and industrial related activities. In many ways PNG is blessed with abundant water resources through high annual rainfall (on average the monthly rainfall ranges between 250-300 mm), which has resulted in some labelling it “one of wettest countries on earth” (Filer and Kalim 2004; World Bank 2021), which makes the country particularly vulnerable to floods. However, this water is dispersed differently across the country, with the highlands generally wetter than the lowlands. Poor infrastructure, pollution, inadequate management of water resources and changing climatic patterns have meant that PNG struggles to provide most of its citizens with clean water where and when it is needed. The challenges of managing this wealth of water resources have evolved through different historical periods, influenced by traditional practices, colonial governance, and modern development needs.

This sub-section provides a brief background on water management in PNG, thus providing a glimpse into the challenges, opportunities and policy landscape of water resources in the country. It shows the key challenges the country faces in improving the management of its water resources and how the policy agenda has evolved in response. It focuses on PNG’s policies and plans that shape government and non-government water management, access and use.

#### 7.1.1 Policy challenges and context

PNG faces significant challenges in providing safe, reliable and accessible water for its population and industry. This is exemplified by its response to achieving the SDG 6, which aims for “safe water and sanitation for all.” The Sustainable Development Report rates the country’s progress towards achieving this goal and the targets set for it as “stagnating” (Sachs, et al 2024). While some targets are on track – particularly on freshwater withdrawal – the country’s progress on the population using at least basic drinking water sources, and basic sanitation services has stalled. According to the United Nations Joint Monitoring Programme (JMP) (2025) for the SDGs, as of 2022, only 44% of PNG’s rural population have access to safe drinking water, and less than 15% had access to sanitation facilities. Urban areas in PNG fared better, with approximately 89% access to water services, compared to peri-urban and rural areas, where access was below 33% (CEPA & SPREP, 2020). Still, PNG has set ambitious targets, aiming to provide access to clean water for 70% of the population by 2027 and 100% by 2050 (MTDP IV, 2023).

In the context of PNG, water quality and access are undermined by a range of factors; however, we argue there are four key interconnected challenges. First, is the ongoing impact that climate change has on water quality and abundance. One of the most significant changes observed is the increased variability in water supply, with periods of drought alternating with episodes of heavy rainfall and flooding (Government of Papua New Guinea & World Bank, 2010). This unpredictability makes water management

increasingly challenging, necessitating innovative approaches and considering mixed source water systems such as boreholes and rainwater harvesting systems.

Flooding, which is becoming more frequent and severe, poses multiple threats to water resources and infrastructure (CEPA & SPREP, 2020). Coastal areas are particularly vulnerable, with one estimate suggesting that beyond the economic losses flooding could impact up to 65,000 people by 2030 (not including the impact of flooding on food security) (Government of Papua New Guinea, & World Bank, 2010 ix). Flooding not only damages physical infrastructure but also contaminates water sources through saltwater intrusion and groundwater pollution (CEPA & SPREP, 2020) leading to reduced water quality and decreased freshwater availability. Increased storm surges and flooding events lead to the contamination of water sources, while altered precipitation patterns can disrupt natural filtration processes in watersheds (CEPA & SPREP, 2020). This degradation of water quality poses significant risks to public health, especially in areas lacking robust water treatment infrastructure.

The changing climate is altering precipitation patterns, leading to more frequent and intense droughts (Bourke et al., 2018). This shift affects water availability, particularly in rural areas where communities rely heavily on surface water sources and rainwater harvesting. The increased frequency of dry spells and seasonal droughts has exacerbated water scarcity issues, impacting both household use and agricultural productivity (Government of Papua New Guinea, & World Bank, 2010).

The impacts of climate change on water resources are not uniform across PNG. Low-lying coastal areas are experiencing increased vulnerability to saltwater intrusion, threatening freshwater sources. Inland regions are facing challenges related to changing precipitation patterns and increased evaporation rates during drought periods (CEPA & SPREP, 2020).

These changes in water availability and quality are having far-reaching consequences for communities, particularly in rural areas. Women and girls are disproportionately affected, often walking longer distances to access clean water sources (Government of Papua New Guinea, & Green Climate Fund, 2020). This brings us to our second key challenge, that is, to improve women and other marginalised groups' access to and decision-making over water resources.

Gender relations in PNG are complex and vary across space. The country is, for instance, home to several matrilineal societies (such as in Bougainville, East New Britain and Milne Bay), where women play a greater role in decision-making and land ownership. However, across most of the country, men dominate decisions around community resources, including land and water. This is despite women and men often having distinctly different needs and roles around water. The Asian Development Bank (2020: 13) notes that women in PNG lose more productive time than men in accessing water and that lack of adequate washing facilities and decent toilets negatively impacts on menstrual hygiene. Women are also often the primary users of water and other natural resources because they are usually responsible for gathering and producing food (PNG DCD, 2011), as well as caring for children, the sick and elderly.

The different challenges men and women, along with other marginalised groups, face in accessing and managing water resources is generally not recognised in PNG policies and plans. However, there are notable exceptions. For example, the National Agriculture Development Plan 2007–2016 looked to improve women's contributions to agriculture and resource management, promote more women in decision-making positions in such industries, and elevate the capacity of women to contribute to national government and industry agendas relevant to agriculture, fishing and forestry. Strategy four of the National WaSH Policy (2015) also acknowledges that women and other marginalised groups are important stakeholders:

Participatory approaches should be fully inclusive to consider the involvement, priorities and needs of women and adolescent girls, people living with disabilities

and HIV/AIDS, infants and children and the elderly (Government of Papua New Guinea, 2015: 20).

Other efforts to engage women in decision-making around water and other resources include initiatives such as the Gender Mainstreaming Guidelines for Project Implementers, designed by Climate Change and Development Authority and Green Climate Fund. Water for Women also play an important role in PNG in focusing on improving WaSH services which benefit and involve women (Water for Women, 2020).

The third key challenge undermining water quality across the country is increasing pollution. The increasing development activities in Papua New Guinea are contributing to a rise in solid and liquid wastes, as well as soil sediments, entering rivers and coastal waters, leading to a decline in water quality. This is a significant concern, as it affects both the environment and the rural communities that rely on these water sources (Nicholls 2004). Chemicals such as pesticides and oil used in agricultural and industrial processes, while boosting productivity, pose a risk of contaminating drinking water systems, and adversely affect fishing and biodiversity (Independent State of Papua New Guinea Ministry of Agriculture and Livestock 2007). The deterioration of water quality is also evident in the increasing presence of domestic rubbish, particularly plastic, in rivers and along shorelines. Anecdotal evidence suggests that siltation and eutrophication are affecting potable water quality, biodiversity, and ecological productivity (Nicholls 2004).

Even more concerning is the challenges associated with managing defecation across the country. In 2023 PNG was assessed as having the fastest rates of increasing open defecation in the world (Goff and Oza 2023: 11). In 2022, the country was assessed to have 16% of the country having to openly defecate, an increase of two percentage points from 2010, and is thus not on track to eradicate open defecation by 2030 (Joint Monitoring Program 2023). Approximately 12% of the country's households use latrines or other types of basic toilets, while just 5% have a septic tank and 7% have sewerage connections (Joint Monitoring Program 2023) – though some of these amenities are poorly constructed and maintained. The country has the highest proportion of schools without sanitation (Goff and Oza, 2023).

Additionally, mining also poses significant environmental risks, particularly through pollution and runoff from tailings. Major environmental disasters, such as the 2019 slurry spill at the Ramu-Nickle Cobalt plant, highlight the severe impact of mining activities on water systems, as have tailings waste from other mines across the country including the now abandoned Ok Tedi (in Western province), Panguna (in Bougainville province) and Tolukuma (in Central province) (see: Walton and Barnett 2008; Hamago, et al 2023; Mudd et al, 2020). The discharge of toxic waste into rivers and seas threatens both human health and biodiversity. The lack of effective waste management and regulatory enforcement further exacerbates these issues, as many regulatory agencies lack the capacity to monitor and manage pollution effectively. Commercial agriculture industries such as palm oil and their processing are another concern, as effluents are often released into the environment with minimal treatment. The low recycling rate and unauthorised waste dumps complicate waste management, increasing the risk of adverse impacts on air, marine, and freshwater environments (CEPA & SPREP, 2020).

Finally, improving PNG's response to SDG 6 will require overcoming the country's challenging and contested terrain and demography. Most Papua New Guineans live in rural and remote areas, with little access to state resources. Indeed, PNG is the least urbanised in Oceania (which includes Pacific Island countries including Australia and New Zealand), and one of the least in the world. In 2018 only around 13% of the population were categorised as living in urban areas (Cox et al., 2022). By 2050 it is predicted that only a quarter of PNG's citizens will live in urban areas (UN DESA, 2019, p. 35). Still, water supply and sanitation remain pressing challenges in all PNG cities, but particularly in the 'settlements' that are home to the majority of urban residents (Cox et al., 2022).

Given that most people live in difficult to reach rural areas, an estimated 80% of people in the country rely on subsistence agriculture for both their own food needs and cash. Agriculture is significantly underdeveloped, though the country does produce commodities for export (such as palm oil, cocoa, coffee, copra) along with commodities for domestic consumption, such as betel nut (Sharp and Busse, 2019, p. 195). The country is heavily dependent on food imports for key staples, such as rice. Though there have been some efforts to address this dependency thus far the country’s reliance on external producers is significant (Walton, Ryan, Deinla. 2017). Addressing PNG’s water needs will require significantly engaging with rural and remote communities with limited access to services, and traditional land tenure systems which can feature high levels of contestation around ownership and use (Kalinoe, 1999). Indeed, with approximately 97% of land in the country communally held, navigating customary ownership of water is crucial for improving WaSH and other water resources across the country.

### Policy trends from WRM to WaSH

Since independence in 1975, PNG has developed a series of policies, strategies and plans aimed at improving water management, access and use. While the nation’s Constitution does not specifically focus on water management per se, its Fourth Goal calls for: “Papua New Guinea’s natural resources and environment to be conserved and used for the collective benefit of us all, and be replenished for the benefit of future generations.” This provides a basic charter for subsequent legislation dealing with the management of natural resources (including water) (Filer and Kalim, 2003).

Figure 7.1 provides a timeline of the country’s subsequent key water-related policies and acts. It shows that the history of policies related to water use, management and access in PNG can be demarcated into three eras. In the first era, from approximately 1982 – 2005 (highlighted in light green in Figure 7.1), policies focused on broader water resource management (WRM) and conservation. This is followed by a second era from 2005 to 2015, when WaSH policies became more prominent, but had yet to dominate the policy agenda. The third era from 2015 – 2021 (and beyond) is what we call the ‘WaSH era’, a time when water-related policies and legislation prioritised improving WaSH related issues across the country.

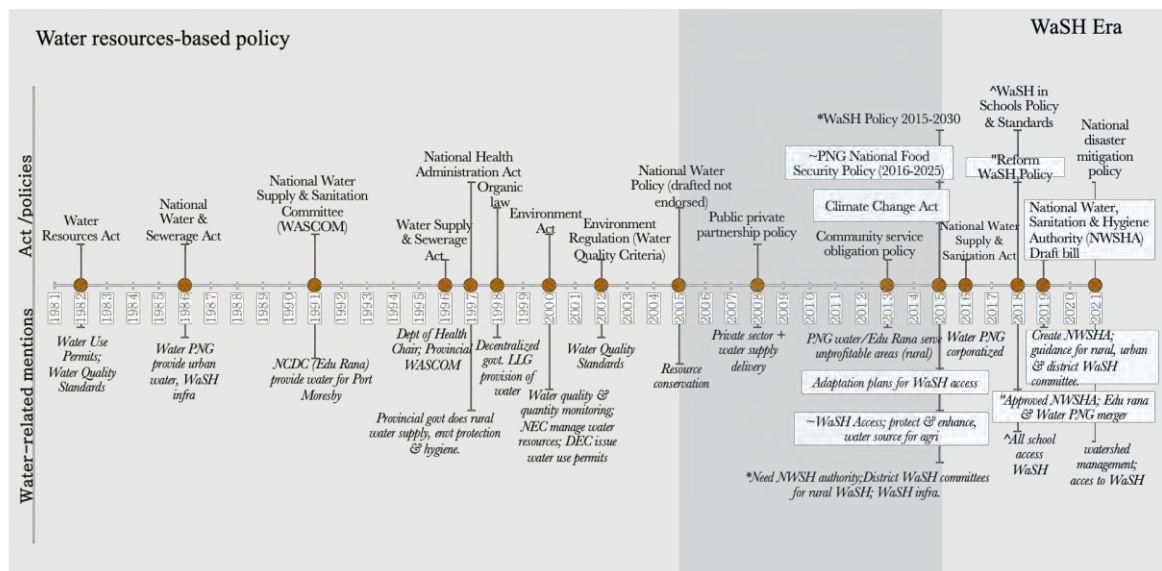


Figure 7.1: A timeline of water-related policies in PNG (See Appendix 11.2 for full size)

This first era starts with the Water Resources Act 1982, which made “provision for the management of national water resources and the responsibility for that management.” This act is connected to the Water Resource Ordinance 1962, passed during the

Australian colonial administration (Filer and Kalim, 2003). The Water Resources Act 1982 covered several water-related issues: from water withdrawal permits to the maintaining of water quality standards for industries and businesses. It also set up a Water Resources Board with a range of functions, including to “examine problems concerning, and make plans in respect all applications for Water Use Permits” (Nicholls 2004: 49) as well as controlling erosion, conservation and the needs of fisheries and wildlife and recreational uses of water (Nicholls 2004). However, Nicholls argues that by the mid-1990s it had become clear to policymakers that PNG’s environmental regulatory system, including its regulation of water, had “not been effective in preventing unsustainable resource use practices, habitat destruction and pollution due to inadequate implementation and enforcement” (2004: 49).

These concerns led to the passing of the Environment Act in 2000 that was to be administered by Conservation and Environment Protection Authority (USAID, 2020). The Water Resources Act 1982’s broader water resources protection, data, permits and related provisions were subsumed within the Environment Act 2000 under the control of the Department of Environment and Conservation. Implementation of the Environment Act and its related policies was assigned to Water Resources Division which was eventually changed into Water Resources Branch. Water services delivery and safe sanitation were then separated and came under the Department of Health and Water PNG (erstwhile PNG waterboard, a private-public authority for water and sanitation delivery in urban regions of PNG) (SOPAC, 2017; Nicholls 2004).

While government policies have referred to WaSH issues since the Water Resources Act 1982, it is around 2005 when we start to see a greater attention being paid to these issues. As with many Pacific countries, PNG’s response to WaSH was influenced by the Millennium Development Goals (MDGs), in particular MDG 7.C – to reduce by half the proportion of people unable to reach or afford safe drinking water by 2015. While the MDGs were launched in 2000, the country’s response to them took some time, and, ultimately, PNG failed to achieve any of the MDGs eight goals. This period of transition (see Figure 7.1) is marked by renewed efforts to introduce WaSH policies, exemplified by calls for a new National Water Policy that focused on national water resources management (resource conservation), and national water services (WaSH delivery), both to be administered through a new body, the National Water Authority (SOPAC, 2007). By 2005, the National Executive Council (NEC) mandated Water PNG to prepare the draft of a National Water Policy (International Bank for Reconstruction and Development/The World Bank et al., 2015; PNG DPMU, 2015). The subsequent draft included provision for a National Water Authority to take over water resources management, protection and WaSH service delivery; however, ultimately it failed to gain political traction (International Bank for Reconstruction and Development/The World Bank et al., 2015). In 2008 the NEC created a new taskforce chaired by Department of National Planning and Monitoring (DNPM) to revisit the national water policy. In 2011, the DNPM led taskforce requested the support of the Water and Sanitation Program of the World Bank to assist in the policy process. By 2014, the focus on national water services delivery was prioritised and a draft National WaSH Policy was created which was subsequently endorsed the following year (Overbeek and Nott, 2023).

The introduction of the National WaSH Policy (2015) was a pivotal moment because it provided a framework for financing and expanding water and sanitation services, particularly in rural and peri-urban areas. This policy, which was accompanied by the launch of the 2015 Sustainable Development Goals (its sixth goal aims to ensure availability and sustainable management of water and sanitation for all), marks the beginning of the WaSH era. The National WaSH policy aims to boost quality of life by decreasing morbidity and mortality caused by water-related diseases, improving livelihood opportunities, and providing greater equity of services amongst marginalised groups across the country (PNG DPMU, 2015).

Since 2015, WaSH has become a ‘cross cutting issue’, with the goals of the National WaSH Policy (2015) supported by a host of other complementary policies, such as the Climate Change Act, National Food Policy, and WaSH in Schools policy; these policies were created and supported by a host of departments such as Climate Change and Development Authority, Conservation and Environment Protection Authority (CEPA), Department of Education, and the Department of Health.

Figure 7.2 provides a timeline of key plans and strategies derived from the aforementioned policies. Government plans and strategies to improve water management only started taking shape in 2000 with the Medium-Term Development Strategy (MTDP) (2000-2005). The MTDP (2000-2005) included goals for increasing access to clean water and sanitation. Subsequent plans such as the National Biodiversity Strategic Action Plan (2007) and the PNG Development Strategic Plan (2010-2030) focused on broader issues of sustainable water use and addressing water pollution. Until 2010, most government plans and strategies focused on the importance of integrating water management with broader environmental and developmental goals.

