



SOPAC



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Third Meeting of the Regional Technical Advisory Group
for the SOPAC/UNDP/UNEP/GEF Project:
*“Implementing Sustainable Water Resource and Wastewater
Management in Pacific Island Countries”*

Teleconference, 12th May 2011

REGIONAL INDICATOR FRAMEWORK

1 BACKGROUND

The logframe of the UNEP and UNDP Project Documents provides a suite of *“comprehensive baseline and target indicators and sources of verification for both outcome and output levels during project implementation”*. It was anticipated that these would *“form the basis on which the project’s Monitoring and Evaluation (M&E) system [would] be built”*. It was anticipated that the M&E program would be revised and finalised in the first six months of the project.

The deliverable of Component 2 of the UNEP and UNDP Project Document (‘ProDoc’) is the development of an IWRM and WUE Regional Indicator Framework with the objective of *“IWRM and environmental stress indicators developed and monitored through national and regional M&E systems to improve IWRM and WUE planning and programming and provide national and global environmental benefits”*. It is proposed in the ProDoc that the regional project indicator framework might evolve into the ongoing regional participatory M&E framework.

At the 2nd RTAG meeting in Nadi, the RTAG agreed that:

- There is value in pursuing a linked national and regional indicator framework
- The PCU will provide support to countries in developing national indicator frameworks

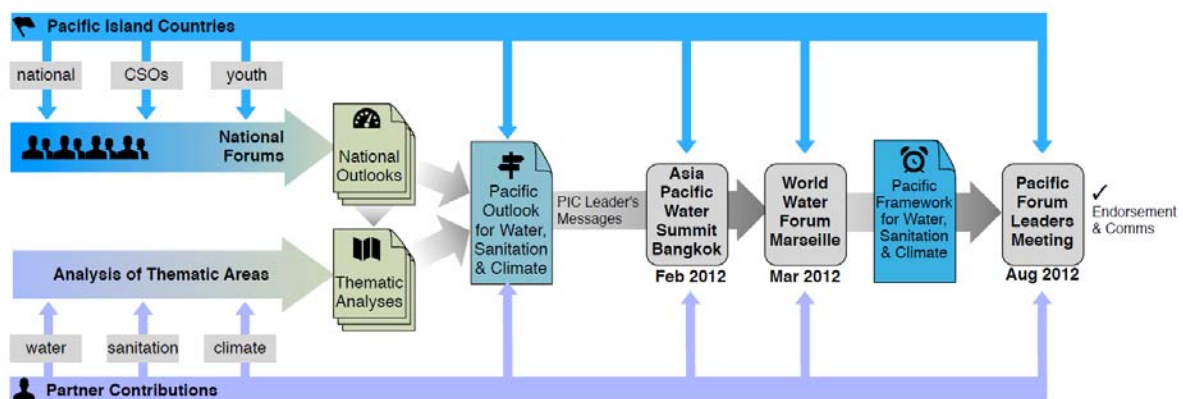
- ❑ The PCU will develop a pilot regional indicator framework and national pilot frameworks for Tuvalu, Cook Islands and FSM by February 2011 for circulation amongst the RTAG
- ❑ Upon RTAG agreement of the indicator framework the PCU will look to developing a worked up regional pilot indicator framework for sign-off at the 3rd RSC meeting in July 2011

This paper looks at progress and developments on the Regional Indicator Framework since the 2nd RTAG Meeting.

2 A NEW APPROACH – THE OUTLOOK PROCESS

Since the 2nd RTAG Meeting, SPC-SOPAC has commenced a process to review and update the *Pacific Regional Action Plan on Sustainable Water Management* (Pacific RAP) for consideration as part of the next iteration of the Pacific Plan, due for consideration by Pacific leaders in mid 2012. As part of this process, forward looking *National Outlooks for Water, Sanitation and Climate* will be developed. Together with an analysis of key water, sanitation and climate themes (through the Pacific Partnership Initiative on Sustainable Water Management), these national outlooks will assist the development of a Regional Outlook. The process is outlined in Figure 1.

Figure 1 - Development of the Pacific Framework



This process aligns well with the development of a regional indicator framework, with information generated to inform strategic decision-making at both the national and the regional level. Key outputs from the process will include national outlooks, regional thematic papers and a regional outlook report.

It is anticipated that about eight countries will have completed Draft National Outlooks by the 3rd RSC Session in late July, and that most of the outlooks for the 14 countries, together with the regional outlook report, will be completed by the end of 2011.

This process is a change from the approach formerly adopted in the Pacific region, where typically the regional strategic documents were developed first to inform national planning. Under the current process, the national priorities are initially identified and these, in turn, inform the regional strategic planning.

