



Da Nang and Quang Nam, Viet Nam

TRANS-BOUNDARY RIVER BASIN MANAGEMENT IN CENTRAL VIETNAM

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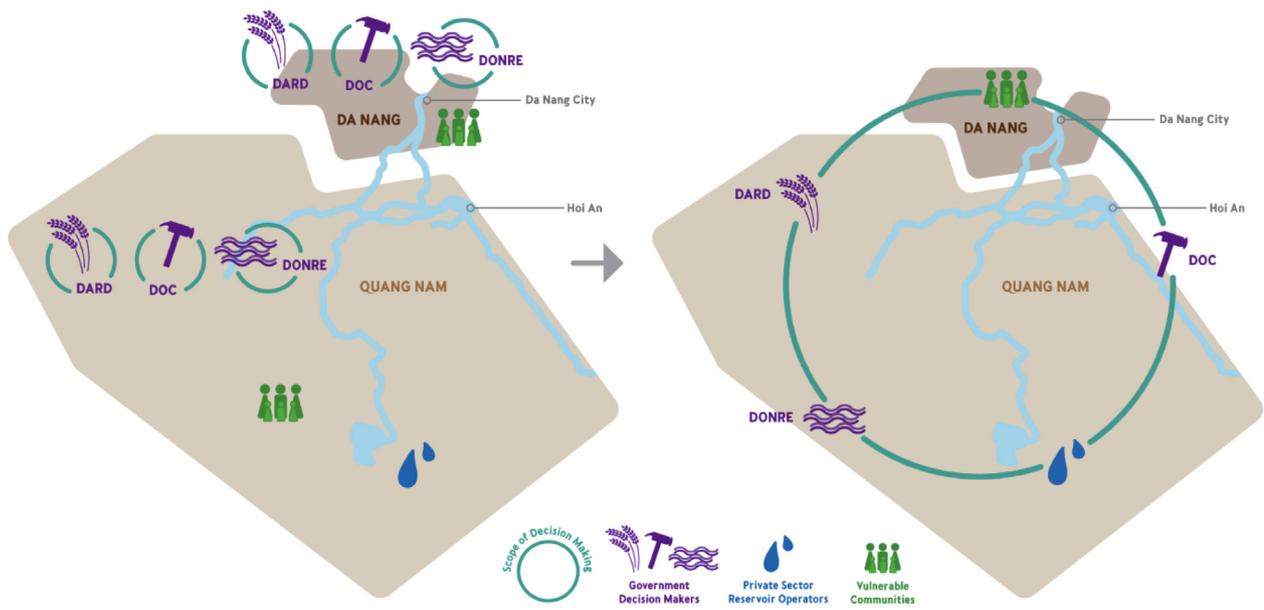


SAND DEPOSITED FIELD BY THE VU GIA RIVER, DAI HONG COMMUNE, QUANG NAM
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KEY FINDINGS

- A shared river basin of Quang Nam province and Da Nang city, the Vu Gia – Thu Bon river basin faces a range of management issues dealing with allocation of water across various time frames, during both flood season and dry season. These questions require assessment of trade-offs between different uses (e.g. hydro reservoir and generation; crop irrigation; drinking water supplies and water quality downstream) and between different flow management and water diversion options.
- The strategic modeling tool introduced by the project (Water Evaluation and Planning, or WEAP) was well suited to assessing key issues of flow allocation and analyzing the broad trade-offs at a basin scale. However, because the participating government organizations only address these kinds of decisions infrequently, if at all, staff lack the mandate, skills and resources to incorporate this type of analysis in their regular work.
- Shared Learning Dialogues (SLDs) proved to be effective for building collaboration between different organizations and engaging vulnerable community members in planning issues. This generated actionable insights for multiple decision-makers. Diagnostic support and capacity building at the community level was important to help the community to identify and articulate their most important concerns at SLDs. Community consultation processes featuring iterative SLDs and capacity building of this type should be regularized by RBOs as part of their assessment of basin-wide strategic planning options.
- The process of establishing a River Basin Organization (RBO) involving just two provinces and one basin is already quite difficult, requiring a large amount of time and effort, the right set of tools, and willingness of all parties to collaborate. In addition, every river basin is unique in its hydrological character, jurisdiction, land use and development context. It would be very challenging for the same RBO to be responsible for multiple river basins and multiple provincial jurisdictions all at the same time. Until there is much more experience with the process and tools, the Ministry of Natural Resources and Environment (MoNRE) should limit the scope of each new RBO to a single major river basin, and the provinces directly implicated in that basin.