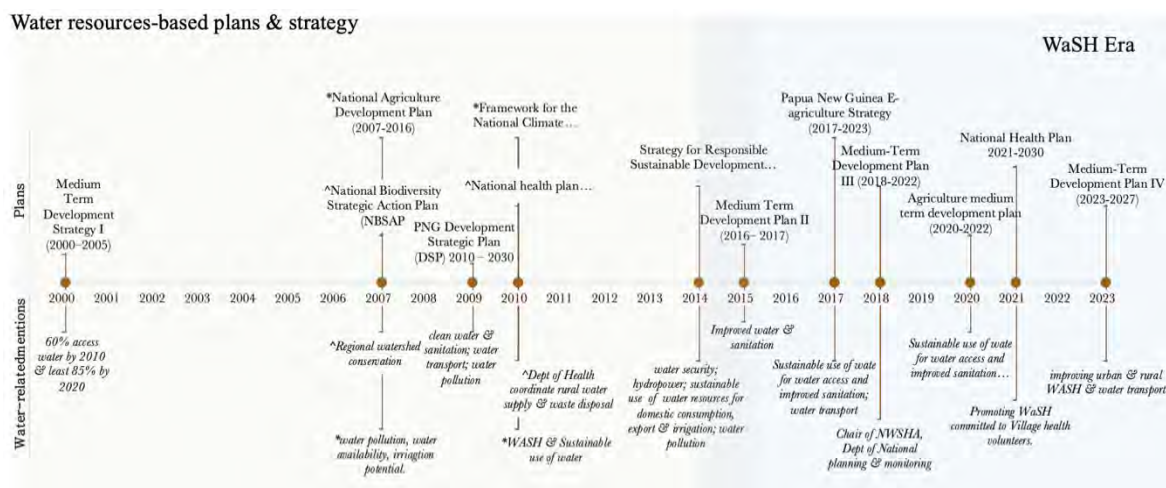


Figure 7.2: A timeline of water-related plans and strategies in PNG (See Appendix 11.3 for full size)

In 2015, the PNG government launched the Medium-Term Development Plans II (2016 – 2017). This plan marked a significant shift towards delivering on the National WaSH policy and signalled the start of the WaSH era in government planning and strategies. A focus on WaSH is maintained in subsequent Medium-Term Development Plans III, and IV, as well as in the Agriculture Medium Term Development Plan (2020 – 2022) and the National Health Plan (2021 – 2030). These plans involve a range of government departments, led by the Department of National Planning and Monitoring under which sits the WaSH Programme Management Unit (PMU). They are supported by international partners such as the Australian Aid program, the World Bank, Japanese International Cooperation agency (JICA), Asian Development Bank (ADB), USAID (until the recent 2025 aid freeze) and European Union among others.

### 7.1.2 District WaSH Committees

To overcome the difficulties in delivering services given the remoteness of much of its population, the PNG Government has been pursuing an aggressive policy of decentralisation over the past decade. This was marked by the passing of the District Development Authority Act (State of Papua New Guinea, 2014) in 2014, which establishes

district<sup>4</sup> administrations as separate legal entities. The newly established District Development Authorities (DDAs) now have expanded functions, can sue and be sued, and are guided by rules and regulations as to how their funds are spent (See: Papua New Guinea Department of Implementation and Rural Development, 2013). Under these arrangements the Open Member (the MP representing a particular district) chairs a committee that includes District administrators, LLG Presidents and community representatives (such as church representatives, women's representatives, youth representatives) who ostensibly monitor spending decisions and influence how revenue is allocated and disbursed. Revenue for these committees have risen exponentially over the past 10 years, with each of PNG's 96 districts now allocated up to 20 million Kina through the District Services Improvement Program (DSIP). While there is some evidence DSIP funds are directed to development priorities, some commentators are concerned that much of this funding goes to waste through mismanagement and corruption (Laveil, 2021), which has led many to label the DSIP as 'slush funds' (Laveil, 2022).

The piloting of District WaSH Committees (DWCs) has been undertaken in the hope that they will help channel some of the largesse directed to DDAs into WaSH related projects. The establishment of an initial 12 pilot DWCs has been followed by more being subsequently established in Rabaul and Pomio districts, East New Britain in 2023 (The National, 2023), with the promise of even more to come. These efforts have been coordinated by the WaSH PMU.

Officially, DWCs should ideally consist of members representing a wide range of stakeholders (Department of National Planning and Monitoring, 2019). These members include leaders and officials from the District Development Authorities and provincial government, LLGs, women's groups, community organisations, faith-based groups, organisations for people with disabilities, and NGOs working on WaSH services (see Department of National Planning and Monitoring, 2019: 5). At the helm is the DDA District Administrator or Chief Executive Officer (CEO), who serves as DWC chair.

The committees are responsible for implementing the Subnational WaSH Planning process which leads to the development of five-year WaSH plans that set out priorities for water programs across the district, and the means for securing funding for them (Department of National Planning and Monitoring, n.d). These plans are to be aligned with Mid-Term Development Plan goals (PNG DPMU, 2019). The members of the DWC are expected to meet every quarter to develop, implement and monitor these plans (PNG DPMU, 2019). DWCs are also tasked with coordinating data collection using the Department of National Planning and Monitoring WaSH Management Information System (MIS), using the data to drive local level decisions and contribute to national datasets managed by the WaSH PMU (Overbeek et al., 2017). This data can help to prioritise WaSH activities and identify potential communities, health centres and schools for WaSH schemes (Department of National Planning and Monitoring, n.d; 2019).

What we have thus described is how the DWCs are *supposed* to operate. To date, there has been no research to understand how they operate in practice, which is where the primary research described in Section 5 (Methodology) comes in. It is also true that DWCs have the potential to expand their mandate. While the DWC's primarily focus on WaSH, its structure allows for flexibility in taking on additional responsibilities. However, the ability of individual DWCs to do so has to be determined by their capacity (PNG DPMU, 2019). In their assessment of capacity building in PNG's WaSH sector, Overbeek and Nott (2023: 10) suggest that there is a lack of capacity – which includes leadership, management, community engagement and evaluation – to ensure the sector achieves its objectives across all levels of government, including in the districts. They note that funding from District WaSH plans tended to be “very ambitious” and have not aligned to the financial

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<sup>4</sup> PNG's four administrative units can be ranked from largest to smallest scale in the following way: national, province, district, local level government.

resources available from the Government”; and that funding for implementing plans from the 12 pilot DWCs is of “paramount importance” (2023: 23). Below we describe findings from primary research conducted in 2024 that was designed to understand the ways in which DWCs and PNG’s broader water governance currently operates, and how they might better respond to PNG’s WaSH and other water needs.

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## 7.2 How do water governance networks operate?

One of the key objectives of this research is to understand how water governance networks operate in PNG. To achieve this, individual interview questionnaires conducted at the national and subnational scales asked respondents to identify who they engaged with on water management issues over the past year, as well as the nature and frequency of that engagement. In this sub-section we map out the connections between policymakers at the national level and those implementing these policies at the subnational level and show the importance of some actors in the network (such as NGOs and LLG managers). We also show which actors were easier and more difficult to engage with.

### 7.2.1 Map reading

The two network maps presented in this section have three key features. First, the figures show the level of *influence* each individual/organisation/group has within the network. The more an individual is connected the larger the circle size, and thus the bigger role played within the network. Note that this is measured by the network statistic metric called weighted centrality degree (Embrey, 2012); the numbers underpinning this measure are outlined in Appendix Table 2 and 3 for Figures 7.3 and 7.4 respectively. Second, they show the *intensiveness* with which individuals are engaged with other individuals/organisations/groups work to manage water resources in PNG. The intensity of relations is represented by the width of the lines: the thicker the lines between the individuals/organisations/groups, the more they engage with one another. Finally, each network map shows what can be called as the *prominence* of these interactions for each individual/organisation/group. This characteristic is measured by the network statistics metric called weighted in-degree centrality (Faul, 2016). A higher degree of *prominence* (i.e. higher in-degree centrality) means that respondents were more likely to say they worked with the individual/organisations/groups. Those with *more arrows* that point to them are considered more prominent in terms of engagement by the individuals/organisations/groups with fewer arrows pointing towards them.

To summarise, the network maps in this section display actors/groups (represented as circle nodes) involved in management of water-related issues and the reported relationship between the actors (represented by a connecting line). Each relationship (line) between actors (circle nodes) has a direction represented by inwards or outward pointing arrows, inward arrow indicates that an actor mentioned that they work with that actor/organisation.

### 7.2.2 Group-level water networks

We start our analysis by examining the network interactions between different groups. Figure 7.3 clusters interactions in broader circles (green and blue) that demarcate between individuals associated with groups working at the national scale (most of whom are engaged in policy making) and the subnational scale (who directly implement water, particularly WaSH, policies).

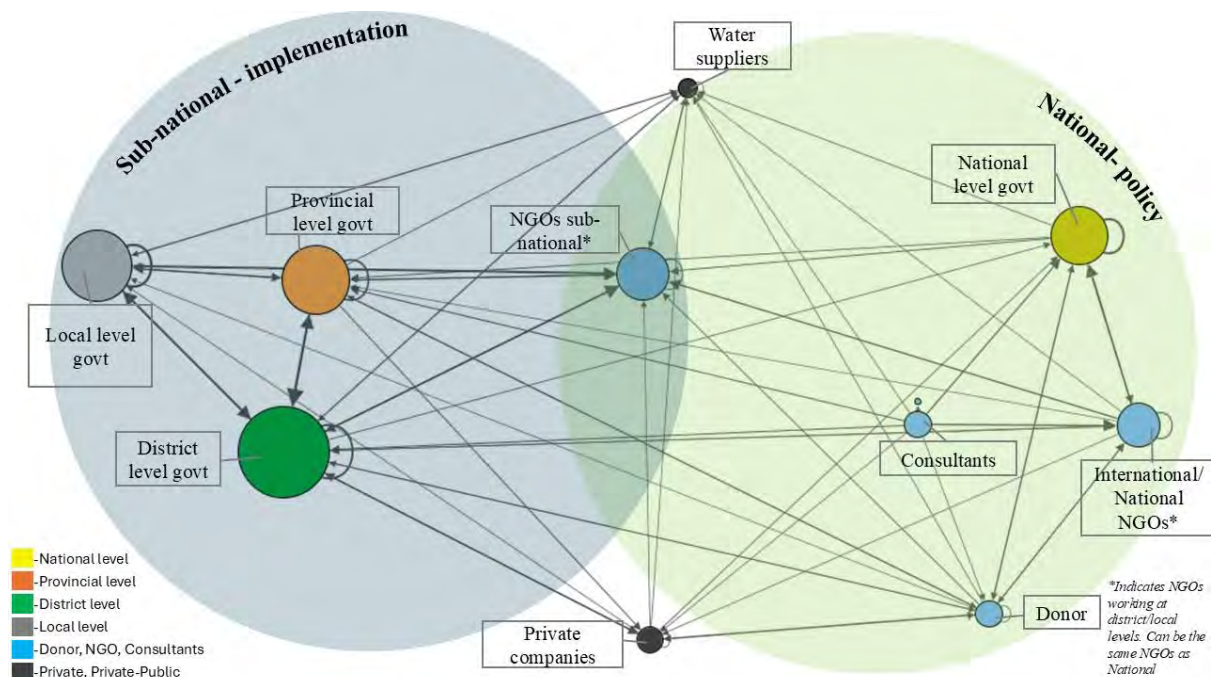


Figure 7.3: Simplified group-level water governance networks<sup>5</sup>

Figure 7.3 shows that NGOs apart from the District level government are some of the most influential group (as per Appendix Table 2 their *total* [national and subnational] weighted centrality degree is 491<sup>6</sup> – the relatively higher this number the higher the influence), as they work at both the national and subnational scales. Here the role of NGOs has been split to reflect their prominent roles at both scales (note that the same NGO can work at both the subnational and national levels, their representation in the network diagram is based on self-reported indication of the scale at which they predominately engage). The network shows that NGOs play a crucial role in translating national policy to guide and inform implementation efforts at the subnational scale. While provincial governments, donors and consultants are connected to national level government officials, the strength of their connections are far weaker than NGOs. NGOs – such as World Vision, WaterAid, CARE and others – are the key connector between provincial, district, and local level governments that implement policy, and the national

<sup>5</sup> This incorporates answers from 46 respondents. Note that Figure 7.3 depicts NGOs working at district/local levels; these can be the same NGOs as those working at the national scale.

<sup>6</sup> Note that this figure comprises NGOs at subnational levels (270) plus INGO & NGOs at national level (221) see Appendix Table 2

government that makes policy. NGOs also directly implement policy at the subnational level by supporting DWCs and directly advising subnational governments.

Within this network, district level governments are the second most influential group (as per Appendix Table 5 its weighted centrality degree is 502). This is not surprising given that DWCs have become so central to the governance of water in the two districts – Wewak and South Fly – included in this research. Local level government (weighted centrality degree 381) are the next most important given their role of implementing water projects, followed by provincial authorities which play a crucial role in directing resources and information to district-level agencies involved in water issues (367). These were followed closely by national government actors (305).

The intensity of interaction (measured by the thickness of the lines) is strongest between the provincial and district governments; the LLG and the district governments; and district level government and NGOs working at the subnational scale. At the national scale, the strongest intensity of interaction is between international/national NGOs and government departments. When it comes to the prominence of the interaction (shown by the arrows), individuals from provincial and district governments were more likely to say that they worked with one another on water issues. On the other hand, international/national NGOs were more likely to say that they worked with subnational NGOs – these include registered NGOs and some church-based organizations working at the subnational level (though some respondents believed the churches could be more involved) and groups representing people with a disability (such as East Sepik Council of Women and East Sepik Province Disability Agency). When we asked them who they most prominently worked with, subnational NGOs were more likely to mention other subnational actors. National NGOs were more likely to mention working with both subnational NGOs and associated organisations as well government officials at the national level. This means that subnational NGOs are more focused on working with other subnational actors, whereas international/national NGOs are more attuned to their role as a broker between shaping national policy making and translating that policy to the subnational level through their engagement with subnational governments and community groups.

### 7.2.3 Expanded water governance network

Figure 7.4 expands on Figure 7.3 by disaggregating the key groups into all the positions in different sectors involved in water governance. The circles represent positions within the groups discussed in Figure 7.3, with each group colour coded in the following way: green for district, grey for local level government (LLG), orange for provincial (PLG), yellow for national (NLG), dark grey for private companies and partnerships, and blue for NGOs, international/national NGOs (NGOs\_N), donors, and consultants. It is important to note that the NGOs at subnational level (NGO\_SN) represent multiple small and larger NGOs along with community groups such as local church and youth groups (see Appendix Table 4 in for a full list of the abbreviations used in the figures).

When disaggregated in this way, Figure 7.4 shows the wide range of actors (represented by their positions) involved in water governance in PNG. In our individual interviews we identified a total of 50 positions involved in the network: the ten most prominent highlighted in Appendix Table 3 in appendix 2. Overall, the cluster of subnational NGOs and associated organisations are the most important actors. Amongst other subnational actors, it is the LLG managers that have the highest level of influence. This is because in addition to being responsible for managing the expression of interest process and contracting the private sector through the DDA procurement board,

LLG Managers are responsible for overseeing the identification of projects, the development of project proposals and submitting the projects for peer review and approval by the District WaSH Committees (Department of National Planning and Monitoring 2019: 6)

The next most important position at the subnational level is the district administrator or CEO (DLG\_DA). The CEO chairs the DWC, and “is responsible for inviting members to

the first meeting and briefing them on the committees’ purpose and function” (Department of National Planning and Monitoring 2022: 21). Officially, their role involves planning, communication, and funding, and they are crucial in coordinating the implications of water projects. The district CEO also plays a key role in establishing the DWCs, along with more broadly managing the DDA and meetings and projects associated DSIP funding. Those working in health-related roles for the provincial government (PLG\_H) are the third most important part of the subnational network. This is particularly because Provincial Health Authorities (PHAs) provide staffing to support the DWCs – such as WaSH engineers and Environmental Health officers – and coordinate activities and projects.

At the national scale, national and international NGOs (NGO\_N) play the most important role in the network. The national level WaSH PMU (NLG\_WaSH) plays the second most important role.

The most intensive interactions (represented by line thickness) are between:

- NGOs at the national and subnational level as mentioned in Figure 7.3; this highlights the important role that NGOs play in connecting subnational implementation to national-level policy making, and reflects the significant resources and capacity that some NGOs have – particularly international organisations.
- LLG managers and subnational NGOs; this shows the importance that both actors play in coordinating the implementation and design of WaSH plans and projects.
- Consultants and national level NGOs; this shows the important role that consultants play in providing NGOs with technical support, research, and capacity building, which again highlights the of donors/NGOs within the network.

