PaCWaM+

PACIFIC COMMUNITY WATER MANAGEMENT-PLUS

PRACTITIONER GUIDE

Water is Everyone's Business - Promoting water conservation in Fijian communities

International WaterCentre

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Habitat for Humanity

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Cover images: Water delivery via bullock (for domestic uses), Vusama Village, Fiji (K. Devenny, IWC)

Contents

Water conservation for water security in Fijian communities

The International WaterCentre (IWC), at Griffith University, in partnership with the University of the South Pacific (Fiji), have prepared this Guide for implementing Water Conservation activities in Fijian communities.

About this Guide

This guide is for government, civil society and other actors designing programs or activities to address water security challenges experienced by rural Fijian communities. It aims to support the design of programs to promote water conservation behaviours by everyone in communities. Government-related actors that might find this useful include national or provincial officers from the Ministry of Health and Medical Services, Department Water Resources, and Water Authority Fiji.

The guide is based on research undertaken in Fijian communities. As such, this Guide is most tailored to Fiji but could also be applicable – with some localisation of activities and stories – to other Pacific Island Country contexts (such as Solomon Islands and Vanuatu).

This guide contains information to assist in the design of specific activities to promote water conservation, specifically it includes:

- Explanation of why water conservation is important in all communities
- Description of strategies for influencing human behaviours, including water conservation behaviours
- Identification of specific water conservation behaviours and target audiences for water conservation programs targeting Fijian communities
- Identification of the factors that influence water conservation behaviours in Fijian communities
- Recommendations for strategies that can be included into the design of Water Conservation programs targeting water conservation in rural Fijian communities.

Water Collection and Storage, Vusama Village (Masibalavu, S)

Water Security in Fiji

Fresh water is very scarce and is a critical issue in many countries and because it is an important finite resource, management of fresh water is vital for the survival of environment and communities. Population growth mixed with an increasing number of business and industry is increasing conflict over limited water resources (Jonch-Clausen & Fugl, 2001). The limited availability of water in the environment has become a threat to human health and the ecosystem.

Prolonged drought, mostly caused by climate change, leads to the unavailability and reduced access to water (Hadwen et.,2016). This, when coupled with increasing population and pollution from human activities, contributes to water scarcity, a threat to people's social, economic and environmental livelihoods (Weber, 2007; Belmar, McNamara & Morrison, 2016). In addition, rising severity and frequency of storms is increasing damage to water infrastructure, adding to water insecurity. Moreover, climate change has induced sea level to rise leading to sea water penetrating into the soil of coastal land, mixing with groundwater and making it unsuitable for drinking (WHO, 2017). Water quality is further compromised by human activities, including inadequate sanitation of human and animal waste. The contamination of fresh water, especially if water that is used for drinking and cooking is contaminated by inadequate sanitation, poses significant health hazards, and increases the incidence of water-related diseases.

Rural communities have access to four main sources of water: groundwater via boreholes or springs, surface water captured by small dams (near creeks and rivers), rainwater and sea water (MIMS, 2021). While multiple sources of water are available, there is great variability in the availability of these sources due to both geographical location and climatic conditions (Kumar, 2010). Over the past 20 years, access to at least basic drinking water services has not increased for rural communities in Fiji, instead with 2020 JMP data suggesting a downward trend is occurring (The World Bank, 2020). When these sources are no longer available, people travel to other villages in search of water and as a last resort they rely on the government for emergency water supplies (McNamara & Prasad, 2014). Studies have shown that people's livelihood can be adversely affected by unavailability of safe water and that there is a need for communities to be engaged in understanding and adopting water saving practices. (Pearce et al., 2017).

Because Fijian communities have challenging access to water supply, it is important to change behaviours of current practices that can control the issue of inadequate water supply of fresh water as a strategy to manage their water resources. To successfully achieve positive outcomes for a behaviour, change intervention, it is important to understand social norms, attitudes that influence a certain type of behaviour and barriers that prevent positive behaviours from being practiced contributing to the desired outcome (Dreibelbis et al., 2013).

Water management, water conservation and water saving practices in Fiji

Currently, there is no clear policy on water conservation in rural communities. Water Safety planning is promoted as part of community management approaches, but the focus is mainly water quality with little guidance on water conservation practices. Further, water safety planning approach can be used to deal with pollution of groundwater sources, even though this is not widespread in Fiji (Carpenter & Jones, 2004).