SCHEMATIC OF VU GIA – THU BON RIVER BASIN IN QUANG NAM AND DA NANG PROVINCES



Description of the Problems

The tributaries of the Vu Gia – Thu Bon river basin have their origins in the highlands of Quang Nam province in central Vietnam, but as it reaches the flat coastal floodplain, the river splits into multiple uncontrolled branches, which reach the sea through Da Nang city at the city’s deepwater harbour, and through Hoi An city in a much shallower estuary. Both Da Nang and Hoi An are subject to flooding during severe storm events upstream, and during the dry season Da Nang’s water treatment plant, which extracts water from the river, is subject to constraints due to low river flows and salinization. Water flows are strongly affected by the operation of 10 upstream hydro reservoirs of varying size (with more planned), and by pollution from industrial activity in Quang Nam. In the fertile coastal floodplains along the river, farmers are subject to unpredictable flooding, riverbank erosion, and sedimentation. The provinces have different interests, and decision-making authority rests at the provincial level. Historically, there have been no practical mechanisms for collaboration or coordination of provincial river management decisions, leading to disjointed decision-making, conflict over water management, and assignment of blame by each party to the other. Technical analysis, modeling and planning exercises are undertaken independently by various technical agencies, but not shared with other organizations whose decisions also affect river management.

In this context, Da Nang and Quang Nam provinces agreed to establish an experimental collaborative River Basin Organization, with a mandate for data collection, modeling and information sharing but no authority to take independent action. While other basin-level organizations and plans have been created in Vietnam, they have met only infrequently (e.g. annually) and have been relatively ineffective. The new RBO was established by formal agreement between the two provinces in August 2017. This project supported the nascent RBO through the development and piloting of a platform for cross-border river management in the Vu Gia – Thu Bon river basin. The approach was designed to improve the success and sustainability of basin-scale river management by:

- Providing a platform for stakeholders to develop and share evidence, and to deliberate in a way that would promote shared understanding of river management responses, as well as greater respect for each another’s interests and recognition of the interdependence of the goals of different stakeholders.
- Supporting stakeholders to develop data and modeling needed to explore how changes and trade-offs in current practice can help realize benefits for multiple stakeholders.

This effort was innovative in the Vietnamese context because it specifically included development of a modeling tool intended to support the multi-stakeholder deliberations of the RBO, and it included processes to ensure meaningful consultation with poor rural communities most affected by river management decisions.

Project Interventions: Tools to support the RBO Platform

The project supported the RBO in three ways:

DEVELOPMENT OF A DECISION SUPPORT MODEL USING THE WATER EVALUATION AND PLANNING TOOL (WEAP)¹

1

A strategic planning model was developed for the entire Vu Gia – Thu Bon river system to help stakeholders explore river management trade-offs. Provincial line department technical staff and local experts were provided training and support to build and operate the WEAP model. The model was designed to provide input for strategic planning for high flow conditions, low flow conditions and the effect of reservoir operations on flows and flow impacts. In particular, the model incorporated existing reservoir operation protocols and could generate flood footprints and water depths downstream. Saline intrusion in low flow conditions was not directly modeled but could be inferred based on known salinity-flow relationships. Model output was generated for a series of scenarios to explore the possible range of operational flexibility in the system during high- and low-flow conditions under variable future climate and hydrological regimes.

SHARED LEARNING DIALOGUES (SLDS)

2

The new RBO undertook a series of seven SLDs over a period of about 15 months that included technical discussions and community consultations in order to clarify trade-offs in river management and potential intervention responses. Poor and vulnerable communities were supported to participate in these deliberations through representatives who could prepare evidence and presentations. During the fourth SLD, technical and policy staff from the provincial governments and private reservoir operators were brought to the affected communities and given a personal tour to see the erosion and drought impacts caused by reservoir operations and hear first-hand stories of the costs these have imposed on local residents.

COMMUNITY CAPACITY BUILDING AND PLANNING SUPPORT

3

Community members in five rural communes were supported to conduct vulnerability and capacity assessments (VCAs) and to use the results to develop community climate resilience action plans. VCA results enabled the community to organize and present systematic evidence of the impacts of reservoir releases and river management infrastructure on downstream communities, so that these could be effectively shared at SLDs with other more powerful stakeholders.

