



# Challenges in designing and implementing climate-resilient water safety planning (CRWSP): initial observations from a CRWSP pilot in rural Viet Nam

Lien Pham<sup>1</sup> and Hang Thanh Dam

## Background

Water safety planning is a critical issue that has received increasing attention and investment from governments and international organisations because of the nexus between water supply quality and public health as well as other economic and social implications. Guidelines for safe, clean and resilient water systems have been developed and disseminated worldwide by the United Nation agencies such as World Health Organization [1] and United Nations Children's Fund [2].

In Viet Nam, climate change resilience and adaptation are important goals in the progress of sustainable development goals to the year 2030. Goal 13 in Decision 681/QĐ-TTg [3] responds to climate change and natural disasters and other disasters and strengthens resilience and adaptation to climate change-related risks. Water safety planning has also been institutionalised through policies and regulations issued by the central government and responsible agencies like Ministry of Construction and Ministry of Agriculture and Rural Development. For example, Decree 117/2007/NĐ-CP [4] is issued by the central government on clean water production, supply and consumption; Circular 08/2012/TT-BXD [5] is issued by the Ministry of Construction to provide guidance on water safety planning.

The focus on climate change and natural disasters in water safety planning recognises the increasingly apparent effects of climate change in Viet Nam. One of the pertinent issues is the saltwater intrusion in the Mekong Delta that occurs during the dry season from January to April every year. Lack of rainfall in the dry season coupled

with interactive effects of the sea and river dynamics causes salinisation in coastal areas. For the Mekong Delta in Vietnam alone, since

December 2019 the unfolding drought and saltwater intrusion event has been particularly serious, even more so than the 'historical' drought event in 2010-2016, with about 96,000 households experiencing water shortage, and tens of thousands of hectares of crops already damaged.

In light of the vulnerabilities of this region to water security, Decision No.543 [6] on the Action Plan on Climate Change Response of Agriculture and Rural Development Sector in the Period 2011-2015 and vision to 2050 stipulates saving water in production and living by:

*"Reviewing the planning, upgrading and constructing saline prevention works, water supply and water drainage works; especially for the Red River Delta, the Mekong River and the coastal area to be protected against sea level rise with the scenario in each phase." Item (d), Article B.*

*"Strengthening rural infrastructure: Ensuring the safety of roads, schools, markets, rural water supply and sanitation works in case of climate disasters." (Item (f), Article B.*

In general, Decision No 543 elevates the need for water supplies to be protected against sea level rise with specific scenario settings to accommodate each phase of climate change resilience and adaptation.

Despite the policy attention, there remains a lack of clear and comprehensive guidance and

<sup>1</sup> Corresponding author: Lien Pham, East Meets West Foundation. Email: [lien.pham@eastmeetswest.org](mailto:lien.pham@eastmeetswest.org).

instructions for water supply operators in Viet Nam on water safety planning for rural areas and climate resilience particularly in rural areas.

### **Climate resilient water safety plan (CRWSP) pilot**

Against these climate-related challenges and policy landscape, East Meets West Foundation (EMWF), an international NGO operating in Southeast Asia, has undertaken a pilot of implementing climate-resilient water safety planning (CRWSP) in two rural provinces of Vietnam, Nghe An and Ben Tre. The pilot is part of the Women-led Output-based Aid (WOBA) Vietnam project funded by Australian Department of Foreign Affairs and Trade, under the Water for Women Fund. The pilot aims to identify any barriers and enablers in implementing CRWSPs and provide recommendations for effective implementation of CRWSPs in rural Viet Nam. At the broader level, the pilot aims to build evidence for effective implementation of CRWSPs in other parts of the country and to contribute to evidence-based policy advocacy for CRWSPs in countries with similar vulnerabilities to climate change.

The pilot involves four components: 1) a discussion workshop with water scheme operators about climate change impacts on water supply works and water safety planning; 2) a training workshop for water scheme operators on developing CRWSP using the World Health Organisation (WHO)'s framework and guideline for small communities [7]; 3) technical on-site training and mentoring activities for water operators and EMWF staff related to the concept, application of risk assessment, and the implementation of the CRWSP; 4) share lessons learned and provide recommendations and guidelines for development and implementation of CRWSPs in rural Viet Nam.

The next two sections describe and discuss our initial observations from the execution of the first two components. The final sections offer some recommendations for the remaining components of the pilot, and the broader implications for integrating climate resilience in water safety planning from the lens of human security.

