# Enhancing capacities of riparian professionals to address and resolve trans-boundary issues in international river basins: Experiences from the Lower Mekong River Basin

Wim Douven[1], Marloes L. Mul[1], Berta Fernández Álvarez[1], Lam Hung Son[2], Nicolaas Bakker[2], George Radosevich[3], Pieter van der Zaag[1,4]

[1] UNESCO-IHE, Delft, The Netherlands

[2] Mekong River Commission, Vientiane Lao PDR / Phnom Penh, Cambodia

[3] Rado International, Thailand

[4] Delft University of Technology, The Netherlands

**Abstract**

This paper analyses the design and impact of capacity building programmes aimed at enhancing capacities of riparian professionals to address and resolve trans-boundary issues in international river basins. Case study is a programme developed by the Mekong River Commission. A post training evaluation was applied to assess its impact in terms of individual capacity enhancement and change (use and application of knowledge, factors hampering application, and change in function and opportunities). The design of the MRC-FMMP Capacity Building Programme showed a well balanced range of subjects which are required for such an integrated topic. The post training evaluation showed the increase in familiarity of the topics for all respondents, with highest increase for the respondents with less working experience and from training and educational institutions. The relevance of the subjects taught is shown by the fact that 95% of the participants ~~indicated they saw the relevance of the subjects~~ and 78% had already used some materials in their job. The respondents also indicated that they did not have a good opportunity to apply some of the other materials. The phased implementation and training of lecturers during the training workshops, had a good impact, directly through increasing involvement in facilitation and delivery of the capacity building programme and through the use of the knowledge gained in short courses and development of curricula at their training institute. For these types of capacity building programmes, a few recommendations can be made, the selection

of participants is crucial for the application of the learned knowledge in their work. Secondly the integrative nature of transboundary water issues, calls for a capacity building programme, addressing a wide range of subjects, which can be understood by a wide range of professionals from different sectors. Training modalities should also address this integrative nature such as roleplays and case studies.

**Key words:** capacity building, international cooperation, trans-boundary water management, conflict management, post training evaluation, Mekong River Basin, Mekong River Commission

## 1. Introduction

Adequate capacities of riparian countries to address trans-boundary issues in river basins is an important condition for successful river basin management (UNESCO-WWAP, 2006). An important element of this capacity is awareness and recognition of upstream-downstream interdependencies. Water users in river basin are linked through the water flow. These water links or water dependencies are frequently seen as a potential problem, especially when they are not institutionalised. This may lead to sub-optimal river management, as certain interventions in upstream tributaries with positive impacts downstream may not be economically feasible if considered in isolation. At the same time, environmental considerations are often not taken into account. As a result, differences may emerge between water users in different parts of a river basin. This is especially true in trans-boundary river basins, where water has created links between riparian countries. A solution to this potential problem is that the countries, sectors and water users involved are aware and recognise the upstream-downstream interdependencies that inevitably exist, and find ways of institutionalising them. Institutionalising interdependencies will strengthen the ties between riparian water users and such intensified social and economic cooperation may boost economic development regionally (Chheang, 2010). At the same time, trans-boundary agreements may divorce from the local situation and institute ecological degradation and provide increasing risk for human security (Fox and Sneddon, 2007). To balance these challenges, the 'from potential conflict to cooperation potential' (PCCP) movement[1] was

[1] PCCP is one of UNESCO's International Hydrological Programme (IHP) contributions to the United Nations' World Water Assessment Programme (WWAP). http://www.unesco.org/new/en/natural-sciences/environment/water/ihp/ihp-programmes/pccp/

initiated (UNESCO, 2003). Its success hinges on societies and citizens being well-informed and water-wise. Hence, the importance of capacity building as a touchstone for trans-boundary water management.

The Mekong River Basin is one of the longest rivers worldwide. The river is formed by parts of China's Yunnan Province, Myanmar, Lao PDR, Thailand, Cambodia and Vietnam. The population in the Lower Mekong Basin (Cambodia, Lao PDR, Thailand and Vietnam) is around 60 million, is relatively young (around 25% between 0 and 14 years) and is largely living in rural areas (75 %) (MRC, 2010). The Mekong River and its resources provide essential benefits for a large share of the Mekong population, in particular those living in rural areas and the total direct-use value of e.g. fishery resources has been estimated about US$ 2 billion per year (Baran et al., 2007). The benefits are strongly related to the yearly recurrent flood phenomenon (Sneddon and Fox, 2006). The fluvial and floodplain habitats in the Mekong Plain form critical feeding and breeding habitats for over 700 fish species, of which part conduct seasonal migrations over hundreds of kilometres between the lower and upper regions of the Mekong Basin (Poulsen et al., 2002). But as normal floods bring many benefits, large floods can be ~~very~~ devastating and cause a lot of casualties and damage like the 2000 floods and the recent 2011 floods (MRC-FMMP, 2009; 2011). The average annual flood damage for the Lower Mekong basin is estimated to be US$60–70 million per year and is concentrated in Vietnam and Cambodia (MRC-FMMP, 2009). Droughts in the basin unlike floods can occur at any time of the year and only have negative impacts. Due to climate change floods and droughts are expected to become more extreme in the future (MRC, 2010).