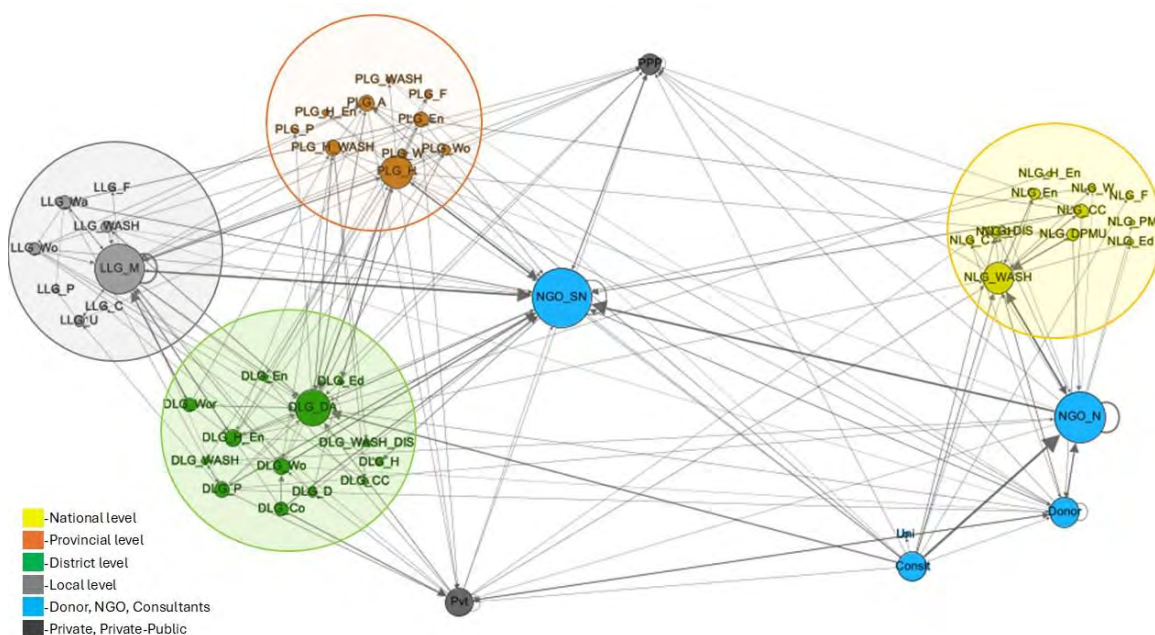


Figure 7.4: Expanded water governance network analysis<sup>7</sup>

Note that the colour of each node is depicted in the following way (see Appendix Table 2 for further details):

- District level governance, green;
- Local level governance: grey;

<sup>7</sup> This incorporates answers from 46 respondents; Note: See Appendix Table 2 for further details.

- Provincial level government: orange;
- National level government: yellow;
- NGOs at subnational levels, INGO & NGOs at national level, donors, consultants: blue; and
- Private, water suppliers (Water PNG/Edu Rana): black.

#### 7.2.4 Ease of working with different actors

Individual respondents were also asked to rank the ease of working with other groups within the network on a four-point scale from difficult to very easy. Figure 7.5 presents the average results of this assessment, and it shows that all groups were ranked as easy to work with, though some were deemed easier to work with (such as provincial and district administrators) than others (those working at local level governments were the most difficult to work with due to a lack of resources available).

#### Box 2: Water Quality – Insights from Focus Group Discussions

Many communities across PNG rely on natural water sources like rivers and streams, which can be contaminated (via mining, oil production, palm oil processing, increasing solid and industrial waste disposal, and soil erosion) and unsafe for consumption (CEPA, & SPREP, 2020). While there is a lack of “hard data” on the level of water pollution, there is consensus that increasing development in the country is causing visible evidence of pollution of rivers and coastal waters in PNG (CEPA, & SPREP, 2020). This is particularly the case for the communities involved in this research, with both Wewak and South Fly riverine areas subject to serious upstream pollution. Industrial waste contributes significantly to pollution of the natural water bodies, affecting water sources and access by making them unsafe for consumption. A male in a Wewak FGD lamented that “garbage and waste come in different forms so one of those challenges that will emerge is environmental pollution which will affect the quality of water”. Residents must wait for the water to clear before collecting it, which is not always reliable or safe. The lack of proper waste management and environmental policies means that pollution remains a persistent problem, impacting the availability of clean water. Participants in discussions highlighted the absence of water quality testing tools, which means that even if water is unsafe, there is no mechanism to verify its quality. This reliance on potentially contaminated water sources poses serious health risks, as a male in South Fly noted, “How sure [can we be that the water is] 100% safe, you can drink and whatever you like and you will not get sick, it is not a contaminated water”.

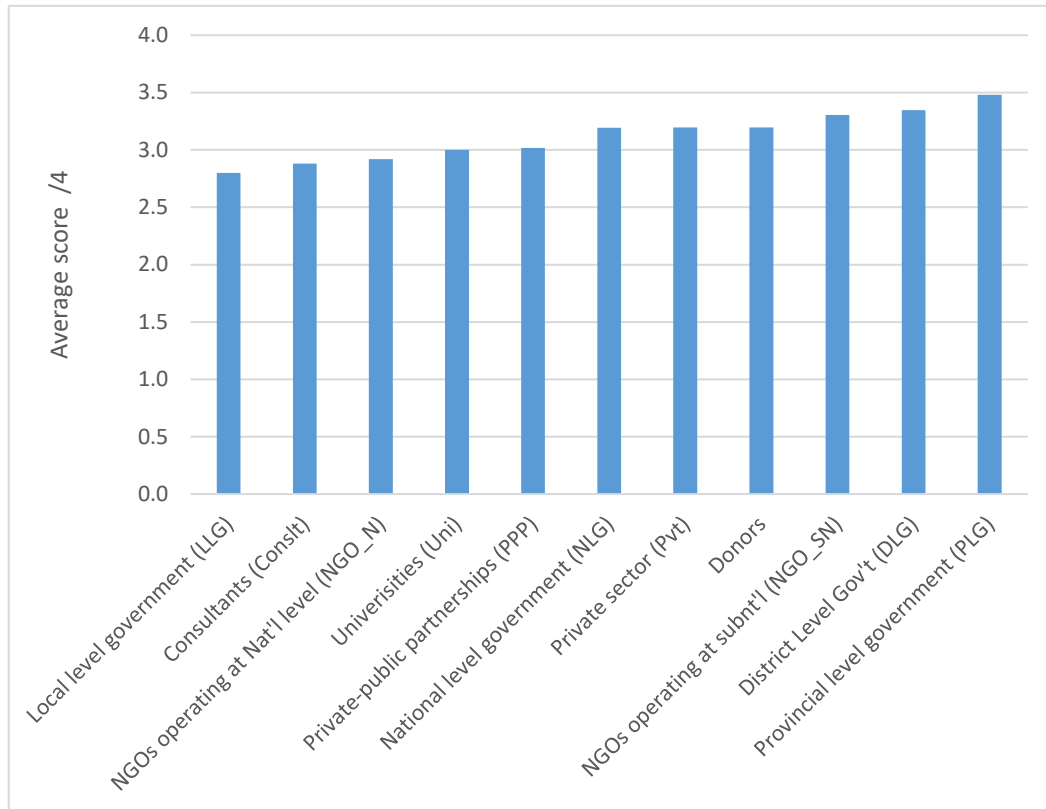


Figure 7.5: Ease of working with different groups of respondents<sup>8</sup>

Figure 7.6 shows that most interactions between those in the network were either easy or very easy<sup>9</sup>. Donors and those working for provincial governments found it easy to engage with a variety of groups. On the other hand, those working for the water provisions agencies (public private partnerships, or PPP) found it difficult to work with district governments. Respondents said that this was because they required a greater number of interactions to get things done.

<sup>8</sup> From 46 respondents

<sup>9</sup> The scale outlined in Figure 7.5 starts from 0, which means that respondents have not worked with that group on water issues over the past year, with 1 indicating it is difficult to work with the group identified and 4 indicating it is very easy.

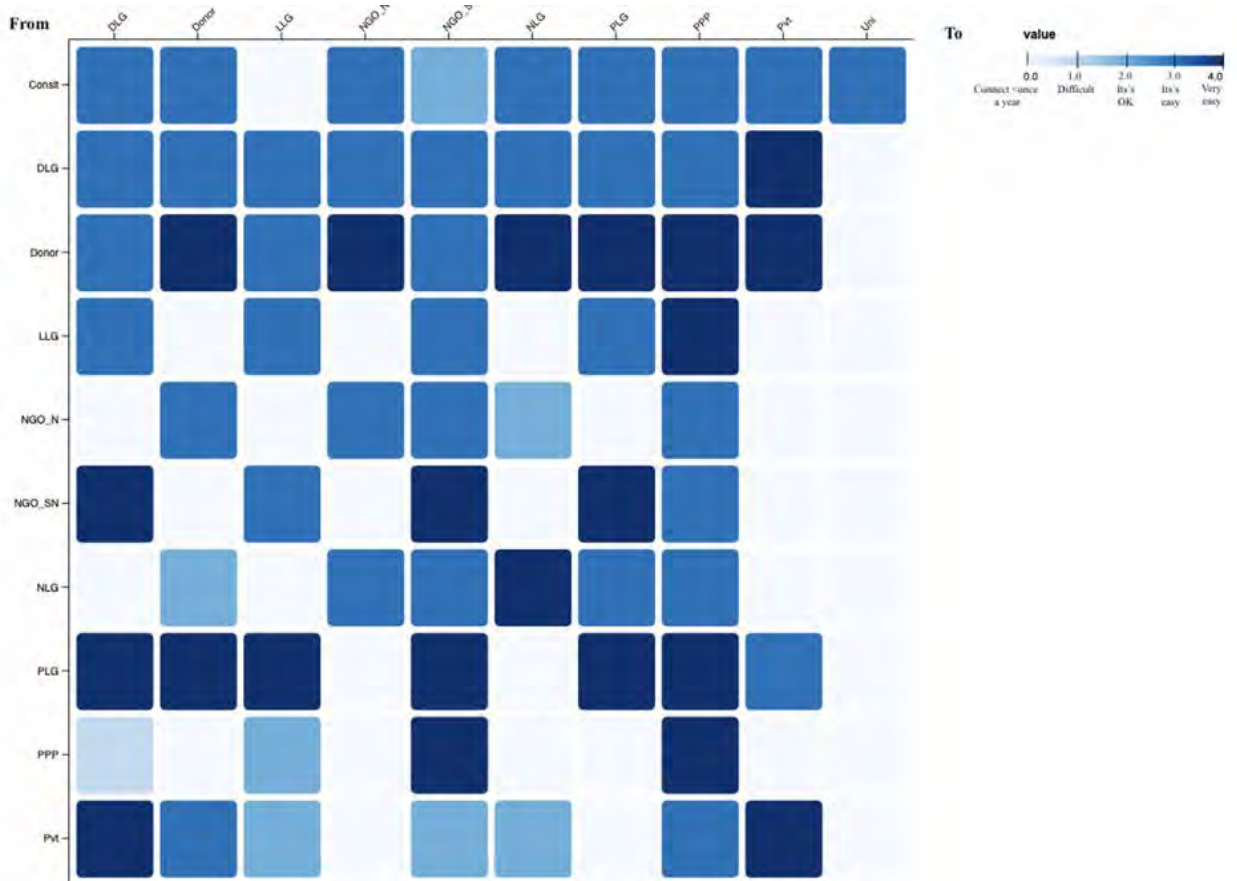


Figure 7.6: Ease of working with others in the network<sup>10</sup>

### 7.2.5 Summary

In summary, analysis of the water governance network shows the complex relationships that help to deliver WaSH projects in Wewak and South Fly. It shows that NGOs play a critical role in bridging national policy and subnational implementation. At the district level, while the official roles of LLGs have not changed since the 1998 Organic Law on Provincial Governments and Local-level Governments, they have evolved with the creation of the 2014 DDA Act. In turn, LLG managers are playing a significant role in engaging with DWCs that are located within the DDA. The next section examines the individuals and groups respondents believe could be more involved in these networks.

## 7.3 Who is missing?

In the individual interviews, respondents were also asked to identify the groups not sufficiently involved in making decisions about water.<sup>11</sup> Figure 7.7 shows that, overall, they were most concerned that provincial government officials were not involved enough in decisions about water resources (14% nominated this group), followed by politicians,

<sup>10</sup> From 46 respondents

<sup>11</sup> The exact question was: “Who do you think are not sufficiently involved in decision-making but are important people or organisations impacted by decisions about water”.

district government officials and local community groups (with each of these groups nominated by 13% of respondents).

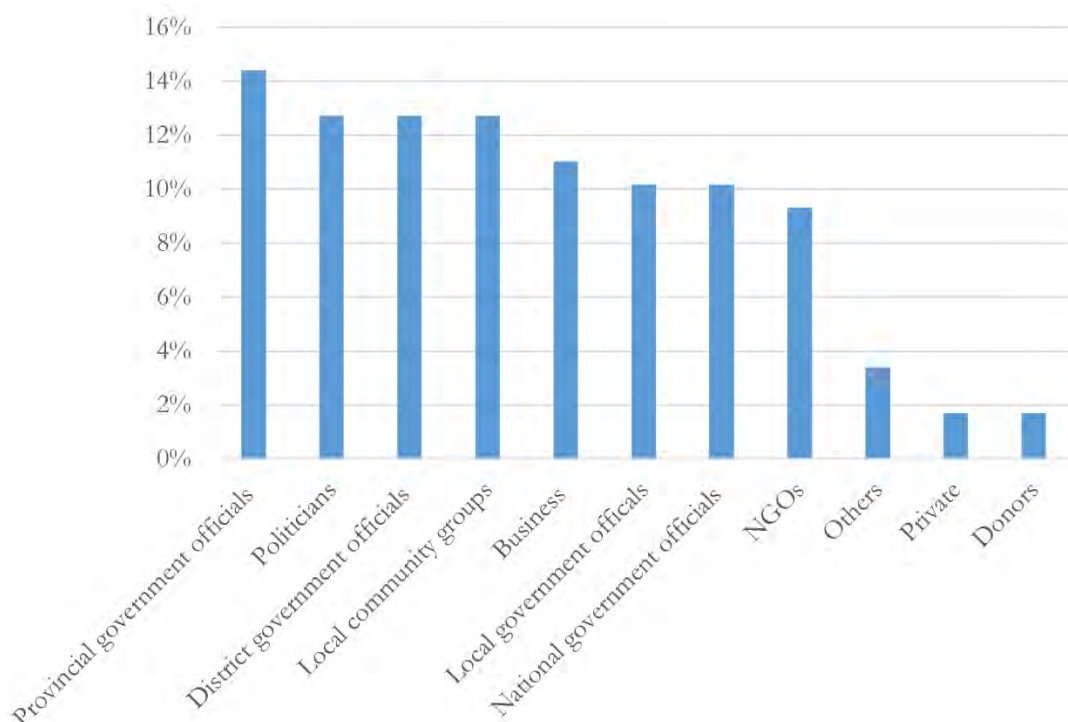


Figure 7.7: Who is missing from decisions about water in PNG<sup>12</sup>

However, there were significant differences between men and women. Figure 7.8 shows that women were far more concerned about the exclusion of local community groups. When asked how these groups should be represented, women focused on the importance of these groups for reflecting the concerns of excluded communities; for example, one female respondent from Wewak said that church and youth groups needed a greater say in decision-making because they represent “the community at large”. Female respondents were also more concerned that provincial officials and businesses were currently not engaged as much as they could be.

Men, on the other hand, were more likely to suggest that politicians, district government officials and national government officials were not as engaged with decisions around water. Men were more likely to focus on these groups because they considered their influence vital for helping to channel resources into the water sector. For example, a male respondent working at the national level said that politicians needed to be involved because they “have the responsibility to get resources and funding... [and can help] empower mandated bodies ... by building capacity and influencing policy”. A male consultant also noted that, “the very first step is to have a champion at the national level, ... who can really... push things.”

<sup>12</sup> Note this graph represents the total of all those who responded to this question – so responses total 100%; from 40 respondents

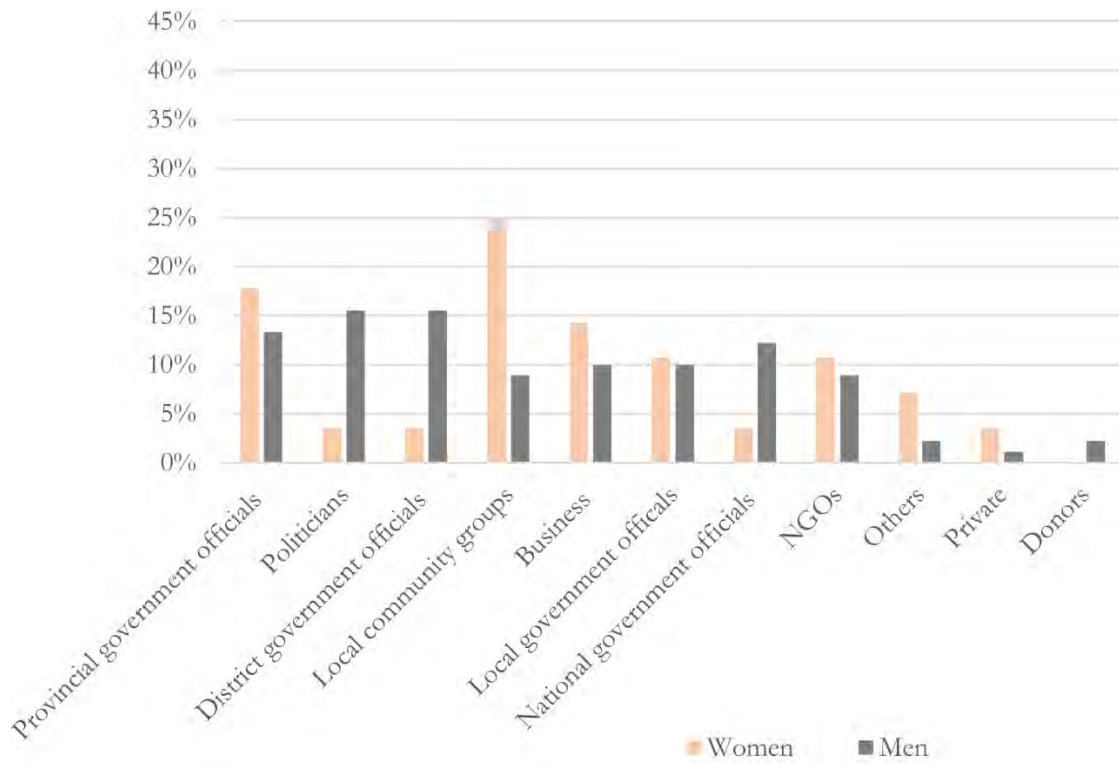


Figure 7.8: Female and male responses to is missing from decisions about water in PNG <sup>13</sup>

**Box 3: Gender and Water – Insights from Focus Group Discussions**

<sup>13</sup> Note the code 'other' includes a range of categories including customary landowners, churches, engineers; this graph includes responses from 40 respondents.

