

THE BANG RAKAM MODEL

Farmers' perceptions on a flood retention policy in Phitsanulok and Sukhothai Province, Thailand



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* Picture on cover page: me (on the right) with translator (next to me) interviewing farmers (left) in Ban Yan Yai (03-25-2019)

Source: Chris Voogd.

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Abstract

To cope with, among other things, recurring floods in deltas, adaptive delta management projects have been initiated all over the world. Public participation and non-structural measures regarding flood management policies are increasingly advocated. The Bang Rakam Model 60 is one of Thailand's flood management projects with the goal to retain large amounts of water to protect Bangkok from floods. The model is located in the Northern Central part of Thailand and covers an area of 8704 hectares within Phitsanulok and Sukhothai Province. To what extent are the notions of public participation and non-structural measures embedded in the Bang Rakam Model 60? To answer this question, a farmers' perspective is taken when looking at what the Bang Rakam Model 60 policy entails, how farmers lives are affected, what their perception is on the policy, and if and how they are able to exert their opinions and interests via public participation. For this research, on site semi-structured interviews were conducted with 29 farmers from two different villages within the project area. Rural life and livelihoods have been observed to gain a better understanding of what farm life entails. Results show that (1) the Bang Rakam Model 60 is a hybrid policy that contains both structural and non-structural measures, (2) perceptions from policymakers and local farmers differ from standard 'living with floods' conceptions, and (3) that public participation was only implemented after the policy making process and is currently present in theory. But, due to farmers dependence on the government and military presence, farmers aren't voicing their true concerns and interests towards policymakers. Thus, this research concludes that participation within the Bang Rakam Model 60 is a hollowed-out version of what active public participation should entail.

Keywords

Flood risk management | Perceptions | Public Participation | Bang Rakam Model 60 | Thailand

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1. Introduction

In 2011, severe flooding occurred in the Chao Phraya River basin in Thailand which resulted in over 750 fatalities. With more than 46,5 billion American dollars in damages, this flood was ranked the worlds' fourth costliest natural disaster (Poapongsakorn & Meethom, 2013; Wongsas, 2014; Zevenbergen et al. 2013). The Chao Phraya River Basin runs through a large part of Thailand, covering about 35 per cent of the nation's land surface. Figure 1 shows the four big tributary rivers in the Upper basin, the Ping, the Wang, the Yom, and the Nan, that join together and flow into the Lower Chao Phraya River basin where it then flows through Bangkok into the Gulf of Thailand (Siripong et al., 2000; Thanawat & Kaida, 2000; Wongsas, 2014).

To cope with, among other things, recurring floods in deltas, adaptive delta management projects have been initiated all over the world. The Chao Phraya delta is characterized by a lot of small scale, low-tech delta flood management project like the 'Monkey Cheeks' project (Hogendoorn et al., 2018). The Monkey Cheeks project (or 'Kaem Ling') is an initiative thought up by the King of Thailand, King Bhumibol Adulyadej, with the purpose of retaining water in basins during monsoon season to combat flooding, and draining these basins outside the rainy season to combat droughts (Poapongsakorn & Meethom, 2013; Siripong et al., 2000; Suksawang, 2012). The main goal of this project is to protect Bangkok from floods like the one in 2011.

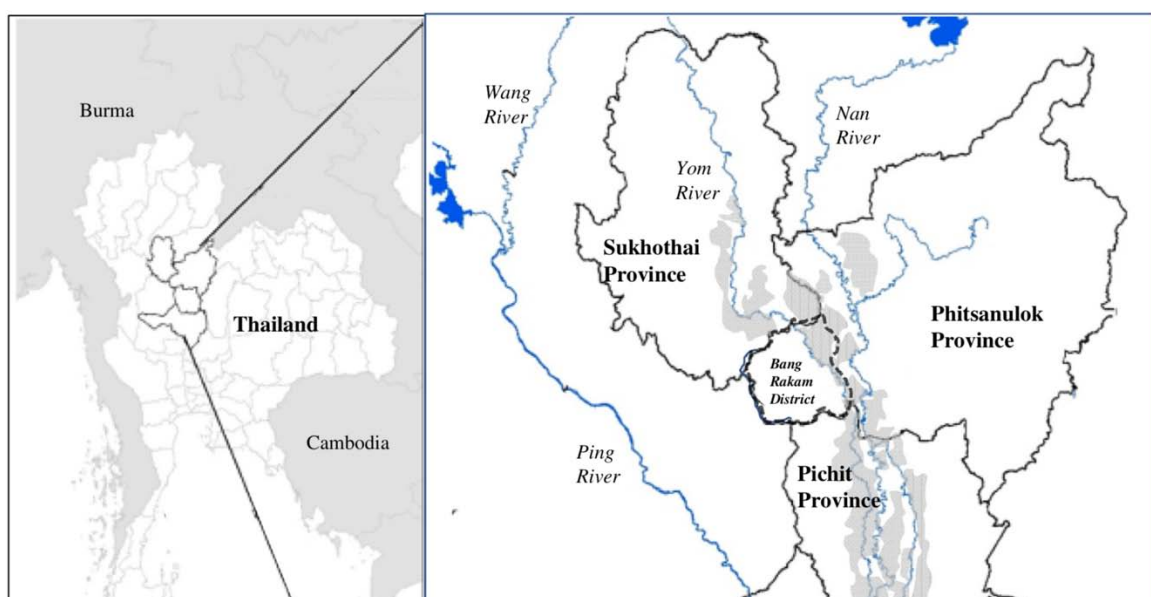


Figure 1: Area overview of the Upper Chao Phraya River Basin (source: Trakuldit & Faysse, 2019).