The themes initially proposed for the outlook process are broadly:

- Security of Supply
- Health
- Environment
- Human rights
- Governance
- Resilience

The outlook process is still evolving, and it is anticipated that the themes will evolve through the process.

Currently junior and local professionals are assisting in five countries (Cook Islands, Nauru, Solomon Islands, Tonga and Vanuatu) and national governments are leading the process in FSM, Palau and RMI. It is anticipated that processes in the other six regional countries will be initiated in the near future. Processes are also under consideration for the regional territories. The outlook reports are being developed through a consultative process in each country, with the intent of also developing national level IWRM indicators through this process.

This approach to strategic water planning is a significant initiative and is a change to the way in which the national and regional indicator frameworks were to be developed.

3 WHERE ARE WE AT NOW?

The development of the national outlook reports will inform the national and regional indicator framework process. The challenge is then to draw the indicators developed at the national level into a consistent regional framework.

Discussions with senior government and other stakeholders in numerous countries have indicated a very low level (negligible) willingness to collect information that is not identified as directly useful to their country's management decisions. Given the limited human and financial resources available to many countries, this approach could be considered unreasonable. This presents a significant challenge given that the issues presented in most countries differ. For example, the primary issues in Tuvalu identified in the project planning Hotspot reports (limited water supply, sanitation access and sludge disposal) are generally quite different from those of Papua New Guinea (flooding, catchment management and urban supplies). Accordingly, the focus for the national outlooks for these countries will differ significantly and will be challenging to roll-up into a regional outlook.

The outlook reports should highlight the main priorities for each country and help identify key areas of national risks in water management. The development of national indicator frameworks based on the outlook process will therefore track the response to risks to national water management. The national indicator frameworks will look significantly different from country to country. Tuvalu's outlook, for example, may have a focus on rainwater storage, sanitation and water use efficiency, with some associated health and governance indicators. PNG's may have a focus on flooding, catchment management, water supply and sanitation. Should either country prioritise environmental water issues these are likely to differ dramatically, with Tuvalu's focussing on lagoon health and PNG's possibly on river water quality.

The key challenges to developing a regional indicator framework include:

- bringing together a regional indicator framework where the focus of each country's monitoring will differ
- a lack of resources (human, technical and financial) to undertake monitoring outside the scope of indicators central to individual country priorities

- ❑ the core issues that countries (and the region) want to report against indicators are still uncertain as they are currently being clarified through the outlook process

Against this backdrop, there are key core indicators that countries routinely report against. In the water sector these include:

- ❑ MDGs for access to improved sanitation and drinking water
- ❑ Diarrhoea statistics

Additionally, there are core socio-economic indicators reported nationally that may be linked to other indicators to provide more relevance to water (for example, productivity is often linked with water abstraction to assess productivity efficiency – however given the rain-dependent agriculture of the Pacific, it is probably more appropriate to use rainfall).

Given that numerous countries have indicated a strong resistance to monitoring for indicators that do not relate directly to national priorities, a monitoring programme linked to a few core indicators, but able to reflect differing national priorities, is therefore likely to be the only sustainable model in the region.

The actual indicators to be considered within the framework will be dependent upon the issues identified at a national level as worth resourcing. Accordingly, it is proposed that the RTAG, and more directly the PCU, support countries in developing their water management priorities and seek to draw together a regional indicator framework once initial outputs are available from the national outlook process.

Support has already been provided directly into some countries on the development of relevant nationally reported indicators. Annex 1 contains a guidance document provided for Tuvalu in the development of nationally relevant indicators. Whilst this process is in its early stages, the development of the outlook reports will position countries to undertake informed discussions on indicators in the near future.

4 SUGGESTED FRAMEWORK

First and foremost, delivery of a sustainable regional indicator framework is dependent upon the willingness and capacity of countries to collect data and report on indicators. Accordingly, regional indicators need to align with national indicators.

As discussed earlier, these indicators are likely to include a small set of core indicators (typically MDG and health related). However, there may also be scope for indicators of governance to be incorporated relatively simply, provided that these can be agreed upon – a starting point on the governance indicators may be the IWRM indicators agreed to at the 2nd RTAG Meeting (Annex 2).

