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Perspectives on Water Management in the Vietnamese Mekong Delta

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1. Introduction

The importance of sustainable water resource management is increasingly recognized in this period of pressure from climate change and increasing water demand from society. Developing long-term strategies is essential in sustainable development. Such a strategy needs to satisfy three important criteria being effectiveness, robustness and flexibility (Offermans et al. 2011). An effective strategy ensures the objectives for people, planet and profit. Robustness refers to the ability of dealing with different future events, such as floods and droughts but also changing societal perceptions. Flexibility refers to the ability of the strategy to allow to be adapted if the

future asks for it. Critical to developing sustainable strategies is therefore not only understanding and developing policy options, but also gaining insight in perspectives of stakeholders. Considering a water system, social aspects are probably most decisive for the appearance of the water body and the way it will be managed. A well-chosen sentence of J. David Tabara as quoted by Valkering (2009) says: “*Rivers don’t have problems. Only people may have problems with rivers*”. People’s beliefs, norms and values determine whether something is perceived as a problem or not. Furthermore, people are the one’s influencing the river system through water consumption, navigation, recreation, irrigation, pollution, land use and the implementation of various water management strategies. However, these social aspects are probably least understood in current river management research (Valkering, 2009), but crucial in assessing the social robustness of long term strategies. In essence understanding perspectives and how these may change over time contributes not only to assessing whether a strategy is supported by stakeholders, but also if it still meets possible problem perceptions held in the future. Offermans et al. (2011) have developed a method (‘The Perspectives Method’) with which they can assess the perspectives of stakeholders on water management in The Netherlands.

In this paper, we apply this method to Vietnam, and in particular the Mekong Delta located in the southern region of Vietnam. The Mekong River plays an important role in the locals’ lives because it is the main water resource for all activities such as irrigation, fishing and domestic use. The delta has become an agriculturally and aquatically highly productive zone. However, the Delta is facing permanent water resource problems such as floods, salinity intrusion, acid sulfate soils, water pollution and droughts. Such problems threaten the region’s agricultural production and livelihoods and are expected to become worse due to climate change. Consequently, the sense of urgency for developing sustainable water resources management strategies is high. The policy-making process in Vietnam is a top-down process. It includes 5 stages in which the National Assembly and the relevant ministers adopt and approve a policy, after which it is issued and carried out by provincial departments or local administrative units. Due to this policy-making culture in combination with a lack of well-established research methods, analyzing perspectives of stakeholders is still very novel in Vietnam. However, their analysis is crucial in developing sustainable water resources management, with which a first step is taken in this paper. The Research Question addressed is therefore:

What perspectives on water management do different stakeholders in the VMD hold?

Next to the actual assessment of perspectives, the paper opens the discussion on the workability of assessing perspectives as well as the challenges one would encounter when applying a participative method developed in The Netherlands in Vietnam. To assess perspectives, we adjust a questionnaire developed for The Netherlands by Offermans and Corvers (2011) to make it suitable for Vietnamese challenges and we study the history of Vietnamese water management, which enables us to place the results in their societal context.

2. Perspectives Method

2.1 Cultural Theory

Understanding perspectives of stakeholders on water and society, and their dynamics, is a critical element for developing sustainable water management strategies. Perspectives provide information about diversity and possible responses of social groups to developments, events and surprises and how these may change over time (Offermans et al. 2011). Building on Cultural Theory (Douglas 1970) that was developed to categorize, analyze and interpret the behavior of communities based on people's religious rituals (Buck 1988) and earlier studies on perspectives on natural resources management (Hoekstra (1998) and Van Asselt et al. (1995), Offermans et al (2010)), Offermans et al. (2011) have developed the Perspectives Method. With the Perspectives Method one can explore human views on nature and resources, climate change, uncertainty, environmental risks etcetera, and help evaluating different water management strategies in an uncertain future considering support, social robustness and flexibility (Offermans 2012). We apply the Perspectives Method for this study to the VMD. In CT four typologies of ways of life have been defined: hierarchy, fatalism, individualism and egalitarianism. The Hierarchist is rational and regulative. They prefer controlling the system in which they operate in their desired way. Individualists seem to be free from social constraints and are highly competitive. The individualist places individual benefit first and aim to achieve individual gain as much as possible. The Egalitarian has a high social commitment, but is not bound by social rules. They emphasize the importance of cooperation and strive for ideals including social equality and voluntary involvement. Control and authority are undesired by the egalitarian. The Fatalist lastly,

has a high social control and low social commitment. They see everything as a lottery and they don't put much effort in finding out solutions for problems such as the negative impact of sea level rise on their lives. In general, fatalists are not interested in developing policies. They accept risks in a passive way. In CT another group (Autonomists) is defined, but this type is not included in this study.