After the flood of 2011, the concept of the Monkey Cheeks was immediately implemented through the Bang Rakam Model 54 which was initiated in the Bang Rakam District in Phitsanulok province, mainland Thailand. The number 54 stands for the Buddhist year 2554 (which equals the widely used Gregorian calendar and equals the year 2011) in which the model was implemented. For this model, three large reservoirs were built to store water. After this model, the Monkey Cheek project was put on hold due to financial reasons. In 2017 the project resumed with the Bang Rakam Model 60. This model is located partly in Phitsanulok and Sukhothai province, in the north part of the Bang Rakam District as portrayed in grey on figure 1. It contains an area of 8704 hectares that stretches from north to south in between the Yom- and Nan river (Trakuldit, 2018). The area is a natural flood plain that sees floods depending on the amount of rain that falls during the monsoon period. With the model in place, the flood plain is artificially flooded every year, for an extended period. The water from the Yom- and Nan river is redirected via water gates and canals to the flood plain and stored there through water gates and heightened roads that function as dams.

Many farmers living in this area are affected by this policy since it is their land that is used for flood areas. On this land they live and grow their crops which, for most people, is their main source of income. The people affected by the policy have different interests than the government, namely, growing their crops and selling these to make a living. It is important to make sure how policy goals and policy activities are affecting the interests of the local people and farmers. To get to a desirable policy, it is important to take to hear the interests of all parties involved. Recent research on the implementation of the Bang Rakam Model showed a lack of public participation during the policy process (Trakuldit, 2018). This lack of participation from the public could be seen as problematic since farmers aren't able to voice their interests and opinions on this policy.

The notion of public participation has seen a surge over the past couple decennia. Recent discourse concerning policy making heavily advocates strong public participation (Arend & Behagel, 2011; Carr, 2015; Cleaver, 1999 & 2004; Cuny, 1991; Delli Priscoli, 2004; Diduck et al., 2013; Grant & Curtis, 2004; Guthiga, 2008; Horangic et al., 2016; Mannigel, 2008; Roth & Warner, 2007). In 2005, the office of the Prime Minister on Public

Consultation in Thailand put a rule in place (B.E. 2548, 2005). This rule dictates that in the case of a government project, the state should inform the public about the project and should conduct one or more public consultation methods (2005). This is a serious commitment from the Thai government on public participation.

Two years have passed since the implementation in 2017 of the Monkey Cheeks project in the Bang Rakam District. It is relevant to look at how the Monkey Cheeks project has developed since implementation, but also, what kind of effect this model had on the affected farmers, how these farmers are experiencing the model, and if public participation from a farmers' perspective is present within the Bang Rakam Model 60. Therefore, the main question this research concerns about is: *How have farmers adapted and shaped the Bang Rakam Model 60, two years after implementation?* To answer this question, this research looks into (1) the main developments in the Bang Rakam Model between 2017 and 2019, (2) how the Bang Rakam Model affects farmers lives and how they perceive the project, and (3) what ways farmers have been able to voice their interests and opinions regarding the Bang Rakam Model.

This thesis consist of five chapters. This first chapter introduced the research topic on flood risk management in Thailand. The second chapter discusses the theoretical perspectives on which this study is based. The third chapter provides the research questions, the methodology of data collection that has been used to study farmers living with the Bang Rakam Model 60 and gives an overview of the research area and practical and ethical considerations. Chapter four discusses the data and provides a reflection of the results in relation to the theory.

The fifth and final chapter provides a conclusion on the research questions. In this chapter it will become clear that the Bang Rakam Model 60 is a hybrid policy that entails both structural and non-structural measures, policymakers are advocating living with floods while local farmers rather live without floods, and farmers aren't able to fully voice their opinions on the Bang Rakam Model 60.

2. Theoretical framework

To research the Bang Rakam Model 60 and the implications it has on farmers lives, three concepts will be used. With the concept of flood risk management, the nature of the Bang Rakam Model 60 can be examined. The concept of perception gives a better understanding of how the model and the effects are perceived differently among actors. By elaborating on public participation, more insight can be given on the role of public participation in the project, and what levels of interaction are present in the project.

2.1 Flood risk management

Policy can be defined as “a tool of coordination in the strategies of governmental or non-governmental actors.” (Assche et al., 2011:5). These governmental and non-governmental actors have their own orders of knowledge and power. Policies are temporary conceptual structures that coordinate knowledge and power while being in constant transmutation because of the confrontation with these other orders of power and knowledge (Assche et al., 2011). Depending on which order of power and knowledge is most dominant, policies can be opposed, repacked, reinterpreted, ignored, selectively enforced or implemented. The Bang Rakam Model is an example of a flood risk management policy. It is a strategy designed by the government that is implemented in the Chao Phraya delta to manage water and floods.

Wesselink et al. (2015) distinguish five types of flood risk management measures that translate into policy. The first type uses land planning and reallocation of essential services, infrastructure and utilities, to try prevent flood risks. Here, the government can oppose property investment and building in floodplains. The second type is flood protection which is being realized through protecting valuable assets using ‘hard’ engineering. The construction of dams and dykes are forms of ‘hard’ engineering to protect for example powerplants or other valuable assets. Flood mitigation is the third type that Wesselink et al. (2015) distinguish. Here, strategies such as retention areas and urban drainage are used to diminish the flood volume. The forth type is flood warning which includes warning systems and disaster planning. The last type is flood recovery which are management tactics that are realized after floods happen. Here, strategies of

rebuilding infrastructure and landscapes and insurances for citizens and companies are used (Wesselink et al., 2015).

When considering the flood risk management types, two broader categorizations have been made by various authors. Wesselink et al. (2015) distinguish 'hard' and 'soft' policy measures. Others use the terms 'structural' and 'non-structural' measures (Faisal et al., 1999; Kundzewicz, 2009; Mohit & Sellu, 2013). Structural measures are based on engineering strategies used to control floods or protect human settlements. Non-structural measures on the other hand are adjustments of human activities and societies to mitigate flood damages. This includes insurances, land use management, raising awareness, and emergency and recovery policies. (Mohit & Sellu, 2013). Recently, there has been a shift from hard to soft measures. Kundzewicz (2002) considered flood risk measures in the context of sustainability and observes that floods have become more severe and occur more frequently, due to climate change. Traditional, structural flood risk measures, such as dikes, aren't sufficient to protect people from floods anymore and are often too costly to restyle or uphold. This caused a surge in the importance of soft measures. Soft measures are more flexible and often more cost efficient than hard measures. They are also more sustainable since they are more reversible, commonly acceptable, environment-friendly, and can more effectively anticipate on future developments (Cuny, 1991; Kundzewicz, 2002; Van Stokkom et al., 2015).