### **Climate change impacts in rural Viet Nam**

The initial discussion workshop highlights key issues relating to the increasing climate change impacts on water supply in rural Viet Nam. In the North, wide fluctuations and uneven distribution of rainfalls have led to an increase in frequency of flood. The intensity of flood in some areas has also caused more severe impacts of drought in some areas and prolonged period of drought in others. In addition, increased upstream deforestation has exacerbated climate-related events such as water shortage and deterioration of water quality in downstream areas of Thanh Hoa province.

In the Central and Southwestern provinces, water shortage for domestic use and agricultural production has aggravated due to extended dry season. In Ha Tinh, many people incurred significantly higher costs to buy water or spend more time getting water for daily. The water quality was also reduced giving rise to outbreaks of waterborne diseases and pushing up health care costs.

In the Mekong River Delta, drought and saltwater intrusion resulting from prolonged dry season have become more common and severe. Since the main source of household income is from agricultural production which is heavily dependent on weather and water resources, drought and saline intrusion have further impacted agricultural production and livelihoods. The climate-related damage to crops and productivity was most visible in Chau Thanh and Cho Lach districts, where up to 70% of coconut plantations, rice cultivation areas and ornamental tree gardens had a substantial decrease in outputs. Local water supply systems and facilities also experienced noticeable infrastructure deterioration due to the water shortage and use of saline surface water.

In light of these lived experiences of climate change impacts, it is imperative for Viet Nam to develop and implement climate resilient approaches and strategies for water safety planning. Adoption of CRWSP is one of the most comprehensive solutions to ensure safe and adequate water supplies and contribute to