In communities with multiple water sources, rainwater, stored in containers is used for cooking and drinking, while laundry and other domestic needs are met using other sources such as wells or springs. For many households, it is shows that when rainwater tanks are well maintained, there is less contamination as compared to these other sources. Further, though water from reticulated systems from groundwater springs can be used for most needs,

it was found to be at risk from contamination by waste from animals and at source contamination from human activities (Mourits & Kumar, 1995).

Water demand can also be affected by changing water uses such as adoption of improved water-based sanitation facilities, as is evident in the last decade where many communities in Fiji have adopted this sanitation option. Suggestions have been made that adoption of water-less or low-water-using sanitation technologies can save water uses in households (Pers Comm, Habitat for Humanity Fiji, 2019).

Groundwater can also be contaminated from use of unsafely managed sanitation options such as open defecation and simple pit toilets, and in some instances poorly designed flush toilets, which are common practises in many pacific island communities. As a solution, use of composting toilets have been introduced in some communities in Kiribati to curb the problem of flush toilets causing pollution to the groundwater (Robin South et al, 2004).

Water conservation practices promoted and adopted are different for urban and rural settings, and in different parts of the world. Strategies that have been developed have been aimed at adapting interventions aimed at minimizing water scarcity and some have shown positive outcomes. For example, in agricultural practices for growing berries, a deficit irrigation technique is used to minimize the amount of water used. This technique involves focuses on how much less the water is used to irrigate the crop than how much water is being lost by the crop, which has been proven to be effective in how it improves water savings as well crop productivity (Santos et al., 2003).

In some cities, use of water saving technologies are common such as installation of water-saving appliances for household taps or showers (Fielding et al., 2012). Additionally, water saving campaigns communicating water savings messages/tips to households are emphasised, such as always fix leaking pipes, having short showers and watering gardens at certain times of the day (Gregory & Di Leo, 2003).

For many Pacific Island households and communities, some water security is achieved by using multiple water sources for domestic or other purposes. For many, different sources are used for drinking, cooking or bathing, allowing lesser quality water to be used for non-drinking purposes. For example, a study of domestic water sources used in rural communities in Solomon Islands and Republic of Marshall Islands showed that, for many households, rainwater was stored in tanks and drums and used for drinking and cooking respectively, while for laundry and bathing, water was sourced from wells. (Elliot et al., 2017).

Domestic water savings, Vunamoli Village (Masibalavu, S)

Pigolo summarised commonly identified household water saving actions and assessed whether these actions could be applicable in Fiji (in David et al., 2019).

TABLE 1: APPLICABILITY OF WATER SAVING ACTIONS TO RURAL FIJI

Water saving actions at the household level	Potential applicability in Fijian rural context
Installation of smart water meters that reduce water use, save water and reduce water costs (Boyle et al.,2013).	This is not feasible in rural Fiji context especially for rainwater systems however could be appropriate in urban areas where there is reticulated water system operated by a professional water utility.
Installation of water saving devices, such as dual flush efficient toilets (Grafton, et al., 2011)	This could be feasible if communities had skills and knowledge on how to install water saving devices in the households.
The use of rainwater tanks to store large volumes of water (a study examined the suitability of rainwater tanks as storage and proved that RWT are quantifiably reliable as household water source; Quigley et al., 2016).	An appropriate water saving action.
Using multiple water sources in a fit-for-purpose way (using drinking-quality water only for drinking and cooking, and lesser quality water for other purposes, to conserve drinking water (Elliot et al., 2017).	This is feasible given the existence of multiple water sources and is likely already being practiced in some way.
Waterless, or low-water, sanitation systems such as the composting toilet (Anand & Apul, 2013)	Very appropriate and feasible in water-scarce areas in rural Fiji.

INFLUENCING HUMAN BEHAVIOUR

Influencing people to change their behaviours for the better are crucial to improve societies all around the world. Behaviour change campaigns and programs have been successful in the areas of health, environment, among others (Lee & Kotler, 2016).