An example of this shift from hard to soft flood risk measures can be taken from the articles from Van Stokkom et al. (2015) and Zevenbergen et al. (2013). The authors discuss that flood risk management in The Netherlands was heavily focused on hard measures such as dykes. In the light of the rising sea level and increased rainfall, the Dutch government shifted towards soft flood risk management in the form of sustainable land use planning through the concept of 'Room for the River' (Van Stokkom et al., 2015; Zevenbergen et al., 2013).

As Cuny (1991) argues, soft measures can and should be derived from local knowledge of indigenous societies. Many of these societies have developed various practices to prepare, respond, and recover from floods. These strategies can be incorporated into soft flood protection policies (Cuny, 1991). One way of incorporating

the local knowledge is through letting the public participate during policy making processes. Arend & Behagel (2011) argue that this can be accomplished by policy makers if they take a practice-based approach to public participation instead of a managerial approach. The managerial approach to policymaking defines policy problems in a top-down fashion and aims at solutions through intervention. A managerial approach to public participation is prone to follow problem definitions set out by governmental actors that are based on dominant discourses with pre-structured policy solutions. Instead, a practice-based approach is more sensitive to how policy problems are socially constructed and looks at how policy solutions can be arrived at through processes of structured interaction. It takes the perspective from the participants and addresses questions regarding participants' activities and agency. By looking at their daily activities, a practice-based policy approach presupposes effective, conscious agency on the side of participants (Arend & Behagel, 2011). This way, policymakers can gather local knowledge through public participation and better incorporate this knowledge into policy.

In the case of the Bang Rakam Model 60, it seems that a top-down, managerial approach is taken. The problem definition is set by the Thai government and policy solutions are based on pre-structured policy solutions. But it is also the 'King's model'. The King of Thailand came up with the concept of the Monkey Cheeks and is known for financing flood management projects with funds from the Royal Family. He is respected among citizens and is considered the greatest person of the country. Here, the aspect of the 'King's model' could appeal to the intrinsic motivation or moral obligation of farmers to actively participate and cooperate. This, in turn, can lead to bottom-up initiatives within the model. Thus, a more hybrid form could be present.

2.2 Perceptions

To get a better understanding of local knowledge, it is important to look at how people perceive certain things. Public participation is an important aspect within policy making processes. Bringing together a variety of different stakeholders and citizens is key. All these parties have different perspectives and values on the situation, and certain measures can be perceived differently (Cash et al., 2006; Van Densen & McCay, 2007;

Verweij et al., 2010; . To come to a successful policy, it is important to take the different interests of the parties into consideration and find common ground (Verweij et al., 2010). Therefore, it is important to take into consideration the concept of perception in a policy making process.

Tuan (1990) defines perception as "both the response to senses to external stimuli and purposeful activity in which certain phenomena are clearly registered while others recede in the shade or are blocked out." (Tuan, 1990:4). The second part of this definition indicates that a certain reality, a phenomenon, is to be perceived differently by each individual as one may register it while others do not. An example of this is given by Cuny (1991) where he writes about floods in riverine environments. Where 'outsiders' perceive floods as a disaster, for riverbank societies, a disaster would happen if floods did not occur, since the benefits of a flood far outweigh the negative effects. Some would try their best to combat flooding while others welcome floods.

Another way of explaining different perceptions is through the notion of boundary objects. A boundary object is an object that is:

"both plastic enough to adapt to local needs and the constraints of several parties employing them, yet robust enough to maintain a common identity across sites. Boundary objects have different meanings in different social worlds, but their structure is common enough to more than one world to make them recognizable." (Star & Griesemer, 1989:393).

This applies to the area of the Bang Rakam Model 60, where two different infrastructures can be identified. Within these areas, both terrestrial- and aquatic infrastructures are present. During times of no flood, people living inside this are living on terrestrial infrastructure such as roads and houses. During flood time, roads become unavailable, and the aquatic infrastructure takes over from the terrestrial infrastructure. People use boats to move over the water. Houses that are built on stilts function in both infrastructures. Since they are built on stilts, they do not flood, and people can still make use of their homes. In this sense, the area has an amphibious nature. It shows a dynamic

interplay of the terrestrial and the aquatic. Thus, the area of the Bang Rakam Model 60 could be seen as a boundary object (Morita, 2016).

More specifically, the area of the Bang Rakam Model 60 can be defined as a coincident boundary. As Star & Griesemer (1989) describe, coincident boundary objects are spaces that have the same boundaries but different internal contents. The model's area has one boundary but inhabits different contents through its different infrastructures. It contains elements which are different in the external reality. These different elements depend on the use and interpretation of the object by different actors. While the terrestrial infrastructure of the Bang Rakam Models' area is used by farmers to grow their crops, the aquatic infrastructure is used by fishermen. These parties depend on different elements of the boundary object and therefore have different perceptions on what the area encompasses and how the area should be developed.

To manage such overlapping perceptions, Star & Griesemer argue that the central cooperative task of social worlds that share the same space but different perceptions, is the translation of each other's perceptions (Star & Griesemer, 1989; Star, 2010). By translating and exchanging these different perceptions, a more complete image of the boundary object can be formed. This in turn can help policymakers and future developments to be more inclusive. It is thus important to gather different perceptions that are present in the area of the Bang Rakam Model 60.

2.3 Public participation

Different perceptions can be translated into policy through the process of public participation. Much has been written about public participation, why it is important, and the role it takes in governmental decision-making (Arend & Behagel, 2011; Carr, 2015; Cleaver, 1999 & 2004; Cuny, 1991; Delli Priscoli, 2004; Diduck et al., 2013; Grant & Curtis, 2004; Guthiga, 2008; Horangic et al., 2016; Mannigel, 2008; Roth & Warner, 2007). Rowe & Frewer define public participation as "the practice of consulting and involving members of the public in the agenda-setting, decision-making, and policy-forming activities of organizations or institutions responsible for policy development" (Rowe & Frewer, 2004:512). Creighton (2005) adds to this the process where concerns, needs, and values

from the public are incorporated into the government and corporate decision making (2005:7). To get a better understanding of public participation, the meaning of participation is one that needs to be further explored.