In FGDs conducted in South Fly and Wewak, both women and men lauded provisions that encouraged the participation of women and other marginalised groups (South Fly District Development Authority, 2021; Overbeek et al 2023). One female in a FGD in Wewak said she was happy that there were “mothers” representing women in the DWC. However, ensuring that these committees have real influence and that women's voices are heard remains a challenge, with some respondents complaining that men often dominate decision-making processes related to water access and provision in some villages. A woman in a FGD in Wewak, for example, reflected on some of the daily challenges that women faced when discussing water access in her village:

we used to be suppressed so we just sit and listen to what the men say although we have something to say or some thoughts to offer. When it comes to going out looking for water, men do not help us by going out to collect water from the water sources. We struggle by ourselves to provide water for the family including the men. When they close the water taps during the day without our notice, we used to complain especially when water has been turned off when we need it the most. This causes a lot of problem for us mothers. We argue with them and complain for not informing us of the closure of water.

Others in the group expressed their frustration with men who seemingly ignored their concerns about accessing clean water.

Men's lack of awareness of the challenges facing women was often put down to the gendered nature of water collection. As one woman in a South Fly focus group said, “Men and young boys don't look for water, but they just come and use the water and men makes decisions about how to use water resources”. Women also spoke of the other challenges related to cooking and personal hygiene they face which men can fail to understand. Gender-based restrictions on water use exist in some areas, with menstruating women and postpartum mothers saying they faced difficulties accessing communal water sources.

The economic implications of water access are also significant for women. During dry seasons, women spoke about seeking alternative sources of water for their informal businesses, such as making ice blocks for sale. In some communities (particularly those in urban and peri-urban areas), residents must pay for water, which can be a significant burden for those with limited financial resources, particularly women. While participants were asked about the use of water for agriculture and other uses, when it came to discussing women's usage of water discussion centred around WaSH.

There were also differences between respondents operating at national and subnational scales. Figure 7.9 shows that respondents from South Fly district were far more concerned that local community groups were not involved in decisions around water management. While community groups – such as women's groups, groups representing the disabled, churches, youth and others – in South Fly were represented by the DWC, respondents felt they could engage better. For example, summarising the sometimes fraught relationships between communities a male respondent from that district said he would like to see more direct engagement of different community groups [of the DWC, even though] as “the level of the society or community they come from may not allow them to be a part they may have representatives in there”. This could be because South Fly's DWC has not been established as long as the one in Wewak and has thus been unable to establish strong relationships with local groups. Respondents from Wewak were worried about the lack of engagement from provincial officials as many wanted to see these officials with responsibility for planning and budgeting more involved. Respondents working at the national level were more likely to be concerned with the lack of other national officials engaging in decisions about water. They wanted to better data sharing, the prioritisation of WaSH on the national agenda and improved coordination of national stakeholders.

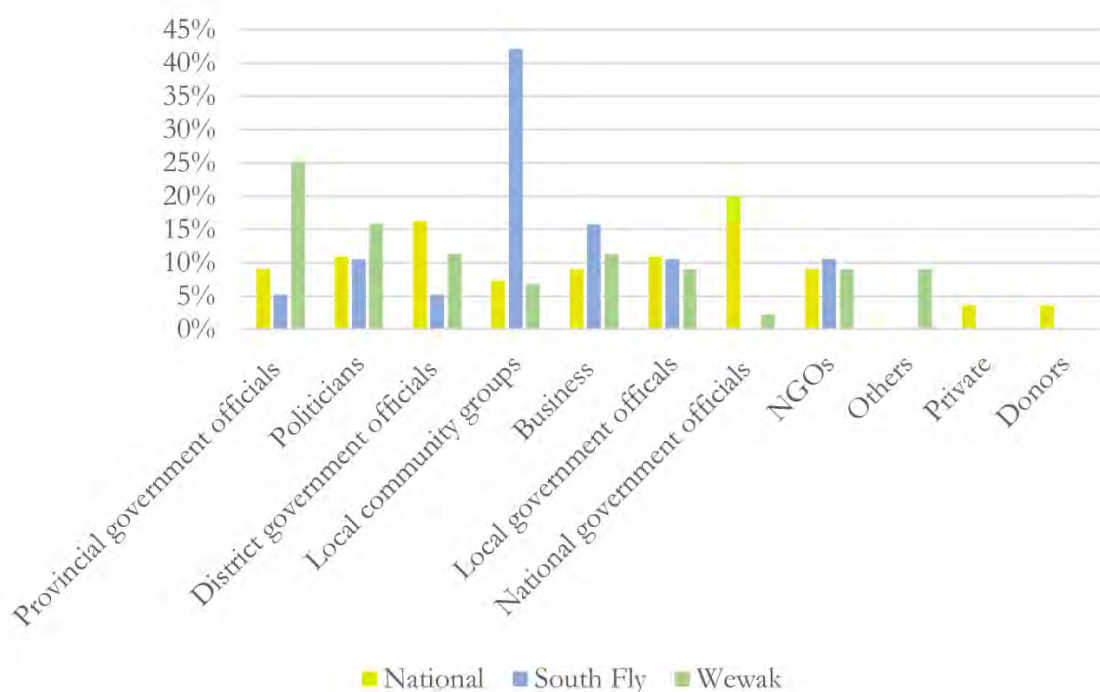


Figure 7.9: National and subnational responses to who is missing from decisions about water in PNG <sup>14</sup>

### 7.4 Key challenges for managing water resources

Individual respondents were also asked to identify the key challenges to managing water resources, with questions allowing respondents to reflect on water resources used for a variety of purposes – including and beyond WaSH. As Figure 7.10 shows, respondents were most likely to report that water access was the biggest challenge for managing resources (with 16% of respondents nominating this key challenge), followed by funding (15%) and human resources (12%).

<sup>14</sup> Note the code ‘other’ includes a range of categories including customary landowners, churches, engineers; this graph includes responses from 40 respondents.

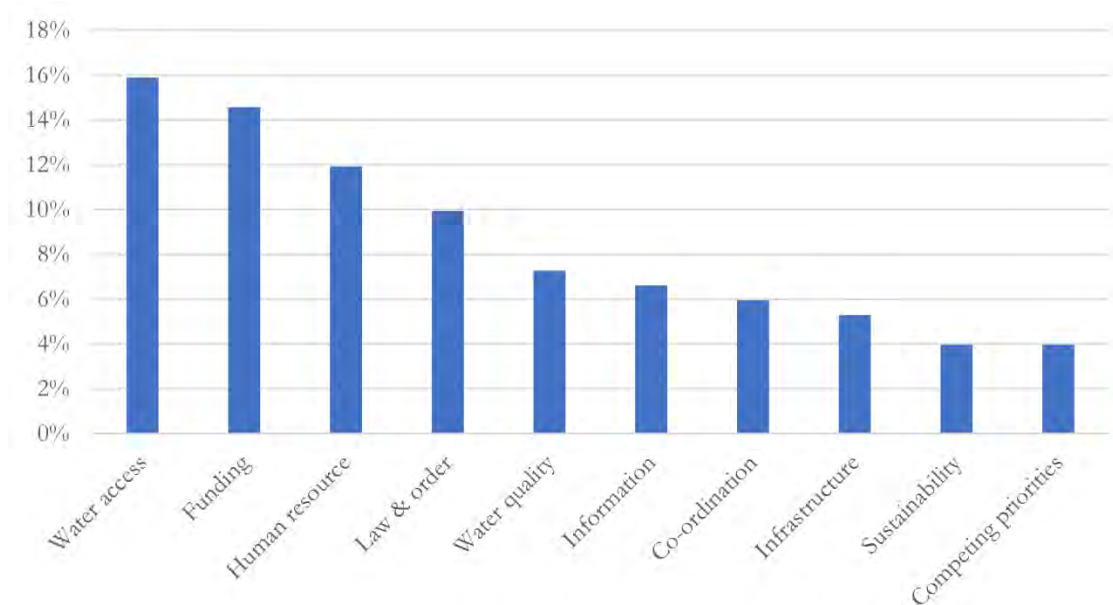


Figure 7.10: Overall key challenges for managing water resources<sup>15</sup>

Figure 7.11 shows that female respondents were far more concerned about accessing water than their male counterparts. As explained in Box 3, this is because women are often primarily responsible for collecting, as well as maintaining the quality of and storing, water. It is also important to note that the complexities around traditional land ownership can make accessing water difficult for some, and cause delays or halt projects designed to improve water quality and access. As one man in Wewak said, "the primary challenge right now is [the] customary land issue. You can bring any kind of project and if it is located on state land, you'll be safe but if it is on customary land, anything can happen because the people have rights."

Men, on the other hand, were more concerned about the challenges connected to funding (see Box 4) and law and order. Reflecting on the challenge that law-and-order poses to water management, during an individual interview one male respondent from South Fly said,

The challenge for the people here is that once they have money, they install tanks. And then ... they get connected but when they don't have money they get disconnected and they turn to vandalism [and] illegal connections and something like that. Those sorts of problems are very hard to solve. When you try to solve those problems, people will come and instigate problems... Those who get disconnected go into vandalism – cut pipes and connect them to their homes.

While this quote speaks to law-and-order challenges, it is also a reminder of the difficulties facing individuals in rural and remote areas in trying to maintain water infrastructure. This highlights the importance of both investments in infrastructure (which is often the focus of DSIP funding [Howes et al 2014]), and more crucially, regular maintenance.

<sup>15</sup> From 50 respondents

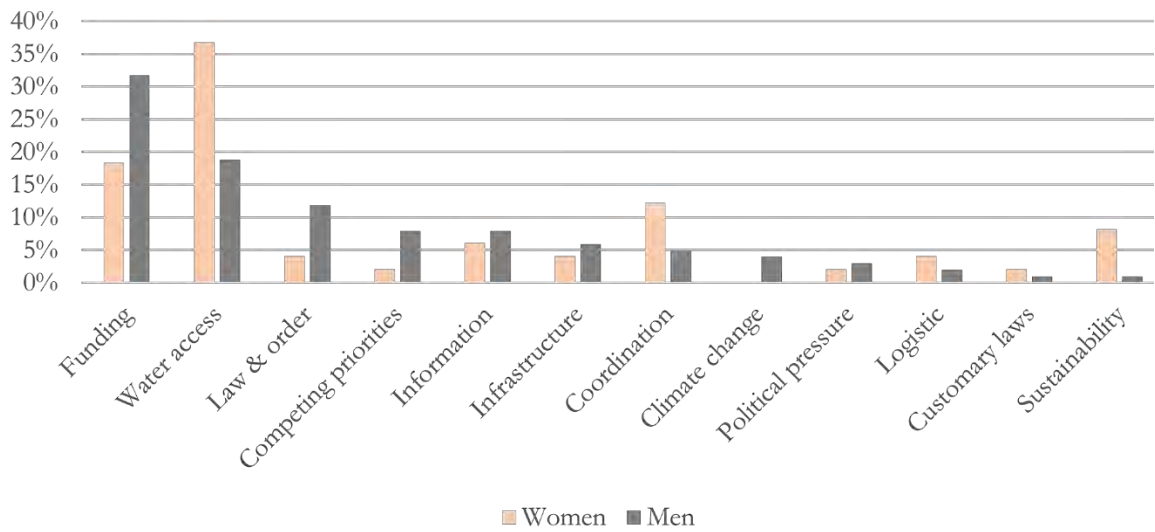


Figure 7.11: Female and male responses about key challenges for managing water resources<sup>16</sup>

There were also significant differences between respondents working with or at the subnational and national scales. Figure 7.12 shows that those working at the subnational scale were far more concerned about access to water than those working at the national scale, with those from South Fly particularly concerned about access to water.



Plate 7.1: A woman and girls accessing a water tap in Wewak district, 2024

<sup>16</sup> From 50 respondents

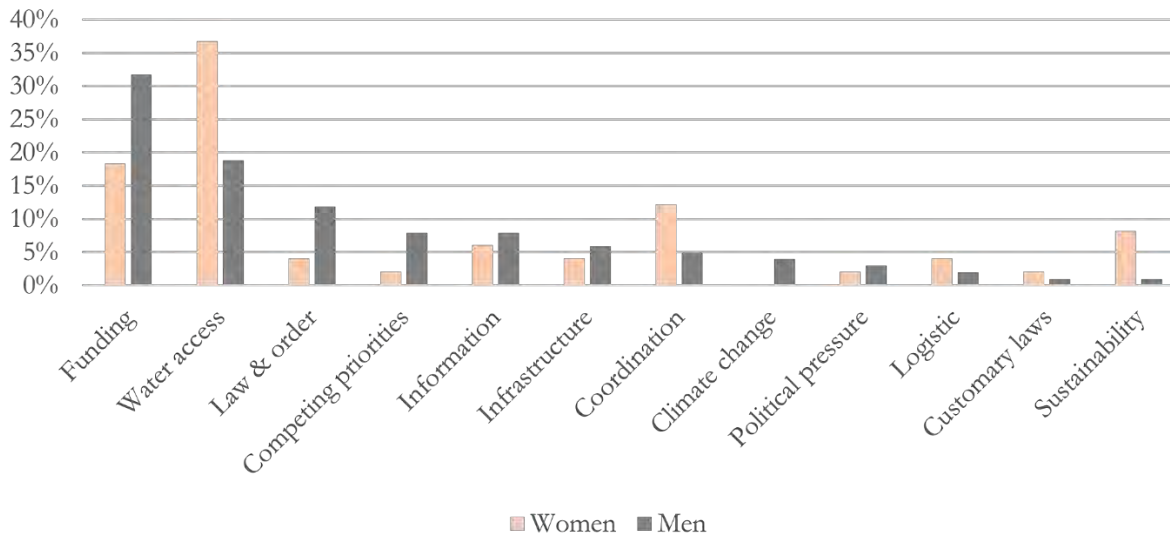


Figure 7.12: Female and male responses about key challenges for managing water resources<sup>17</sup>

On the other hand, national counterparts were more concerned about coordination, competing priorities and the lack of information. Both subnational and national actors were concerned about funding and resources, which was reflected in FGDs (see Box 4).

**Box 4: Resources for improving water management – Insights from Focus Group Discussions**

Funding – the lack of it and the importance of securing more – was a recurring theme in the FGDs. Participants emphasised that while there is manpower and technical capability available, all too often, in the words of a male from South Fly, the "money power" is lacking. While the DWCs were acknowledged as an important way of influencing budget allocations by some, many were concerned that more could be done to ensure WaSH projects in particular are properly funded. Without prioritising WaSH in annual plans and budgets, many feared communities will continue to face water-related challenges. As one female participant of a FGD in Wewak noted, "If we don't make WaSH a priority, we will be here talking about WaSH, WaSH, WaSH, and remain helpless."

For many, this meant proactively engaging with government leaders to secure their approval and support. As one male participant in South Fly noted, "knocking on the door" of politicians and public servants was critical to ensuring continued funding. Furthermore, there was emphasis on the importance of transparency and accountability in financial management of WaSH projects to ensure that resources are utilised efficiently and effectively. Additionally, some participants stressed the need for sustainable funding models that can support WaSH initiatives beyond short-term projects. They suggested exploring alternative funding sources, such as public-private partnerships or innovative financing mechanisms, to supplement government funding.

<sup>17</sup> From 50 respondents

## 7.5 How to improve water resource management

When asked about what needed to be done to improve water resource management in the country, the most popular response from respondents (25%) was greater community engagement and collective decision-making (see Figure 17). The second most popular response (with 21%) was increasing funding and prioritising water in national and subnational budgets.