In addition to these core indicators there would also be indicators that could then be broadly grouped, probably in accordance with the categories agreed to through the outlook process. Challenges that will then need to be addressed in establishing a regional indicator framework include:

- ❑ Inconsistency across region – comparison of say five different types of indicators for water security, which might be rolled-up into a water security indicator
- ❑ Lack of information on some key global indicators – even where core indicators are available, there are significant concerns about the reliability of the published data. The MDGs for access to improved sanitation and drinking water are two such indicators. Currently the Joint Monitoring Programme (WHO and UNICEF) are seeking to address these issues
- ❑ Consistency in approach in reporting indicators – diarrhoeal statistics is a simple example, where different countries use different criteria for assessing whether a case of diarrhoea is reported (e.g. report to hospital, admitted to hospital, report to clinic, etc). Notably, there may be more disadvantages for a country to change the way it

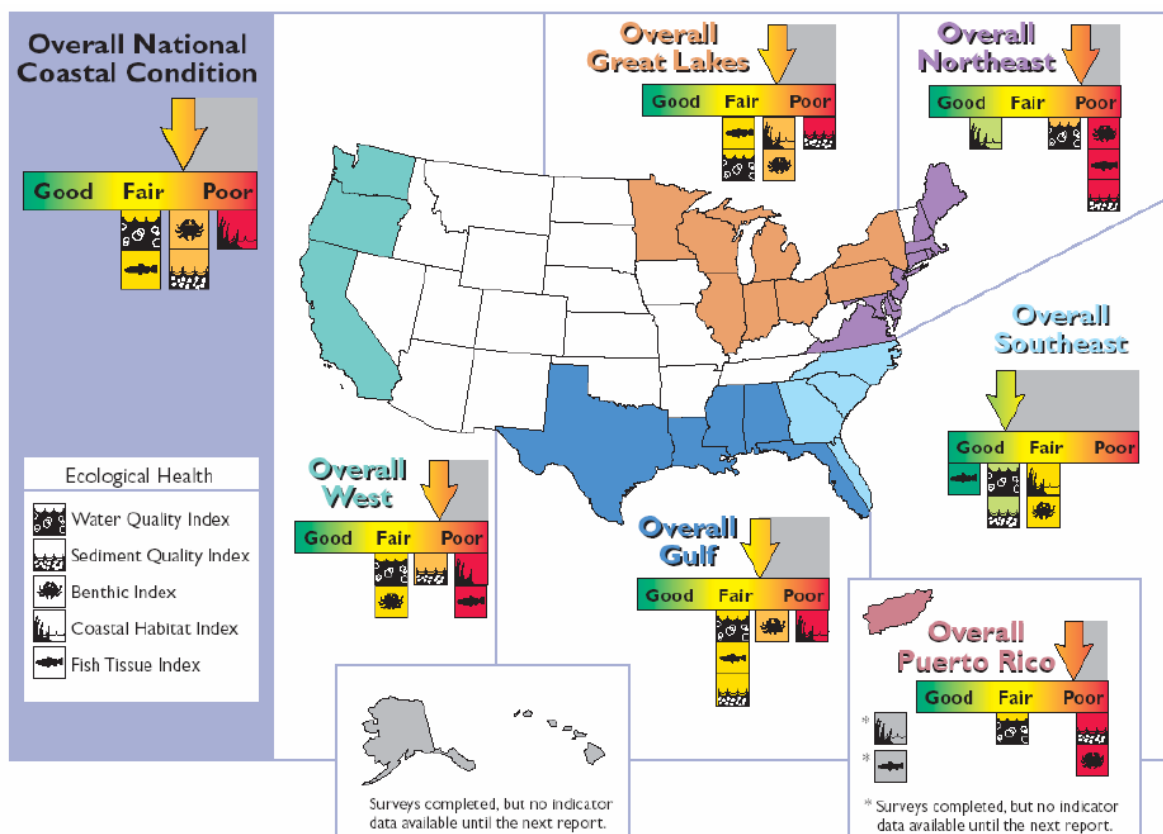
reports these numbers (through a loss of understanding of what the numbers mean) than there are benefits from adopting a common approach

The framework would therefore need to combine core indicators reported for all countries (such as MDGs and diarrhoea figures), with a capacity to incorporate different monitoring methodologies with indicators reflecting national status and response to in-country risks.

This challenge is something that has been managed across a range of reporting frameworks, where some issues matter more in different parts of the region being monitored. Two examples of how disparate indicators might be brought together are shown below (from USEPA (2004)¹ and COS (2009)²).

The first example shows broad categorisation of coastal condition – this is based on the accumulation of a large number of sub-indicators, some of which are not available for several sites. This style of mapped reporting could readily be adopted for the issues identified in each country, with subsequent indicator monitoring showing progress against the issue (through tools such as arrows: up – improving; level – no change; down – declining).

The second is an example of risks to marine ecosystems, with different issues being identified as having a different level of significance in each country. The subsequent responses and monitoring can address each of these issues separately. Regional reporting then focuses on progress against the broad issue, reported in those countries where it is identified as an issue.