2.2 Perspectives on Water

When applying the CT typology on water, the perspectives will have the following characteristics (Offermans et al. 2011, Offermans and Corvers 2011, Hoekstra 1998):

- Hierarchists believe that water is a valuable natural resource for human society, but it can also be considered as a potential threat through scarcity or abundance. However, the hierarchist believes they can cope with this. Their management style relates to bureaucratic systems. They favor government control and regulation on water resources. Additionally, scientific knowledge is important, meaning that experts also have great influence on the development of water policies. A hierarchist also pays much attention to economic growth, meaning that economic development is explicit part of sustainable strategies. Hierarchists tend to choose water policy options focusing on controlling over water and nature such as building dike systems, heightening dikes and channeling
- Individualists reject the idea that water resources are finite. Moreover, water is not necessarily a threat for humans. Instead, water offers great opportunities for economic growth and welfare, self-development and recreation, and economic cannot be isolated from sustainable development. Generally, the individualists' perspective on water is optimistic. The individualist has large trust in technology but the development of science and innovative technologies requires large financial investments, for which economic development is seen as a prerequisite. Cost benefit analyses are critical in decision making. The higher the net benefit, the more preferred the choice. Therefore, the individualist prefers innovative adaptive approaches projects such as amphibious living enabling living with the water.
- Egalitarians consider water resources finite. Water scarcity and abundance becomes worse and worse due to over-exploitation. In contrast to Hierarchists, they do not believe

that humans can control nature. The decision making process is also different. Whereas Hierarchists place great emphasis on expert knowledge, Egalitarians find that all people have the same voice and responsibilities in water management. Therefore, the decision making process should be of a participatory nature in which all actors engage. Furthermore, water policy is mainly oriented to the preservation of ecological systems ensuring natural development. Economic growth is of less importance. Preferred water policies include giving space to rivers, enhancing the resilience of vulnerable ecological systems, ensuring reasonable water supply, reconsideration of humans' water needs and precautionary actions.

- Fatalists believe in destiny. Decisions are made based on fortune. Fatalists don't believe in their own competencies to increase welfare, so even economic development is seen as a lottery. In line with these beliefs, Fatalists are passive with respect to water resources. They do not believe they can control water resources and can handle water related problems. They are pleased with current benefits and abundance of water resources now and don't worry about water problems for future generations.

As with every typology, reality is more complicated and fuzzy. Real life perspectives are heterogeneous and cannot be as clearly divided as described above. Perspectives on water management are in practice therefore a mixture of different perspectives. A stakeholder can hold elements of multiple perspectives. For example, a person can perceive the current state of the water system as problematic while on the other hand believes that such problems can offer great opportunities for the human society (Egalitarian-Individualist).

3. Assessing and Mapping Perspectives

To assess the perspectives of stakeholders in the VMD, we have developed a questionnaire for the Vietnamese situation and asked the main stakeholders to fill it out. To be able to do this and to interpret the results, we also need to know more about specific water issues in Vietnam, its (institutional) history that has framed the way people think and identify main stakeholders (see section 4). Results have been mapped and analyzed with the help of a Perspectives Triangle.

3.1 Questionnaire

The questionnaire we developed follows the questionnaire Offermans and Corvers (2012) to identify the current Dutch dominant perspective on water management, but has been adjusted to the VMD. Due to the differences in water related problems and water management strategies between the Netherlands and Vietnam, some questions have been adjusted or added, most notably on salinity intrusion, waste water and ground water. The questionnaire consists of 15 questions addressing 15 beliefs on Vietnamese water management, whereby each question has 4 answers that correspond with the 4 perspectives: Hierarchism, Egalitarian, Fatalism and Individualism. Respondents can choose any combination of answers even within one question. Moreover, if respondents don't agree with the given answers, they can formulate their own answers. The questionnaire consists of 2 parts. Part 1 deals with stakeholders' societal perspectives and part 2 zooms in on perspectives on water management. The questions of the first part concentrate on stakeholders' worldviews relating to their personal values, the value of water, climate change and the nature of current water related problems. The second part focuses on ascertaining stakeholders' perspective concerning ways to respond to regional water resources problems such as drought, saltwater intrusion, floods and water pollution. Additionally, questions are included on responsibility for water management and decision making preferences.