Participation can be categorized in different stages or forms. Rowe & Frewer write about passive and active participation. Passive participation refers to the public being the passive recipient of information. Active participation, then, can be seen as the public playing an active role in the decision-making process through drafting or designing the policy. An example of this is public representation on an advisory commission (Rowe & Frewer, 2004:514-515). In another article written by Rowe & Frewer, they argue that the definition of participation is too broad (Rowe & Frewer, 2005:254). They propose to use the term 'public engagement' which encompasses three different descriptors to differentiate actions that can all be seen as public participation. This differentiation is based on the flow of information between participants and sponsors. Rowe & Frewer use the term sponsor to refer to the party commissioning the engagement initiative. The three types they propose are (1) public communication, (2) public consultation, and (3) public participation. In public communication, information is transmitted from the sponsor to the public. With public consultation, the information flow is the other way around, i.e. information is transferred from the public to the sponsor. As shown in figure 2, in the case of public participation, the flow of information is not one-sided as with the first two descriptors, but the flow of information is two-sided in that information is exchanged between members of the public and the sponsor (Rowe & Frewer, 2005:254-5). In this definition, the two-sided flow of information is considered active participation while the one-sided flow of information is a passive variant of participation.

Participation can also be seen as a continuum (Creighton, 2005; Mannigel, 2008). Creighton (2005) comes with his own continuum. He distinguishes four major categories on the scale that shows an increasing participation; 1) inform the public, 2) listen to the public, 3) engage in problem solving, 4) develop agreements. Creighton (2005) refers to a more detailed continuum from the International Association for Public Participation (IAP2). This continuum is shown in figure 3. Here, public participation is divided in five levels that show an increase in impact participants have on the decision. Again, in this

definition, the level called 'inform', which is seen as the level with the least impact on the decision, can be seen as passive participation. It handles a one-sided flow of information where the sponsor informs the public with information. Already in the third level of 'involvement', a two-sided flow of information can be found which indicates an active form of participation.

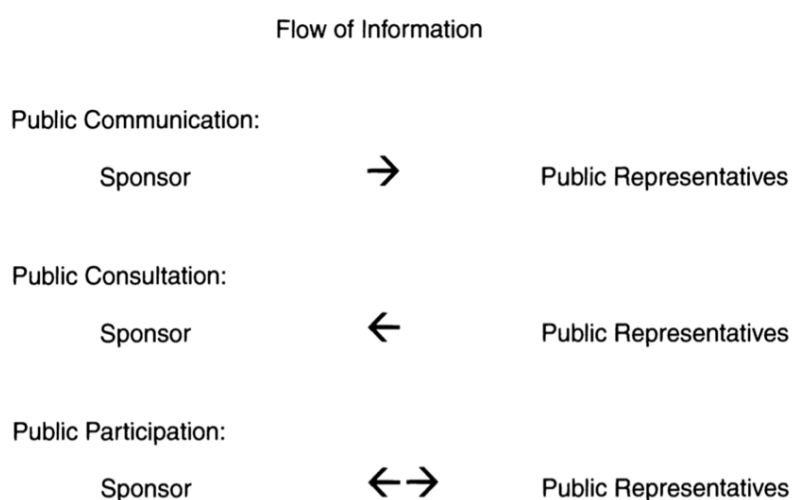


Figure 2: Three types of public engagement (source: Rowe & Frewer, 2005:255).

INCREASING IMPACT ON THE DECISION					
	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

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Figure 3: IAP2 Spectrum of Public Participation (source: IAP2, 2018).

A recent study by Trakuldit & Faysse (2019) shows that the Bang Rakam Model 60 was designed without public participation. After the design period of the policy, meetings were held with farmers in February 2017. The aim of these meetings was to inform farmers of the changes that the model would bring and to get farmers acceptance on the model, not to get feedback from farmers (Trakuldit & Faysse, 2019). These kind of meetings can be categorized under informing the public, the lowest level of public participation as described by Creighton (2005). Two years have gone by since the implementation of the model in 2017. Meetings with farmers have continued on weekly (in the first year of implementation) and monthly (in the second year of implementation) basis. To research what level of public participation is present in the model, the concepts of Rowe & Frewer (2005) and Creighton (2005) will be used.

2.4 Conceptual scheme

Figure 4 shows the conceptual scheme that links the different concepts together. The concepts of what forms of flood risk management measures are implemented, to what extend farmers are able to participate in the model, and the practices that Thai farmers use in their daily lives, are researched. Thai farmers have customs and perceptions on boundary objects and spaces. These perceptions can be influenced by the Bang Rakam Model 60 because the model has implications for the farmers lives. The perceptions in turn, influence how flood risk management is designed. How this flood risk management is designed has impact on farmers' perception. The design of flood risk management and the perceptions from farmers then, impact how farmers are willing and able to participate in the policy. The participation of farmers in the process greatly impacts how a policy is developed and what this policy entails.

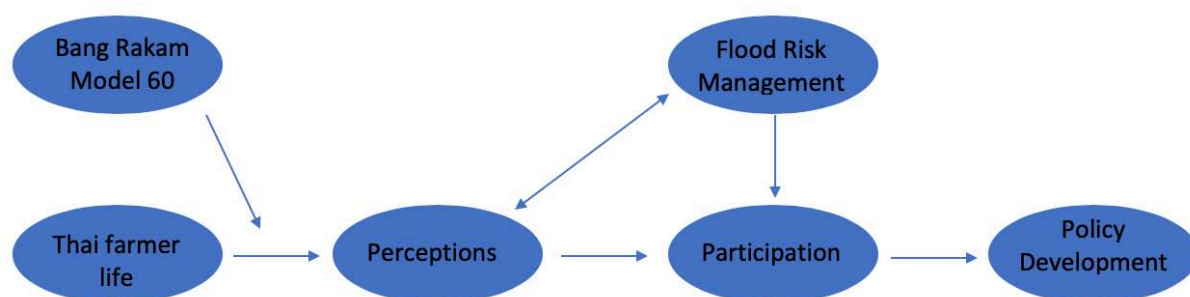


Figure 4: Conceptual scheme (source: author, 2019).