Extracted from: USEPA (2004) National Coastal Condition Report II. Office of Research and Development/Office of Water. EPA-620/R-03/002

¹ USEPA (2004) National Coastal Condition Report II. Office of Research and Development/Office of Water. EPA-620/R-03/002

² Center for Ocean Solutions. 2009. Pacific Ocean Synthesis: Scientific Literature Review of Coastal and Ocean Threats, Impacts, and Solutions. The Woods Center for the Environment, Stanford University. California

TABLE 6: Polynesia Threats Based on Scientific Literature and Impact Assessment																						
✓ Identified as Threat ● Severe Impact ● Moderate Impact ● Low Impact <small>It was documented when an article identified an issue as a present or future threat. If no scientific literature was found on the topic, then no check was assigned. This does not necessarily mean the topic is not a threat; rather, it suggests that no scientific literature was found on the topic.</small>	AMERICAN SAMOA		COOK ISLANDS		FRENCH POLYNESIA		HAWAIIAN ISLANDS		NEW ZEALAND		NIUE		PITCAIRN ISLANDS		SAMOA		TOKELAU		TONGA		TUVALU	
	Threats	Impacts	Threats	Impacts	Threats	Impacts	Threats	Impacts	Threats	Impacts	Threats	Impacts	Threats	Impacts	Threats	Impacts	Threats	Impacts	Threats	Impacts	Threats	Impacts
POLLUTION																						
Aquaculture: Wastewater			✓	●	✓	●	✓	●	✓	●												
Land-based Chemicals	✓	●			✓	●			✓	●												
Fishing Lines/Nets							✓	●	✓	●												
Nutrients	✓	●	✓	●	✓	●	✓	●	✓	●												
Offshore Oil/Mining																						
Oil Spills & Antifouling Chemicals	✓	●	✓	●	✓	●					✓	●					✓	●	✓	●		
Radionuclide					✓	●																
Solid Waste Disposal			✓	●			✓	●														
Thermal																						
Ocean Waste & Toxic Dumping	✓	●			✓	●															✓	●
HABITAT DESTRUCTION																						
Anchor Damage							✓	●														
Aquaculture: Coastal Modification					✓	●	✓	●	✓	●												
Coastal Development/Land Reclamation	✓	●	✓	●	✓	●	✓	●	✓	●							✓	●	✓	●	✓	●
Destructive Fishing															✓	●			✓	●		
Dredging									✓	●									✓	●		
Marine Recreation							✓	●											✓	●		
Land-based Sedimentation	✓	●	✓	●	✓	●	✓	●	✓	●												
Ship Groundings																						
Tsunamis					✓	●																
Typhoons/Cyclones/Hurricanes & Storm Surge	✓	●			✓	●					✓	●									✓	●
Wrecks/Military Equipment							✓	●														
OVERFISHING & EXPLOITATION																						
Aquaria Trade							✓	●											✓	●		
Artisanal/Recreational/Subsistence Fishing	✓	●	✓	●	✓	●	✓	●							✓	●			✓	●	✓	●
By-Catch & Discharge	✓	●					✓	●	✓	●					✓	●						
Commercial Fishing	✓	●			✓	●	✓	●	✓	●									✓	●		
CLIMATE CHANGE																						
Acidification	✓	●					✓	●														
Sea Level Rise	✓	●	✓	●			✓	●	✓	●					✓	●	✓	●	✓	●	✓	●
Sea Surface Temperature**	✓	●	✓	●	✓	●	✓	●	✓	●					✓	●						
INVASIVES																						
Invasive Species (Different Vectors)	✓	●					✓	●	✓	●												

Extracted from: Center for Ocean Solutions. 2009. Pacific Ocean Synthesis: Scientific Literature Review of Coastal and Ocean Threats, Impacts, and Solutions. The Woods Center for the Environment, Stanford University, California

5 RTAG CONSIDERATIONS

As discussed above, eight draft outlook reports are due for presentation at the 3rd RSC, with the regional outlook report due at the end of 2011.

It is proposed that RTAG:

- Task the PCU with preparing a draft version of a regional indicator framework to be presented at the RTAG meeting of the RSC
- Offer to review the Draft Outlook reports as they become available

**ANNEX 1 – COUNTRY GUIDANCE ON A NATIONAL AND REGIONAL
INDICATOR FRAMEWORK**

National Water Indicators and a Regional Framework

Managing water resources is a complex task, bringing together broadly ranging information, opinions and values. Climatic, geographical, technical, environmental and human pressures and responses all need to be considered. Basically though, management of water is about answering simple questions regarding our capacity to sustainably manage these resource whilst optimising opportunities. These questions include:

- What are the issues?
- What are we doing about them?
- How well are we doing?
- Could we do better?