The Lower Mekong Basin countries are 'medium human development' countries, with human development index values between 0.500 and 0.799 (MRC, 2010). All four countries show gradual improvement in development (MRC, 2010). This inevitably will result in more river basin developments impacting in various degrees on the river system and its benefits. Preventing, addressing and resolving related trans-boundary issues, requires cooperation in the Mekong River Basin. The Mekong Agreement 1995 between Cambodia, Lao PDR, Thailand and Vietnam, aims at providing an effective framework for such cooperation, and the trans-boundary dimension is at the core of the Agreement (MRC, 1995). The central institution in this framework is the Mekong River Commission which is represented by the four member countries

and aims to facilitate cooperation on the development and the management of the water and environmental resources of the lower Mekong River Basin (MRC, 1995). Although the Mekong Agreement 1995 is one of the world's first agreement which considers equitable utilization and considers the protection of water quality, it faces many challenges (Bearden, 2010).

The Mekong river basin still is one of the last great rivers without large reservoirs build in the middle and lower parts of the mainstream, but plans are being proposed and developed leading to trans-boundary issues. Now 15 years into the Mekong Agreement, the first major dam proposal on the mainstream (Xayaburi dam in Lao PDR) is under discussion by the four downstream countries (MRC, 2011). The Procedures for Notification and Prior Consultation and Agreement (PNPCA) under the Mekong Agreement is being applied to address and resolve the trans-boundary issue (MRC, 2003). Currently, the capacity in riparian countries is limited and showing regional variation to implement such procedures, adequately understand and analyse the implication of these developments and to come to a common agreement on such developments. Therefore, one of the components of the Flood Mitigation and Management Programme (FMMP) of the Mekong River Commission aims, at enhancing the cooperation between member countries through building skills and strengthening knowledge and capacities. To achieve this goal, the FMMP initiated a capacity building programme aimed at strengthening the capacity of both riparian high-level decision-makers and mid-level professionals on anticipating and resolving trans-boundary flood issues, differences and disputes in the Lower Mekong River Basin (MRC-FMMP, 2008; Douven et al., 2009). The programme was implemented in two phases from 2009 until 2011. During these two phases 15 high-level decision-makers were trained and 76 mid-level professionals including 12 lecturers from national and regional training and education institutes.

In this paper, we analyse the MRC-FMMP Capacity Building Programme, in particular its part addressing mid-level professionals, as an example of capacity building to support trans-boundary cooperation and addressing and resolving trans-boundary flood issues. We will present the design of the programme and analyse its impacts in terms of individual capacity enhancement and change based on a post training evaluation. Based on the insights gained we give recommendations for the design of similar programmes addressing cooperation in trans-

boundary rivers. The paper is organised as follows. Section 2 presents the theoretical framework consisting of capacity building and its key elements and impacts of capacity building programmes. Section 3 gives information on the methodology that was used which relates to the design of the MRC-FMMP Capacity Building Programme and the post training evaluation. The post training evaluation results of the MRC-FMMP Capacity Building Programme are presented and discussed in section 4. Finally, section 5 contains the conclusions and recommendations for capacity building programmes in support of cooperation in trans-boundary rivers.

## 2. Enhancing human capacities to address trans-boundary water related issues

### *2.1 Capacity requirements for addressing transboundary water related issues*

Key element in institutional arrangements in international river basins is the need to manage river basins as a whole and recognise the upstream-downstream interdependencies. To achieve this, far-going capacities are needed which are often lacking (UNESCO-WWAP, 2006). Capacity is a broad term and used in different contexts (UNDP, 1997; Kaplan, 2007; Baser and Morgan, 2008). These definitions illustrate a few common elements. One common element is that capacity is related to abilities; abilities to perform functions (UNDP, 2007), manage successfully (OECD, 2006) or function strategic and autonomous (Kaplan, 2007). Another common element is that abilities are linked to different levels: an appropriate policy and legal framework (the enabling environment), effective, flexible and adaptive organizations (institutional or organisational capacity), and individual capacities (human resources) (Alaerts and Kasperma, 2009). As the focus of this paper is on individual capacity building we will address this level of capacity building specifically.

Individual capacities (for a certain function) can be expressed in professional competencies. Various authors have distinguished different categories of professional competence. Cheetham and Chivers (1996), for instance, distinguish between knowledge/cognitive competence (e.g. theoretical/technical knowledge, tacit knowledge, procedural knowledge of finances or projects), functional competence (e.g. occupation specific skills like report writing, IT literacy, budgeting, project management), personal or behavioural competence (e.g. self-confidence, control of

emotions, listening, objectivity, collegiality, sensitivity to peers etc.), and values/ethical competence (e.g. adherence to laws, social/moral sensitivity, confidentiality etc.). Different functions will require different combination of competencies (Cheetham and Chivers, 1996; Uhlenbrook and de Jong, in prep.). A floodplain modeller for instance will require a strong focus on knowledge/cognitive competencies, hence a different mix of competencies then a water manager involved in addressing trans-boundary issues in a river basin.

New water managers will need to be trained and educated addressing these mixed competence profiles. This is shown by Savenije et al. (1992) who describe the evolution of the field of Integrated Water Resources Management. This field evolved from an engineering approach (water resources development) to water resources management (recognition that water can be 'overexploited' and accounting for ecological and social constraints) to integrated water resources management in which water management embedded in an overall policy for socio-economic development, physical planning and environmental protection. They conclude that new water managers should be able to design and facilitate the process of IWRM: to identify water-related problems early on (and analyse causes), to carefully define the problem, understanding the interests of those involved and/or affected by it and its solution, to design the process towards solving the problem, and to facilitate that process and bring it to a satisfactory conclusion (van der Zaag et al., 2003). Programmes educating these new water managers will need to address a mix of knowledge areas and skills which are related to technical aspects that enhance the understanding of physical, biological and other technical processes, non-technical aspects that enhance the understanding of legal, social, economic, financial, institutional and managerial aspects, and integrative aspects that enhance the understanding of the interplay between technical and non-technical aspect (e.g. WaterNet IWRM MSc Programme).