¹ Developed by and available from the Stockholm Environment Institute (SEI)



AGRICULTURE FIELD IN HOA KHUONG COMMUNE, DA NANG
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Results

The voluntary creation of the RBO itself was a significant accomplishment, and required both provinces to overcome initial resistance and to gain high level political support. The new RBO platform operated in a manner that was different from the experience of the government agencies involved, who were accustomed to working independently with technical consultants, where modeling exercises were essentially opaque “black boxes” and the only interest of the user was in the model results. The platform instead placed an emphasis on technical collaboration, which included training in how to use the model, consensus on data sources and interpretation, and collaborative selection of scenario parameters. This was the first time that provincial technical staff had used a practical river basin model for decision-making that was able to integrate issues of land use, reservoir management and hydrology (and possibly the first time such a model had been used this way anywhere in Vietnam). While the modeling was able to generate preliminary trade-off analysis in terms of water flow, the next step would be a more detailed benefit / cost analysis of options. This would be much more time-consuming and costly so it would likely only be undertaken for major investment decisions.

The combination of the SLDs to review technical and modeling issues, and the ability to manipulate the model based on consensus over input data and scenario parameters, led to increased collaboration between the two provincial DoNREs

on technical issues, and built trust and mutual understanding. Local technical staff and other stakeholders were able to provide inputs and review outputs of the modeling in order to consider trade-offs in basin management; while affected communities were better able to communicate vulnerability issues and provide evidence to be used in reservoir operations and early warning systems (EWS). However, the nature of the WEAP model, and its emphasis on strategic trade-offs in river management, is not compatible with the main day-to-day functions of DoNRE technical staff, who are mostly responsible for short-term water allocation and operational decisions, rather than long term basin management, which is only commissioned approximately every 5 years.

While optimal river basin management requires strategic level planning, coordination and effective operational decision-making, the modeling and information needs for operational decisions are different than those for WEAP. While the original intent was to build the capacity of DoNRE technical staff to support WEAP modeling as a strategic decision-making tool, it seems more likely that this role will be adopted by an external technical consultant in the future. Researchers from the Central Vietnam Institute for Water Resources were part of the technical working group and SLDs, and are now familiar with applications of WEAP for this purpose. They are likely to continue this work with Quang Nam, Da Nang and other provinces.



The SLDs were effective in creating opportunities for deliberation between all the key stakeholders, including private reservoir operators, government technical staff and communities most affected by river flows. The iterative nature of the discussions meant that it was important to have largely the same group of participants from key stakeholder groups, so that they became familiar with the details of the discussions and could more easily build consensus and respond to new information based on recognition of each other's goals, and on the group's prior agreements.

The SLDs were particularly effective in integrating community voices into river management decision-making. Current planning and decision processes do not encourage community consultation, despite regulations requiring this. This is partly because community inputs are not systematically solicited, and partly because the main communications channel, up the formal hierarchical chain from local residents to their representatives and government officials several steps to the provincial level, typically results in delay and miscommunication. At the same time, it was valuable for communities and their representatives to learn directly in the SLDs about likely options for river management, and how these might affect downstream flows. This helped them to understand the management constraints that affect options for basin intervention.

But clearly the largest benefit to community participation in the SLDs was their ability, through local preparation and planning, to clearly present their concerns about downstream impacts of unpredictable fluctuations in river flow. Inclusion of commune representatives and site visits in the SLDs showed how different water management decisions and actions impact community lives and livelihoods. This helped RBO members better understand the gaps in both current policy and the flood early warning systems. While flooding is a familiar aspect of Vietnamese life, and post event compensation has been regularized by governments, provincial policy makers did not appreciate the chronic low-level impacts associated with the building and operation of the upstream hydropower reservoirs. Erosion, drought, sedimentation of fields, changes in water availability and flood patterns – all have increased livelihood risks in an unpredictable way for marginal farmers. By highlighting these issues, by having the communities experiencing them directly present to the SLD participants, and by following this up with field visits and demonstrations, rural communities were able to clearly communicate to provincial staff and reservoir operators the nature and magnitude of the problems they faced.