Indicators are generally developed to enable answers to these questions to be identified and communicated effectively. UNESCO³ has suggested that making decisions without reliable indicators is like driving without road signs. More directly, indicators are able to provide key water resource information to guide and influence decision-makers. Millennium Development Goals (MDGs) for example are guiding investments of hundreds of millions of dollars in drinking water and sanitation investment.

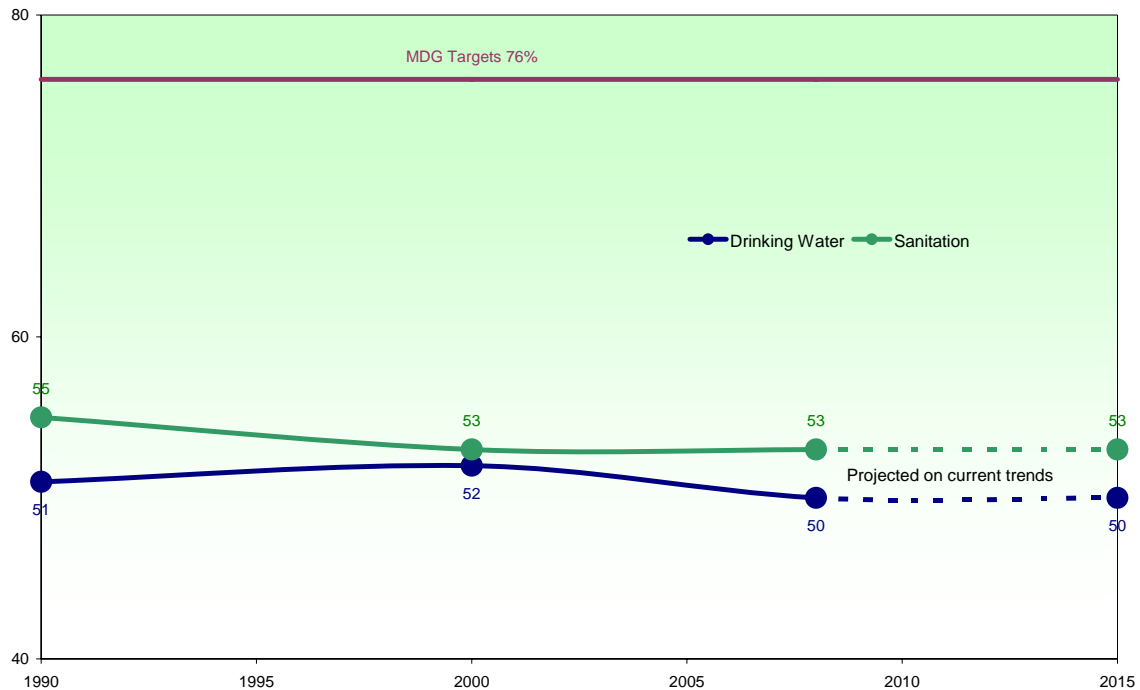
The Water and Sanitation Committee is tasked with developing national indicators that will be reported as part of the national reporting framework. The mechanism for reporting may depend on the issue and the nature of the indicator, but examples might include annual reporting against the National Strategic Plan, or as part of a national census or demographic health survey (DHS), or an annual report tabled in Parliament from the National Water and Sanitation Committee.

What is the point?

Importantly, this process is about simply providing information to inform and guide decision makers and better informing the Tuvalu community and commercial sectors. Indicators provide a way of presenting information in an understandable and accessible manner.

The Millennium Development Goal for access to improved sanitation is an example of this – the global question is “Does everyone have adequate sanitation?”. It is a simple question, but quite complex. First we have to define what is adequate. This took about two years and is still being refined, involving discussions on the importance of access (including how close does a toilet need to be? how safe is access?) and sanitation (which toilets separate people enough from waste? are they maintained?). Then everyone is counted – literally through national censuses, by surveying part of the population in demographic health surveys, or through targeted national or regional studies. By repeating the measurements (or counts) every five to ten years or so, we can track progress.

³ UNESCO – Scope Policy Briefs, May 2006 – No.1



Regional trends in improved drinking water and sanitation coverage 1990 to 2015 (JMP 2010)

The challenge is to identify which issues and which questions matter most to Tuvalu, now and into the future, and then to develop indicators for these questions.

Considerable work has been done identifying the important water issues in Tuvalu. Periods of drought, high rates of waterborne disease and degraded lagoon ecosystems are evident and likely to become more challenging with increasing climate variability. This process is about making sure that information is available about these key issues and others when it's needed.

What are the questions?