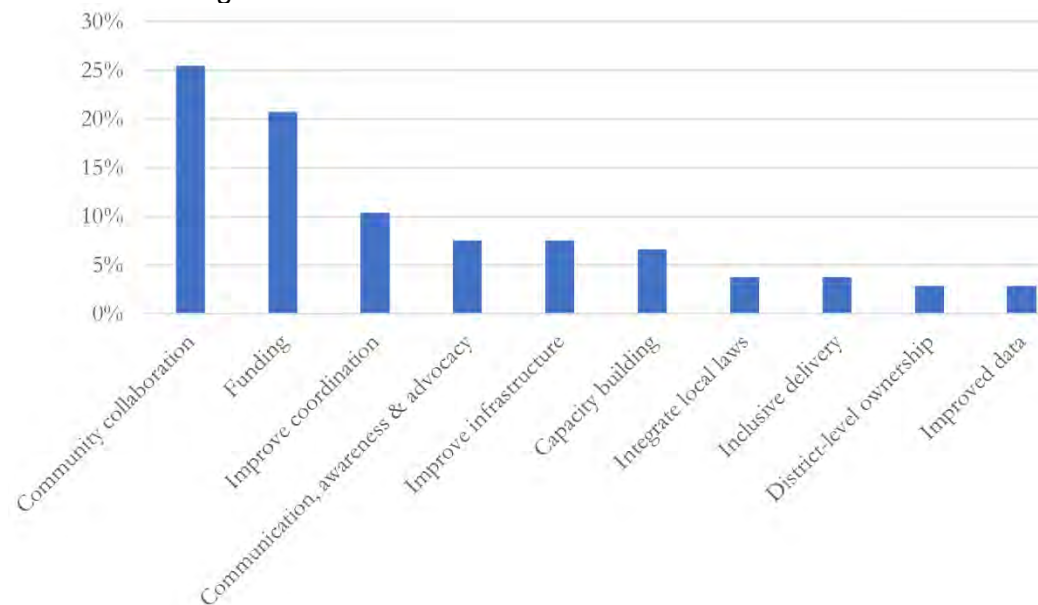


Figure 7.13: Suggestions for improving water management<sup>18</sup>

Figure 7.14 shows that women were more likely to suggest more needs to be done to improve community collaboration and decision-making. Female respondents suggested two ways of improving collaboration. The first, was to improve communities' communication and engagement with the range of stakeholders involved in managing water resources. A female respondent working at the national level said,

I think from what I can help, I guess, is to be communicating with the various different stakeholders more frequently and having the buy-in [particularly] from the WASH PMU

The second involved improving community ownership over water resources. One female respondent in a mixed FGD in Wewak said,

we have one tank but we as a community need [it restored] ... The community must agree and identify a certain amount of money to be contributed by members of the community on a monthly basis to ... to cover the cost of any damaged parts of the water project instead of going around looking for money when an incident happens. ...So at least we contribute K10 or K20 on a monthly or fortnightly basis to keep on standby to cover water-related emergency cases.

This quote suggests that in more could be done to strengthen the community's ability to collaborate through fund raising to maintain water resources. Both men and women were just as likely to suggest that more funding would help improve water management (Figure 7.14).

<sup>18</sup> From 52 respondents

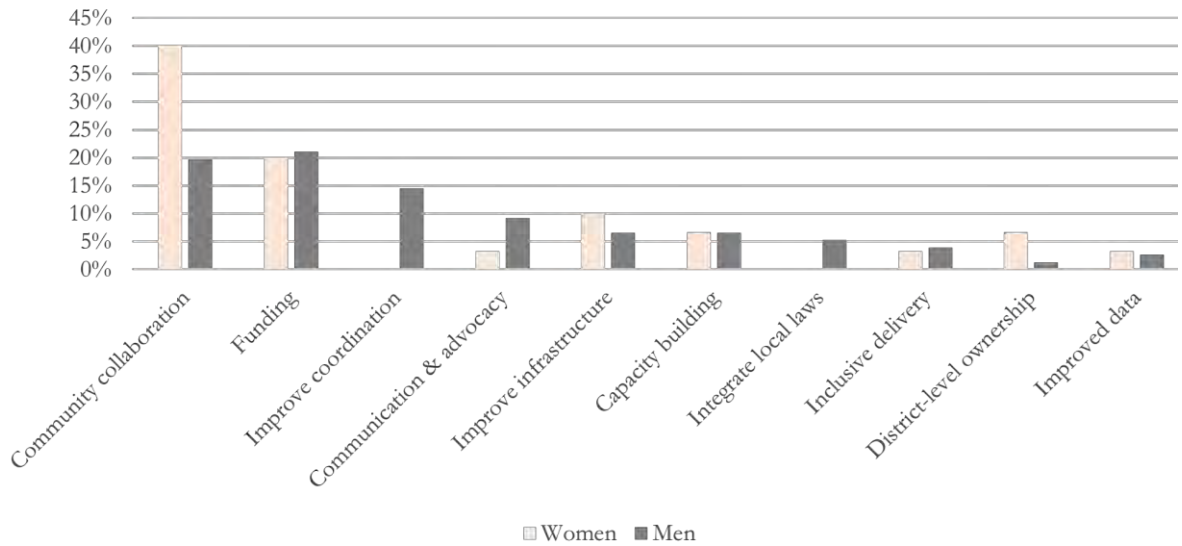


Figure 7.14: Female and male suggestions for improving water management<sup>19</sup>

Figure 7.15 shows that respondents working at the subnational scale were more likely to say they wanted to see greater community collaboration and collective decision-making, while those working at the national level were more concerned with funding.

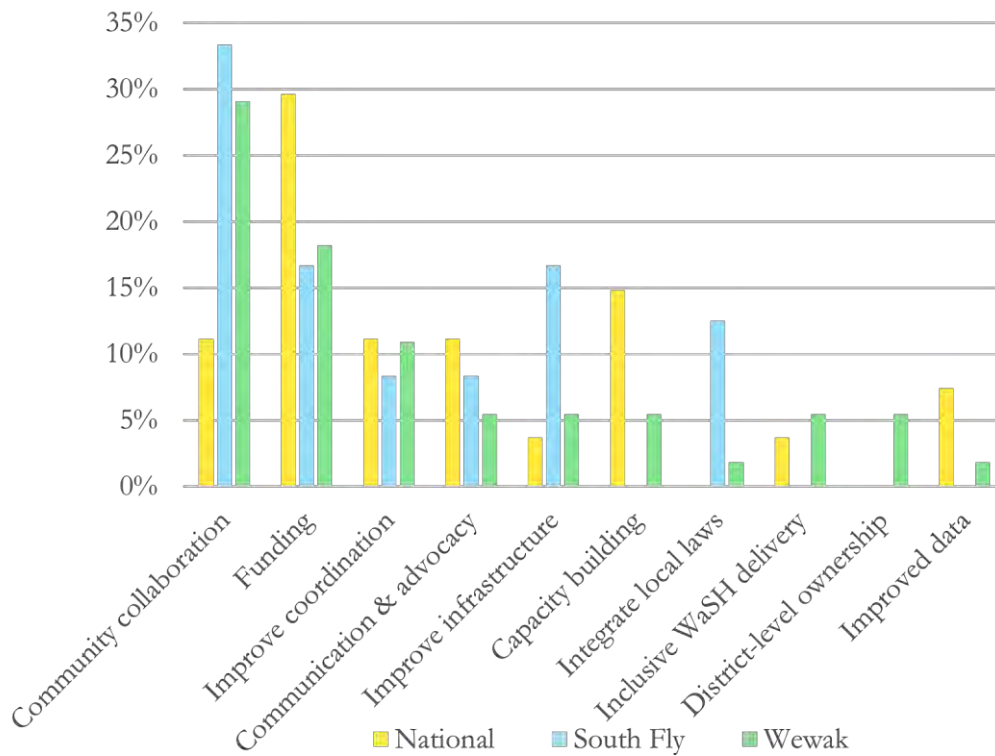


Figure 7.15: Subnational and national suggestions for improving water management<sup>20</sup>

<sup>19</sup> From 52 respondents

<sup>20</sup> From 52 respondents

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## 7.6 The potential for expanding District WaSH Committees

Currently, DWCs focus almost exclusively on improving WaSH. However, given broader challenges around water management in PNG (as explored in Section 7.1), some have suggested that there might be scope for these committees to take on broader responsibilities – particularly around agricultural and industrial water use. Given this, in the individual interviews respondents were asked whether they thought the role of DWCs could be go beyond focusing on WaSH to improve the use of and decision-making about water for agriculture and other businesses and industries.

Some respondents were sceptical about expanding the DWC's role: they believed that DWCs had enough to do in focusing on their primary mandate. This often was the assessment of those working at the national scale. A male consultant summarised this view,

I think the short answer is at the moment, no... I don't see [DWCs doing] very much in terms of water resource management. I know ... there's a lot of talk about linking WaSH with water resource management. But I don't really see it in PNG ... I know that you have CEPA (Conservation and Environment Protection Authority), the Environmental Agency, and I know that you have the Mineral Resource Authority [that] talk about [it], they know about hydrology and drilling, but I don't see much connection.

Another consultant said that, at this stage, getting DWCs to focus on anything other than WaSH would undermine their sustainability:

In the absence of an NGO, those committees tend to stop operating. So, they're not reliable ... I wouldn't consider them to be ... a reliable body for guiding water resource management at all... As soon as an NGO withdraws, the committee stops working, so I wouldn't consider that to be a model for water resource management.

Others, however, were cautiously optimistic about the opportunities for expanding their mandate. A male respondent working for the Wewak LLG explained,

At the moment, the [DWCs] [do] not cover the business and industries (economic activities), rather it covers the schools and communities. But with regards to the economic activities, especially the small holder farming, ... we can still contribute towards making water available [along with] other sectors like business. An example [is]... fisheries where small holder farmers are processing fish and are supplied with solar power systems and deep freezers that are used to store their fish. These farmers need water to make ice ... So, I think we can make a contribution towards [that].

A female NGO worker in Wewak suggested that improving WaSH for farmers would help with productivity: "everyone wants to get money from cocoa because the price is going up [but] our hygiene is not good, we need proper sanitation [to help ensure we don't get sick]".

These more sanguine respondents thought more could be done to improve data collection, analysis, resource allocation and co-ordination. First and foremost, they highlighted the potential for DWCs to play a greater role in collecting and sharing data and information that could benefit agricultural and other industries. A male respondent working within East Sepik provincial government said that data is the most important factor for expanding the role of DWCs to help ensure "informed decision-making". Having access to information about broader water resource needs was critical if DWCs are to help improve water issues with industry as one male working for the Wewak district government noting: "if we can find out how [industry and farmers] manage the water...then we can help".

To improve data sharing, the Department of National Planning and Monitoring has developed the National WASH Management Information System (MIS) utilising the mWater platform, which collects and analyses a range of WaSH and water related data – including on water funding, use and management issues. This portal provides a host of information uploaded by users across the country and has the potential to help guide efforts to expand upon DWCs mandate where capacity exists. A male respondent from an NGO working at the national level said that data sharing was already taking place, and could be scaled up:

we also do this through the technical planning group, we work more closely with the National Weather Service ... and the Sepik Government. We just signed a MOU last week, in fact, is to install weather stations, at all the specific strategic sites in Sepik, five locations, and even the weather data. So it will pick up ... rainfall and moisture [which will help] with for WaSH planning, but it also picks up other stuff that's useful for say, agriculture. So, I think there's things that can ... overlap each other. So, we could kill two birds with one stone, in a sense, with some of these data.

Some respondents also called for greater resources and better co-ordination between agencies and levels of government to improve cross-sectional water management. A male working for local level government in Wewak said,

Our issue is we do not have a commercial officer, for instance, in the WaSH coordination body to tell us which commercial activities or areas [which] need water. These are the kind of people who advise us where the water needs to go.

Some respondents also cited the need for better coordination of cross-sectional water management issues. For example, a male respondent working for the Wewak provincial government said,

I think the most important thing is for training for village and clan leaders, so they understand; [training is also needed for] the ward members. At the provincial level, we can run trainings and then we can conduct trainings at the LLGs and Districts. We can share data [and] information that can go from the LLGs to the districts and go further up [to] the National level.

In summary, as a group, respondents were ambivalent about the potential for DWCs taking on a broader mandate. These responses suggest that efforts to incorporate broader responsibilities for DWCs need to be considered on a case-by-case basis. DWCs with adequate resources and capacity might be able to play a role in managing other water resources, as long as they are supported by a coalition of government and non-government agencies and informed by relevant data. But first and foremost, DWCs should focus on their primary mandate, particularly when new committees are being established.

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## 7.7 Insights from a policymaker consultation workshop

As noted in the methodology (Section 5), some of the findings above were presented to around 45 key stakeholders in Port Moresby in October 2024. Respondents were asked to provide comments on these initial findings and outline how they could shape policy and practice over the coming years. Plate 3 shows some respondents presenting their reflections on the findings. This sub-section summarises these responses.



Plate 7.2: District consultation workshop discussions and presentations

To start with, respondents were keen to note that they had seen improvements to WaSH resources and projects over the past few years. They also recounted stories about how they had personally worked hard, and in difficult circumstances, to deliver and manage WaSH projects. At various times respondents were keen to note that their feedback on the findings should not be seen as criticism of efforts to date.

However, when presenting their recommendations respondents noted that they agreed with the key findings of the research presented above, and were keen to see more done to ensure that the gaps highlighted were addressed. In terms of specific recommendations, respondents suggested that the following should be prioritised.

### **1. Improved funding and resourcing**

Respondents stressed the importance of financial investment and resource allocation to ensure successful implementation. Indeed, many respondents expressed frustration that money was not only scarce, but it was difficult to get access to information about how to access it. One district administrator said, "the PMU national office [has said] there is money [for WaSH], but how do we access that money? ... We at the district... developed our five-year district WaSH plan in 2019, twice we submitted [it], and we do not know today [where our money is]". This highlights the need for a clear financial pathway and accountability to ensure that funds are appropriately allocated and utilised for the projects that are outlined in five-year WaSH plans.

Some called for the establishment of Memorandums of Understanding (MOUs) between national, provincial, and district levels of government to improve certainties around accessing finance. One respondent from South Fly said that they wanted to "sign [an] MOA with the Western provincial government to source funding for our WaSH project". Respondents suggested these agreements would formalise the financial commitments and responsibilities of each level of government, ensuring that resources are allocated efficiently and transparently.

Advocacy was, for some, one way of achieving this. One respondent from an international NGO said, "advocacy is very important to actually drive the policies from the national level, sensitizing people up at the regional level". Another respondent said, "we need to influence the politicians; they make the decisions".

Respondents also wanted to see more specific WaSH-related roles established at both provincial and district levels. For example, one respondent from South Fly said, "we need to recruit ... WaSH positions under the PHA [Provincial Health Authority] structure". Some called for appointing full-time WaSH coordinators at both provincial and district levels.

### **2. Greater co-ordination between the local and national scales**

Reflecting on the network diagrams featured in Section 7.2, respondents agreed that there was too much reliance on NGOs to bridge the gap between subnational and national

levels of government. A respondent from an international NGO noted that while they play an important role, “there's [still] an absence of coordination”. A district official said, “There is a missing link between national planning down to the provincial planning, down to the district planning”. As a result, while there is a national WaSH Project Management Unit that currently serves as a coordination body, some suggested that other bodies were needed, particularly at the provincial level. One respondent from Wewak district said, “we need a central coordinating agency to coordinate WaSH at the province and national level...that is well-resourced”. In turn, some participants felt that better resourced agencies at the provincial and national level would help to bridge the gap between national policymakers and subnational stakeholders. By streamlining resource allocation and providing consistent guidance and standards, some respondents also believed such agencies could facilitate better collaboration with international partners and NGOs.

Others noted that more needed to be done to collect and analyse data to guide coordination and inform implementation efforts. A respondent from Bougainville shared that that her government established a WaSH unit in part because, “we realized that we were not managing the data properly”. Other respondents agreed that more could be done to both collect and analyse data around water resource management, and some suggested that they would like more to be done with the data collected by the government's WaSH MIS.

### **3. Enhanced community engagement**

Many respondents wanted to see greater community engagement and ownership over WaSH. For some, more could be done to include women and marginalised communities in decision-making. For example, a disability advocate said, “we want to see that people living with disability and women are being empowered”. She went on to say that more needed to be done to include women and marginalised communities' voices in local level government discussions:

The first thing first has to be done in the LLGs. They have to be [where] WaSH committees are established, [and] where women and [people with] disabilities can participate. And then from there, it's carried on to the ... district, province and the nation budget allocations to work with the vulnerable groups of people. That's women and [those with] disabilities.

Others suggested that while significant gains had been made, more could be done to improve community ownership of WaSH projects and programs. A respondent from one local NGO said, “we see [a] lack of ownership... at the subnational level, down to the community level, the beneficiary level”. He went on to explain that in his district a lack of ownership led some in the community destroying a water system. To build community ownership some suggested that policymakers should understand and respond to traditional knowledge and communal ownership practices.

### **4. Adapting to context**

Finally, respondents stressed that understanding and responding to the challenges and opportunities presented by different contexts is critical for the successful implementation of WaSH projects. A district official noted that “when we talk[ed] about our findings, you know, we felt that it varies”. He went on to explain that even within the one province there was great variety: “Western Province has a very large geographical remoteness.” He continued,

So, the findings that we have is only for the South Fly, but [that] doesn't mean that it will be the same for Delta, Middle and North Fly [districts]; it will vary. ...The findings will be different in terms of when we try to do the planning, in terms of doing the monitoring, and also the implementation part of it.

This point was well received by the larger group, with many noting that while government policies are developed at the national level, ultimately, they need to be adapted to address the social, cultural, economic and political differences in different areas. Respondents suggested there is a need for tailored solutions that consider the unique needs and circumstances of different communities.

All of these recommendations, along with key initial research findings, were subsequently presented to national stakeholders – including senior representatives from government, donors and NGOs – at the national WaSH symposium on 17 October 2024. This meant that senior policymakers were clear about the priorities identified by both the research and subnational stakeholders. Since the research was presented, the Department of National Planning and Monitoring WaSH PMU have formed MoUs with 13 districts, aiming to support their formation of DWCs and lay plans for forming 5-year costed WaSH plans at district level. The research has provided useful insights into the composition, structures and roles of stakeholders on the DWC. Several Provinces have taken steps to form Provincial WaSH committees as formal subcommittee under the Provincial Administration, aligning with Section 25 of PNG organic law 1998.