*2.2 Impact of capacity building programmes*

Baser and Morgan (2008) address the inter-relation between capacity, change and performance. Olsen et al. (2006), for the example of ecosystem-based management, defines four orders of outcomes through successive project cycles, which link closely to Baser and Morgan (2008)'s model. The first order sets the enabling conditions and encompassing commitment, authority

agreement, funding, legal/institutional capacity to implement, clear policy and goals, and constituencies present at local and national levels. This order is part of 'capacity'. The second order is when changes in behaviour occur which can be changes in behaviour of institutions and stakeholder groups, changes in behaviour directly affecting resources of concern, and / or changes in investment strategies. This order relates to 'change'. The third order - the attainment of IWRM objectives - is when the desired social and/or environmental qualities are maintained, restored or improved. Finally, the fourth order - sustainable basin and coastal zone development - is when the desirable and dynamic balance between social and environmental conditions is achieved. The latter two orders are related to different levels of 'performance' in Baser and Morgan (2008)'s model.

Baser and Morgan (2008) argue that the interrelations between capacity, change and performance are complex and need to be seen in relationship to the socio-political dynamics of the context within which they take place like external context, stakeholders, external interventions and internal features and resources. Also Mizrahi (2004) addresses the difficulties in measuring capacity enhancement and concludes - amongst others - that capacity enhancement involves more than strengthening individual capacities. This is in line with Alaerts and Kaspersma (2009) who argue that the combination of different levels of capacity (human, organisational, institutional) is a prerequisite for a successful programme. ‘Adaptive capacity’ is often seen as a key capability at different levels to learn from past experiences and hence better cope with existing and future challenges (Pahl-Wostl et al., 2007). Mizrahi (2004) continues concluding that capacity enhancement should be regarded as a process, capacity enhancement indicators should be related to development objectives and specific actors towards which a project is directed, and capacity enhancement projects must entail local ownership. The importance of the latter is illustrated by capacity building programmes like WaterNet in Southern Africa (van der Zaag et al. in prep).

## 3. Methods: Implementation and evaluation of the MRC-FMMP Capacity Building Programme

### *3.1 Design of the MRC-FMMP Capacity Building Programme*

Processes of identifying, addressing and resolving trans-boundary water and water-related issues often have interdisciplinary dimensions, and are carried out by teams involving members with technical as well as administrative backgrounds from different governmental agencies. To educate professionals involved, the right mix of knowledge areas and skills is required. A programme, like the MRC-FMMP Capacity Building Programme, educating these professionals will need to address physical, legal, technical, social, economic and political aspects and to be able to educate professionals with specific backgrounds into team members who understand each other's background and can work in multi-disciplinary teams.

The design of the MRC-FMMP Capacity Building Programme was based on the training needs of the four MRC member countries, as identified through consultation meetings with national agencies (MRC-FMMP, 2008). In addition, consultations were held with MRC core programmes to ensure a sound link to these programmes and related capacity building efforts. Related outputs of the FMMP on trans-boundary flood issues (MRC-FMMP, 2007) and the legal aspects of the 1995 Mekong Agreement for enhancing cooperation in addressing these issues (MRC, 2009) were consulted and helped in outlining the new capacity building programme within the scope of the subject.

The overall objective of the MRC-FMMP Capacity Building Programme is to strengthen the capacity of riparian decision-makers and professionals on anticipating and resolving trans-boundary flood issues, differences and disputes in the Lower Mekong River Basin (MRC-FMMP, 2008). Compared to the levels of capacity building addressed in section 2, the programme targets the third level - individual capacities - specifically. In the first phase ~~also~~ decision-makers participated, with the intention - on the longer term - to induce changes in the way organisations function and therefore the programme, indirectly, also targeted the second level of capacity - organisational capacity. In this paper we will focus on the capacity building programme developed for the mid-level professionals only.

The capacity building programme developed in 2 phases (Phase 1 in 2009 and Phase 2 in 2010 and 2011) which allowed for a gradual development of the curriculum and related training

materials based on regular evaluations. A key element in the design of the capacity building programme was the involvement of national and regional training and education institutes[2]. The same group of lecturers from these training and education institutes participated in both phases to strengthen their knowledge and skills with the idea in mind that in later phases they could take over implementation of at least part of the capacity building programme at the national level. A post training evaluation (after Phase 2) was carried out to assess the impact of the MRC-FMMP Capacity Building Programme in terms of the individual capacity enhancement of the mid-level professionals and how it changed their working situation. Compared to Baser and Morgan's model (2008; section 2) in this paper we will address aspects of capacity and change, and not performance.

*3.2 Programme learning objectives and curriculum*

The specific learning objectives for the mid-level professionals participating in the MRC-FFMP Capacity Building Programme are strongly related to those identified for the new water manager (section 2). Participants at the end of the programme were expected to be able (MRC-FMMP, 2008):

- To describe the key characteristics and challenges of the Mekong system, describe the key trans-boundary issues, and the rights, interests and responsibilities of those involved and/or affected by it and its solution.
- To contribute to / facilitate the process of addressing and resolving trans-boundary issues in line with options provided in the Mekong Agreement 1995.
- To list the role of tools (engineering, environmental, economic, conflict prevention and management) in supporting the process of addressing and resolving trans-boundary issues, and partly apply these tools.
- To critically review the process of addressing and resolving trans-boundary issues, the role of MRC institutions, the role of technical tools, and the conditions needed for implementation.

