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Addressing food security, WASH and climate vulnerability: The WaterAid-CARE partnership in Timor-Leste

A. George, T. Morgan, J. Bhushan & M. Gamez, Australia¹

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The small tropical country of Timor-Leste is in a period of social, political and environmental change. Its predominantly rural population is coping with aberrations in historical rainfall patterns and seasonal cycles, affecting communities' ability to manage food and water security throughout the year. In 2012 CARE and WaterAid successfully applied for funding under the Australian Government's Community Based Climate Change Action Grant. The objective of the joint project is to increase the adaptive capacity of women and men in vulnerable households living in Liquiça District with the goal of increasing resilience to the unavoidable impacts of climate change. The partnership has generated many interesting lessons, particularly around taking a catchment scale view and an integrated approach to managing water and food security. This paper will highlight selected lessons from the partnership, including addressing competing demands for water and mitigating conflict between its productive and domestic uses.

Introduction

This paper presents progress and learning from the *Climate Change in a Secure Environment* (Tetun acronym, MAKA'AS) project in Timor-Leste, which is currently mid-implementation (expected completion date December 2014). The project is supported by the Australian Government's *Community Based Climate Change Action Grants Program*. The paper briefly describes the changing climatic context facing communities in target project areas² and highlights how the partnership between CARE, WaterAid and local civil society has evolved to address the twin challenges of food security and water, sanitation and hygiene (WASH). The authors believe that the partnership has generated lessons that are instructive for others considering a similar approach to integrating these two programmatic areas in the context of climate change adaptation. These lessons and some recommendations are also presented here.

Changing hazards and vulnerabilities – the Liquiça context

Timor-Leste is particularly vulnerable to climate change impacts including changing rainfall patterns and temperatures, water scarcity, strong winds, ocean acidification and sea level rise. The most immediate manifestation of climate change in this country and the project site has been a longer dry season. The MAKA'AS project is being implemented in two watersheds in Liquiça district, which ranges in altitude from sea-level to approximately 1,300 metres (Figure 1). People in Liquiça live predominantly in rural hamlets scattered from the upper parts of the catchment down to the coastal areas.

CARE research on livelihood security and climate change in Liquiça District demonstrates that climate-related hazards pose significant risks to food and income security for poorer households, who have few alternatives available to them. The impact of climate-related hazards upon local communities, such as flooding and landslides, is exacerbated by degradation of local ecosystems and water resources, and water catchments are heavily deforested. In the lowlands, livelihood activities are affected by flash flooding and increasing intensity of cyclonic weather, which causes severe damage to infrastructure, washes away topsoil and permanently degrades agricultural land. Storm surges have also contaminated freshwater aquifers in some places, with brackish or salty water found in some coastal water points.

At higher altitudes, strong winds damage crops and landslides, caused by human activities and exacerbated by changed rainfall patterns, impact on accessible agricultural land for farming. This has implications for food security. At the same time, anecdotal evidence suggests that changing rainfall patterns are increasing water stress (particularly in *El Niño* years) and affecting the previously predictable availability of water used for domestic and agricultural purposes. Whether or not changes in water availability are directly caused by climate change or by other human-related impacts such as deforestation and erosion, there is little doubt that the situation in terms of water security is worst during the dry season and therefore will be more pronounced under all climate change scenarios which predict longer dry seasons in Timor-Leste.



Figure 1. The project area – Liquiça, Timor-Leste



Photograph 1. Typical Liquiça community with kitchen gardens in foreground, domestic water point to the left and agricultural fields in the hills (WaterAid)

Access to improved water and sanitation in Timor-Leste is poor, with coverage rates amongst the lowest in the region. Coverage in rural areas, where 70% of the population lives, is particularly low – 57% of rural people have access to improved water (compared to 91% in urban areas) and only 18% have access to improved sanitation (81% in urban areas). These access trends are born out in Liquiça District where many communities still utilise unprotected water supplies that are located up to 30 minutes' walk from homes. Open defecation is also still common practice in many communities that WaterAid and CARE work in across the District.

In Liquiça District, where the predominant occupation and income source is agriculture, there is a marked gender division of labour. Women are most often responsible for managing the household food and water supplies, for specific agricultural tasks and for marketing of vegetables. Men tend to be responsible for raising and selling livestock. Women are also more likely to be responsible for collecting water for domestic use with many walking up to two to three hours per day, especially during extended dry periods. The MAKA'AS project is premised on the understanding that any solutions to climate vulnerability necessarily need to be community driven and localised due to the high variability of experiences across the watersheds. Most importantly the project recognises that different communities and social groups – such as men, women, boys and girls – experience hazards and stress differently.