To guide the process of defining the questions, broad categories have been suggested as prompts for thinking and discussion. As this process evolves through the development of the national and regional Water Outlook⁴ process, these categories will likely change to reflect the issues and questions that are most important.

The questions will need to be refined a little so that they address the specific information needs and so that indicators can be developed. Through this process, "Do we have enough water?" can be refined through questions such as "How much is enough?", "Can we accept some restrictions?", "How many and by how much?", "Do we mean do we have enough water now? Or into the future?", etc. Often we are asking several questions rolled up into one, such as "Do we have enough now and into the future?". One part is the ability to meet immediate needs (the now) and the other is an estimation based on many assumptions about the future (e.g. population, climate variability, industry / tourism development, etc).

⁴ This will be discussed by Pisi

Broadly the categories can be grouped as (together with simple high-level examples):

- Security of Supply (Do we have enough water?)
 - Water resources (What can we capture?)
 - Water Use (Do we use it well?)
 - Water Supply (Do we have enough safe water in our homes? For other uses?)
- Health
 - Sanitation (Do we have adequate sanitation? Are we maintaining it?)
 - Human health (Are waterborne diseases making us sick? Are we getting more or less healthy?)
- Environment
 - Ecosystem Health (How healthy is our reef? Is it getting better or worse?)
 - Pollution (Is water pollution getting better or worse?)
- Human Rights / Governance
 - Community participation (Are our needs and desires considered? Are our voices heard?)
 - Integration (Is our government working together on this?)
 - Information (Do we have the right information? Can I access it?)
 - Funding (Is our funding commitment adequate?)
- Preparedness
 - Drought (Can our water resources handle a drought?)
 - Economic (Do we have a plan to supply adequate water for future development? Will we have enough water?)

Reporting

It is important to keep in mind the reporting needs. Information is needed for different purposes:

- Operational and emergency response
Needed now or sooner. Usually relates to activities that change over short periods of time (days to weeks). Examples include during a drought “how much water do we have in storage right now? Or “how many days storage do we have?” which can lead to immediate management decisions (e.g. advise people to reduce consumption and stop all but essential uses)
- Management
Information is needed periodically to guide management decisions. Usually relates to activities that change over moderate periods of time (months to a year or two). Examples include “Are we using too much water for our storage and predicted rainfall?”
- Governance
Information is a system oversight and review, to guide investment and policy, although it may be directly related to management and operational questions. . Usually relates to activities that change over years. Examples include “Is our water system getting more or less stressed?” which might be informed by how often storage dropped below say 30 days.

Most of the questions that are likely to be reported nationally fall into the Governance category (although during an emergency, immediate information is critical). The reason for this is partly the national reporting cycles and partly the types of information needed.

National reporting against the National Strategic Plan is typically annually. Censuses and DHSs typically take place every five to ten years (although there is growing support regionally for 3 year overlapping cycles). So this generally means that, for any questions that need short-term answers, other mechanisms are required. The systems still need to be in

place for operational, emergency response and management type questions; however, typically they will not be reported nationally.

The type of information needed to inform the community and make decisions at a national level tends to be the long-term pressures and responses as this is the level at which much of the decisions influence. This could be achieved through budget allocations (annual), regulations (typically 6 months to 2 years), legislation or policy development (typically 2-3 years) or international agreements (typically 2-5 years). Whilst governments can react to crisis rapidly, the normal planning cycle aligns well with annual reporting cycles.

What would it look like?

In framing the question it is important to think about what matters and how well the question can be answered to inform decisions. “How much water is in our water tanks?” can be answered relatively easily, but without a lot of context (average use, rain forecasts, climate forecasts, population, leakage, etc) this is only part of the question.

It might be possible to convey this information to the community, so that once they are aware of what different levels of storage mean in terms of use and restrictions, it becomes a simple powerful tool (as is done with reservoir levels in many countries).

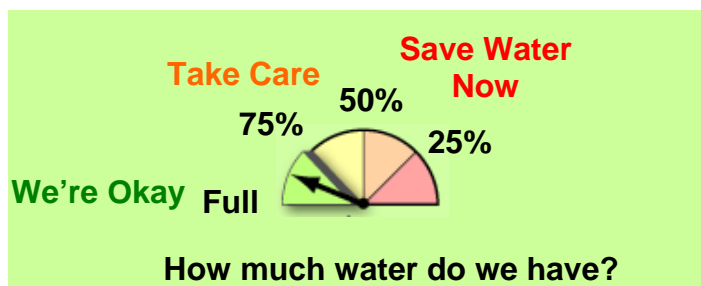


Figure: A simple version of the sort of community level indicators that might be effective to convey information, but also would use the same data to report at a national level against strategic targets for water security.