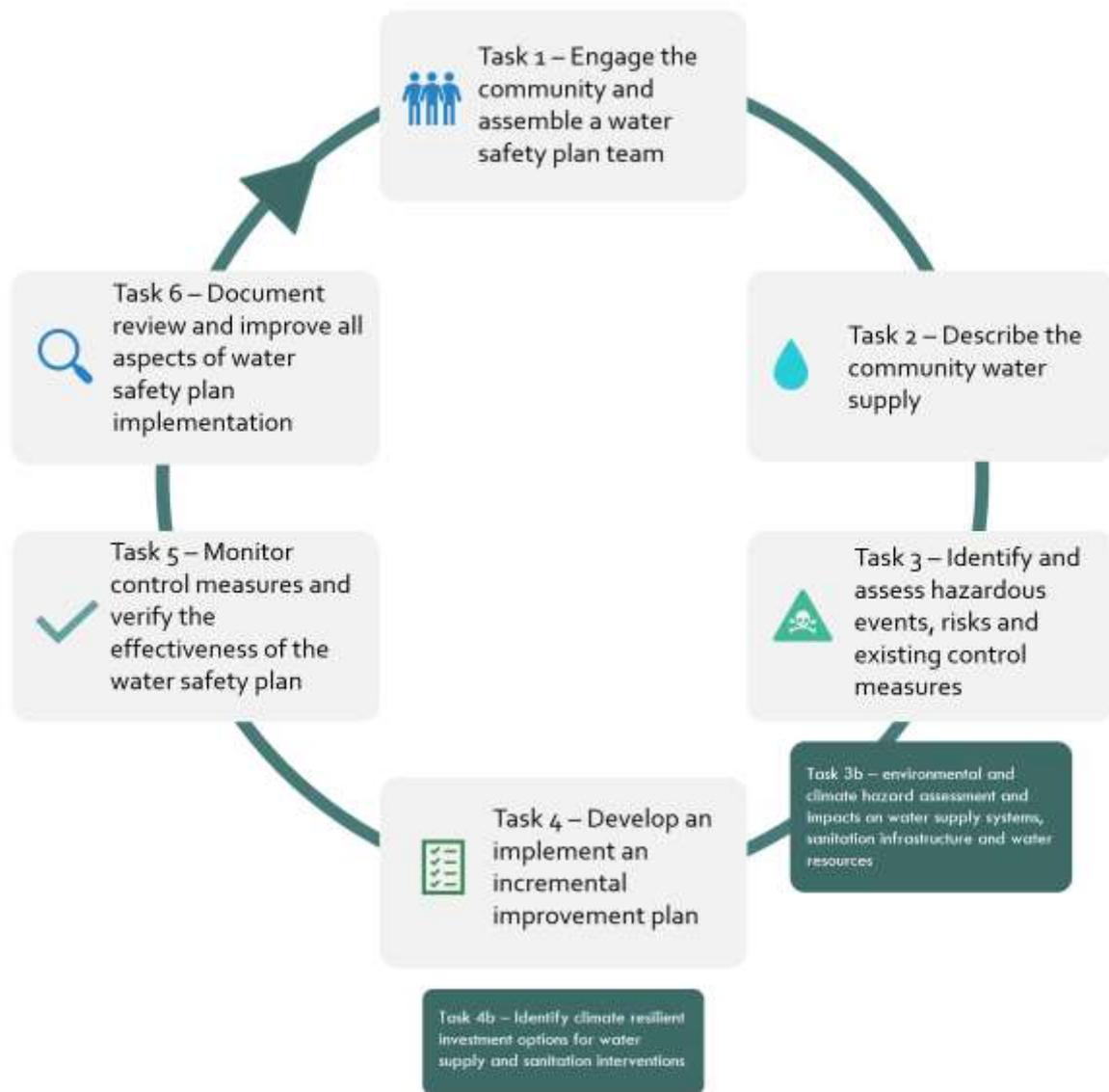


Fig 1. Adapted WHO guidelines for climate resilient water safety planning in small communities [7]

improved public health and sustainable economic development.

### Challenges in developing CRWSP

The follow-up training workshop presented the WHO [7] framework and guideline for climate resilient water safety planning in small communities (Fig 1). The framework emphasises three characteristics of the WHO's CRWSP approach. First, systems characteristics of the water supply system. Second, agents' capacity in climate resilient thinking and disaster reduction.

Third, institutional aspects that link agents and systems to assess whether they enhance or constrain climate resilience.

Participants' engagement in the workshop activities revealed many encountered challenges in developing CRWSPs. Overall, none of the CRWSPs followed the 6-steps of the WHO guidelines [7] in a methodical way. Some contents relating to these steps were present and included in various parts of the plan, which made the plans difficult to follow and evaluate within the criteria of the framework [7]. Some plans were simplified



versions of an urban water safety plan with certain sections on urban water supply planning removed. In one case of a private water operator in Nghe An, the CRWSP was developed and submitted for the Provincial People's Committee (PPC) approval. However, the CRWSP did not have clearly identified climate-induced risks and most risks were based on general and anecdotal observations. There was little use of statistical data and scenario analysis as the basis for risk projection. Some non-climate risks were also listed for impact assessment. Likewise, existing control measures were reported based on the scheme operators' perceptions rather than evidence from systematic monitoring and review.

This case was not unique. Most rural water supply systems in the Nghe An province are small with limited capacity and not financially sustainable due to low or even absence of revenue from water tariff. According to one public water operator, up to 80% of over 500 water schemes in Nghe An has yet to charge water tariff. The lack of funding is a critical challenge for many water supply operators in rural areas, which limits capacity in water safety planning and integrating climate resilience into water safety plans.

In Ben Tre, four water schemes had developed and submitted their water safety plans for the PPC approval but none of the plans included climate resilience and adaptation measures. It is noticeable that all CRWSPs prepared by these water suppliers were based on Circular 08/2012/TT-BXD by Ministry of Construction [5], which provides guidelines exclusively on urban water safety planning. As such, these water supply plans may not have accounted for the specific characteristics and conditions of the province's rural water supply sector.

Another factor contributing to the challenges encountered by the water operators in developing CRWSPs is the lack of systematic guidance and regulations on rural water safety planning. The current overarching policies on water safety planning are mostly on urban water supply. The national strategies and action plans for climate change response only provide general guidance for all sectors, which has also experienced a paucity of policies and guidelines on climate resilience in the water supply sector.

## **Recommendations for the remaining components of the pilot**

Our initial observations of the two components of the CRWSP pilot affirm the need for WASH-related development programs in Viet Nam to engage with climate change issues and develop interventions toward climate adaptation and resilience. Applying the WHO's water safety planning approach [7], the challenges that water operators encountered in developing CRWSPs can be observed at three levels: individual, system, institutional. At the agent level, there is an apparent lack of knowledge and skills in identifying and assessing climate related hazards and risks, hazardous events, existing control measures, and in designing an incremental improvement plan. At the system level, the apparent absence of monitoring and evaluation tools and methods limits evidence building about risks and designing and monitoring appropriate and effective improvement plans. At the institutional level, the lack of policy guidelines and regulatory framework to guide climate change adaptation and resilience issues in water safety planning particularly for rural areas inhibits potential synergies between the agents and the system towards change. This is further exacerbated by lack of funding for investment into CRWSPs.