There are several behavioural models and techniques that can be used as frameworks to guide researchers and practitioners in the design, implementation and evaluation of behaviour change programs. Some mechanisms of change commonly used in campaigns or behavioural programs include advertising campaigns to raise awareness, education programs focussing on increasing knowledge and providing information, repetition in order to develop habituation, exposure to cues, social support, influencing social norms, influencing self-identity (e.g. role model), creating positive behavioural associations, environmental or structural changes (Michie et al., 2013).

A successful approach to behaviour change is social marketing. Social marketing is the process of using commercial marketing tools to create a valued exchange in order to influence behaviour change to occur (Andreasen, 2002). social marketing embraces the tools and techniques of commercial marketing such as the concepts of consumer orientation, exchange theory, audience segmentation, competition, a marketing mix, and continuous monitoring (Andreasen, 2002; Grier & Bryant, 2005), so that behaviour change can be achieved.

In contrast to public health campaigns and other approaches, social marketing has behaviour change at its core. It goes beyond approaches that focus on solely raising awareness and using promotional tools. Programs are developed based on audience research and competitor analysis ensuring social marketing gains necessary insights to meet the needs and wants of the target audience. Social marketing, with its audience - oriented focus, provides a bottom - up research philosophy where insights gained from the target audience can be used to inform program improvement. This research was conducted, and recommendations developed using a social marketing and behaviour change lens.

In order to design and implement a behaviour change program, it is crucial to understand that a “one size fits all” approach is not effective. Findings from this research clearly show that there are a series of different specific behaviours to be targeted (see below). For each one it is recommended that a specific strategy is designed and used.

In addition, considering the different target audience, or segments, is extremely important. For behaviour change to occur, understanding of the needs and wants of the target audience is essential. A “what’s in it for them” mentality is helpful to achieve change. It is also important not to assume that people will adopt behaviours because it is good for them. Very often people are aware that certain behaviour is not good for them, and they will still continue engaging in the harmful behaviour (e.g. smoking, alcohol drinking, sedentary behaviours, etc). Therefore, strategies that go beyond providing information and knowledge and telling people what to do, are needed.

A normative approach, which seeks to establish new social norms for desired behaviours, is frequently considered one of the most effective, since people are influenced by what others around them do and think they should do. Approaches that appeal to the emotional, rather than cognitive are also very successful. Strategies that aim at giving a sense of self-identify, role model, or associating the new behaviour with a positive feeling are examples of this approach.

In summary, it is recommended that water conservation programs in Fiji:

- **Target a range of water use and conservation behaviours by water users, and target ‘enabling’ behaviours of influential people**
- **Combine social marketing approaches with educational approaches**
- **Use messages that build on existing factors (determinants) that influence water behaviours in Fijian communities**
- **Aim to creating positive and public social norms relating to water conservation.**

Water pipe repairs, Vunamoli Village (Masibalavu, S)

What factors influence water conservation behaviours in Fijian communities?

Based on global research, the following are considered as the most common determinants in influencing water saving behaviours by domestic users:

- Water users have sufficient skills and knowledge to perform conservation behaviours (Corral–Verdugo, 2002). People in water-scarce areas have been shown how to use less water during water shortages (Corral-Verdugoa et al., 2003).
- Water users have been exposed to communication campaigns on saving water (Corral–Verdugo, 2002),
- Young people have been provided knowledge on saving water behaviours, such as through schools, encouraging water conservation behaviours in the future (Middlestadt, et al, 2001).
- The values people place on water uses, which influences how much water is allocated to these activities, e.g. there was higher allocation of water for gardening reported in households that placed higher value in their gardens (Syme, et al., 1983).
- Increased water prices such as through tiered water tariffs, commonly referred to as price elasticity; this means that higher volumes of water used cost more per unit volume, that lower water usage volumes (Mayer et al., 2004).
- Enforcement of regulations limiting water use, with penalties, (Agras, & Ledebeck, 1980).

As part of a broader research program on Community Water Management, Pigoloa conducted research on water factors influence water conservation, and David and Souter conducted research on factors affecting the uptake of water-saving sanitation (such as dry pit latrines, compost toilets, and low-water using toilets). Those research results are described in David et al., 2019 Promoting water conservation and sanitation in Fiji communities

Using the FOAM framework for identifying determinants of WASH behaviours (Coombes and Devine et al., 2010), the research identified the following determinants, or factors, affecting the uptake of water conservation behaviours.