However, the base question is still something like “Do we have

enough water?”

Some example questions might be:

Water Resources – Do we have enough water?

Which could be any combination of “Did we have enough water this year?” or “Are we likely to have enough water next year?”.

The definition of enough is important. How much is ‘enough’? ‘Enough’ in day to day Tuvaluan life might be interpreted as water for everyone to do anything they want. The World Health Organization⁵ (WHO) says 15-20L per person per day, but this is more related to survival of refugees rather than comfortable living. Several numbers are used by various sources, including 30L and 80L per person per day as the minimum for a healthy life. The answer is likely to be somewhere in between the above numbers.

Ideally, this could be linked to government management response to drought. So, if government places restrictions at a certain level of storage/supply then this would be a reasonable benchmark. Alternatively, possibly just a statement of number of days with restrictions might be adequate – although this becomes more complicated and possibly slightly less reliable as it includes subjective components.

⁵ WHO (2003) Environmental Health in emergencies and disasters: a practical guide, World Health Organization Geneva ISBN 92-4-154541-0

Once 'enough' is defined, then it becomes easier to frame the question. It might become "Are we improving our water security?", with clear links to times of stress associated with restrictions.

It is important to ensure that the most important aspects are considered. These might be:

- Having no restrictions
- Ensuring that we always have some water

It is also important to consider in this what people value, so levels of 'enough' might differ practically and psychologically. Ultimately, the decision on 'enough' is one for Steering Committee to resolve, considering the above discussion.

Once the question has been defined, the step to indicators becomes simpler. The indicator needs to convey information directly relevant to the question. So for the question of "Are we improving our water security?" the indicator could be any of the following (or others):

- Proportion of storages empty
- Proportion of the time that various management restrictions are in place (or State of Emergency)
- Proportion of time below a certain storage level (%age, number of days use or total volume)

Then in conveying the information, it may be useful to place them into categories, for example:

- Very Good No restrictions. Storages remained above 30%
- Good No restrictions, but storages dipped below 30%
- Moderate Only one occasion < 1 Week of restrictions
- Poor One restriction of less than one month or two restrictions < 1 week
- Very Poor Restrictions totalling more than one month

Whilst categorising is not necessary, it can convey easily the level of stress on the indicator.

Should storage levels be used as the indicator, monitoring programmes would be required. However, with some simple guidance, these could be participatory, engaging the community to take measurements of their own tanks and provide this information centrally.

Sanitation/Health – How many people have access to functioning improved sanitation?

Importantly, this question is directly relevant to MDG reporting.

Again, questions would need to be asked about the word 'functioning'. It might even be useful to define this, say for a septic tank, as a minimum it would need to be de-sludged in the past five years. Genuine levels of function would need inspections, which can be onerous. Also, continuity of use would need to be considered – should it not be possible to flush during a drought, then the question should be asked whether this is acceptable to the community in defining the reported information,

Defining 'improved' sanitation is also complex. The guidelines for this MDG⁶ indicate that only houses with an attached toilet (not shared communally) are considered 'improved'. This

⁶ Progress on Sanitation and Drinking-water: 2010 Update, WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation. ISBN 978 92 4 156395 6

relates to the security associated with children accessing the toilet confidently. The toilets defined by the United Nations that satisfy 'improved' definition include composting toilets, septic tanks and flush latrines, but not pit latrines without slabs.

The indicator could then relate to targets for Tuvalu, including those relating to shared facilities. Collecting data for this is onerous, requiring household surveys, so might be best done as part of the DHS/Census cycle.

The target would relate directly to the question, reflecting people's values and government intent, possibly either linked to %age of cover or number of houses or people with access.

Again in conveying the information, it may be useful to place them into categories, for example:

Target:	Good Coverage by 2015. Total coverage by 2018
• Very Good	Everyone has access to private toilet (composting or flush) All schools have adequate ⁷ private toilets
• Good	Everyone has access to toilets (composting or flush) All schools have adequate private toilets
• Moderate	95% of population has access to toilets (composting or flush) All schools have adequate private toilets
• Poor	90% of population has access to toilets (composting or flush) All schools have adequate toilets
• Very Poor	85% of population has access to toilets (composting or flush)

⁷ This would need to be clearly defined but there are references to assist this process, both in terms of numbers of toilets and privacy