To collect perspectives of different stakeholders on water management, different stakeholders have been invited to fill out the questionnaire. The questionnaire has been distributed through personal email correspondence and personal interaction. To facilitate the surveys, an online questionnaire has been made. The online questionnaires has been sent to people working in the water management offices or departments from the ministry to local level (specifically MONRE and DONRE), universities (Can Tho University, Ho Chi Minh City University of Industry) and research institutes including the Southern Institute of Water Resources Research and the Institute for the Environmental Science, Engineering and Management. Additionally, local farmers were invited to fill out the questionnaire. This has been done in person by an MSc student working in the area because farmers have little access to internet. Lastly, students and experts from Wageningen University and participating in doing the project "Mekong Delta Master Plan" have been invited to participate. In total 80 people were invited for the questionnaire from which 55 people have filled it out, about 33% of governments (both central and local departments), 36.4%

from research institutes, 29.1% from farmer associations and 1.8% from other organizations (see Table 1).

Table 1. Number and distribution of Respondents to questionnaire

\$Organization Frequencies

		Responses		Percent of Cases
		N	Percent	
\$Organization ^a	WM office/department at ministry level	9	16.4%	16.4%
	WM office/department at local level	9	16.4%	16.4%
	Research Institute (linked to university)	17	30.9%	30.9%
	Research Instute (not linked to unviersity)	3	5.5%	5.5%
	Farmer association	16	29.1%	29.1%
	Other organizations	1	1.8%	1.8%
Total		55	100.0%	100.0%

a. Dichotomy group tabulated at value 1.

3.2 Perspectives Mapping

The respondents have decided for each belief which position they support, having the possibility to mark none, one, two, three or four positions per belief. The combination of positions for all beliefs together represents a perspective, which can be visualized on a perspectives pyramid (see Figure 1). Thus, based on the respondents' answers, we can classify their position on the triangle. For example, when a respondent has all features of the egalitarian, his or her perspective will be mapped at the right corner of the triangle (Egalitarian). The position on the triangle indicates the extent of similarity between the measured perspective and the four archetypes. Positions in the pyramid are calculated by summing up the scores per perspective in the questionnaire, normalizing them to four and calculating x-, y- and z values in a standard barycentric pyramid. The corners of this pyramid correspond to the extreme, stereotypical positions, but every combination of beliefs can be mapped on this pyramid (see Offermans et al. 2011; Valkering et al. 2010). Through the 3D perspective triangle, we can identify the dominant perspective on water management in the VMD.

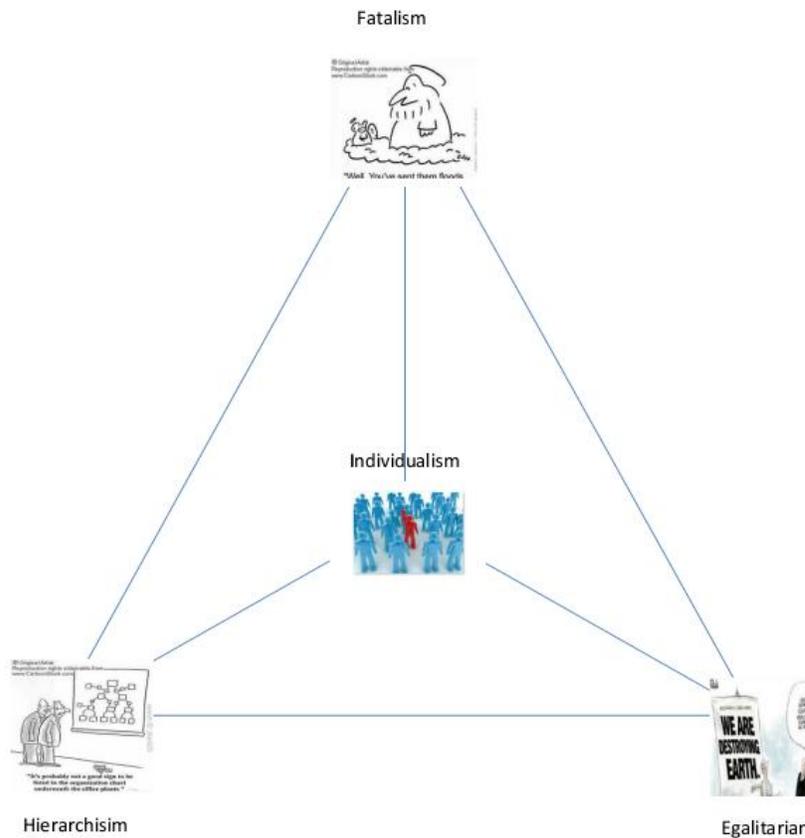


Figure 1. The four archetypal perspectives on a 3D triangle (source: Offermans 2012)

4. Water Management in Vietnam

The history of water management in the Vietnamese Mekong Delta (VMD) can broadly be divided in 2 periods (see Figure 2). In the colonial period all water policies and projects were under the control of colonial states. Water works were constructed from a defensive and control-oriented paradigm to ensure food production. In the liberated period power shifted to the Vietnamese state. These initially followed the control-paradigm, but recently new challenges in the light of climate change have emerged, asking for more adaptive strategies. However, policies seem to be loose and inefficient not in the last place due to a large gap between policy-makers and local communities. This is a great challenge for Vietnamese government towards sustainable strategy of water management under climate change impacts.