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## 8 Impacts

The project has generated valuable new knowledge that has impacted upon policy, practice and will contribute to debates within the academic literature. It has built the capacity of Papua New Guinean and Australian students and professionals. Through targeted communications the project has already influenced hundreds of key stakeholders and will reach out to many more. The project also promises to positively impact economic, social and community outcomes.

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### 8.1 Scientific impacts – now and in 5 years

The academic literature has highlighted the challenges facing marginalised communities in participating in water governance, though recent research has suggested that opening governance fora to marginalised communities can improve access to and control over water resources (see Aleu et al 2022). This research contributes to this debate by drawing on findings in two contexts in PNG, a country which has, to date, been significantly under-researched by water governance scholars.

The research findings outlined in this report provide the basis for at least two academic articles for publication in highly-ranked journals (as noted in Section 6, the lead authors Grant Walton and Safa Fanaian are currently drafting these papers). By drawing on PNG as a case study, the first will focus on academic debates about the local contexts and networks that shape the delivery of water governance in the global south. There are two prominent streams in the water governance literature. On the one hand, many scholars have shown that water governance is shaped by local power relations that, while fluid, can result in marginalised people being excluded from access to and decisions about water (e.g. Latchmore, et al 2018). On the other hand, scholars have shown that water governance is shaped by trans-local networks that link stakeholders across space (e.g. Eberhard, 2017). Our contribution to this literature is to draw on our case studies to bring these two elements of the literature together; that is, to show how water governance is shaped by both local context and networks that connect subnational and national actors and institutions. The tentative title of this paper is “Relational Place and Water Governance: Insights from Papua New Guinea”.

The second paper is tentatively titled, "Mapping Water Governance Networks: Decentralization, Collaboration, and Participation in Papua New Guinea". This paper will draw on the Social Network Analysis (SNA) described in this report to map water governance relationships, identifying who collaborates with whom, on what issues, and how effectively these collaborations function. Findings will focus on the role and power of development ‘brokers’ (those who bring together different elements of a development project) in bridging the gap between national and subnational scales. It will show that while national and subnational governments engage within governance structures, coordination remains uneven, with NGOs becoming the key ‘brokers’ between policy and community-level implementation. We look at the benefits and drawbacks of this arrangement, and the implications for women and marginalised groups who are often underrepresented in governance networks. By providing a network-based perspective on governance interactions, this research highlights the structural dynamics between national, subnational and non-state actors, revealing who is included and marginalised and what this means for effective and inclusive water management.

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### 8.2 Capacity impacts – now and in 5 years

Through the research and associated training by ANU staff, WaterAid and World Vision staff have gained valuable new knowledge, capacity and experience in qualitative and quantitative research methods, including research ethics, snowball sampling, key informant interview methods, facilitating focus group discussions and conducting key

informant interviews. With research a key part of both WaterAid and World Vision's operations, there is significant scope to participate in and undertake further research using the capacity gained through this project.

Prior to the research, WaterAid and World Vision already had strong existing relationships with both National and subnational stakeholders, however these relationships were mostly under the scope and expertise of WASH. The research provided the opportunity to broaden conversations to include water resource management, and network with non-WASH stakeholders, for example from CEPA, CCDA, MRA. The conversation and networking through the research has provided some momentum and traction to further align WaSH and WRM. As part of efforts to integrate WRM into the 2025-2030 WaSH sector development plan, WaterAid have been engaged by the Australian Water Partnership to undertake a baseline of the existing state of WRM in PNG. The work draws upon the findings outlined in this report.

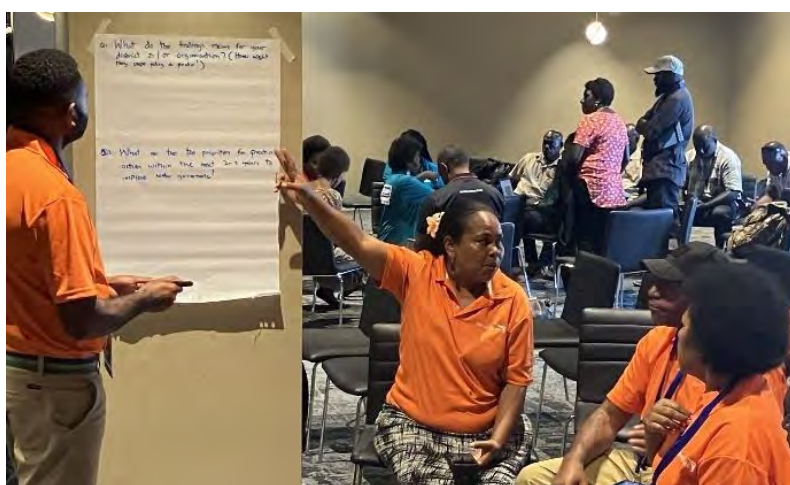


Plate 8.1: Turea Wickham and the team from World Vision reflecting on the findings

### **Student capacity building**

This project provided valuable capacity-building opportunities for two interns, enhancing their research skills and professional development. David Poka, a Papua New Guinean Masters in International and Development Economics student at the Crawford School of Public Policy, ANU, provided research assistance in late 2023 and early 2024. He gained hands-on experience in qualitative and quantitative research by conducting a literature review on water governance in PNG and conducting interviews. This helped him develop skills in data collection, analysis and deriving insights from policy literature. David is now a lecturer at the University of Papua New Guinea's School of Public Policy.

Katherine Durban, a Masters of International Relations student at ANU, was an intern on the project in Semester 1, 2024. Katherine conducted research on the gendered dimensions of water policy in PNG. In doing so she deepened her understanding of gender-differentiated perspectives in water governance, particularly in comparing PNG to other Pacific Island nations. She also strengthened her ability to quantify qualitative data and refine her academic writing skills; this included producing research content for broader audiences. Katherine is now a Graduate Consultant in Earnst and Young's Climate Change and Sustainability Services division. By actively engaging in key aspects of the project, both interns not only contributed to the research but also built foundational skills that will support their future academic and professional careers in governance, policy, and research.

The research findings were presented at a lecture for around 25 Master of Economics and Public Policy students at the University of Papua New Guinea in October 2025 (Plate 5). Lecturing at this course was specifically relevant for capacity building as the students in

this course are working executives in government and other fields currently holding managerial positions. The lecture for the MEPP students focused on framing water-related challenges in PNG and included insights from the research. The lecture informed students about existing policies related to water governance in PNG, the challenges associated with their implementation and the broader implications for the effectiveness of water governance. Additionally, we shared the research results of the network analysis to highlight the gap between policy and practice. Safa also demonstrated how water governance unfolds in reality, who is missing from these governance networks and the impact of these missing actors on implementation at the community level. This engagement provided students with examples of how to research governance structures and identify pathways for more inclusive and effective water management in PNG.



Plate 8.2: Safa Fanaian with postgraduate students at The University of Papua New Guinea

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## 8.3 Community impacts – now and in 5 years

### 8.3.1 Economic impacts

In line with previous assessments of PNG's WaSH sector, a key finding emerging from the research is the importance of increasing funding for WaSH and water-related projects, and to improve the funding mechanisms associated with accessing this funding. In particular, the research highlights that financing mechanisms by DWCs can be enhanced by increasing engagement with a range of decision-makers, namely the provincial administration and open member (the member of parliament). A gap identified through the research and the associated stakeholder workshops was the lack of DWC engagement, communications strategies and clear roles and responsibilities for undertaking advocacy and engagement. While this is happening informally by DWC members, such as the district authority, a more deliberate and focused strategy could result in an increase in public funds, driving increased service delivery and economic benefit.

The study found that there is currently limited appetite to broaden the role of DWCs to agriculture water management. However, it is also important to note that in some contexts expanding the remit of DWCs could be possible. This could include getting DWCs to play a greater role in data collection, and providing technical support for agriculture and other commercial activities which could improve livelihood outcomes.

As discussed above, these findings were presented to both national and subnational stakeholders, who subsequently discussed how they could improve both the quantity of funding available and the ease of which they can be accessed. These conversations have provided a platform for policymakers to advocate for further changes to funding mechanisms in the future. The research project has thus provided them with the evidence required to shape policies around the funding of WaSH and water projects in the years to come, and will contribute to the improved WaSH practices and in turn reduce the costs associated with poor health outcomes.

### **8.3.2 Social impacts**

The initial sharing of results has already resulted in some nascent social benefits. Through intentional engagement with the community, stakeholders, rights holders and duty bearers – there has already been heightened awareness and advocacy around sustainable water practices, improving participation of communities in local water decision-making in both South Fly and Wewak. DWCs in both districts have benefited from the sharing of knowledge, perspectives and recommendations from this research; this has started to contribute to a more robust approach to decision-making, accountability and service delivery.

The research findings provide tangible recommendations that, if adopted in part or whole, could mark significant improvements to the functions, performance and accountability of DWCs, this in turn would have flow on impacts to communities in the way water and WaSH services are financed and delivered. For instance, if the DWC were to prioritise building political will to improve public funding and resource allocation this could discernibly result in acceleration of service delivery and the community would benefit from improved services.

Enhancing community engagement by ensuring there is more direct engagement for women, youth and marginalised groups with decision-makers, especially within the LLG could result in a range of benefits from more fit-for-purpose and inclusive infrastructure to more targeted investment for the most marginalised. While adopting the research recommendations will take time, resources, strategy and agreement among stakeholders, changes and benefits could potentially be observed within five years, accelerated by the continuing pace of decentralisation.

Over the next five-year period we anticipate the project's findings will contribute to strengthened local institutions; improved health outcomes (which will reduce costs associated with poor health outcomes); sustainable water resources management (thereby ensuring equitable access to all members of the community, including marginalised groups); and enhanced climate resilience approaches to infrastructure, financing, and community behaviours. These anticipated outcomes are rooted in the principle that effective water governance not only improves immediate access to safe water but also lays the foundation for long-term community development and resilience. Having said this we are aware of the significant capacity constraints and uncertainties within the sector, and that these outcomes are reliant on the continued prioritisation of WaSH reform in PNG.

### **8.3.3 Environmental impacts**

Ultimately, the findings and recommendations provide a basis for improving the management of one of PNG's most precious environmental commodities: water. This is particularly important due to the increasing pressures on clean water across the country which have been exacerbated by climate change and pollution.

The research on water governance in Papua New Guinea (PNG) reveals a complex but critical intersection of climate, governance, and community participation, with profound implications for environmental sustainability. This is particularly the case given the increased recognition of the planetary limitations of key resources as outlined by the

planetary boundaries literature (see: Tomalka, et al 2024). Situated within the broader planetary boundaries framework —particularly freshwater use, climate change, and biosphere integrity—the report highlights both the promise and the fragility of PNG’s water systems.

PNG’s recent ‘WaSH era’ has seen a welcome increase in political attention and policy development, yet the over-reliance on NGOs and limited governmental ownership challenge long-term resilience. Climate change compounds these issues. Rising temperatures, unpredictable rainfall, and extreme weather events increase the strain on fragile water infrastructure and sanitation systems. This affects both water quantity and quality, particularly for rural and marginalised communities. The lack of data further obscures the true scale of environmental stress, limiting proactive adaptation.

From a planetary boundaries perspective, the over-extraction or contamination of freshwater resources risks local hydrological systems. Inadequate WaSH services—particularly in climate-vulnerable districts like South Fly and Wewak—can exacerbate disease outbreaks, ecosystem degradation, and gendered vulnerability. Conversely, well-governed water systems have co-benefits: they reduce pressure on ecological systems, enhance adaptive capacity, and promote public health.

As found in other contexts across the Pacific (WISH Pacific, 2022), PNG’s future lies in strengthening district-level governance structures (such as DWCs) and embedding local social, cultural and ecological knowledge into water decision-making. Recommendations to improve resourcing, data systems, gender inclusion, and policy adaptability align well with this approach, promoting both environmental and social health.

In sum, PNG’s challenge is not just access to water but securing climate-resilient, community-led governance that operates within safe environmental limits. As this report has outlined, supporting this requires bridging WaSH and water resource management—ensuring catchments and communities can thrive together.

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## 8.4 Communication and dissemination activities

The project has communicated its findings and recommendations in the following ways:

- Preliminary findings were presented at the annual PNG Update conference on 22 August 2024, which was held at the University of Papua New Guinea. Approximately 50 people – including university students, academics, NGO representatives, donors, and community representatives – attended the presentation. The presentation was entitled: “Role of district WASH committees in building bridges for improving water access, quality, and equality”.
- As described in Section 8.2, preliminary findings were shared with Masters students at the University of PNG in October 2024 (Plate 5).
- Preliminary findings and recommendations were shared with subnational stakeholders in Port Moresby on 16 October 2024 (Plate 6). In this workshop, participants provided their own recommendations emanating from the findings.
- Findings and recommendations were presented to national stakeholders at the 2024 national WaSH symposium on 17 October 2024 (Plate 7).
- The research findings have been communicated disseminated through a quarterly DWC meeting in Wewak and stakeholder meetings in South Fly.
- WaterAid has developed a learning brief “Forming an inclusive and Climate Resilient 5-year District WASH plan” (Plate 8); the learning brief is a synthesis of experiences from different districts across the country and features research findings from the Improving Water Governance project. This learning brief has been distributed to key policy stakeholders and will assist those involved in establishing new DWCs in East New Britain province.

- The team has produced two separate policy briefs, which can be used by key stakeholders to understand the findings and what they mean for policy. The first is entitled: *How can water governance networks in Papua New Guinea be strengthened?* The second is entitled: *How can WASH policy-makers engage more constructively with women’s experiences and priorities in Papua New Guinea?*
- The team has also compiled two blogs, which have been submitted to devpolicy.org. Once these blogs are published, the Development Policy Centre media team will distribute them to media in PNG and the Pacific region.



Plate 8.3: Safa Fanaian presents preliminary research findings to subnational stakeholders in Port Moresby



Plate 8.4: Grant Walton presents preliminary research findings to national stakeholders at the 2024 WASH Symposium

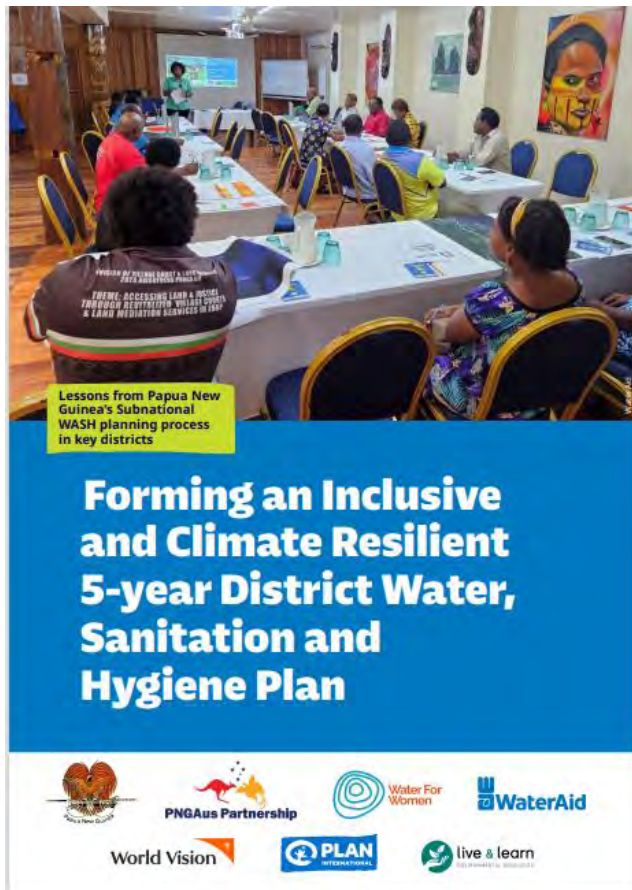


Plate 8.5: Front page of the “Forming an inclusive and Climate Resilient 5-year District WASH plan” learning brief

The findings and recommendations emanating from the project will also be shared into the future, in a variety of ways, including:

- World Vision’s Turea Wickham will share the findings to international stakeholders at the Water security and WASH in Asia Pacific conference being held in Bangkok and Fiji on 29 April – 1 May 2025.
- WaterAid and World Vision plan to further communicate and dissemination the research findings through formal and informal meetings, and internal learning events.
- World Vision is developing two key documents for its WASH programme:  
i) Knowledge & Learning Strategy ii) Communications and Advocacy Strategy, and this research will feature in this strategy.

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## 9 Conclusions and recommendations

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### 9.1 Conclusions

This report has shown the opportunities and challenges facing policymakers and other stakeholders tasked with improving WaSH outcomes, along with other ways water is used – such as for agriculture and industry. While PNG has been labelled one of the wettest countries in the world, it still struggles to provide clean water where and when its population requires it. The country's ability to do so is particularly challenging given the difficulties posed by climate change, increasing pollution, gender relations and the country's challenging terrain and demography. To address these challenges, over the past decade the PNG government – supported by NGOs, donors, and communities – has focused its efforts on improving access to clean water and sanitation. We see these efforts as a new epoch in water management, and argue they constitute what we call the 'WaSH era'.