[2] Royal University of Phnom Penh, Phnom Penh, Cambodia, National University of Laos, Vientiane, Lao PDR, the Mekong Institute, Khon Kaen, Thailand, King Prajadhipok's Institute, Bangkok, Thailand, and the Water Resources University, Hanoi and Ho Chi Minh City, Vietnam.

The MRC-FMMP Capacity Building Programme consisted of training workshops, assignments, games and exposure visits aimed at building the right mix of knowledge and skills to address trans-boundary flood issues. The main knowledge areas targeted were 1995 Mekong Agreement, conflict management and technical tools, all three in relation to the addressing and resolving ~~of~~ trans-boundary flood issues. Table 1 presents the knowledge areas and skills targeted and underlying subjects, for each of the training modalities. The programme was designed over a nine months period in which the participants were expected to attend all training modalities. This design was based on the idea of incremental learning and to ensure that the knowledge and skills learned would take root and would be sustained. It was also expected to instil self-confidence as well as respect and trust among the participants. At the end of the programme, newly introduced in Phase 2, the participants were engaged in a so-called Pilot Study (MRC-FMMP, 2012). The Pilot Study is a role play of three days in which the participants - representing the different MRC institutions - were asked to address and resolve a given imaginary trans-boundary issue (e.g. a proposed hydropower development) following the basic principles of the Mekong Agreement 1995 and supported by a set of technical tools and conflict management tools (Figure 2). This Pilot Study was introduced to allow the participants to apply and reflect upon the knowledge gained and skills acquired during the nine months programme period.

[About here Table 1]

[About here Figure 2]

*3.3 Measuring impacts: post-training evaluation*

A post training survey was carried out to assess the training outcome and impact on the medium term rather than limiting the evaluation to the training workshop content. The aim was to assess what people had done with their (expected) enhanced capacities, beyond simply assessing whether they have retained the theory, which in general is a very limited part of capacity enhancement (Kirkpatrick and Kirkpatrick, 2006). We applied the capacity, change and performance model of Baser and Morgan's (2008) as a framework and identified indicators based on Mizrahi (2004). The selected indicators addressed capacity (working experience, familiarity

with knowledge areas before and after programme) and change (usefulness knowledge and skills, application of knowledge and skills, factors hampering application, and change in function and opportunities) (Table 2).

[About here Table 2]

The post training survey was carried out by means of an online questionnaire. The mid-level programme participants of both programme phases were invited by email to fill-out the questionnaire. The questionnaire was online between September 15 and October 15 2011 which is two years after the ending of Phase 1 of the programme, and 5 months after the ending of Phase 2. Of the total 63 participants invited (of which we had email addresses) 37 participants responded (Table 3), resulting in a response rate of 58%. The bench mark for response rates of Internet surveys is 30% (University of Texas at Austin, 2007; Sheehan, 2001). The 37 respondents represent 43% of the total 86 mid-level participants that participated in both phases of the programme. The response data shows that most of the respondents worked for various government ministries and departments (25 out of the 37 respondents) like water resources, foreign affairs, natural resources and environment and fisheries, followed by training and education institutes (10), and the MRC (5)[3]. The survey population gives a good representation of the total group of participants.

[About here Table 3]

## 4. Results of the post training evaluation

*Working experience in related areas*

A large part (65%) of the respondents worked for 5 years and longer for their employer (Figure 2). Their working experience in the three knowledge areas addressed in the capacity building programme is shorter (between 55 and 75 % up to 5 years), with least experience in trans-

[3] 2 respondents indicated to work for both the MRC and a government department, one respondent worked for both a government department and training and education institute

boundary issues of water and flood management (32 % of the respondents less than 1 year, and no respondents more than 10 years experience). The experience in water and flood management varies as participants were selected from a mix of government departments, including departments like foreign affairs, who are less related to water and flood. Interestingly, the working experience in trans-boundary issues of water and flood management shows a different distribution than the experience with the Mekong River Commission (18% less than 1 year and 18 % more than 10 years) although the mandate of the commission obviously is trans-boundary cooperation.

[About here Figure 2]

Looking at the differences between the organisations, the data shows that the majority of the Mekong River Commission respondents (80%) had more than five years working experience in water and flood management, in contrast to the majority of the respondents from the training and education institutes (20%). 40% of the Mekong River Commission respondents had more than five years working experience with the Mekong River Commission, while 11 % of the respondents from the training and education institutes. The latter can be partly explained by the fact that relations between local knowledge institutions and the Mekong River Commission, at least in the past, were limited, and regional university curricula in water and environmental sciences only to a limited extent pay attention to trans-boundary aspects (MRC-FMMP, 2008).

*Familiarity with the knowledge areas addressed*

Respondents were asked to respond to statements related to familiarity with the three main knowledge areas addressed - Mekong Agreement 1995, conflict management approaches, and technical tools and their role in addressing trans-boundary issues - before and after the MRC-FMMP Capacity Building Programme. The underlying data shows that amongst the three knowledge areas, the familiarity before the capacity building programme with conflict management approaches is lowest (33% of respondents agree and strongly agree), and familiarity with the Mekong River Commission highest (54% of respondents agree and strongly agree) (see supplement). This confirms that conflict management approaches is a relatively new knowledge

area for the respondents. Overall the respondents indicated that the capacity building programme has led to a substantial increase in their familiarity with the three areas (on average from 3.3 to 4.3; Table 4). Although the familiarity after the capacity building programme in both phases is comparable, the increase in familiarity before and after the capacity building programme was slightly higher in Phase 2 (increase of 1.3) compared to Phase 1 (between 0.4 and 1.0) (Table 4).