3. Methods and data analysis

There are different ontological and epistemological views of looking at the world. This research takes a critical realist view. This means that the world exists independently of our knowledge from it, however, it is also partially socially constructed by people. Critical realists resolve these contradictory views by arguing that the world is socially constructed but not entirely. Sometimes, the 'real' world breaks through the complex stories that we create to try understand and explain the situations we research (Easton, 2010). Social phenomena such as policies are concept dependent and we should try to understand, read and interpret what they mean (Easton, 2010). This critical realist view fits in with the notion of boundary objects and suits a form of research where perceptions of respondents are used to understand the 'real', external world they live in. These interpretations can be categorized under a qualitative form of research. The data gathered in this research can be considered 'deep' or 'rich' data (Bryman, 2012). It is important to take into consideration that the production of knowledge is a social practice. The conditions and social relations of the production of knowledge are of influence on its content (Easton, 2010). This having said, the qualitative nature of this research translates into a list of interpretative, subjective methods that will be used.

3.1 Research question and sub-questions

The Bang Rakam Model was implemented in 2017 with little participation from the public during the policy making process. This could lead to a policy in which interests from the public have not been taken into account. The main question this research concerns about is: *How have farmers adapted and shaped the Bang Rakam Model 60, two years after implementation?* To answer this question, three sub-questions will be researched.

The first sub-question will be: *What does the Bang Rakam Model entail and how has it developed in the past two years since 2017?* The analysis of the policy and its developments, are used to understand the model and the situation that farmers are living and working in. This context of the model will be the starting point for a better understanding of the effects the policy has on farmers and what they have to deal with in their daily life and work.

The second sub-question is: *How are affected farmers perceiving the Bang Rakam Model 60 and how do they cope with its effects?* After having portrayed the model, I take a closer look at the models' implications on farmers lives, and how they cope with these implications. This magnifies the perspective of the farmers, who in some form or way are forced to stand in the service of the city of Bangkok.

The last sub-question looks into: *In what ways are farmers able to voice their interests and opinions on the Bang Rakam Model 60?* By taking a closer look at the experiences of farmers, these experiences can be integrated into the policy to better serve the needs and interest of the people affected by the model. It is also important to discover if farmers are able to voice their experiences and opinions to the policy makers. If so, a more balanced policy can be created that better all parties involved.

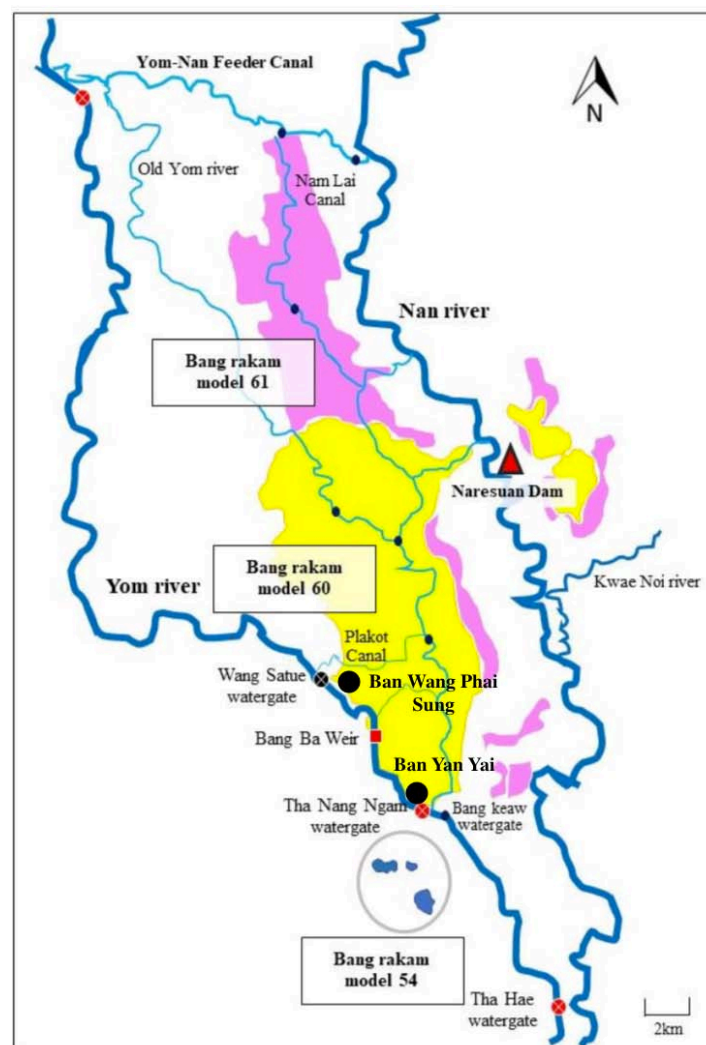


Figure 5: Area of the Bang Rakam Model 60 and areas of study (source: Trakuldit, 2018).

3.2 Study area

Several Monkey Cheek projects have been initiated in the North Central part of Thailand. Figure 1 shows exactly where the Bang Rakam District is situated in Thailand. Figure 5 shows a zoomed in view of this area and the different Bang Rakam models that lie within it. These models are separate models that have been initiated in different years. The Bang Rakam Model 54 was initiated in 2011 and contains three large water reservoirs to hold water. The Bang Rakam Model 60 started in 2017 and differs greatly from the previous model. It covers an area of 8704 hectares and holds the water not in artificial build reservoirs like the Bang Rakam Model 54 does, but it holds water in the area portrayed in yellow in figure 5. This area is a natural flood plain which makes it perfect for retaining water. Through dykes, water-gates and canals, the Royal Irrigation Department directs the water to the area, and artificially flood it every year. For this study, farmers living in Ban Wang Phai Sung and Ban Yan Yai village, located in the yellow area shown with two large black dots on figure 5, have been interviewed. These villages are located in Phitsanulok and Sukhothai province and part of the Bang Rakam Model 60.