Opportunity to practice water conservation

"Opportunity factors" considers whether the target individuals have the resources to perform a behaviour. This focused on the external factors that are related to water conservation and the use of water0saving sanitation.

- *Existing water uses that could be changed* – use of dry toilets in dry seasons, water uses for social activities (e.g. reduce number of kava drinking sessions), reallocation of water for agricultural purposes
- *Access to water saving equipment* – availability of water storage equipment
- *Multiple Water Sources* - the use of multiple sources for water use is an opportunity to save water, i.e. the use of multiple water sources for non-drinking purposes (bathing, laundry, flushing of toilets and cleaning) maximises water for drinking and cooking.
- *Use of water-based toilet and lack of interest on dry toilets* - water-based toilets can be a barrier to water conservation, however, the use of dry toilets can be environmentally friendly as well as promoting water conservation as compared to water-based toilets.
- *Rules and regulations on water conservation and saving* – enforcement of rules by water committees need to be strengthened with a set of community water management rules adhered to by all community members

Ability to practice water conservation

Ability determinants reflect people's capabilities to perform the behaviour, including perceived and actual capabilities. The main determinants of ability are knowledge of the behaviour, perceived social support, and self-efficacy (how confident an individual is of performing such behaviour).

- *Knowledge* – lack of knowledge is a barrier to water saving behaviours. To ensure water conservation interventions are properly implemented, an understanding of the current situation and the use of tools available is needed to successfully address issues.
- *Perception of people that water is abundant* – where water is thought to be plentiful, water conserving behaviours will not be considered
- *Self-efficacy and control* – belief in personal control over water savings contributes positively to community members ability to take action.

Motivation for water conservation behaviours

Motivations represent an individual's interest to engage in a certain behaviour, once they're given the opportunity and ability. Determinants of motivation include personal beliefs and attitudes, perceived outcomes or consequences from engaging in the behaviour, perceived risks and threats, and one's intention to carry out the behaviour.

- *Emotional drivers towards water conservation* – feelings can motivate individuals by triggering intentions to practice water conservation behaviours, e.g. feeling guilty, upset or sad about water being wasted. Intrinsic motivations where individuals acknowledge the value of water leads to water savings to keep the community healthy.
- *Attitudes to known water saving actions and intentions towards water conservation* – an understanding of the issues being faced, and social norms by those who interact or look after sources (i.e. those who feel responsible, have the knowledge create intentions towards water saving)
- *Attitudes about water security and water conservation* – where there is a fear of water running out, water conservation practices are administered more frequently (e.g. water storage equipment on-hand)

Recommended Target water conservation Behaviours and audiences

The research identified several water conservation behaviours, and target audiences, which could be targeted in efforts to improve rural village water security.

Use of alternative water sources

Many households reported to using multiple sources of water for different needs rainwater was a trusted source and therefore, a source for drinking water while water for non-drinking purposes would be collected from the springs, creeks or from the dug wells. Water from the reticulated systems, another trusted source and readily available was used for all household needs.

Using less water

There are some activities for which less water could be used, without making the activity less effective. For example, washing laundry at tap stands can be just as effectively done with the taps closed when not refilling washing tubs (rather than current common practices of leaving tabs run). And water-based sanitation could be achieved just as effectively with using less water for flushing than is often currently used (e.g. with full cisterns being used to flush).

Reuse of water

The reuse of water was common in the island areas, such as water for food preparation could be reused for washing kitchen utensils, leftover water from washing clothes would be reused for flushing toilets or cleaning the house.

Water storage

Storage of water was identified as an important way to save water for drier periods. Future programs can promote a mix of both community and individual tanks where communities can be encouraged to seek support from government and private sector partners, at the same time supporting certain individuals who can make some contribution to install tanks in their households.

Target audiences

Decisions relating to water conservation actions

Decisions about water use such as turning off taps, reusing buckets in the rural communities come from the females and the men make decisions regarding infrastructure, including the management of shared infrastructure. The research indicated that women in the rural areas in Fiji were more positive towards to conserving water because most of the chores they are expected to do are related to water, such as cleaning, laundry, cooking and collecting water for drinking.