[About here Table 4]

The familiarity with the knowledge areas before the capacity building programme was largest for the respondents from the Mekong River Commission, while the familiarity after the capacity building programme was more or less equal between respondents of the different organisations (Table 5). The different starting position of the respondents per organisation, is understandable given the mandate and activities of these organisations. The increase in familiarity was largest amongst respondents of training and education institutes, for instance the familiarity with the Mekong Agreement from 3.0 to 4.2, and with conflict management from 3.0 to 4.4. Respondents from the training and education institutes although having a different starting position appeared to have gained the most from the capacity building programme.

[About here Table 5]

Comparing the responses about familiarity with the data on working experience clearly shows that the more working experience the respondents had the more familiar they were with the knowledge areas after the capacity building programme (Table 6). The familiarity before the capacity building programme was clearly lower for the respondents with less than 1 year experience, compared to respondents with more experience, but the increase in familiarity largest (ranging from 1.3 to 2).

[About here Table 6]

*Usefulness of knowledge and skills addressed*

Almost 95% of the respondents (strongly) agreed that the knowledge gained during the capacity building programme was useful for their professional work. The data shows that the longer the working experience of the respondents, the higher the agreement with the usefulness of the knowledge gained (Table 7). Reason for this result could be that more experienced respondents rank importance of the knowledge gained higher than les experienced respondents, also as they might see more possibilities for applying the knowledge gained than less experienced respondents. Usefulness of the knowledge gained is also illustrated by some of the quotes of the respondents:

- "The knowledge gained is better for the cooperation with other countries."
- "IWRM principles are starting to be applied in Cambodia."
- "As I work in the Ministry of Foreign Affairs, I find the knowledge I have learned in the course very useful for me in my professional work, especially those concerning trans-boundary conflict management."
- "First, the experience from role play helped me to recognize the real situations. Second, I have recognized that tools are very important to help decision makers to make a good decision."
- "It helps me to be more confident in organizing the water related training programmes. It also built up my professional connections with other participants and resource persons."

[About here Table 7]

The specific skills addressed in the capacity building programme - critical thinking, cooperation, and building trust - were perceived as very important skills, with critical thinking scoring a bit lower (79% very important and extremely important, against 97% and 94% for cooperation and building trust). The respondents from the training and education institutes gave overall the highest scores, except for critical thinking.

*Application of knowledge and skills addressed*

Within each of the knowledge areas addressed by the capacity building programme, specific subjects were taught (Table 2). In the post training evaluation respondents were asked about the

use in practice of these specific subjects. The two subjects most used in practice were Mekong Agreement (67% of respondents) and Integrated Water Resources Management (64%). Respondents indicated to use the knowledge gained by applying it in their work (78%), by informing others (60%), by using it in lecture and training material (22%) and by giving a presentation (19%). Different in application between organisations are presented in (Table 8).

[About here Table 8]

The two subjects addressed by the capacity building programme which were considered useful but least applied were International Water Law (70%) and Models and Decision Support Systems (61%). When asked about the factors hampering application, 26 (of the 37) respondents claimed to have had no opportunities to apply, followed by 6 who said it was difficult to apply and by 2 who did not how to apply the knowledge gained. It was also explained by one of the participants that gaining knowledge about technical tools and role in addressing trans-boundary issues requires a long time. Comparing these results with the working experience of the respondents, the survey shows that almost all respondents with a working experience up to 10 years indicated to have no opportunities to apply the knowledge gained, while amongst the group of respondents with a working experience above 10 years half of the group indicated to have no opportunities and the other half indicated to find it difficult to apply the knowledge gained from the capacity building programme (46%).

*Change in function and / or promotion after capacity building programme*

The respondents were asked to indicate change of function and/or promotion after attending the MRC-FMMP Capacity Building Programme. As quite some replies related to the fact that respondents got more opportunities, we categorised the answers in either change in function (e.g. promotion) or having more opportunities. Table 9 presents these changes in functioning of the respondents by means of the quotes given.

[About here Table 9]

## 5. Discussion and conclusions

### *5.1 Limitations of the study*

The post training evaluation resulted in a survey response of 58% and a good representation of the participants of the MRC-FMMP Capacity Building Programme (43%). Before discussing the results in the next section, we will first reflect on some of the limitations of the study. A first limitation is related to the fact that we asked respondents to self evaluate on their (un)familiarity with certain topics after some period which most probably will have lead to some bias. Measuring improvement in ability before and after training using self-assessment is difficult because scores are subjective – some participants may grade themselves relatively high and some relatively low – and respondents may tend to over-estimate their abilities. After following a training programme various participants may realise that they actually had lower competence than they initially believed before receiving the training. The results could also be biased by some social-cultural factors. The fact that no respondents indicated to be not familiar with the subjects taught after the capacity building programme could be because of politeness and not willing to lose face. The latter could also have been an issue because of the senior level of at least part of the participants (65% with working experience over 5 years).

Using Baser and Morgan's (2008) model of capacity, change and performance as a framework we analysed aspects of capacity and change, and did not address performance (section 3.3). We realise that to obtain a full picture of capacity, change in behavior and ultimately performance a further in-depth data collection and analysis would be needed. Also in light of the above-mentioned methodological limitations, we should be careful in drawing conclusions. We are however confident that the wide array of indicators assessed by a representative response group gives us sufficient information to answer the questions posed related to the impact of the capacity building programme and its design, and provides us with better insights on the conditions needed for change and performance.