In 2012, the MAKA'AS project undertook a gender and power analysis as one of its first activities. This study showed interesting differences in how men and women recalled significant hazards. For example, the unusually large storms in 2003 were described by men in terms of the winds that destroyed crops, houses and roads. Women talked about how the heavy rain led to increased cases of dengue, malaria and the specific impacts on children and pregnant women. They also talked about the impact on food and water supply and the resulting increase in workload and malnutrition.

Project overview and approaches

Basis for the WaterAid-CARE partnership

Prior to the MAKA'AS project, both WaterAid and CARE were working in Liquiça District for a number of years on separate programs. WaterAid and its local NGO partners (*Malaidoi, Haufoun Timor Lorosae* and *Naroman Timor Foun*) have been implementing community WASH projects in Liquiça since 2009. Over the same period and often in the same communities, CARE has been undertaking food security activities such as supporting kitchen gardens, seed banks and Farmers' Groups. Frequently both organisations' work utilised the same local water spring-fed supplies but little deliberate integration had taken part. One exception was some coordination around directing runoff from tap stands built through WaterAid projects to provide irrigation to kitchen gardens supported by CARE.



Photograph 2. Flash flooding near Liquiça town (in the lower part of the watershed) in March 2012 – climate related disasters like this are experienced by men and women differently

Source: Nivio Benevides/CARE

Project overview

In 2012 CARE and WaterAid successfully applied for funding under the Australian Government-funded *Community-Based Climate Change Action Grant*. The objective of the joint MAKA'AS project is to increase the adaptive capacity of women and men in vulnerable households living in Liquiça District, Timor-Leste, with the goal of increasing their resilience to the unavoidable impacts of climate change.

This project set out to work in 6 *sucos* (villages) and 33 *aldeias* (hamlets), and jointly plan and deliver a range of activities that improved water and food security. The project has a strong focus on strengthening community decision-making mechanisms to enable communities to plan and implement practices that promote sustainable livelihoods, food security and water management and respond to changing climate conditions. Significant emphasis is also placed on the role of partnership in achieving sustainable outcomes. All activities under MAKA'AS are delivered through CARE's local partner (*Centro do Desenvolvimento de Economia Popular*) and WaterAid's aforementioned local NGO partners. Project planning, coordination and troubleshooting have been enhanced by an ongoing collaboration with government and sector stakeholders at the sub-district, district and national level.

The MAKA'AS project, which has a focus on community-centred solutions, is not a watershed management project. That said, the project has a presence in 33 *aldeias* spread across three agro-ecological zones (upland, mid-land, lowland) and it applies the principles of the watershed approach to its water and land management activities. Community members are supported to build their knowledge of water availability in the catchment and to better understand how water availability affects different users.

Project progress to date

The project is grounded in a participatory analysis of vulnerability and community capacity to adapt to the impacts of climate change, as well as technical analysis of key hazards and water systems.

The project's WASH-focused outcomes to date have been directed towards improving community access to reliable water sources for domestic consumption and protecting water sources through re-vegetation and sustained improvements to community sanitation access. In 20 of the 33 communities, a protected gravity fed water supply system is installed and connected to tap stands close to houses. Households have also been implementing water resource protection strategies (reforestation and spring protection) to improve the long term quality and quantity of water supplied through these systems. People report that they are very happy with the new system and improved access and quality of water. Women in particular are spending less time collecting water which has freed up time to spend on other activities; most commonly mentioned was working in their kitchen gardens to supplement food and income.

Each community is also supported to become open defecation free through sanitation and hygiene promotion activities (predominantly using community-led total sanitation approaches) leading to the construction of improved pit latrines by every household.

WaterAid's partners have supported each community to elect a gender-balanced community water management group (Tetun acronym, GMF). These GMFs have been involved in the planning, design and construction of each water supply and trained in maintenance and management skills that will be required for the life of the system. Women's participation in GMFs has been supported through ongoing work to raise awareness around making space for women to participate and lead in planning and managing

community projects. Activities that have the community analyse barriers to women's involvement have been particularly useful and have resulted in greater and more meaningful participation (Kilsby 2012).

Land use, livelihood and food security activities under the MAKA'AS project have been adjusted to the context of the different communities that we work with and varied depending on location and altitude. Together, the partners are working with community stakeholders to plan for the impacts of a changing climate. To date activities have included (but are not limited to):

- Seed storage – including more diverse and drought tolerant varieties;
- Distribution of over 90,000 saplings for the purposes of reforestation, bio-engineering/ catchment stability, soil protection, food production and commercial use (timber and fuel);
- Construction of water ponds as an auxiliary water supply for irrigation;
- Promotion of water sensitive agricultural techniques, such as terracing, to reduce evaporation;
- Soil fertility enhancement through sloping agricultural land technology (SALT); and
- Supporting Farmers' Groups to lead the above initiatives.