Influential others

When designing water conservation programs and campaigns, it is important consider not only those people whose water conservation practices the program is seeking to change (the ‘water users’). It is also important to influence the knowledge, attitudes and behaviour of other people who can influence the behaviours of the water users. The recommendations below include specific strategies to target additional audiences that can influence water conservation in communities.

Recommendations for promoting water conservation in Fijian communities

The following describes appropriate specific outcomes that can be targeted through water conservation programs in Fiji, and strategies that could be used to achieve these outcomes, based on the research above about appropriate target behaviours and determinants/factors that influence these. The strategies are designed to target a specific audience and specific behaviours – as recommended above, a range of behaviours should be targeted, and a single message will not be sufficient to bring about these changes.

Targeted Outcomes

- Increase knowledge of how to conserve water
- Increase positive social norm for water conservation actions at the household level and village level
- Adoption of water conservation behaviours
- Promoting water-saving sanitation
  - Increase awareness and knowledge of alternative sanitation options and their link to water use
  - Increase self-efficacy to build and maintain appropriate alternative toilets
  - Create positive attitudes toward VIP toilets

Targeted behaviours

Householders in all villages, to conserve drinking water by using less and saving more. Specifically:

- Use of alternative water sources (e.g. rivers) for non-drinking and cooking purposes
- Increase storage of rainwater in water tanks for drinking purposes
- Storage of rainwater for non-drinking uses, such as washing and bathing, in other containers (e.g.
- buckets, barrels)
- Closing of taps after using, and whilst bathing
- Fix leakages and breakages in household water storage, pipes, and taps
- Report broken pipes and leakages in shared systems

Water Committees to:

- Limit community water supply during dry season (e.g. to a few hours in the morning and afternoon)
- Repair of broken pipes and leakages

Behaviour change strategies

- Positively promoting personal and social benefits and creating social norms - designed to positively motivate adoption of new/adapted water use behaviours and create social norms to support their use by all. Combined social marketing and education materials and activities are recommended. An example of a social-marketing-based approach is the ***Water conservation is Everyone's Business*** video.
- Education and awareness - designed to increase knowledge and raise awareness about water conservation actions, including specific information on how to use less or save more.
- Strengthen identity and social norms relating to water saving actions – achieved by assisting the existing water committee, or a newly created water saving group, to raise awareness and promote water saving actions.
- Reminders/cues/social norms – visually reminding people of simple but important water practices, using public notices and posters helps to remind people what to do, how and why, and doing this

Targeted behaviours

Target: Households that currently have a pit toilet (and all villages with water scarcity), promote the adoption (construction, use and maintenance of VIP latrines)

Behaviour change strategies

- Positively promoting personal and social benefits and social norms – designed to positively motivate adoption of new/adapted toilets and create social norms of their use. Combined promotional and education materials and activities are recommended.
- Education and awareness - designed to increase knowledge of new/adapted toilets, including why they are beneficial and how to construct and maintain them. Combined promotional and education materials and activities are recommended.
- Improve Identity and Self-efficacy - designed to improve confidence and leadership to construct new/adapted toilets. A train-a-trainer approach is recommended.

Targeted behaviours

Target Households that currently have a water-based toilet and higher water availability, promote low-water using toilets, achieved either by:

- Modifying existing cisterns to reduce the volume water used for flushing (e.g. filling cisterns with blocks/rocks)
- Promotion, supply and adoption of the SaTo pan – a low-water using toilet seat for pour-flush toilets.

Targeted behaviours

Target: government and civil society to incorporate into community engagement programs (e.g. Drinking Water Safety and Security Planning):

- water-saving sanitation (VIPs, cistern-modifications, Sato-pans)
- water conservation behaviours (e.g. those recommended be adopted by household and Water Committees)

Behaviour change strategies

- education and awareness-raising to advocate for water-saving sanitation options which provide both health and water-saving benefits, rather than the current promotion of only water-based sanitation for health reasons).

Examples of social marketing resources to support implementation of the above strategies

The PACWaM+ research project has produced a series of video resources with the title *Water is Everyone's Business*. Most of these were produced with communities in Solomon Islands, with one video from communities in Fiji. They are made up of video stories of the real opinions and experiences of people in communities. There are intentionally not educational in style – they do not contain instructions on how to do things. They are focused on the emotional reasons why people – everyone – should and needs to get involved in water management.