*5.2 Design of the MRC-FMMP Capacity Building Programme and its impact*

We will first discuss the aspects of capacity enhancement. The majority of the respondents was quite senior (working for their organisation over 5 years), but working experience in the three knowledge areas was much less, in particular for the respondents of training and education institutes. The results of the post training evaluation related to capacity (working experience and familiarity before and after) show that the participants appreciated the capacity building programme both in terms of knowledge gained and skills acquired, this increased their capacity to address and resolve trans-boundary issues. Overall a substantial increase in familiarity is measured after the capacity building programme. Largest increase in familiarity is measured, by respondents with limited working experience and by the respondents from training and education institutes for all three knowledge areas, as they were least familiar with MRC and MRC-related subjects before attending the capacity building programme. The results imply that the design of the capacity building programme in terms of objectives and modalities addressing a mix of competencies was effective. The results also showed slightly higher familiarity levels after the second phase of the programme, and clearly a larger increase in familiarity (lower levels before and higher levels after the programme). This gives indications that the gradual development and updating of the programme based on regular evaluations was effective.

We measured 'change' by several indicators relating to usefulness of knowledge and skills addressed, application of knowledge and skills, factors hampering application, and change in function and opportunities. Almost 95% of the respondents (strongly) agreed that the knowledge gained during the capacity building programme was useful for their professional work. The longer the working experience of the respondents the higher usefulness was rated, as more senior participants given their longer working experience probably can better oversee possibilities of using new knowledge. Also specific skills addressed like building trust and cooperation were seen as very relevant. Practical application, as shown by the responses, however, proved to be more difficult. Most respondents indicated to have applied knowledge gained and shared the information with colleagues. At the same time, many respondents indicated that they also faced challenges in applying knowledge gained, whereby a lack of opportunities to apply this knowledge was mentioned the most. This shows the relevance of linking individual capacity to

other levels of capacity building (Section 2). At the same time, respondents indicated that their familiarity had increased, but they required a much longer time to be able to apply the gained knowledge about technical tools and their role in addressing trans-boundary issues in their work environment. This would call for a capacity building approach in which training workshops and on-the-job training are integrated.

Like Baser and Morgan (2008) argue, the results show that the interrelations between capacity and change are complex and need to be seen in relationship to the context within which they take place, e.g. motivation of participants, possibilities to apply knowledge gained. The results also make clear the need for enhancing capacities at different levels: enabling environment, organisations, individual (Alaerts and Kaspersma, 2009). The capacity building programme addressed the individual staff level (in Phase 2), with limited relations to the other two levels. This is also not easy. A good way forward would be to better integrate these capacity building activities in the capacity building strategy of the Mekong River Commission and a stronger involvement of national and regional training and education institutes.

With respect to the involvement of training and education institutes the MRC-FMMP Capacity Building Programme has made an important step. A selection of institutes was involved from the beginning and the same group of lecturers participated in both phases. The data shows that their familiarity with the subjects of addressing and resolving trans-boundary issues increased the most compared to the other groups. This had two positive effects. The first effect was that the lecturers through their intensive involvement in the capacity building programme could play an incremental role in facilitation and lecturing. This effect appeared to be important as not all participants participated in all training modalities of the capacity building programme. In practice, having a few participants as a core group throughout the capacity building programme, in our case the lecturers from training and education institutes, proved to be instrumental, as they could support and guide the new participants (internal learning). A second effect relates to the use of the knowledge gained, which was relatively high for the university respondents as we saw above, and which adds to the local ownership and embedding of curriculum developed.

*5.3 Recommendations for the design of similar capacity building programmes*

The results lead into the following six recommendations for the design of similar capacity building programmes.

- Involvement of national and regional training and education institutes like universities is important for embedding the capacity building efforts. These institutes should work closely with water and water-related sector organisations, like the national line agencies and river basin organisations in capacity building.
- Selection of the right group of participants is crucial for the success of a capacity building programme. Selection criteria related to relevance of the topics for the participants and their work / organisation is essential. The subject of addressing and resolving transboundary issues does not only require water professionals but it requires a mix of professionals and institutions to participate in a capacity building programme.
- The subject of addressing and resolving trans-boundary issues is complex and requires a mix of competencies to be addressed. Professionals involved need to be educated with specific backgrounds into team members who understand each other's background and can work in multi-disciplinary teams. This requires addressing different aspects including physical, legal, technical, social, economic and political aspects and a strong focus on the integrative nature of transboundary issues, which can be supported by training modalities like case studies and role plays representing real life situations.
- The complexity of the subject area, and in many situations its innovative character, requires a gradual development of a capacity building programme to be able to learn and update. Post training evaluation is part of this process. Such approach may seem and be more expensive, but in the end will result in a higher quality with stronger regional embedding.
- A successful capacity building programme needs to address the three levels of capacity building (enabling environment, organisations, and individual). Capacity building strategies at river basin level should address these different levels taking contextual factors, like culture and local language, into account.

*5.4 Next steps in the MRC capacity building*

The training material developed in the MRC-FMMP Capacity Building Programme and experiences gained are being used in the design and implementation of Phase 3 of the capacity building programme. In this phase, the lecturers who participated in the first two phases of the capacity building programme will adjust the curriculum for implementation at the national levels (short courses, university curriculum) and will be responsible for implementation. As teaching capacities vary and competencies to teach certain knowledge areas are still lacking, a number of approaches are considered in overcoming this. These include, training and education institutes supporting each other, introducing guest lecturers from water sector organisations like the Mekong River Commission and national line agencies and a continued capacity building to address teaching gaps.