Figure 2. Timeline of water management periods in Vietnam

4.1 Water management during the colonial period

In general, water policies in the colonial period focused on making farming systems less reliant on natural conditions. This means that they attempted to limit damage caused by seasonally floods and saltwater intrusion and to expand double and triple-cropping to the flood-prone and brackish zones. Before the colonial period a great number of water works, such as canals, were already constructed at a small scale. This was intensified under the French and American colonial rule. In the late 19th and early 20th century, a large-scale canal network was constructed by the French regime through dredging and settlement measures. In the 1930s, projects to construct such dikes and saltwater dams were commenced (Biggs et al. 2009). After a serious flood in 1937 different flood zones (high-medium-low) were planned, in addition to a ‘Dutch dike strategy’ to prevent floods and salt water intrusion. However, the plans were interrupted by military conflicts. After the 1954 Geneva Accords, the ‘Dutch dike’ strategy was continued and an additional program put in place to deal with floods and salt water intrusion with the technical and financial support of the USA. Additionally, the USA aimed at the involvement of regional actors. Floods and salt water intrusion were seen as two obstacles for agricultural production. As a next step the delta was closed off to protect it against floods and saline water intrusion and polders were constructed to enable multi-cropping and cultivation of crops with higher yields (Kakonen 2008). In short, water management policies mainly focused on irrigation problems. Other water related problems such as polluted water were not on the agenda.

The administrative system was simple during the colonial period. The colonial state was the most powerful actor in water management. They were the final decision maker during that time. In

addition to the colonial power, Vietnamese institutions existed at all levels from national to community. Irrigation and hydraulic works were under the subordination of the Ministry of Irrigation in Hanoi (Evers and Benedikter 2009). However, influence of any Vietnamese institution was very limited as the colonial states controlled all decisions.

4.2 Water management under liberated period

4.2.1 Irrigation development

After 1975, when the country was liberated, a new period under control of the Vietnamese government began. The transition from a colonial regime to a Vietnam communist regime has caused challenges for water management in Vietnam. This included both engineering challenges and institutional challenges. Water constructions were largely destroyed due to the war and lack of maintenance, policy preferences changed, there was a lack of money and institutional structures were not well established. In short, policies of the colonial countries concentrated utilizing the natural resource to enrich those countries, whereas the Vietnamese government focused on national benefits. More specifically, policies during the colonial period focused on prevention and control of floods and salt intrusion, whereas the policies of the Vietnamese government mainly focused at improving the irrigation system (mainly building canals) for national food security.

The policy process encountered many challenges and was controversial occasionally. The policy confiscating private machinery and land for collective ownership between 1975 and 1986 caused dissatisfaction among citizens, especially with those having to dig the new canals by hand (Biggs et al. 2009). As a consequence, hardship for water management was developed. Another major issue was the financing of water management. The Vietnamese government depended much on international aid. However, when the aid dried up from the end of 1980s onwards, the irrigation infrastructure gradually deteriorated and conflicts in responsibilities between different authorities and farmers became apparent, making access to new funds more difficult (Biggs et al. 2009). After 1986, a decentralization process was put in place, whereby maintenance costs of infrastructure was shifted to provincial authorities and private landowners who now had to

coordinate with each other and for some period requested irrigation fees from farmers who were unable to pay for this. Additionally, the ministry of agriculture (MARD) started to share some of its responsibilities with the ministry of natural resources (MONRE) in 2002, who are now together the leaders in Vietnamese water management. Nevertheless, the main focus remained with stable water supply and flood mitigation, for which size and number of dikes and hydraulic structures significantly increased (Evers and Benedikter 2009). Water flow and quality were of less importance and policies remained fragmented and loose. An additional challenge was that a legal framework had to be developed, but there were many overlaps, gaps, contradictions and even conflicts. Besides the national water law adopted in 1998, a great number of sub-laws were issued and implemented at different levels lacking clear coordination amongst them (Can Tho University 2011).

