

## Issues of Water Resources Management and Usage in Samoa

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### Abstract

The paper highlights outstanding water conservation and water delivery needs for Samoa. The Government of Samoa in partnership with the European Union have committed extensive funding into ensuring that the people of Samoa have access to clean and reliable water all in the name of Sustainable Development. There is also the widespread adoption of the Integrated Water Resources Management Framework to aid in the implementation, delivery and management of water resources and water services infrastructure. These efforts while not in vain, have come up against a number of obstacles that existed long before government and donors formalized the partnership to upgrade water services delivery. Obstacles pertaining to land tenure, land-use management and ownership, farming practices near the watershed are some of the existing problems that continue to plague the Ministries responsible for water resources management (Ministry of Natural Resources and Environment) and water service delivery (Samoa Water Authority). To ease some of the obstacles to water resources conservation efforts, require a holistic bottoms-up approach beginning with the Samoan household unit, the main water users and land holders.

**Keywords:** Integrated water resources management; Sustainable development; Water service delivery; Land-use management

### Introduction

The need for the protection and sustainable use of water resources is important in the social and economic development of the country is a priority statement in the Government of Samoa Strategy for Development 2005-2007 and 2012-2016 [1,2]. The Samoa Water Authority reiterates this view in the light of water resources and water services challenges. The lack of community understanding and appreciation of responsible water management, restricted community involvement in water resource management, deteriorating water quality and quantity at supply sources are some of the challenges identified [3]. Samoans have always used water from rivers, coastal springs and ground water and wetlands for many of its agricultural, hydropower, manufacturing and domestic needs. Its utilization has long taken precedence over other commodities and services provided by freshwater ecosystems and watershed areas. The management and protection of freshwater resources is essentially the role of the Ministry of Natural Resources and Environment, whereas the provision of water services into homes and workplaces rests with the Samoa Water Authority.

The management of water catchment areas is best discussed in the light of previous water acts and legislation that govern the protection and usage of Samoa's water resources. The Water Act of 1965 marked an initial attempt to manage water resources but with very minimum commitment by the responsible government department (former Public Works) at that time. It was not until 1992 under the Watershed Protection and Conservation Act with the Ministry of Agriculture that some form of recognition and lip service action was adopted and demonstrated through interschool poster and speech competition to mark Arbor Day with a water conservation theme. Currently, the Ministry of Natural Resources and Environment is responsible for the protection, conservation and sustainable management of Samoa's water resources as stipulated in the National Water Resources Policy (National Water Resources Policy Act: Draft) [4]. The Water Resources Management Act 2008 further supports the former and guides the ministry in the sustainable management of the country's water resources (Water Resources Management Act 2008:18).

One other document released by the Ministry of Natural Resources and Environment is the National Water Resources Management Strategy

2007-2017 [5] that describes the current status of water catchment areas and the socio-economic issues surrounding its governance, monitoring and evaluation of the protection of Samoa's water resources. Key issues identified in the document range from the limited or absence of baseline information on the extent of sedimentation, excessive/intensive cultivation and pollution problems to conflicting and fragmented control of land and water resources particularly within the Vaisigano and Fuluasou catchments. An obvious gap identified in these documents is the absence of information on the activities of those at the grass roots level who occupy areas within the watershed areas. While the literature acknowledges the impacts of anthropogenic activities as crucial in explaining poor water quality and conflicting demands for water resources, there is insufficient quantitative evidence to support this view, it is in the scope of this work to address this gap.

### Integrated Water Resources Management

An integrated Water Resources Management (IWRM) approach is not a new concept, since it was flagged more than 60 years ago [6]. The escalating complexities of water resources management and governance and water problems at the global level in the early 1990s intensified the need for a holistic approach to address the emerging global water crisis hence the rediscovery of the integrated water resources management concept. A comprehensive reassessment of the IWRM concept by Biswas is critical in the outset if island states such as Samoa is to embark on embracing this concept as a tool for water resources conservation.

The widely accepted definition for IWRM was proposed by the Global Water Partnership in 2000 as 'a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability

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of vital eco-systems' [7]. Evidently, the definition means well, but a closer look, reveals an urgent need for further clarification of some of the words used to ensure that it means exactly how it is used in the definition, and that the concept is 'do-able' if applied to solve the water problems of Samoa.

So what are the issues-questions that are raised in the above definition of IWRM that needed clarification to ensure that the concept can be applied to managing water resources in the real world? "Promotes" connotes an action to be carried out, and who should be responsible with publicizing this idea? Is promoting a vague and ambiguous concept sufficient to improve and resolve some long standing water management problems? How relevant is this definition to small island states such as Samoa especially when the concept was designed primarily for developed country contexts [8].