The MRC-FMMP Capacity Building Programme focused on ~~the~~ addressing and resolving ~~of~~ transboundary flood issues, being the Flood Management and Mitigation Programme. The experiences gained at this moment are very useful in broadening the capacity building scope to all water and water-related trans-boundary issues in the Mekong river basin. At the moment the MRC is engaged in the development of the module-based IWRM competency framework. This Framework aims to address the competency gaps in implementing IWRM policies and MRC procedures and related technical guidelines in the Mekong river basin in a systematic way. The experienced gained in the MRC-FMMP Capacity Building Programme provides important input to the development of this framework.

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*Table 1. Knowledge areas and skills addressed in the MRC-FMMP Capacity Building Programme and training modalities (excluding group assignments and exchange study visits).*

| **Knowledge areas (and subjects)** | **Skills** | **Training modality** |
|---|---|---|
| ***Introduction Mekong***<br>Integrated Water Resources Management<br>Integrated River Basin Management<br>Flood risk management<br>Trans-boundary flood issues<br>International cooperation | Applying tools and methods<br>Critical thinking<br>Cooperation<br>Building trust | Training Workshop 1 '*Water Resources Development and Flood Management in a Trans-boundary Context*' |
| ***Mekong Agreement and conflict management***<br>International water law<br>Mekong Agreement 1995, incl. framework of addressing and resolving trans-boundary issues<br>Conflict management<br>Alternative Dispute resolution | Applying tools and methods<br>Critical thinking<br>Cooperation<br>Building trust | Training Workshop 2 '*Trans-boundary Water Conflict Management and International Water Governance*' |
| ***Technical tools***<br>Model and Decision Support Systems<br>MRC Decision Support Framework (DSF)<br>Environmental Impact Assessment<br>Economic assessment<br>Strength-Weakness-Opportunity-Threats (SWOT)<br>Role technical tools in addressing trans-boundary issues | Applying tools and methods<br>Critical thinking<br>Cooperation<br>Building trust | Training Workshop 3 '*Technical Tools to Address Trans-boundary Issues*' |
| All above | Applying tools and methods<br>Critical thinking<br>Cooperation<br>Building trust | Shariva Pilot Study: *Imaginary trans-boundary issue to address and resolve* |

*Table 2. Indicators assessed in post training survey.*

| **Indicator** | **Related to** |
|---|---|
| Working experience | - Water and flood management<br>- Trans-boundary water and flood management<br>- Mekong River Commission |
| Familiarity knowledge areas in relation to addressing and resolving trans-boundary issues (before and after programme) | - Mekong Agreement 1995<br>- Conflict management approaches<br>- Technical tools |
| Usefulness knowledge and skills | - General knowledge<br>- Specific skills addressed |
| Application of knowledge and skills | - Specific knowledge subjects (not) applied<br>- Application methods<br>- Factors hampering application |
| Change in function and / or promotion after programme | (open question) |

*Table 3. Mid-level professional participating in (parts of) Phase 1 and 2 of the MRC-FMMP Capacity Building Programme.*

| Phase | Government | Training/education institutes | Total participants | Survey response |
|---|---|---|---|---|
| Phase 1 | 27 | 8 | 35 | 20 |
| Phase 2 | 37 | 10 (6 same as in Phase 1) | 47 (6 same as in Phase 1) | 23 (6 same as in Phase 1) |
| Total | 64 | 12 | 86 | 37 |

*Table 4. Familiarity with the knowledge areas in relation to addressing trans-boundary issues before and after the MRC-FMMP Capacity Building Programme (n = 37)*[4].

| Knowledge areas | Familiarity before the programme | Familiarity after the programme |
|---|---|---|
| | **The Mekong Agreement 1995** | |
| Phase 1 | 3.7 | 4.1 |
| Phase 2 | 3.2 | 4.5 |
| Average | 3.4 | 4.3 |
| | **Conflict management approaches** | |
| Phase 1 | 3.5 | 4.1 |
| Phase 2 | 2.9 | 4.5 |
| Average | 3.2 | 4.3 |
| | **Technical tools** | |
| Phase 1 | 3.2 | 4.2 |
| Phase 2 | 3.0 | 4.3 |
| Average | 3.1 | 4.2 |

[4] Average score on scale from 1 to 5; 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

*Table 5. Familiarity with the knowledge areas in relation to addressing trans-boundary issues before and after the MRC-FMMP Capacity Building Programme per organization (n = 37)*[5].

| Organisation | Familiarity before the programme | Familiarity after the programme |
|---|---|---|
| | **The Mekong Agreement 1995** | |
| Mekong River Commission | 4.0 | 4.6 |
| Government | 3.5 | 4.4 |
| Training and education institutes | 3.0 | 4.2 |
| | **Conflict management approaches** | |
| Mekong River Commission | 3.6 | 4.2 |
| Government | 3.3 | 4.3 |
| Training and education institutes | 3.0 | 4.4 |
| | **Technical tools** | |
| Mekong River Commission | 4.0 | 4.2 |
| Government | 3.0 | 4.2 |
| Training and education institutes | 3.2 | 4.4 |

[5] Average score on scale from 1 to 5; 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

*Table 6. Familiarity with the knowledge areas in relation to addressing trans-boundary issues before and after the MRC-FMMP Capacity Building Programme per years of working experience (n = 37)*[6].