4.2.2 Water management towards climate change adaptation

Since recent years more attention has been paid to climate change and the consequences for water resource management. Local climate change impacts include sea level rise leading to additional coastal erosion and salinity intrusion, changing rainfall patterns, and the increase in frequency and intensity of floods, droughts, storms, tropical cyclones and heat waves (Tol 2002, Dasgupta et al. 2007). The Mekong River Delta is particularly vulnerable to climate change. The peak of the river tides has in some provinces (e.g. Ben Tre) already increased by 15-20 cm and salinity intrusion is getting more severe penetrating deeper and deeper inland¹. Droughts and saltwater intrusion lead to the shortage of fresh water, floods damage harvests, all resulting in a reduction of production and potentially affecting the national food security. As a response, the government develops new water policies to adapt to these and future climate change impacts.

Adaptation to climate change has been given priority in the ‘national target program to respond to climate change’ (NTP), which aims at assessing climate change’s impacts on sectors and develop feasible plans to adapt to climate change impacts in the long term. The NTP plays a significant role in the comprehensive and sustainable development of Vietnam. Additionally, Vietnam signed a Strategic Partnership Arrangement with The Netherlands to develop a comprehensive, long-term sustainable water management plan for the Mekong Delta. This has

¹ Southern regions’ hydrometeorology center, <http://www.kttv-nb.org.vn/> (access on 17 April, 2012)

led to the Mekong Delta Master Plan that provides firm recommendations on water management and climate change adaptation in the area.

Local adaptation policies are for example the shift from rice production to aquaculture. Since 2000 seawater is allowed to enter previously protected zones to facilitate aquaculture (Kakonen 2008). However, only few farmers could benefit from this shift. The poorest farmers have no access to aquaculture and lose their income. The policies thus remain inefficient, unable to meet local demands.

Administrative changes installed are the sharing of responsibility between MONRE and MARD since 2002 and the presence of more stakeholders such as international partners, non-government organizations, academic centers, businesses or individuals having an interest in the water sector. However, decision-making power remains with the central government, leaving little room for local policy makers and communities.

5. Results of the Questionnaire

We first show the results of the questionnaire in terms of dominance of perspectives by showing the frequency of answers chosen per belief. Secondly, we further refine the results per stakeholder group to elicit similarities and differences in dominance of perspectives across stakeholders. This will be done with the help of the perspectives triangle.

5.1 Dominant perspective

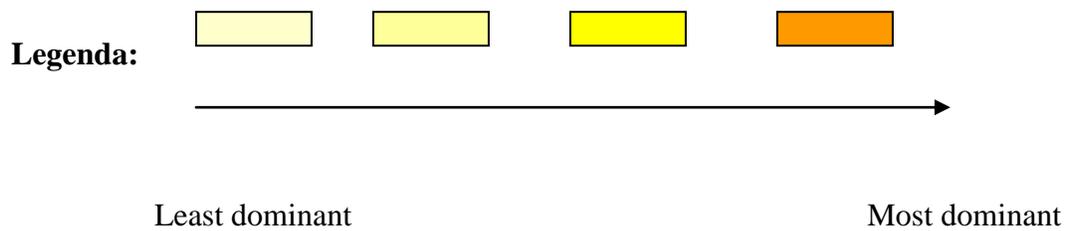
In a perspectives map (Table 2) we present how the respondents answered to the different questions and which perspective on water management in the VMD was most and least dominant per belief amongst the respondents. The belief, classified as worldview or perspective in water management, can be found in the first (grey) column). The responses responding to a Hierarchist, Individualist, Egalitarian or Fatalist perspective can be found in columns 2-5. The different shades of yellow indicate the dominance of a response (the darker the more dominant). The results indicate that the present dominant perspective both for worldview and water management is mainly Hierarchism. Egalitarian and Individualism are less dominant, whereas Fatalism is

clearly very little present. The present dominance of Hierarchism is in line with the dominant technological and hierarchical management style of the government since long time, both during colonial and present times. Additionally, investment strategies of international donors also have a strong focus on technologies. Consequently, this style is strongly present in the VMD and (therefore?) with the people and institutions involved in water management.