The first village, Ban Yan Yai village, in the Bang Rakam district in Phitsanulok Province, Thailand. Phitsanulok is located in the lower part of the north of Thailand. The land in Phitsanulok province is suitable for extensive agriculture. Both the Nan- and the Yom river run through the west of the province. There is no dam or reservoir within the Yom river to control the water during the rainy season. Thus, the Yom river overflows almost every year, leaving the surrounding area to flood. For the first case, interviews are conducted in the sub-district Tha Nang Ngam. Most of the sub-district is considered a Monkey Cheek and historically, it has been heavily affected by floods. It is the very first area where the Royal Irrigation Department, in 2017, has implemented the Monkey Cheek Project and the model is named after the Bang Rakam District. This area is therefore an important area for the RID to lead as prime example for the success of the model.

The second village is Ban Wang Phai Sung, in the Kong Krailat District, Sukhothai Province. The province borders the Phitsanulok province on the west side. Ban Wang Phai Sung is located north west of Ban Yan Yai. The choice for Ban Wang Phai Sung was a practical one. Contact with the head of the village was already established which gave

easier access to the village as a research subject. The distance between the two villages is also close which kept the expenses and time (which were limited for this research) to a minimum. The Kong Krailat province is also part of the Bang Rakam Model 60 since the beginning of its implementation in 2017. Both villages have been subjected to the same model for the same duration, but the model is named after one of the two districts and is therefore more highlighted in the media¹. This research will look at the implications the model has on farmers in both villages in the area, to see difference in levels of public participation and governmental influence.

3.3 Interviews

Interviews are a form of research inquiry that offers the researcher direct access to the perceptions of the interviewees. This is both in terms of the attitudes they hold and the account of their experiences. Interviews are an interactive method in the sense that it is a dialogue where explanations, emotions and meanings from interviewees are being taken seriously by the researcher. Therefore, interviewing is a process of human interaction that involves a mutual construction of meaning. It can also produce a joint construction of knowledge (Smith & Elger, 2012). For this to happen, the researcher has to develop a degree of trust and establish a relationship with the interviewee. In the case of cross-cultural interviewing, this can be difficult. As Marschan-Piekkari & Reis (2004) argue, when conducting an interview where the researcher and interviewee do not speak a common language, problems can arise. The exchange between the two can suffer from misunderstanding, interviewer and response biases, and neglect of important cues such as non-verbal communication (Marschan-Piekkari & Reis, 2004).

The introduction of a third party such as a translator can produce noise, artificiality, and absence of tempo. This damages the intimacy and relationship building between the researcher and interviewee which can have impact on the mutual construction of meaning and knowledge. Instead of speaking of a translator, Edwards (1998) uses the term interpreter. A translator does more than just translating since it also listens to intonation

¹ See translations of online Thai News Articles in Appendix VI

and non-verbal gestures. Furthermore, a translator often shares the culture and customs with the respondents. The title of interpreter better suits the content of the role. Therefore, an interpreter plays an important role in conveying information that lies below the surface and overcoming problems of misunderstanding and biases.

All this has to be taken into account when working together with an interpreter while interviewing. To tackle some of the problems that can arise during cross-cultural interviewing when not speaking the same language, it is important to agree on some set rules during the interview process. This means discussing certain behavioral and process-based rules between the researcher and the interpreter decide on what works best for both. It is important to invite the interpreter to this stage of setting the 'rules' for an interview. She or he will have experience, and everyone has their own way of doing so it is important to take this into account. Furthermore, it would be wise to let the interpreter look at the interview questions that I set up and adjust these to cultural norms and values or other interpreter insights.

Thereby, Edwards (1998) has made some remarks regarding the process of interviewing. She advises a triangular setting between researcher, interviewee, and interpreter. This way, non-verbal and verbal communication is possible between all. It is also very important for the researcher to make eye-contact with the interviewee and to direct the questions to the interviewee instead of the interpreter. Furthermore, for the researcher it is important to actively listen and observe the interpreter-interviewee conversation. This setting and actions prevents a 'psychosocial coalition' between the interpreter-interviewee where the researcher is being isolated (Edwards, 1998).

Working together with an interpreter was a big part of the research. This means some practicalities had to be taken into account. The interpreter was involved in the phase before doing the interview. We agreed upon rules that could be uphold during the interview in different situations. What kind of signal can I make when I feel like I am isolated from the conversation? How is the interpreter going to translate non-verbal communication that she/he receives from the interviewee, to me? Rules in the form of hand gestures were set between me and the interpreter to tackle these kind of situations.

While interviewing farmers, I got help from interpreters. In the first week, four students from the University of Naresuan accompanied me to the field. Communication between me and the interpreters was difficult because their level of English didn't suffice. Moreover, I felt that the amount of interpreters harmed the intimacy and therefore the trustbuilding between me and the respondent. This first week resulted in interviews and data that only scratched the surface. I decided to look for a different interpreter in the middle of my research and found Noon, a native Thai who studied English at the University of Naresuan. She was able to connect with farmers and convey information to me while also explaining the culture and customs behind it. It resulted in richer and more valuable data and I am very satisfied with our collaboration.

While trying to answer the research- and sub-questions, I have interviewed various actors. For the first sub-question, interviews were held with a handful of experts. These experts include academics from the Naresuan University in Phitsanulok that are engaged in some way with the Bang Rakam Model. Two officials of the Royal Irrigation Department (RID), the director and the head of water management have been interviewed (see Appendix VI). For the second and third sub-questions, twenty-nine farmers in the Bang Rakam District have been interviewed. These interviews were of a semi-structured nature, meaning an interview guide was used to make sure specific topics were covered (Bryman, 2010). The interviews were recorded with consent given by the interviewee. A list with the farmers that have been interviewed can be found in Appendix III and records of the interviews can be found in Appendix VII. For privacy reasons, the names of farmers and RID officials have been left out.