One of these videos specifically addresses Water Conservation – that is the *Water Conservation is Everyone's Business* video from Fiji. This vide is specifically designed to support the strategy above of communicating personal and social benefits and creating positive social norms. This video can be screened in communities, as part of a broader community engagement activity or program, and should be followed up with discussion amongst the audience about what they heard and saw in the video, what they think about this, and whether these opinions and ideas are relevant to their own community.

The *Water is Everyone's Business* videos made with communities in Solomon Islands, address issues such as the involvement of everyone, of women and of men, in community water management. While they do not specifically address water conservation in a focused way, and they are set in Solomon Islands, they may be useful in Fijian water programs, especially where local resources do not exist. These resources were shared with communities in Vanuatu, who found them very interesting and engaging, and relevant to their own context – "the same but different", and still served the purpose to provoke discussion about collective action on water management.

Water Conservation in Fiji - a guide for stakeholders and implementers

https://youtu.be/n4gS85ypH54

Water Conservation in Fiji – for use in implementation

https://youtu.be/p5WtWRrhClw

Solomon Islands – Safe Child Faeces Management

https://youtu.be/XicY3bGEYvI

Solomon Islands – Nurture and Love

https://youtu.be/3RIp2zmA4A4

Solomon Islands – Fathers and Equitable Child Faeces Management

https://youtu.be/1OFTqeAMm04

CFM in Rural Solomon Islands With SUBS

https://youtu.be/xD-FvyYORac

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Other Resources

The PaCWaM+ research project has produced a range of implementation guides and resources to support Pacific Community Water Management Plus, these include:

- Pacific Community Water Management Plus Compendium of Tools, and associated video
- Pacific Community Water Management Plus – Community Water Diagnostic
- Strong Water Committees – Strong WASH Communities in Fiji – Implementation Guide
- Strong Water Committees – Strong WASH Communities in Solomon Islands – Implementation Guide. Including associated resources:
  - Video "Strong Water Committees – Strong WASH Communities - standalone copies can obtained from iwc@griffith.edu.au (with or without English subtitles).
- Water is Everyone's Business – Community workshop in Solomon Islands – Implementation Guide, and associated resources
  - Video: Water is everyone's business
  - Video: Youth and Water
  - Video: Women and Water
  - Water is Everyone's Business poster – Fiji (Fijian and English versions)
- Water is Everyone's Business – Promoting water conservation in Fijian Communities - Guide and associated video resource:
  - Video: Water Conservation is Everyone's Business (for stakeholders)
  - Video: Water Conservation is Everyone's Business (for use in implementation programs)
- Water Committee Backstopping in Solomon Islands and Fiji – Implementation Guide
- Supplementary activities for Drinking Water and Security Planning (DWSSP) in Fiji - Implementation guide
- Community-based Water Security Improvement Planning – Solomon islands – implementation guide (Volume 1, Volume 2, Volume 3)

In addition to the CWM+ tools and resources), the following research outputs were generated during the project:

1. Pacific Community Water Management Plus – Final Research Brief
2. Localising Water Security – Research Brief
3. Policy Brief – Improving water management in rural communities – Key findings for Policy in Fiji
4. Policy Brief – Improving water management in rural communities - Key findings for Policy in Solomon Islands
5. Research Brief – The Potential Role of Social Networks in improving Rural Community Water Management: Insights from Solomon Islands
6. Backstopping Rural Community Water Management – Lessons From Solomon Islands and Fiji – A Research and Practice Brief
7. Fiji Synthesis Report Phase 1 Research
8. Solomon Islands Synthesis Report Phase 1 Research
9. PacWaM Research Brief – Phase 1 Key Findings
10. Water Conservation and Water-Saving Sanitation in Fiji
11. Learning Brief on "The benefits of strong Gender and Social Inclusion in the management of village water systems in Melanesia"
12. Policy Brief on "Governance to support Integrated Water Management in the Solomon Islands"
13. Challenges and opportunities with social inclusion and community-based water management in Solomon Islands
14. Challenges and opportunities with social inclusion and community-based water management in Solomon Islands
15. Video: Community-based Water Security Improvement Planning in Solomon Islands

These resources, together with other research outputs, including forthcoming publications are available at: https://watercentre.org/pacwam/