Table 2. World views and preferred water management styles in the VMD

Perspective		Hierarchism (Response in %)	Individualism (Response in %)	Egalitarian (Response in %)	Fatalism (Response in %)
Worldview	Important personal values	Structure and stability (50.6)	Freedom and independence (23.5)	Harmony and solidarity (24.7)	Short term comfort and pleasure (1.2)
	Important value of water	To fulfill diverse water functions (e.g. habitat functions; navigation) (43.6)	A source of material welfare and self-development (26.4)	An important natural source for climate regulation etc. (19.1)	To make my life more comfortable (10.9)
	Current water-related problems	Serious, but controllable by humans (45.8)	Maybe serious or not (1.7)	Serious, and uncontrollable by humans (45.8)	Not really serious, don't worry about that (6.8)
	Climate change	Scenarios of CC made by scientists/experts are accurate (44.1)	Global climate may change, but not significantly (less than expected) (8.5)	Climate change will become much worse than expected (27.1)	Impossible to give any predictions of climate change (16.9)
	Trust in technology	Moderate (37.3)	Very large (32.2)	Low (11.9)	Indecisive (15.3)
Water management style	Solving water-related risks	Managing and controlling risks in a systematic way (41.2)	Adapting to risks by making use of opportunities (41.2)	Prevention (16.5)	Passively accept all risks (0.0)
	Flood risks	Setting flood risk norms to control water discharges (33.8)	Should be dealt with by adaptation (35.2)	Are acceptable to some extent (29.6)	Do nothing (0.0)
	Drought management	Increasing water availability (39.0)	Allocating water based on market pricing (20.7)	Decreasing human water demand (32.9)	No real need to worry about (6.1)
	Salinity intrusion	Constructing sea and estuarine dike systems... (38.6)	Adaptation by taking advantage of salt water to develop brackish aquaculture (34.1)	Ecological recovery such as replanting mangrove forests (26.1)	It is not really a problem (0.0)
	Waste water	Treated to meet standards set by the national regulations (51.1)	Treated strictly to prevent environment pollution (28.3)	Efficiently reused (20.7)	Treatment is not necessary (0.0)
	Use of	Continued if the	Is profitable	Should be reduced	Can be continued.

	groundwater	freshwater supply from surface water is not sufficient (32.8)	(4.9)	(37.7)	Groundwater is an unlimited resource (23.0)
	Spatial planning	Water should follow (52.5)	Water offers opportunities (32.5)	Water should be steering (8.8)	Used for relaxation and other comforts/pleasure (6.3)
	Water management policies	Control and regulation (32.5)	Opportunism (16.3)	Pro-active natural organization (31.3)	Passive natural developments (18.8)
	Responsibility of WM	National government (41.7)	Individuals or companies favor market regulation (21.7)	Regional governments NGO's and stakeholders (28.7)	Don't care (6.1)
	Decision making	Scientists/researchers' expert knowledge, findings (38.6)	Functions of the liberal market and privatization (20.5)	Participatory processes (35.2)	Focusing on short term benefits (4.5)



5.2 Perspective per Stakeholder group

Next to a general impression of the dominant perspective, we further refine results per stakeholder group. We distinguish between a) central government actors (Ministry of Natural Resources and Environment), b) local governmental actors, and c) farmers living in the VMD. Figure 3 demonstrates the perspectives of the three stakeholder groups in the VMD through a 3D perspective triangle. Although the present perspective amongst respondents seems to be a mixture of Hierarchism, Individualism and Egalitarian, Hierarchism is most dominant amongst all actors and in particular with central governmental actors and farmers. Provincial actors have a more mixed perspective, with more space for Egalitarian beliefs. Fatalism hardly plays a role amongst any group.

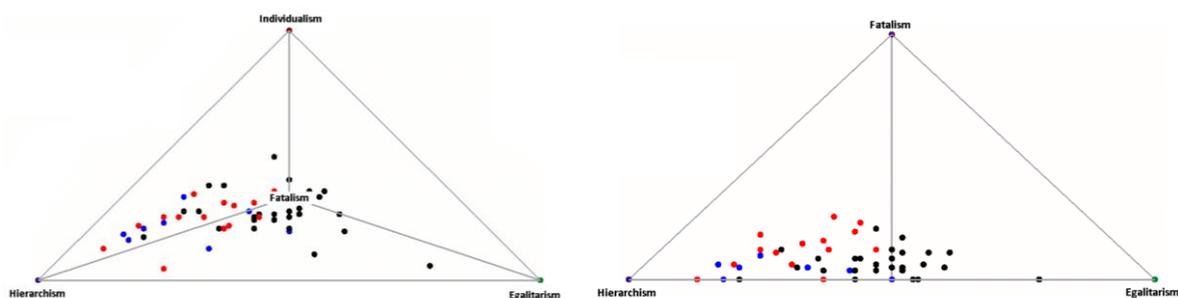


Figure 3. Perspectives of the different stakeholders in a 3D graph (left). The right figure gives a 2D impression. Blue = Central Government, Red = Farmer, Black = Local government agents

A clear distinction in answers between central government actors and farmers on one hand and provincial government actors on the other is that for central government and farmers the important value for water is to fulfill several human functions, whereas at the local level water is acknowledged as a natural source for climate regulation, providing living area for flora and fauna (see also Table 2). The local government actors think that water management policies should be based on pro-active natural organization, meaning that much more attention is paid to natural retention and resilience than to water control and regulation. Additionally, a large group (62%) thinks that responsibilities for water management should be distributed to regional governments, NGO's and stakeholders such as farmer organizations, instead of focusing mainly on the national government. This explains their more Egalitarian perspective. At the same time, more than half of the people at provincial level have great trust in technology for dealing with water-related problems. Technology should be applied at large scale, which is in line with the dominance of technological preferences in the VMD.