"Land and related resources" imply many things. For example, does it include aquatic resources, minerals and subsistence agricultural resources? Given 80 percent of Samoa's land resources are customary owned, does IWRM have jurisdiction over tenure arrangements? In addition, Biswas [6] raised issues on inter-ministerial and intra-ministerial rivalries that seem to obstruct an integrative approach to managing of such resources. In the case of Samoa, recent public sector reforms dictated a clear demarcation between policy and service delivery, where the MNRE water section deals with policy and water resources management issues and the Samoa Water Authority (SWA) is responsible for providing water into homes, workplaces and industries (National Water Resources Policy 2007). The Samoa IWRM diagnostic report 2007 comments on the relatively small integration of functions between sectors, ministries and civil societies stakeholders [9]. This weakness is further manifested in the limited and often superficial water conservation awareness programmes at the household-village level.

Then there is the use of the word 'maximise'. Biswas [6] presented a strong criticism of the nuances implied in the usage of this verb. For instance, what specific aspects of society's social and economic welfare are to be maximized? Is there a process to select these aspects? More importantly, who will select these social and economic aspects and precisely who determines the "equitable" sharing and distribution of the social and economic benefits derived from water, land and related resources? Who decides what is equitable, for whom, and can it be achieved?

Integrated Water Resources Management (IWRM) is about linking and connecting all parties with an interest in water resources management, use and protection based on the guiding principles from the Dublin Statement. But, people are rarely at the center of IWRM [10]. It appears to be an exercise in ticking the box, and attracting additional funds or obtaining greater national and international visibility [6]. In another light, IWRM is about resource control through the technical/physical control of water service provision. A case in point is the Samoa Water Authority threatening to disconnect water supply to households wasting water. Practical efforts to address the short comings in the definition of IWRM are important if the less developing countries that have embraced this water management concept are to realize the objectives and measurable benefits derived from this approach. Having stated some of the gaps in IWRM concept, how does one propose to make the most of the concept given it has already been adopted by Samoa.

### **Integrating the Household into IWRM-Samoa**

Numerous reports point to the abundance of water resources in Samoa [9]. Yet, despite the richness of water resources, the main focus

on water management is heavily in favour of the top-down, techno-centric approach. This is futile as water resources are finite but water demand escalates every year. Efforts to teach water consumers how to control their water demands have been minimal. A study on water resources management in 2010, found 53 percent of the household surveyed had little or no knowledge of water resources conservation [11]. Similarly, when asked about who should be responsible for water resources conservation, 49.3 percent believed that government should take full responsibility of water resources protection. What does this imply for catchment management initiatives if households acknowledge the value of water and water resources but shifts the responsibility for its protection to government and others? This issue was raised in the focus group discussions where questions about the ownership of resources and the right to develop resources in the catchment for individual, household and village social-economic development conflict with government water resources conservation laws.

The household, particularly women, play a critical role in water conservation at the grass roots. To realize the 'integrating' aspect of IWRM in Samoa, the household unit and women are important components that should be defined and given the 'highly' important status. Extensive literature published in the last thirty years on women's role in water conservation elsewhere highlight the multiple roles of women in fetching and providing water for bathing, cooking, washing and overall control of water usage in the household [12]. In the event of a drought, women and the household are worst affected especially when crops fail and men migrate to the cities to look for work leaving behind the women, children and older people [13]. In Samoa, anecdotal evidence suggests a lot of water wastage and careless use of water through poor and ill-informed clothes and dish washing practices. An adult Samoan would use up to 300 liters of water per day which is comparable to 100 gallons needed on average by one American person to drink, bathe, flush toilets and to wash clothes and dishes [14]. Even more so, the important role played by women in managing water within the family as well as within the community has not been fully recognized.

As such, water supply management initiated from the top cannot work in this modern age of population growth and competing demands for water. A large proportion of households have not been factored into the equation of water resources management. Without the support and cooperation of households and women, water demand and waste will continue to escalate which can be detrimental to national efforts to manage its finite water resources. The households and the public at large can influence the success or failure of water management as they consume more than half of the country's water supply. In the same vein, women should be encouraged to play a more active role as water 'managers' in the home to supplement their role as home makers. Women are usually responsible for managing the household's water budget as they use water for domestic chores. The understanding is that when women save water at home, they are also imparting water conservation practices to their children and other household members.

A domestic water audit can illustrate the role of women in controlling water usage in the homes. Given the indoor usage of water for laundry, cooking, bathing, flushing as well as outdoor use for gardening and car washing, women have a say in how much water should be used in fulfilling these domestic water demands. For instance, studies on domestic water use in Malaysia have demonstrated that selecting a water efficient washing machine that will only use 45 litres per wash compared to using a large automatic washing machine that uses 120 litres would save 75 litres of water that could be used

for other indoor purposes [15]. If the numbers of annual washes are calculated, the amount of water and money saved is quite substantial. Similarly, wise dish washing practices using two half-full sinks or wash basins for washing and rinsing dishes have proven to save water. Time and amount of water used for bathing/showering can be controlled for both children and other adults in the household.