Lessons learned

The following section will some explore examples where WASH, food security and land management focused activities have overlapped, and identify some lessons that have emerged. These lessons are a non-exhaustive sample of learning from stakeholder reflection and the project's mid-term review (conducted in March 2014). Three areas are summarised below: (i) tensions between domestic and productive use of water; (ii) the challenges of reforestation activities and (iii) the opportunities and ongoing issues of working through a collaborative partnership, such as the MAKA'AS project.

Managing competing water demands – the case of water ponds

Water catchment ponds were included in the project design as a simple way to increase the amount of water available for productive uses, including irrigation of agricultural fields and kitchen gardens. The domestic gravity feed water supplies (constructed by WaterAid and partners) are designed to meet the daily water demands for drinking, cooking and bathing (with allowance for population growth) but not the additional demands of these non-domestic water needs – one vegetable garden can use as much water as 100 people per day. Feedback from community members suggested that the domestic tap stands were sometimes running dry, and this could be because people were frequently using them to fill the water catchment ponds. This practice was also observed prior to the project (in communities where CARE and WaterAid had been working separately) and was one of the motivations for the MAKA'AS partnership. These additional and unplanned demands on the domestic supply have the potential to cause ongoing conflict between the GMFs (responsible for the water supply system) and those utilising the ponds (often represented by Farmers' Groups, and sometimes the same people). While diverting water from tap stands for irrigation purposes would seem to meet short term food security outcomes, it does create sustainability challenges for the domestic water supply and therefore also food security.

This outcome is not altogether unexpected nor an unreasonable action on behalf of those choosing to fill the ponds from the domestic supply. It stems from a misunderstanding about the function of the water ponds as ephemeral catchments of rainfall and runoff, rather than permanent storage ponds to be used for irrigation year-round. The two water supply activities (ponds and domestic) were also implemented by different teams – CARE and WaterAid – which probably contributed to misunderstandings of the project principles by the field teams and consequently the community. Project teams have discussed this and will be actively seeking opportunities to jointly implement activities in the remaining months of the project.

Mosquitos were a secondary factor that contributed to the redirection of domestic water to ponds. The still catchment ponds became a breeding ground for mosquito larvae – a concern for households located nearby. In some cases, community members took the initiative to introduce fish into the catchment ponds as a way of managing mosquito populations whilst supplementing protein and, occasionally, income. This development was encouraged by some field staff who had previously promoted fish farming as a mosquito mitigation technique in other projects. In principle, fish farming is a good use of permanent water storage ponds – however, for catchment ponds where the water level is designed to fluctuate with rainfall, the practice necessitates 'topping up' with other sources, lest the fish should suffocate when levels fall too low.

A number of recommendations were produced as a result of the mid-term review and ongoing reflections with staff and project stakeholders. These will be implemented for the remainder of the project and include:

1. Locate ponds further from houses to reduce the need for mosquito control.
2. Encourage the community to use alternative water sources to fill the water ponds i.e. not the tap stands intended for domestic use. These could include improving local rainwater harvesting systems and diverting more grey water (for example from laundry washing) and run off into the ponds.
3. Include low-cost lining, fencing and shades for water ponds as part of the recommended design to improve water quantity. These modifications will reduce water losses from evaporation and animals.
4. Support Farmers' Groups and GMFs to jointly develop guidelines on filling ponds. These could include only filling the ponds at night (where domestic demand for water is low)

The gendered aspect of this tension is not yet well understood. This paper earlier stated that there is a clear division of labour along gender lines evident in the project communities. This means that men and women will have very distinct relationships with water. Further study is required to see how gender influences decision making when there is a conflict between limited water and its domestic or productive use.

Reforestation – not as simple as planting trees

The MAK'A'S project has actively tried to address the degraded local environment, including through seedling distribution and reforestation efforts. To date the project has distributed over 90,000 saplings for a variety of purposes – including reforestation of the upper catchment to protect soil and stabilise slopes, food trees that contribute to productive income of farmers and to encourage water source protection and recharge.

The project established twelve seedling nurseries in the project area and provided the poly bags, seeds and technical support to the Farmer's Groups managing the seedling nurseries. As the chief of Lukulai village said, "Timorese used to cut trees for firewood due to economic problems. This project is good because it has provided seedlings to prevent landslides... Planting trees is one way to manage it."

The mid-term review heard from an external stakeholder that the seedling nursery model adopted under MAK'A'S has been an improvement as current government seedling nurseries are near the coast and it can be logistically difficult to transport the seedlings to the communities, given the condition of the roads. The seedling nurseries place a value on trees and communities learn that trees are something that should be looked after. As the Asorlema Hamlet Chief noted, "the community and future generations benefit from reforestation. If we don't plant now, future generations will not see any trees." The mid-term review also identified a number of challenges that could potentially compromise the benefits of these activities.