For farmers, water is undoubtedly a source of material welfare and it provides their livelihood, which explains they have some level of Individualism in their perspective. Nevertheless, also their dominant perspective is Hierarchism. The reason could be that Hierarchical management exists for a long time, low educational levels and low incomes. Consequently, farmers depend on the national government and this is what they are used to. Water management in their eyes is a task of the (national) government. They follow the instructions and guidance of the government. However, the survey also revealed that a change is desired in the current responsibility and decision-making process. In particular, some of the farmers indicated that water management responsibilities should belong to regional governments, NGO's and different stakeholders. Moreover, in their view, the decision making process should be based on a mix of engagement of locals, functions of the liberal market and privatization and expert knowledge and findings.

6. Discussion and Reflection

6.1 Perspectives in Vietnam and challenges for sustainable water management

Developing socially robust long term sustainable water management strategies requires the involvement of different stakeholders and insight in their perspectives. The results of the survey in the VMD demonstrate that the dominant perspective across stakeholders is a hierarchical perspective, but that there is an Egalitarian undercurrent.

The reasons for this strong Hierarchical perspective originate from the current and past institutional structures of Vietnam in which the government had and has a strong top-down role and focused on primarily on water control and technology (Biggs et al. 2009). This is enhanced by preferences of international donors. A recent project is the Ba Lai Irrigation System in 2002, when saline prevention sluices and dams were constructed making the largest freshwater storage lakes of the region. It significantly contributed to control salinity and the provision of fresh-water for agricultural production. Citizens are not only used to this style, but also depend on the government to due to their poor economic and educational standard to facilitate farming. The thought 'everything is determined by the governments' has penetrated into the citizens' mind. Moreover, the Vietnamese people had suffered from the damages caused by the wars under the first liberated years. Especially for the poor farmers the most important thing was to improve their livelihood. They didn't pay much attention to water resources management, decision making from the state and how such decisions would affect their lives. After the formation of the Vietnamese official government citizens completely entrust the

leading direction of the government, also enhanced by the Vietnamese taking a strong leading role. The responsibility for water resource management was concentrated within the government.

Next to the Hierarchical dominant perspective, we identified an Egalitarian undercurrent, particularly present at the local governmental actors. A first reason for the existence of this perspective are the overlap in responsibilities of the different ministries MONRE and MARD and that they experience the tension between policy formulation and implementation. The foundation of MONRE in 2002 aimed to address some of the challenges in Vietnamese water management, but also causes new challenges in terms of fragmentation and overlap and addressing vested interests. The latter is particularly difficult due to the hierarchical system in Vietnam. Secondly, there has been weak coordination and cooperation between and within water agencies, which particularly local water managers encounter. Thirdly, Vietnamese water management is bearing consequences of decisions of the past in which sustainability was no issue. Management actions focused on short term results and decisions were single-sided. For example, hydraulic works were only maintained when their conditions was very bad leading to an obsolete system. Moreover, policies were adopted based on a certain group's demand and interest, without taking sustainability into account. For example, most projects of building dams and dikes were built during the colonial period serving the agricultural production for the colonial powers, rather than thinking about long term development of water resources and Vietnamese society. However, also current large hydraulic works and projects are still built without stakeholder involvement and technological approaches have serious drawbacks. In the example of Ba Lai Irrigation System environmental problems emerged after 2 years. The river drained more slowly than before, causing salt water to intrude deeper in-land causing severe lack of fresh-water in the province.

For developing long term strategies, it is of importance to take into account this undercurrent since this might become a more dominant perspective one day. Consequently, strategies that have been developed today only taking into account a Hierarchical perspective, may no longer be desired in the future. Moreover, even today perspectives may be diverse. For example, in response to salinity intrusion, the surveys showed 38.6% of responses focused on methods aiming at constructing sea and estuarine dike systems, canal embankments systems, pumping stations and sluices in order to prevent saline intrusion and keep fresh water for production and domestic use. However, 34.1% of responses were also chosen for the methods aimed at salinity intrusion adaptation by taking advantage of salt water to develop brackish aquaculture and 26.1% for the method aimed at recovering ecological systems. Additionally, exploring strategies and management styles that fit with different perspectives broadens both the palette of policy actions one can choose from and ways in which goals could be achieved (e.g. do responsibilities shift, do we broaden the policy process in terms of stakeholder

involvement?). A shift towards a more Egalitarian approach would be a large change from Vietnamese water management. Nevertheless, this change would not easily be attainable due to existing institutions, practices and long-standing dominant power of the government.