Women's active participation in household water demand management needs to extend beyond the household to include decision making at the village council level. More often, women are on the receiving end of ill informed decisions passed down from the village council. There is a need to reassess the hierarchical nature of decision making in the village context to ensure all persons have access to safe drinking water, reliable water supply and that there is a collective responsibility for water conservation. Water management should be transparent and representative of the needs of men and women alike. When women play a pivotal role in water project design and implementation, evidence suggest a higher rate of project efficiency and sustainability. Evidence from Trinidad and Tobago, Uganda, and Cameroon demonstrate how women's active involvement in community water projects have contributed to reducing the time spent fetching water by women and young girls, empowered women with new skills in water pumps maintenance, monitoring and evaluation of water projects, and training for young women to take up careers in the water sector [16]. Samoan women can replicate the experience of women elsewhere and extend their participation beyond guarding and maintenance of the village freshwater pool to a more active participatory role in household water conservation, village decision and policy making, greater involvement with the independent water scheme and lobbying for better services targeting women and children.

### Integrating Other Water Users

Other water users such as the farming community, manufacturing, energy providers, tourism and natural ecosystems for example need to be considered when exploring the macro water issues related to climate variability. Climate change is expected to aggravate the current water challenges facing Samoa and many of her island neighbors, such as deforestation in the water catchment areas leading to increased soil erosion and siltation, threatening surface water quality [17]. Fragmented and poorly coordinated management of water resources and implementation of water policies at the national and local level demonstrate the capacity issues facing the responsible water agencies in meeting and delivering the water demands from competing water users. Integrating all interested water users require long term strategies that address water management capacity at all levels beginning with the government right down to the household unit. Equally important are the spiritual connections and cultural value of water (springs, rivers) to Pacific island communities which seems to have declined over the years as a result of state control of these resources [18].

### Conclusion

While an integrated water resources management approach holds the promise of delivering an efficient management of macro and meso-scale water policies and programs for developed countries, it has been a somber experience for small developing islands like Samoa. A foreign concept imposed without any consideration of the culture, physical attribute, management capacities, decision-making processes and governance systems of the host society is bound to fail in achieving the expected outputs. What is needed is an objective, contextualized and impartial version of integrated water resources management that is people centered and equally sensitive to the water needs of the

household unit where women as water managers in the home can make a positive impact on water conservation. In the villages, women bear water monitoring responsibilities for the village drinking and bathing water pools, these are critical roles that need to be factored into an integrated water resources management framework at the village level to ensure everyone are on the same page when it comes to water resources management and conservation.

### References

1. Strategy for the Development of Samoa (2012-2016) "Boosting productivity for sustainable development." Government of Samoa. Ministry of Finance, Apia.
2. Strategy for the Development of Samoa (2005-2007) Government of Samoa.
3. Samoa Water Authority (2005) Water sector plan and framework for action. Government of Samoa.
4. Ministry of natural resources and environment (2007) National water resources policy.
5. Ministry of natural resources and environment (2007) National water resources management strategy 2007-2017. Government of Samoa, Apia.
6. Biswas AK (2004) Integrated water resources management: A reassessment. *Water Interna* 29: 248-256.
7. Global Water Partnership (2011).
8. Moss T (2010) Managing water beyond IWRM-from paradigm to pragmatism. Presentation to 1<sup>st</sup> Water Research Horizon Conference, Berlin.
9. National IWRM diagnostic report (2007) Independent State of Samoa.
10. Butterworth J (2006) People-Centred integrated water resources management (IWRM).
11. Taua S (2010) Management problems of water catchment areas-integrated water resources management (IWRM) and the household unit-Samoa's experience.
12. Weng C N (2007) The Role of Women in Water Conservation in Penang.
13. Jahnavi T (2011) Water and women-the flow.
14. Hutson SS, Barber NL, Kenny JF, Linsey KS, Lumia DS, et al. (2004) United States geological survey (2004) Estimated use of water in the United States in 2000.
15. Weng CN, Nitivattananon V (2007) The role of gender in domestic water conservation in Malaysia. *Malaysian J Environ Manage* 8: 109-129.
16. United Nations Department of Economic and Social Affairs (2005) A gender perspective on water resources and sanitation. Background paper No. 2 by Interagency task force on gender and water, New York.
17. United Nations Environment Programme (2012) Fresh water under threat-Pacific Islands report.
18. Macpherson C, Macpherson L (2017) Culture and the commodification of water in Samoa. *Asia Paci Viewpoint* 58: 86-98.