Aiming to improve WaSH outcomes across the country, the government has introduced DWCs designed to shape policy, funding and projects within district administrations. Piloted in a handful of districts, these committees are slated to roll out across the country. The research featured in this report has focused on better understanding the networks associated with these committees, how they work, and what needs to be done to improve and potentially expand their activities. It has done so by undertaking a literature review and research with national and subnational (within two districts, Wewak and South Fly) stakeholders. In particular, in line with the project's objectives, it has:

1. Developed and undertaken network governance analysis of district WaSH committees in two districts in PNG.
2. Identified those empowered and excluded from decision-making around water use and allocations.
3. Consolidated knowledge and supported policy and practice to link WaSH and WRM governance at the local scale.
4. Considered how WRM could be further incorporated into sub-national planning and decision-making.

Through a literature review, interviews and FGDs, the research has provided a number of key findings that derive from these objectives. For a start, it has shown that the networks governing WaSH in PNG are complex, but are marked by:

- An over-reliance of well-funded NGOs bridging policy making at the national level and implementation at the subnational level. It is understandable that NGOs play a prominent role during the initial rollout of DWCs given their resources and ability to work between subnational and national scales. However, our analysis shows that as DWCs are rolled out across the country, there is an opportunity to ensure governments are stepping in to the roles that NGOs are currently playing.
- A handful of primary actors who have come to play a critical role in both developing policy and delivering on it. In terms of the former, NGOs and the WaSH PMU have come to play a critical role, while at the subnational level LLG managers and district CEOs are critical for the delivery of WaSH projects.
- Concerns that the right types of people are still not involved and adequately supported to constructively contribute, with respondents concerned that provincial government officials and politicians could be more involved in water governance. There are also further opportunities to improve community ownership over water resources.

The research also shows significant differences between men and women. Women were more likely to want local community groups involved in water networks, considered access to water a key challenge and wanted to see more community involvement and decision-

making. Women recounted how they faced significant challenges in accessing clean water, particularly for cooking and sanitation needs. Men more likely wanted to see more politicians involved in water governance and were more concerned about improving funding and law-and-order. There were key differences between those working at national and subnational scales too. National-level respondents were concerned with increasing the role of national government officials in decision-making and wanted to see greater coordination and funding/resources.

When asked about expanding the role of the DWCs to include management of other water resources and priorities, responses suggest policymakers should proceed with caution, and when first introducing these committees focus on their core mandate. While there are opportunities for expanding the DWC's role in data sharing and collection, some were concerned that expecting these committees to take on too much might undermine their sustainability. Reflecting on the findings in a workshop in Port Moresby key stakeholders highlighted the importance of improved funding and resourcing, better co-ordination between the local and national scales, enhanced community engagement and the need to adapt policies to the local context.

The findings show that while the WaSH era has helped to focus attention onto one of the country's key challenges, there's much more that can be done to improve the management of the nation's water resources. Below, we provide key recommendations emanating from the findings.

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## 9.2 Recommendations

The recommendations emanating from this research are grounded in the responses from the variety of people interviewed. We start our analysis with the suggestions made by the policymakers and other key stakeholders that are summarised in Section 8. This is because the approximately 45 participants in these workshops engage with the challenges of improving water management in PNG on a daily basis. We agree that **improving water governance in PNG needs to start with examining ways to improve funding and resource allocation**. While the WaSH era has seen an increase of policies, plans and resources devoted to improving WaSH across the country, there are still uncertainties about how to access funding and the funding envelopes for activities on a year-to-year basis. Creating separate budget lines in the national budget, and DSIP allocations, for WaSH could help. As would efforts to improve the transparency of funding application processes, particularly between the DWC and the national level. Yet, one of the most critical and yet often elusive and difficult outcomes should be to build political will towards supporting WaSH. This could mean policymakers are actively engaged in identifying and working with key politicians to ensure the gains of the WaSH era are not erased with the changing of the political guard. Moreover, community engagement in raising funds for and maintaining water infrastructure was considered underutilised, which suggests that more could be done to encourage communities to manage and contribute to their own water infrastructure and better connect them to fora that can provide external funding.

However, it is also critical to note that focusing on funding alone would be unwise. This is because, as we have shown in our analysis, improving water governance and outcomes relies upon a variety of actors working together towards common goals. This leads us to the second key recommendation: **more needs to be done to improve subnational engagement with water governance networks**. While the DWCs do include representatives from marginalised communities, in some contexts there may be scope to improve this representation at local level governments. Given that women are often primary users of water and are often excluded in decisions about it, including their representation is particularly important. As is improving engagement from people with disabilities and other marginalised groups. It is also important to note that women in particular favoured community engagement as a key priority, and that it is thus critical that

it not be overlooked in favour of male preferences of increasing funding and engaging with politicians. Both are important for strengthening water governance in the country, but building community engagement is particularly important given PNG's limited resources and the difficulties involved in sustaining political will towards any public policy issue. This is particularly the case given PNG's challenging geographic and demographic profile – with the remoteness of many communities making getting resources out to some places costly and logistically challenging.

Third, **policymakers should look to improve coordination between subnational and national scales to ensure greater sustainability of water governance networks.** The network diagrams showed that NGOs currently play an oversized role in connecting policy making and delivery. While it is important for these organisations to step into this role in the initial stages of the DWC rollout, it is important that government agencies step up to bridge this gap – particularly between the DWC and the national-level PMU. While there has been a great deal of work that has gone into widening networks around WaSH issues, more needs to be done to work with governments, particularly Provincial Health Authorities, the national health department and the WaSH Program Management Unit, to ensure that there is an ongoing connection between national and subnational scales. This could mean that NGOs ramp up efforts to build the capacity of key government agencies to bridge this gap.

Improving community engagement is also vital. Supporting LLGs is particularly important given the critical role that LLG managers play in implementing projects. This suggests that when setting up DWCs in new contexts, policymakers and implementers should make it a priority to build relationships with and support LLG managers.

Finally, it is critical that **policies are adapted to context.** PNG might be one of the wettest countries on earth, but the cultural, economic, environmental and social factors shaping water availability and management vary significantly. Thinking about these variables is particularly important when considering the potential for DWCs to take on additional roles related to managing water. While some respondents warned against DWCs taking on extra roles, others suggested that once they are established and adequately supported, these committees could help with the management of water for agriculture and other industries. Indeed, some respondents suggested that improving WaSH outcomes amongst farmers would be a small but important step in increasing productivity. However, there are significant capacity shortages in many places across the county, which are manifest by a shortage of resources, knowledge and skills, which can hamper the best efforts. Tailoring these efforts and supporting systems will be crucial.

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## 10.2 Publications produced by project

### Blogs

Fanaian, S, Walton, GW, Cox, J (forthcoming, 2025) What women want: water access, representation and development in PNG. *Devpolicy.org*

Cox, J, Fanaian, S, Walton, GW, (forthcoming, 2025) From WRM to the WaSH era: The changing landscape of water governance in Papua New Guinea *Devpolicy.org*

### Policy Briefs

Tim Davis, Simon Wanga and Clare Hanley (2024) “Forming an inclusive and Climate Resilient 5-year District WASH plan” (see Plate 8.5)

Cox, J and Walton, GW (2025) How can water governance networks in Papua New Guinea be strengthened? Policy Brief, March (see below).

Cox, J and Walton, GW (2025) How can WaSH policymakers engage more constructively with women’s experiences and priorities in PNG? Policy Brief, March (see below).

## POLICY BRIEF MARCH 2025



# How can water governance networks in Papua New Guinea be strengthened?

## SUMMARY

Over the past decade, the Papua New Guinea Government, its development partners and civil society actors have been working to improve both rural and urban Water, Sanitation and Hygiene (WaSH) outcomes through a broad set of strategies and programs. This is important because access to basic WaSH in PNG remains a challenge. Current WaSH indicators are the worst of all Pacific countries and among the poorest in the world.

This briefing paper reports on recent research into water governance in PNG and assesses the effectiveness of District WaSH Committees (DWCs), the key policy innovation that has been implemented to address water needs and programming. This brief first provides a background on the functions of DWCs before presenting key findings.



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## DISTRICT WATER COMMITTEES

DWCs represent an attempt to engage with decision-makers at the district level. Districts are the administrative units that correspond to the constituencies of each national Member of Parliament (MP) and include the local level governments (LLGs) of the area. District Development Administrations (DDAs) were established in 2014 to administer District Services Improvement Program (DSIP) funds — currently K20 million per annum — and are run by notionally independent public servants, with input from community representatives. However, in practice, district level decision-making can be heavily influenced by MPs who have few constraints on how DSIP funds are allocated, and who see development activities primarily as extensions of their political influence.

Since 2019, DWCs have been introduced in 12 districts, with plans to roll out the model across the whole country. DWCs are chaired by the District Administrator under the guidance of the district MP, and include senior DDA staff, LLG presidents and community representatives from, for example, schools and women's, youth and church groups. DWCs aim to develop better planning and coordination capacity for WaSH at the district level, attracting more and better targeted funding (including from DSIP) and delivering better outcomes for communities.

Given the importance and potential of DWCs in the national WaSH response, this research set out to examine the workings of water governance networks in two districts: South Fly District in Western Province and Wewak District in East Sepik Province. These districts were chosen because of existing WaSH program relationships between the DDAs and the research partners WaterAid and World Vision. Interviews were undertaken with key stakeholders in the districts and at the national level in Port Moresby. Eight focus groups were held in both rural and urban local level governments within the two districts.

## FINDINGS

The research used network analysis to identify the key actors within water governance networks. This revealed a dynamic sector where there is significant local leadership and effective collaboration across national and district scales. The most significant figures in water governance networks are NGOs, who are central to the networks and bridge national policy and local programming, perhaps reflecting their access to external resources. The next most important actors are LLG managers and district administrators, who provide local leadership, followed by WaSH

consultants. Respondents all reported high levels of ease in working with these stakeholders.

The research also asked, “who is missing from decisions about water in PNG?” and responses showed a stronger gendered division than with other questions. Men were more concerned about which people control resources, such as politicians and provincial authorities, while women were more focused on the need for better consultation with community groups who identify needs and implement programs at the community level. Most respondents also wanted to see more investment in community management of water resources, rather than an expansion of the DWC mandate into taking on responsibilities that they may not have capacity to sustain.

## RECOMMENDATIONS

How can water governance networks be further strengthened?

The following recommendations have been supported by national and district stakeholders:

1. Improve funding and resource allocations. This includes providing specific budgetary allocations for WaSH programs, providing demarcated funding for WaSH in the DISP and Provincial Services Improvement Program (PSIP) allocations, building political will towards WaSH and broader water resource management, and increasing the number of dedicated WaSH-specific roles at the national and subnational levels.
2. Enhance community engagement by ensuring that there are more opportunities for women, youth and other marginalised groups to directly engage at all levels of decision making, but particularly within local level governments (LLGs).
3. Improve coordination between the local and national scales by empowering the government to gradually take over from NGOs in coordinating national and subnational efforts.
4. Better adapt policy prescriptions to the economic, social, cultural and environmental contexts in which they are being applied.
5. Improve collection (and analysis) of data on water use to allow DWCs to make better-informed decisions. DWCs are tasked with data collection using the Department of National Planning and Monitoring WaSH Management Information System, so more support and training from the national level will be needed for district officials to maintain and utilise this data.

### POSITIVE SIGNS

These recommendations are grounded in some positive experiences from the 12 operating DWCs. For example, some districts have moved away from INGO support and have already begun cost sharing with national government and DSIP funding. This has been aided by developing financial and program management tools, such as a standardised set of WaSH project costings, that are district level authorities find useful.

Similarly, there are some success stories that can serve as models of skills development in community engagement and gender-sensitive social inclusion. Wewak District has come to value the WaSH advocacy of the East Sepik Council of Women despite initial reservations about the role of women on the DWC.

### CONCLUSIONS AND NEXT STEPS

PNG's National WaSH Policy (2015-2030) called for the establishment of DWCs, in the hope that they will help channel some of the significant funding directed to DDAs into WaSH related projects.

The establishment of an initial 12 DWCs, since 2019, is being followed by more committees being introduced as the Department of National Planning WaSH Program Management Unit rolls out the subnational WaSH Planning process. Rabaul and Pomio districts in East New Britain were the first districts to benefit from the latest round of MOUs in 2024, with the promise of more to come.

The recommendations outlined above can be used to shape these efforts. In seeking to improve water governance across PNG, it is critical that policy makers support broader networks that help to improve access, quality and management of water resources. This must involve better funding, improvements in community engagement, improvements in coordination, better targeted program design and improvements in data collection and management.

### ABOUT THE AUTHORS

This Policy Brief was written by John Cox, Senior Research Associate at the School of Social and Political Sciences, University of Melbourne and Grant Walton, Associate Professor at the Development Policy Centre, The Australian National University.

It is based on the report *Improving water governance in PNG*, authored by Grant Walton, Safa Fanaian, Tim Davis, Simon Wanga, Sonia Yeung, Turea Wickham, Kolis Rua, Donald Kanini, Shirlee Rovou and Ezra Maris.

The project was funded by the Australian Centre for International Agricultural Research.

The full report can be downloaded at [aci-ar.gov.au](http://aci-ar.gov.au).

The views expressed in this publication  
are those of the authors only.

## POLICY BRIEF MARCH 2025



# How can WaSH policy makers engage more constructively with women's experiences and priorities in PNG?

## SUMMARY

Recent research into Water, Sanitation and Hygiene (WaSH) initiatives in Papua New Guinea by the Australian National University's Development Policy Centre, WaterAid and World Vision has explored the role of water governance networks in advancing WaSH programming. The research focused on South Fly and Wewak districts where interviews and focus group discussions were conducted; these were complemented by interviews with key national government and civil society stakeholders in Port Moresby.

This research has confirmed that women and men have different priorities in relation to WaSH. Women tend to be concerned about access to WaSH services whereas men are more focused on funding and improving political will. This brief considers what steps are needed for WaSH policymakers to engage with women's priorities more effectively.



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World Vision

## WOMEN, WATER, SOCIAL NORMS AND POLITICS

The differing WaSH priorities of men and women reflect well-known social dynamics in PNG. Women are largely responsible for collecting water for household use, often walking for hours a day in rural areas for this purpose. Women also travel beyond the household to sell garden produce in markets where the lack of WaSH access creates discomfort, health risks and sometimes higher vulnerability to security threats. Women's domestic labour and other commercial activities are fundamental to community resilience and need to be recognised within WaSH programming.

Cultural norms (that have a complex traditional, Christian and colonial lineage) mean that women's work in collecting water and associated risks are seldom visible to men at the household level. Within institutions, structural gender bias means that decision-making in relation to disbursement of funds is seen as a male domain. An added challenge is that expectations of personal benefit from development projects have come to characterise the political economy of clientelism across the country. Men may then look to WaSH and other projects for opportunistic financial gain and miss the importance of improving access to basic services.

## POLICY RESPONSES: DEVOLUTION OF WASH

For the last ten years, the PNG government has taken a devolved approach to WaSH that is committed to working through District WaSH Committees (DWCs) as local decision-making bodies that can identify needs and suggest projects through five-year WaSH Investment Plans. DWCs are overseen nationally by the WaSH Program Management Unit within the National Department of Planning and Monitoring. To date, 12 DWCs have been established, with plans for all districts to include DWCs under their District Development Authorities (DDAs).

Some work closely with international NGOs such as WaterAid and World Vision, while others rely more on PNG Government and District Services Improvement Program (DSIP) contributions from their MPs. NGO involvement has included funding and training, and the development of tools for surveying water needs, budgeting and project management that are used by all active DWCs.

The PNG Government's WaSH policy recognises that allowing women's experiences and priorities to shape WASH policy approaches is very important and

participatory approaches are embedded in the policy. The success of DWCs depends on their ability to plan for the WaSH needs of their communities and this in turn requires that they make good decisions based on evidence and in consultation with beneficiaries and rights holders. DWCs are designed to be representative of their communities and are chaired by the District Administrator and composed of the constituent local level government (LLG) presidents, and other community members, such as women's groups and youth. They provide a platform for WaSH sector coordination and planning at the sub-national level. This body, if utilised appropriately, can help facilitate WaSH service delivery in the district by brokering relationships with respective players for planning, implementing, financing and monitoring service delivery.

## LEARNING FROM SUCCESSFUL APPROACHES

Experiences of successfully including women within DWCs and broader WaSH governance networks provide some important learning opportunities that can guide policy responses.

### 1. Women's advocacy roles may be unfamiliar but is something men can learn to appreciate.

Most functioning DWCs recognise the need to be representative of the diverse groups in their communities, however, this is not automatically connected with inclusion of women on the committee.

For example, some members of the Wewak DWC initially were hostile to the presence of women's representatives but in time came to see the value of the advocacy contributions led by the East Sepik Council of Women.

The Council has developed a Gender Based Violence Strategy and are in the process of finalising their Strategic Plan. The frameworks will provide for greater participation of women in planning, coordination and implementation of WaSH service delivery at the local and subnational levels.

**2. The five-year District WaSH Plan process can provide opportunities for women's needs and priorities to be taken seriously.**

Planning processes are based on principles of consultation and using good evidence to make decisions. They also require an awareness of funding sources and advocacy skills in persuading funders to support particular projects. In the experience of several DWCs, women's constructive input into needs analyses and project proposals were important to the development of their five-year inclusive WaSH plans and gave DWC work more credibility when applying for funding.