6.2 The Perspectives Method in Vietnam

The Perspective Method is one means to overcome the barrier of stakeholder engagement, which is still in its infancy in Vietnam. It provides us a method to show differences and similarities amongst different stakeholders on a deeper level than only direct stakes and it contributes to assessing the support for and desirability of water management strategies under different futures. It may therefore help the discussion on finding long term socially robust strategies and better prepare for risk such as decline in support. This implies that strategies need to be adaptable and flexible and so can meet future preferences. The perspectives map itself is useful as a basis for discussion and dialogue and is an initial step towards finding effective and robust solutions. Regularly studying perspectives on water management helps identifying changes in perspective.

However, applying the Perspectives Method will also be challenging, particularly in an environment like Vietnam where participatory practices are still in their infancy. To address challenges we encountered and expect we have to mention that part of the Perspectives Method that is not addressed in this paper is an interactive simulation game. In the game, stakeholders come together in a workshop setting and together develop a 100 year water management strategy, during which they encounter all sorts of uncertainties such as climate change, economic developments and changing citizens' preferences. The players can thus learn from each other and about the water system they are part of, whereas playing the game provides insight in the motivation of stakeholders, new ideas may emerge. Additionally, other perspectives may be taken into account. For example, next to traditional approaches water managers can consider different types of approaches such as building freshwater-brackish water environmental zones to develop rice-shrimp rotation systems (Individualist approach) or replanting mangrove forests that were destroyed by shrimp farming (Egalitarian approach).

Specific challenges one will encounter when applying the Perspectives Method or comparable participatory approaches in Vietnam developed in The Netherlands, include:

- *Stakeholder engagement*: How to call for public engagement? Which stakeholders are willing to participate in the game? It is unknown whether farmers are willing to delay their own individual business to engage in the game. They must feel their voice is heard. And, how are citizens perspectives included in the game? Additionally, it may still be difficult for different

type of actors to participate in the game at the same time. Will they actually listen to each other and dare to negotiate? How does one deal with the different levels of education? Due to the hierarchical, dominated and bureaucratic nature of Vietnamese water management, this is the greatest challenge when applying the game.

- *Measuring perspectives:* During the survey, there were some difficulties in distributing and collecting the questionnaires. Some people were not willing to participate in the survey because they were afraid of involving the political problems. Secondly, one needs to be directly in the VMD to ask them personally and explain the questionnaire in case respondents do not understand questions. Thirdly, distributing questionnaires is not as open as in the Netherlands. One cannot just ‘knock on the door’ of an institute and ask them to fill it in, let alone to further distribute it. One needs to have personal connections.
- *Policy actions:* Developing measures that suit the VMD context and are thus in line in with existing and potential future perspectives of stakeholders in the VMD is an important task. In other words, one needs to develop a list of measures that can meet different stakeholders’ preferences, For example, rice farmers in Bac Lieu certainly favor the salinity controlling measures, whereas shrimp farmers don’t because those measures affect their shrimp production.
- *Absence of negotiation culture:* A major problem in Vietnam is the absence of a negotiation culture which is a core element of the game. This problem exists within the government and between the government and other stakeholders. The Vietnamese government’s opinions are dominant over public opinions and it will be a challenge for stakeholders such as poor farmers to participate in the negotiation with the state stakeholders. Additionally, within government agents, due to the strong hierarchy, negotiations between different levels are not always easy. Including negotiations in the game can therefore be a challenge and take a great deal of time before agreements can be found.
- *Facilitation:* Often mentioned as a success factor for workshops, but only few people are really good facilitators. This also holds for Vietnam. Facilitators need to know the meanings of the game and how it works. They need to have good knowledge of water management, modeling and climate change, but also be able to guide the process, understand perspectives and encourage negotiations without imposing their views.

Following the above concerns, in order to be able to apply the Perspectives Method to the VMD, some adjustments need to be made. First and most foremost is the development of a safe environment in which people can give their perspective and negotiate, thereby taken seriously, despite their level of education and without having to fear for consequences. Language should therefore also be understandable for all. Secondly, there needs to be concrete explanation about how the method works and how outcomes will be used. This will increase stakeholders' willingness to participate.

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