The gap in the regulatory framework offers an opportunity for international civil society organisations to step up to share international experience and best practices in developing and implementing climate resilient water safety planning for rural water supply sector. We offer the following recommendations to address issues at the agent and system level, which could be incorporated into the remaining components of the pilot:

- Include and empower the community through interest and ownership in the management of its water supply.
- Engage health and water sector staff at different levels of government (province, district, commune), experienced climate experts from research and other institutions, and NGOs in the CRWSP team.
- Systematically assess vulnerabilities of water utilities using established monitoring

tools and methods to identify the risks, how the risks are being controlled, and design improvement plan.

- Set up operational monitoring and inspections in CRWSPs to assess the extent to which the designed control measures are appropriate and are working effectively.
- Verify CRWSPs' appropriateness and effectiveness based on data collected and analysed using reliable methods and tools.
- Mobilise CRWSPs by linking design and implementation to prevailing government policies and guidelines, international standards, best practices and scientific research.

### Final thoughts

At the conceptual level, our initial observations of the CRWSP pilot further highlight the importance of thinking about climate resilience and water safety planning through the lens of human security [8]. Taking a people-centred approach, the human security framework focuses on threats to individuals' conditions (environmental, socio-economic, political), their access to food and health and their environmental, communal and personal safety. A human security analysis looks at a person's vulnerability, exposure to risks and misfortune, and ability to prepare for, cope with and recover from threat and harm with emphasis on basic human priorities, including life and health and dignity [9].

Integrating climate resilience in water safety interventions through the human security lens can help to draw attention to concerns with the environment and its impacts on how humans live and *can* live. The connection between water security and human security aligns with considerable efforts linking the UN's sustainable development goals with global environmental change such as the Intergovernmental Panel on Climate Change (IPCC)'s 2014 General Assessment [10], which consolidates a large body of works on climate change impacts on health, poverty and other aspects of human (in)security, including conflict and migration.

The recognition of climate resilient water safety planning as an issue of human security

operationalises the WHO's definition of health by paying deep attention to health needs in disasters management, climate adaptation, risk reduction, and tracking the interconnections of diverse factors, that emphasises empowerment and wide involvement from all rather than selected few. As argued by Des Gasper [9], health is an integrative theme and cannot be securely enjoyed by some groups while others go without.

### References

1. World Health Organization, 2005. *Water Safety Plans: Managing drinking-water quality from catchment to consumer*.
2. UNICEF, 2014. *Local participatory water supply and climate change risk assessment: Modified water safety plans*. WASH Climate Resilient Development Technical Brief.  
[https://www.unicef.org/wash/files/GWP\\_UNICEF\\_Tech\\_A\\_WEB.PDF](https://www.unicef.org/wash/files/GWP_UNICEF_Tech_A_WEB.PDF)
3. *Decision 681/QĐ-TTg*, 2019. Implementation of sustainable development goals to the year 2030, Viet Nam.
4. *Decree No. 117 /2007/ND-CP*, 2007. Clean water production, supply and consumption, Viet Nam
5. *Circular 08/2012/TT-BXD*, 2012. Implementation of safe water supply, Ministry of Construction, Viet Nam
6. *Decision No. 543/QĐ-BNN-KHCN*, 2011. Action Plan on Climate Change Response of Agriculture and Rural Development Sector in the Period 2011-2015 and vision to 2050, Viet Nam.
7. World Health Organization, 2012. *Water safety planning for small community water supplies: step-by-step risk management guidance for drinking-water supplies in small communities*.  
[https://apps.who.int/iris/bitstream/handle/10665/75145/9789241548427\\_eng.pdf?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/75145/9789241548427_eng.pdf?sequence=1)
8. Jolly, R. and Ray, D. B., 2006. *The Human Security Framework and National Human Development Reports: A Review of Experiences and Current Debates*. United Nations Development Programme.
9. Gasper, D. (2020). Human security. In Enrica Chiappero-Martinetti, Siddiqur Osmani, Mozaffar Qizilbash (eds), *The Cambridge Handbook of the Capability Approach*. Cambridge University Press. DOI: 10.1017/9781316335741.
10. IPCC, 2014. *Fourth Assessment Report*. Geneva: Intergovernmental Panel on Climate Change