The result of these consultations was that reservoir operators have relocated the loudspeakers in their Early Warning System to be closer to the most affected residents, rather than in the commune administrative centers. These is a simple, but valuable modification that will improve conditions for the

most affected communities. The next step in this effort is to ensure that the EWS messages are intelligible and actionable for local residents who are not familiar with technical jargon. The regional Hydrometeorological Center and the provincial Disaster Management Unit are collaborating to design simple warning messages for the relocated EWS. Additional funding from UNDP / GEF has also been secured to test the EWS under the modified reservoir operating protocols, and to scale up lessons to other communities.

Conclusion

At the conclusion of the project, political leaders in both provinces recognized this new platform for collaboration as a significant innovation and a priority, and have requested the responsible agencies to continue implementing its work over the next two years.

The new RBO is not intended to be an implementing agency, and has no authority to make investment or operating decisions anywhere in the basin. However, this does not mean that it is powerless. By convening stakeholders, sharing information, and building common understandings of the most important issues, RBOs better define the agenda and scope for river basin management trade-offs. Through collaborative discussion, they can more readily identify simple solutions and win-win opportunities that stakeholders would be willing to take anyway. RBOs can also provide a mechanism for institutionalizing community capacity building and consultation as part of the multi-stakeholder SLD process. This also sets the stage for more complicated discussions around issues such as benefit sharing (e.g. downstream users paying for reservoir releases in dry season); or the eventual introduction of collaborative decision-making mechanisms. The RBO can serve as a focal point for the data collection, analysis, community consultation, shared learning and information exchange needed to support these collaborative decision making processes, even with no authority to take action itself.

One of the drawbacks in the application of the WEAP model to the RBO is that the strategic planning functions that it supports may only be needed infrequently. The greatest value of modeling is not the result of a single model run, but the lessons from multiple alternative scenarios and transparent sensitivity tests, so the best approach is for different organizations to use the same model and data to undertake shared analysis of different scenarios of interest. Tools for sharing evidence and analyzing trade-offs are helpful if they can be tailored to

decision mandates and organizational priorities. In practice, climate, development and infrastructure conditions in the basin may not change much over a five-year period, meaning that once key decisions and policy frameworks for river management are reached, there might not be much demand for the RBO to undertake alternate model runs for several years, leading to lapsed modeling skills. It now appears more effective to have the expertise for supporting WEAP modeling reside in a regional technical services group, such as the Central Vietnam Institute for Water Resources.

Policy Issues for Quang Nam and Da Nang

Based on the accomplishments of the new RBO in its first few months of operation, the provinces should continue to support decision-making tools and SLDs to begin to address more complex and challenging river management issues. The platform provides a basis for undertaking new WEAP model runs and engaging other stakeholders as appropriate to the issues. As the RBO gains experience, consideration could be given to strengthening the role of the RBO and the participation of technical and policy staff from different provincial agencies. With increasing recognition of its collaborative approach and with the critical and respectful inputs of multiple stakeholders, its recommendations would gain greater force and impact.

The SLDs and community VCAs enabled vulnerable communities to directly voice their concerns to technical staff and decision makers through the RBO. This mechanism should be encouraged and made more systematic. In particular, the communities remain reliant on an invitation from the RBO to participate in a formal consultation mechanism. They have no regular channel to raise issues or concerns about river management outside of these formal consultations. It might be helpful to consider how the RBO could better respond to concerns initiated by the communities themselves.

National Policy Issues

River basin development, such as major hydro reservoirs, can dramatically affect downstream flows. Reservoir releases are generally managed to optimize hydro-electric generation in the context of the inter-connected national grid and its electricity dispatch requirements, as well as the operator's revenue needs. But fluctuating river levels can create chronic low-level problems for residents downstream, including riverbank



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erosion, drought impacts, sedimentation, and occasional localized flooding. Compensation for regular nuisance disturbance along riverbanks is not recognized, and there is no platform for residents to express concerns or to document these issues during the planning and approval phase of such projects. Earlier, and more thorough, consultation with affected communities could lead to less damaging reservoir operations and reduced costs for marginal farmers.

MoNRE could support extension and application of these lessons through confirmation that use of WEAP by expert

consultants would be an effective tool for long-term strategic planning at the river basin scale. This would require ongoing training, capacity building, scenario development, and trade-off discussions through RBOs.

Finally, because of the unique inter-dependent relationships and complexities with in any single river basin—not only hydrologically but also socially and economically—it will be most reasonable and practical that no more than one major river basin should be included under the authority of a River Basin Organization.

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