ANNEX 2 – IWRM INDICATORS AGREED AT 2nd RTAG MEETING

Grade	Low (0)	Moderately Low (0.25)	Moderate (0.5)	Moderately High (0.75)	High (1)
Institutional / Policy Arrangements	<ul style="list-style-type: none"> <input type="checkbox"/> No water policy <input type="checkbox"/> No water resource legislation <input type="checkbox"/> No formal communication or coordination between government agencies 	<ul style="list-style-type: none"> <input type="checkbox"/> Draft water policy <input type="checkbox"/> Draft water resource legislation <input type="checkbox"/> Institutional meetings but no formal arrangements 	<ul style="list-style-type: none"> <input type="checkbox"/> Water resource policy implemented <input type="checkbox"/> Water resource legislation implemented <input type="checkbox"/> Formal institutional arrangements, but regulation limited 	<ul style="list-style-type: none"> <input type="checkbox"/> Participatory processes with cross-sectoral and cross-community representatives <input type="checkbox"/> Regulation established <input type="checkbox"/> Information on governance decisions open and accessible to all 	<ul style="list-style-type: none"> <input type="checkbox"/> Participatory water resources policy framework with open community engagement <input type="checkbox"/> Institutional framework, communication and operational linkages <input type="checkbox"/> Regulation open with transparent auditing
System Knowledge	<ul style="list-style-type: none"> <input type="checkbox"/> No/limited awareness of role of water in economic development, health and environmental protection <input type="checkbox"/> Insufficient knowledge to complete national and international reporting requirements 	<ul style="list-style-type: none"> <input type="checkbox"/> Limited data collected for some water resource components <input type="checkbox"/> National and international reporting completed with limited data gaps 	<ul style="list-style-type: none"> <input type="checkbox"/> Basic system data collected (e.g. supply, demand, rainfall, yields, consumption, etc.) and basic understanding of system resources, stressors and linkages <input type="checkbox"/> National and international reporting completed with no data gaps 	<ul style="list-style-type: none"> <input type="checkbox"/> High level of system understanding, supported by resource modelling <input type="checkbox"/> Monitoring processes established and benefits demonstrated to deliver ongoing funding 	<ul style="list-style-type: none"> <input type="checkbox"/> Understanding of system resources and stressors and linkages, integrated in planning processes, monitoring and evaluation strategies with feedback <input type="checkbox"/> Transparent and open access to water resource data and academic debate on water resources
Stakeholder Engagement	<ul style="list-style-type: none"> <input type="checkbox"/> Isolated initiatives with no stakeholder engagement in governance <input type="checkbox"/> No formal engagement and responses are reactive 	<ul style="list-style-type: none"> <input type="checkbox"/> Formal engagement with all stakeholders without engagement in governance <input type="checkbox"/> Stakeholder communication strategy developed and implemented 	<ul style="list-style-type: none"> <input type="checkbox"/> Participation limited to directed delivery of solutions <input type="checkbox"/> Stakeholder capacity building strategy developed and implemented 	<ul style="list-style-type: none"> <input type="checkbox"/> Policy and strategy frameworks incorporate representative stakeholder engagement in governance <input type="checkbox"/> Formal and informal capacity sharing and exchange with all stakeholder sectors 	<ul style="list-style-type: none"> <input type="checkbox"/> Implementation of strategy for consultation/engagement of stakeholders from all levels and sectors <input type="checkbox"/> Formal participative water resources governance processes with open community participation
Financial Stability	<ul style="list-style-type: none"> <input type="checkbox"/> Inadequate financing of capital and ongoing management 	<ul style="list-style-type: none"> <input type="checkbox"/> Adequate funding available for capital works but insufficient funding for ongoing maintenance and operation 	<ul style="list-style-type: none"> <input type="checkbox"/> Financial water resource planning undertaken and worked into national budgets 	<ul style="list-style-type: none"> <input type="checkbox"/> Fee for service charges regulated, but often not covering costs 	<ul style="list-style-type: none"> <input type="checkbox"/> Sustainable, accountability transparent financial planning established and
Human Resource Capacity	<ul style="list-style-type: none"> <input type="checkbox"/> No or extremely limited expertise across sectors <input type="checkbox"/> No or extremely limited capacity across stakeholders 	<ul style="list-style-type: none"> <input type="checkbox"/> Professionals in limited key positions <input type="checkbox"/> Mechanisms in place to provide capacity access to stakeholders 	<ul style="list-style-type: none"> <input type="checkbox"/> Capacity base not wide and low capacity for higher level needs (e.g. monitoring, modelling and planning) <input type="checkbox"/> Stakeholder capacity building strategy developed and implemented 	<ul style="list-style-type: none"> <input type="checkbox"/> Core professional for water resource management – consultancies only let for strategic specialist work <input type="checkbox"/> Formal and informal capacity sharing and exchange with all stakeholder sectors 	<ul style="list-style-type: none"> <input type="checkbox"/> Specialist knowledge available, either directly or through institutional arrangements <input type="checkbox"/> Stakeholder led dialogues and initiatives