| Working experience related area | Familiarity before the programme | Familiarity after the programme |
|---|---|---|
| | **The Mekong Agreement 1995** | |
| < 1 year | 2.7 | 4.0 |
| 1-5 years | 3.1 | 4.1 |
| 5-10 years | 3.3 | 4.3 |
| > 10 years | 3.7 | 4.5 |
| | **Conflict management approaches** | |
| < 1 year | 2.7 | 4.0 |
| 1-5 years | 3.0 | 4.1 |
| 5-10 years | 3.3 | 4.3 |
| > 10 years | 3.3 | 4.5 |
| | **Technical tools** | |
| < 1 year | 2.3 | 4.3 |
| 1-5 years | 2.9 | 3.9 |
| 5-10 years | 3.1 | 4.1 |
| > 10 years | 3.5 | 4.5 |

[6] Average score on scale from 1 to 5; 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

*Table 7: Usefulness of knowledge gained for professional work by years of working experience (n=37).*

| Working experience related area | Strongly disagree | Disagree | Neutral | Agree | Strongly agree |
|---|---|---|---|---|---|
| <1 year | 0 | 0 | 1 | 2 | 0 |
| 1-5 years | 0 | 0 | 1 | 6 | 3 |
| 5-10 years | 0 | 0 | 0 | 8 | 1 |
| > 10 years | 0 | 0 | 0 | 8 | 7 |

*Table 8: Use of knowledge gained per organization type (multiple answers allowed) (n=37).*

| Use of knowledge | Mekong River Commission | Government | Training/education institutes |
|---|---|---|---|
| Informed others | 2 | 17 | 4 |
| Gave a presentation | 2 | 5 | 1 |
| Applied in work | 4 | 20 | 8 |
| Used in lecture or training material | 0 | 2 | 6 |

*Table 9. Quotes given on change of function and/or having more opportunities after attending the MRC-FMMP Capacity Building Programme.*

| **Change in function** | **More opportunities** |
|---|---|
| • "Yes, I will be focal point for related projects"<br>• "I will be the focal point for FMMP-MRC project implementation"<br>• "The knowledge and skills gained from CBP supported my capacity to be in charge of a new teaching course on conflict management"<br>• "Yes, I am now the coordinator for the FMMP (Flood Management and Mitigation Programme)" | • "Yes, most of the projects related to water have been given to me after attending the capacity building programme"<br>• "More experiences to develop and teach courses related to conflict management"<br>• "I have more opportunities to cooperate with other experts" |

*Figure 1: Years of working experience of respondents.*

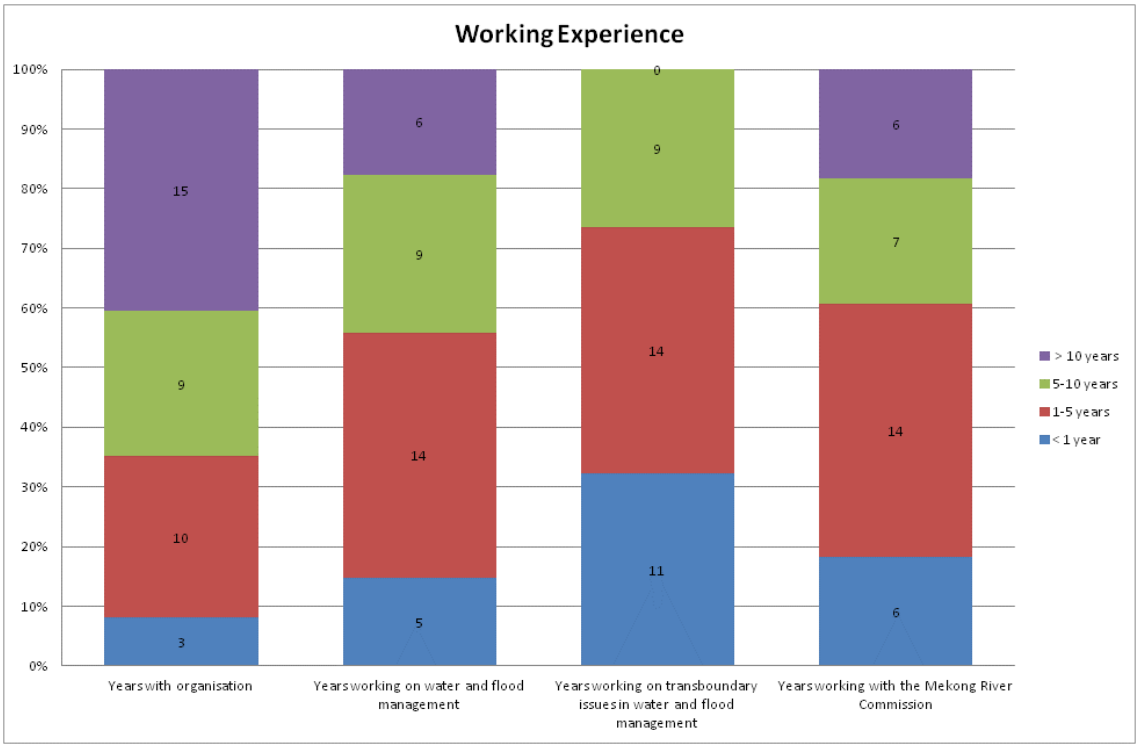

*Figure 2: Pilot Study on addressing and resolving a trans-boundary issue. Top left the imaginary trans-boundary issue, top right the process of addressing the issue and mandate of institutions (in line with the Mekong Agreement 1995), bottom left an example of a tool to support the process, and bottom right negotiations between parties taking place.*