3.4 Observation and fieldnotes

During the six weeks of research in the Bang Rakam Model, observations were made. These observations were documented in field notes that describe the setting of various places and the customs and behavior of people. These fieldnotes include some personal reflections of my feelings about occasions and people (Bryman, 2010). Appendix V displays a few of the notes that I made in my travel log. Bernard (2011) categorized three forms of field notes. The methodological notes are notes about the technique of

collecting data. Descriptive notes are mostly derived from watching and listening by trying to capture “what’s going on?”. Analytic notes are rarer and consist of ideas about the how the culture that is being studied is organized (Bernard, 2011). Within the fieldnotes, distinction will be made between these categories of field notes. The fieldnotes prove to be an addition to the information gained from interviews about the context of the situation. It gave a better overview of hierarchical structures and certain customs.

3.5 Data analysis

Different methods have been used to analyze the data gathered. The interviews were first translated from the notes that have been made during the interviews. These notes have been analyzed on certain key words and topics that are relevant for answering the different sub-questions. Through open coding, the data was examined, compared and eventually conceptualized and categorized under the relevant codes. The phase of selective coding comes after where the core categories were selected that all other codes relate to. The data are thus treated as potential indicators of concepts and these indicators are constantly compared to see which concepts they match best with (Bryman, 2010). Appendix IV shows what codes were made and how they relate to the core categories.

For the data analysis, a standard form was made with the codes (see Appendix VII). These codes have been derived from the recorded interviews and quotes and answers from the respondents have been sorted under different codes. This way, the data was analyzed via a systematic approach. The main codes to categorize answers under were ‘farmer life’, ‘BRM/RID’, and ‘public participation’. These main codes had sub-codes like ‘compensation’ and ‘flood life’. Categorizing answers under these codes created a quick overview of answers and data for a specific topic. All 29 interviews have been analyzed via this standard form.

3.6 Practical and ethical considerations

This research is part of a 1-year masters. It was discouraged to do research abroad due to the small amount of time available. A period of six weeks was available for me to do research and there were no funds available. My supervisor, Andres Verzijl, takes part in the DouBT Research Program (Delta's dealing with uncertainty: Multiple practices and knowledges of delta governance) and brought me in contact with his colleague Dr. Nicolas Faysse who is also takes part in the DouBT Research Program. DouBT Research Program was willing and able to partially fund my research and covered a lot of my costs which I appreciate very much. Regardless of the financial aspect, time was still limited. This time constraint impacted my research and the trust building between me and farmers living in the Bang Rakam Model 60.

There are also some ethical considerations regarding this research. Interviews can be very personal, and emotions can run high. Therefore, it is important to always make sure there is informed consent, that there is anonymity, a feeling of safety, and that findings aren't recklessly being spread. To make sure this happens, these first two aspects were mentioned at the start of each interview. The interviewee was asked if they are put in any harm if they talk about certain topics and if there are subjects that should be avoided. It is also important that the role of researcher is clear, and the fact that the researcher is in no position to change something about the current situation.

4. Results

The Bang Rakam Model 60 is in place since 2017. At present, two years have passed. What has happened in these two years and how are farmer living in Ban Yan Yai and Ban Wang Phai Sung affected by this model? To try and answer this, this chapter will first discuss a brief history of the water situation in Thailand (4.1); the details of the BRM 60 and the developments that have been seen in the villages since implementation (4.2); the impact of the model on farmers' lives (4.3); if and how farmers are voicing their opinions and experiences with the policymakers (4.4); and brings all the above together in connection to the concepts of public participation, perception, and flood risk management (4.5).

4.1 Water situation in Thailand

Thailand is rich in rivers. Four big tributaries in the Upper Chao Phraya basin, the Ping, the Wang, the Yom, and the Nan, join together and flow into the Lower Chao Phraya River basin where it then flows through Bangkok into the Gulf of Thailand (Siripong et al., 2000; Thanawat & Kaida, 2000; Wongsas, 2014). The Chao Phraya river basin covers about 35 per cent of Thailand's land surface and has a recurring effect on Thailand's landscape and its people. Flooding is the norm rather than the exception. Seasonal monsoons happen in Thailand from May to October which causes annual flooding to happen between September and November. Natural causes of flood in Thailand consist of overflow from the rivers caused by heavy rainfall. Man-made causes are deforestation, uncoordinated development and over-abstraction of groundwater. Regarding the latter, farmers pump groundwater to water their rice fields which causes land subsidence and causes deeper flooding and longer waterlogging. In recent Thai history, two major floods happened. In 1995, after several tropical cyclones passed through Thailand, heavy rain caused the spillage of the Sirikit Dam and high discharges in Thailand's rivers, which caused a major flood. In the aftermath of the 1995 flood, the King of Thailand ignited more flood management and flood mitigation initiatives to cope with future floods. He devised a flood management system for Bangkok which he called Kaem Ling, or Monkey Cheeks. Besides this initiative, other projects like the heightening of flood barriers around the Bangkok Metropolitan Area, river- and drainage system improvements, and a loop-cut at the Bangkok port and constructions of multiple dams, were initiated by various government agencies (Siripong et al., 2000).

The second major flood happened in 2011 as a result of natural- and man-made effects. Natural causes were heavy rainfalls and five consecutive tropical storms between June and October 2011. This led to high peak flows in the upper Chao Phraya basin. Man-made causes consisted of unsuitable land use in the flood plains and flood mismanagement, in particular the lack of effective flood forecasting, contradicting political interventions in dam operations and irrigation management, and neglect of flood protection infrastructure. The result of this heavy rainfall and flood mismanagement

caused what is known in modern Thai history as its worst flood, the flood of 2011 (Poapongsakorn & Meethom, 2013).