Firstly, tree species selection is critical in terms of ensuring the desired effect of reforestation; for example some species with certain root functions are inappropriate for groundwater recharge and can have a counterproductive effect. Other species will compete with productive crops for nutrients and reverse efforts at strengthening livelihood initiatives through agroforestry techniques. Nurseries established by the project are growing saplings fit for a range of different purposes and this has been communicated to project participants, government stakeholders and implementing partners. The tree species selection process was undertaken via a participatory workshop with extension workers, community leaders and farmers, and was based on the recommendations of the World Agro Forestry Center. Nevertheless there is evidence that there is still some confusion about which trees should be planted where – which is affecting tree survival as well as contribution to project outcomes. For the remaining duration of the project, extension efforts will be strengthened to ensure seedlings are planted in the appropriate location for their use and purpose.

Secondly, the benefits of reforestation are reaped over the very long term (often more than 10 years). Saplings are only 30cm tall when distributed and therefore do not have an immediate impact on slope stabilisation, recharge or productive output. This long timeline creates a disincentive for people when faced with deciding where to expend their limited time and (during the dry season) water. Reforestation activities (especially for water source protection purposes) often happen far from the community and therefore these saplings are even less likely to be regularly tended at the outset. Faced with these challenges, many people will favour using their limited resources on tending their own crops. Therefore, it is important for the project to strengthen community ownership of reforestation activities and provide ongoing support to local leaders.

Partnership – all marriages take hard work

The CARE-WaterAid partnership has been a considered attempt to draw on each organisation's expertise and established relationships in Liquiça. The resultant project design integrates CARE's local experience with food security, resilient livelihoods, disaster risk reduction and community-based adaptation activities and WaterAid's expertise in WASH and community water resource management. This intent is recognised by the local NGO partners. When asked to reflect on the benefits of this partnership, one NGO staff member said "integrating water supply and agricultural activities into one project is positive – they go hand in hand."

The partnership has also provided additional benefits; staff and stakeholders identified the following:

1. Together the partners are able to reach more people during the project period, than if working alone.
2. Staff have an opportunity to learn new skills and knowledge from each other.
3. Training opportunities in skills and topics new to both partners (for example in community-based water resource management approach) will have a greater impact and are more cost effective.
4. Lessons from the project can be shared widely through different sectoral networks and contacts.

Nonetheless the project team acknowledges that partnership takes additional effort working in consortium means that you cannot approach the work with a business as usual approach. This is particularly the case for large, established international NGOs that are used to working in a certain way. There is a risk that the partnership will be more about coordination (implementing related activities side by side) rather than true collaboration or integration which creates an outcome greater than the sum of its parts. The example of the water ponds above, illustrates a time where greater coordination between partners could have avoided adverse or unexpected outcomes. Insufficient integration can also come about through decisions to identify ‘leads’ on certain activities. While this has obvious logistical benefits, it can lead to increasing the time burden placed on communities with multiple visits from different staff over a short period of time and confused messaging. WaterAid and CARE continue to work together with their local NGO partners to strengthen coordination, coherence, and maximise opportunities for shared learning.

Conclusions and lessons learned

This paper has presented a brief snapshot of the MAKAS project and its progress towards addressing the concepts of food security and water supply in the context of increased climate vulnerability. The project provides lessons for others undertaking a similarly integrated approach to work. In particular the project highlights the risks of managing the competing demands for water when integrating WASH and food security initiatives. The project also emphasises the value of working in partnership with other organisations, but is a reminder that partnerships themselves require investment of resources and ongoing evaluation if they are to fully reach their potential.

Climatic data indicates that *El Nino* weather conditions may return to the region toward the end of the Southern Hemisphere winter. This is likely to create drier than usual conditions in Timor-Leste and consequently will be a test for the MAKAS project to see how the community utilises its new knowledge and decision-making mechanisms in water stressed times. The CARE and WaterAid teams, as well as their partners, look forward to sharing further lessons.

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References

Kilsby, Di (2012) "Now We Feel Like Respected Adults": Positive Change in Gender Roles and Relations in Timor-Leste WASH Program, Issue 6, ACFID research in development series

Notes

¹ The views expressed below are of the authors and do not necessarily represent WaterAid or CARE.

² Note this project brief deliberately does not present scientific climate data. The focus of the paper is on lessons around integrating food security and WASH programming.

Contact details

Alana George	Takara Morgan
WaterAid Australia	CARE Australia
Level 7, 176 Wellington Parade	GPO Box 2014
East Melbourne, Victoria, Australia 3002	Canberra, ACT, Australia 2601
Tel: +61 (0)3 9001 8277	Tel: +61 (0)2 6279 0200
Email: Alana.George@wateraid.org.au	Email: Takara.Morgan@care.org.au
www: www.wateraid.org/au	www: www.care.org.au