**ONGOING CHALLENGES FOR MEANINGFULLY INCLUDING WOMEN IN THE WASH POLICY PROCESS**

**1. Capacity and inclusion challenges remain at the LLG level**

LLGs tend to be dominated by men and do not create active forums for women to contribute to the WaSH policy process. LLGs need more support on participatory planning approaches, alongside more work with local women's groups to strengthen their capacity in advocacy.

**2. New DWCs will need support to embrace participatory planning approaches**

While there are reports of positive experiences where DWCs have embraced women's perspectives and priorities, these have developed over time. Learning from their experiences and using them as models for newly-formed DWCs may help to institutionalise more inclusive approaches nationally.

**CONCLUSIONS AND NEXT STEPS**

With the PNG Government committed to rolling out DWCs across the country, it is crucial that policy makers understand the challenges facing women in accessing and managing water resources, and work to respond to these challenges.

Recent research suggest that women have different needs and priorities to men. It is critical that policy makers ensure that District Administrators and women's groups have support to allow them to work together to make sure that the new DWCs learn the relevant lessons from recent experience in building inclusive approaches to WaSH programming.



Public servants formulating 5 year WaSH plan priorities in Wewak district, November 2023.

**ABOUT THE AUTHORS**

This Policy Brief was written by John Cox, Senior Research Associate at the School of Social and Political Sciences, University of Melbourne and Grant Walton, Associate Professor at the Development Policy Centre, The Australian National University.

It is based on the report *Improving water governance in PNG*, authored by Grant Walton, Safa Fanaian, Tim Davis, Simon Wanga, Sonia Yeung, Turea Wickham, Kolis Rua, Donald Kanini, Shirlee Rovou and Ezra Maris. The project was funded by the Australian Centre for International Agricultural Research.

The full report can be downloaded at [aciar.gov.au](http://aciar.gov.au).

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## 11 Appendixes

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### 11.1 Appendix 1: Network statistics description

We calculated weighted degree centrality, weighted in-degree centrality, and weighted out-degree centrality to identify influential members, intensiveness of interactions, and prominence of actors (for more details check Embrey 2012, Faul 2016; Nelson and Grubestic, 2018; Althor and Witt, 2020). The three features that are assessed in the network analysis include:

1. **Weighted Degree centrality (circle size and width of lines):** Is a measure to identify how connected or influential a node(actor/position) is within a network based on the volume of its direct connections. This metric is a cumulative measure of the number and strength of connection or relationships in a network.
2. **Weighted In-degree centrality (Arrows pointing towards a circle):** Is a measure of how many connections lead into a node, providing insights into its importance or role within a network. This measure means that many are directing their attention, communication, or influence towards these actors/positions.
3. **Weighted Out-degree centrality (Arrows pointing away from a circle):** It measures how many connections or links a particular node has that lead to other nodes. This measure is important in analysing the flow of information or resources in a network, as it helps identify nodes that are actively disseminating or initiating connections.

These are reported in Tables 2 and 3.

**Appendix Table 1: List of institutions that are involved in the WaSH policy implementation process**

National Government	Provincial government	District government	Local level government	NGOs & University	Public private partnerships	Donor	Private
Climate change and development authority	Provincial Administrations	District Development Authority	LLG Managers	IOM	Edu Rana	Asian Development Bank	Abt Associates
Conservation and environment protection authority (CEPA)	Provincial Environmental Health Coordinator	District Development Authority Board women's rep	LLG Presidents	UNICEF	WATER PNG	Commonwealth of Australia (DFAT/ACIAR/AWP)	Independent Public Business Corporation (IPBC)
Council of Women representative	Provincial Environmental Health Officer	District Development Authority CEO	LLG Ward EHO	WaterAid		European Union via GIZ	Independent Consumer and Competition Commission (ICCC)
Department for Community Development	Provincial Health Authority	District Environmental Health Officer	Community Development Officers	World Vision		Japan ODA	
Department of Agriculture and Livestock	Provincial health CEO	District Planning Officer		Plan International		JICA	
Department of Education	Provincial Health Promotion Manager	District School Inspectors	Council of Women representative	Live & Learn		World Bank	
Department of Environment and Conservation (DEC)	Provincial Healthy Island Concept Officer	District WaSH Committee		Care International		WHO	
Department of Finance	Provincial Hygiene and Sanitation Officer	District WaSH EHO		Touching the untouchables			
Department of Health	Provincial Project planning and monitoring officer	District WaSH Officer		Appropriate technologies projects ATp			
Department of Implementation and Rural Development.	Provincial School Health Officer	Water PNG Branch Manager		Wantok Support Charity			
Department of National Planning & Monitoring (DNPM)	Provincial School Inspectors			University of Papua New Guinea (UPNG).			
Department of Treasury	Provincial WaSH Environmental Health Officer			Save the Children			
Department of Works	Provincial WaSH Engineer			Local disabled people's organisation			
Geological Survey of the Department of Mineral Resources (GSPNG)	Provincial Works Office			Consultants			
Hydrological Services Branch				Local NGOs			
National Executive Council				Other church/faith-based organisations			
National Weather Service (NWS)				Community-based groups			
Office of Legislative Counsel				Local artisans			
<b>WaSH PMU (National Water, Sanitation and Hygiene Commission (NWSHA))</b>							

**Appendix Table 2: Network statistics for simplified group-level network showing top ten nodes in Figure 7.3<sup>21</sup>**

District level government	Green	252	250	502
Local level government	Grey	181	200	381
Provincial level government	Orange	161	206	367
National level government	Yellow	170	135	305
NGOs at subnational levels	Blue	205	65	270
INGO & NGOs at national level	Blue	104	117	221
Donor	Blue	47	77	124
Consultants	Blue	0	121	121
Private	Black	59	55	114
Water suppliers (Water PNG/Edu Rana)	Black	61	18	79

**Appendix Table 3: The table shows the list of top ten actors who play central roles and their network statistics including weighted in-degree, weighted out-degree and weighted centrality degree in the detailed network analysis Figure 7.4.**

Node Label	Full Form	Node Color	Weighted In-Degree (arrows pointing inward)	Weighted Out-Degree (arrows pointing outward)	Weighted Centrality Degree (circle size)
NGO_SN	NGOs at subnational levels	Blue	210	61	271
NGO_N	INGO & NGOs at national level	Blue	114	117	231
LLG_M	Local level government, Manager	Grey	112	112	224
DLG_DA	District level government, District administrator/C EO	Green	118	37	155
PLG_H	Provincial level government, Health	Orange	44	96	140
NLG_WaSH	National level government, WaSH PMU	Yellow	80	48	128
Donor	Donor	Blue	47	77	124
Const	Consultant	Blue	0	121	121
Pvt	Private companies	Black	59	55	114
PPP	Water PNG/ Edu rana	Black	61	18	79

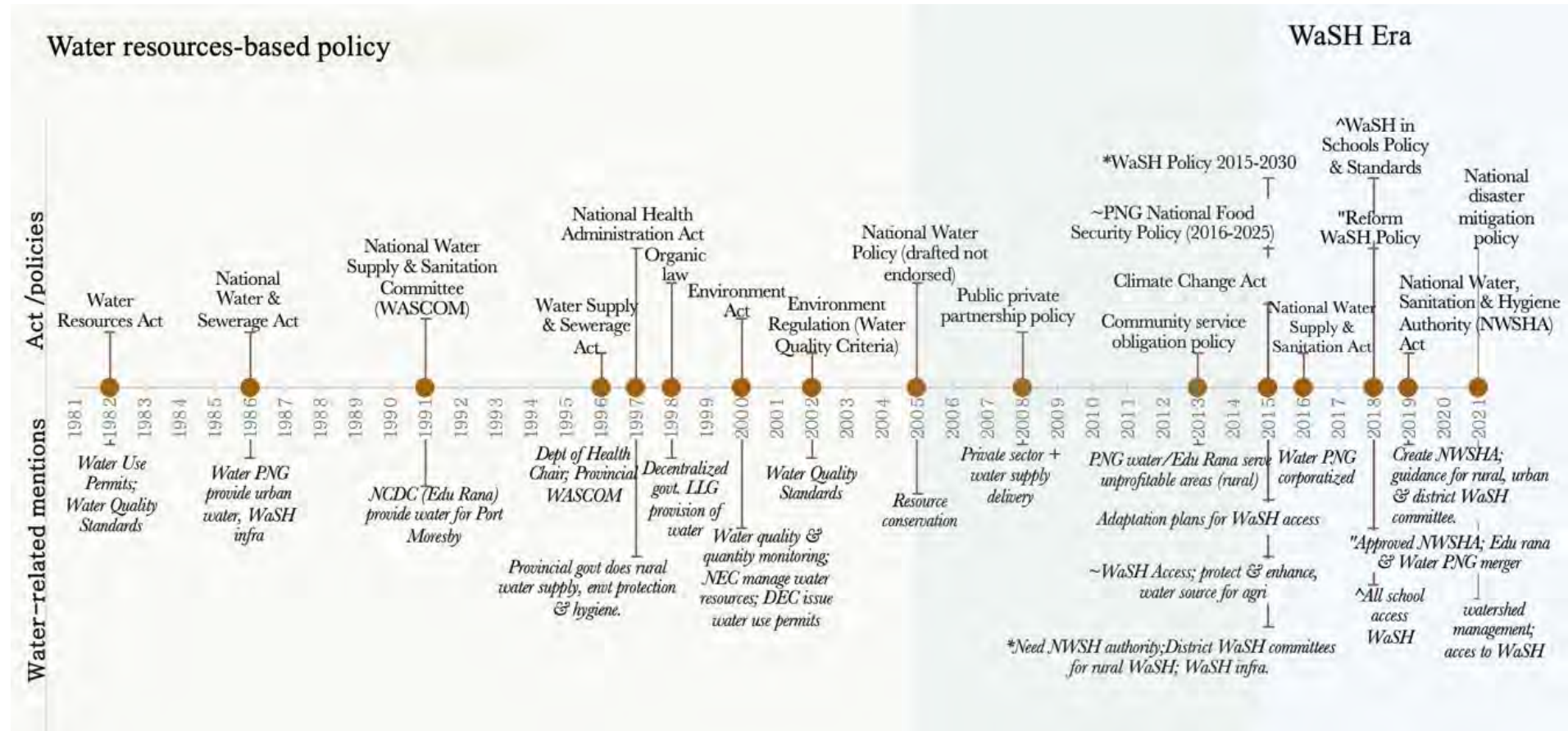
<sup>21</sup> Description of the statistics: the table presents weighted centrality of actors, weighted in-degree and out-degree of relationships. The network statistics here are weighted to account for the number of people in the group this means that we can show the degree of overall influence rather than the number of people in the group per se. Since each node (circle) represents a specific organizational/scale-level positions, the weighted measure is better at showing overall how central or influential a node is based on both its connectivity (number of lines connecting it to other nodes) AND the strength/importance of those connections (thickness of the lines).

**Appendix Table 4: Full form of the labels used in the network diagram to represent positions**

ID	Full form
Const	Consultants
DLG_CC	District level government, climate change
DLG_DA	District level government, district administrator/CEO
DLG_Co	District level government, community officer
DLG_Ed	District level government, education
DLG_En	District level government, environment
DLG_H	District level government, health
DLG_H_En	District level government, health and environment
DLG_P	District level government, planning and monitoring
DLG_WaSH	District level government, WaSH committee
DLG_WaSH_DIS	District level government, WaSH disabled representative
DLG_Wo	District level government, women representative
DLG_Wor	District level government, works
Donor	Donor
LLG_C	Local level government, council/councillor
LLG_F	Local level government, finance
LLG_H	Local level government, health officer
LLG_M	Local level government, manager
LLG_P	Local level government, planning and monitoring
LLG_U	Local level government, urban
LLG_Wa	Local level government, ward member
LLG_WaSH	Local level government, WaSH committee
LLG_Wo	Local level government, women council/rep
NGO_N	NGO national
NGO_SN	NGO subnational
NLG_C	National level government, council
NLG_CC	National level government, climate change
NLG_DIS	National level government, disabled representative
NLG_DPMU	National level government, planning and monitoring
NLG_Ed	National level government, education
NLG_En	National level government, environment
NLG_F	National level government, finance
NLG_H	National level government, health
NLG_H_En	National level government, health and environment
NLG_PM	National level government, Prime Minister's office
NLG_W	National level government, weather services
NLG_WaSH	National level government, WaSH PMU
PLG_A	Provincial level government, administrator
PLG_En	Provincial level government, environment
PLG_F	Provincial level government, finance
PLG_H	Provincial level government, health
PLG_H_En	Provincial level government, health and environment
PLG_H_WaSH	Provincial level government, health WaSH
PLG_P	Provincial level government, planning and monitoring
PLG_W	Provincial level government, weather services
PLG_WaSH	Provincial level government, WaSH committee
PLG_Wo	Provincial level government, women representative
PPP	Water PNG/ Edu rana
Pvt	Private companies

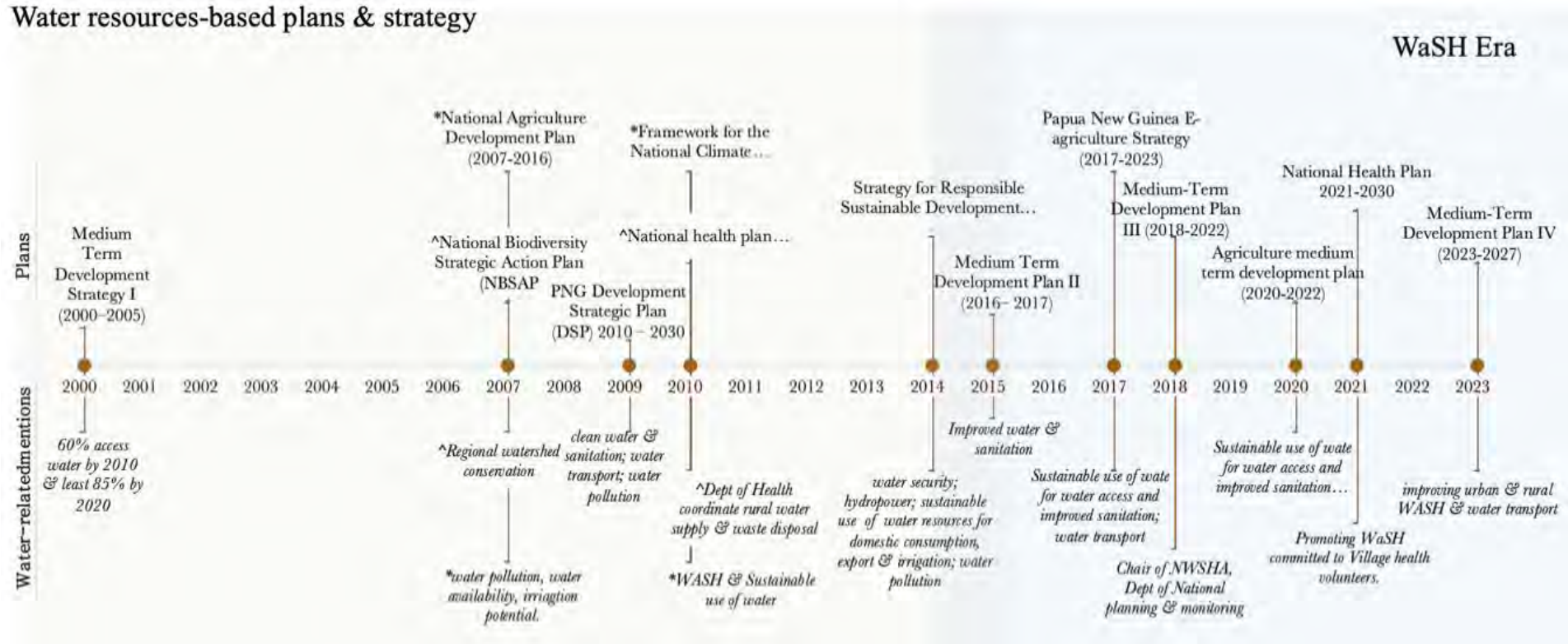
Uni	University
NGO_SN	Care, UNDP, IOM, World Vision, WaterAid, Youth Council, Church Group, Disabled Persons Agency, Women's Council, Oxfam, Live and Learn, Touching the Untouchables, Community Development services, PNG SDP, Catholic Health Services, Plan International, Save the Children
NGO_N	WaterAid, UNICEF, UNDP, World Vision, Oxfam, Save the Children

## 11.2 Appendix 2: Full size version of Figure 7.1: A timeline of water-related Policies in PNG



## 11.3 Appendix 3: Full size version of Figure 7.1: A timeline of water-related Plans and Strategies in PNG

### Water resources-based plans & strategy



## 11.4 Appendix 3: List of organizations interviewed for the research

<b>List of organizations interviewed for the research</b>
Climate Change and Development Authority
Conservation and Environment Protection Authority
Department of National Planning and Monitoring WaSH PMU
Department of Provincial and Local Government Affairs
National Assembly of Disabled Persons
National Council of Women
National Weather Service
PNG WASH Cluster
UNDP
UNICEF
Water PNG
WaterAid
World Bank
East Sepik Council of Women
East Sepik disabled Person Agency
East Sepik Provincial Health Authority
Wewak District Planner
Boiken Rural LLG
Wewak Rural LLG
Turubu LLG
Public Health Authority
Department of Prime Minister and National Executive Council
Consultants engaged extensively in Water management in PNG
Australian High Commission in PNG
Department of Agriculture and Livestock