As can be seen on figure 5, Thailand was heavily affected by the 2011 flood. Figure 6 shows the difference in cumulative rainfall between the average rainfall and that during 2011. The accumulated precipitation between January and October 2011 was 35 per cent higher than average annual rainfall. Seasonal rainfall from May to October in 2011 was 20-60 per cent more than normal. From August till mid-September, water level in Sirikit dam was higher than normal retention level, which forced the Thai government to open the emergency spillway to save the dam. As the rainfall affected water flow in rivers that flowed from the north, storm surge and high tides hit the Gulf of Thailand in the south. This raised the sea water level and negatively affected the draining system into the sea. The excessive amount of water had no place to go and affected Thailand's lower northern part, central part, and most areas of northern, eastern and western Bangkok Metropolitan area. Protective dykes broke and villages and industrial areas near and around the Chao Phraya river were submerged by water. 9.1 per cent of the country's total land area got inundated as a result of the heavy rainfall. The flood affected in total more than 13 million, of its 67,5 million people and lasted from late July until mid-December 2011. With over USD 46,5 billion in damages, the 2011 flood in Thailand was ranked worlds fourth costliest natural disaster. More than 700 people lost their lives (Poapongsakorn & Meethom, 2013; Wongsu, 2014).

After the 2011 flood, the Thai government established the National Water Resources and Flood Management Commission (NWFPC) and the Water and Flood Management Commission (WFMC). These bodies formulate policies, approve projects, and monitor the implementation and impact of these policies. They were also appointed to draft a flood management master plan in 2011. This master plan has three objectives. The first is to prevent, mitigate, and reduce the damages caused by flooding. The second objective is to improve the efficiency of the flood prevention and the flood emergency management systems. The last one is a more general objective, namely, to increase public confidence and security, increase national income, and manage natural resources in a sustainable way. The committees came with a structural and a non-structural approach to

flood management. The structural approach consisted of measures to store and divert water through increasing the number and capacity of water reservoirs. The non-structural approach is to create “room for the river”, which would allow for increased areas where floods can spread. This concept consists of large flood retention areas or so-called Monkey Cheek reservoirs (Poapongsakorn & Meethom, 2013; Wongs, 2014).

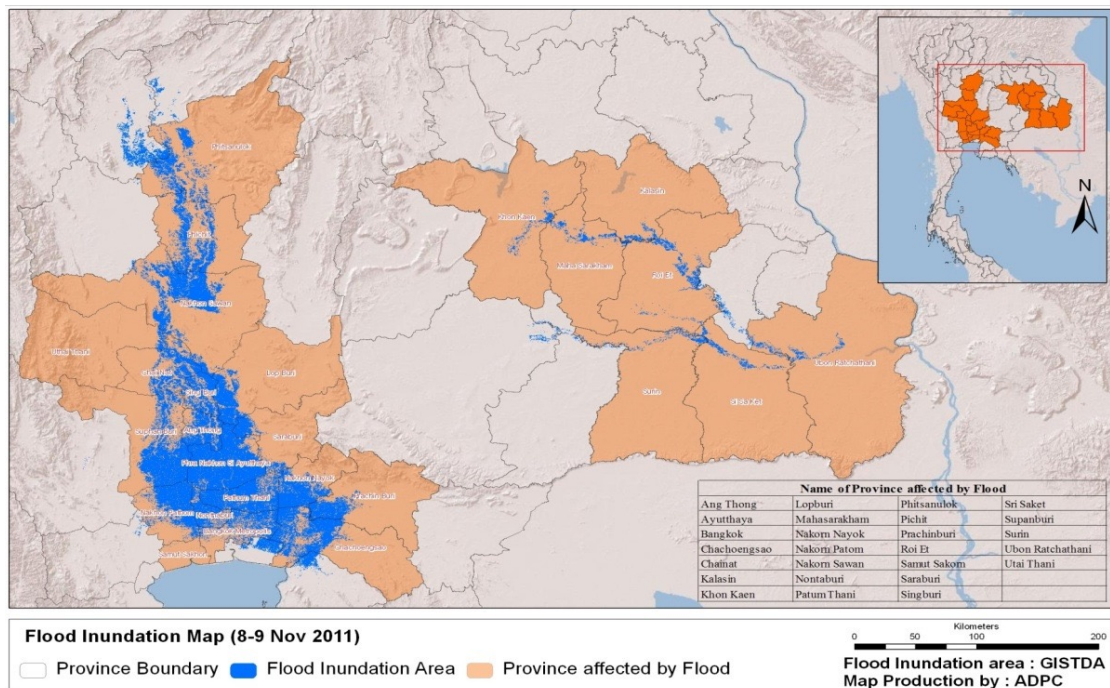


Figure 5: Flood Inundation Map (8-9 Nov 2011)

(source: The World Bank 2012). Original source of satellite image is GISTDA.

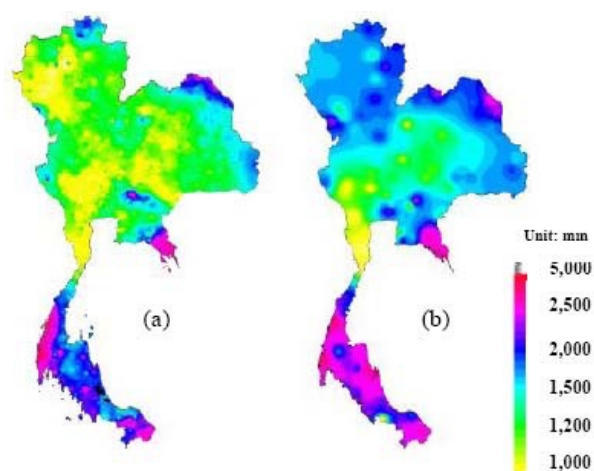


Figure 6: Comparison of cumulative rainfall between (a) average annual rainfall (1950-1997) and (b) 2011 (source: HAIL, Thailand).

Figure 7 shows the Monkey Cheek project (or 'Kaem Ling'), an initiative thought up by the King of Thailand, King Bhumibol Adulyadej, in 2003. The King stated in 2003 that:

"... Monkey Cheek reservoirs are needed in order to retain water when the sea water rises, and water excess cannot be drained. During the flooding season between September and November, the seawater will push water in rivers until it reaches Ayutthaya province, which will make it impossible to drain excessive rain water into the sea. As a result, the areas along the Chao Phraya river in the lower Central Plains will remain flooded. Therefore, we need Monkey Cheek reservoirs" (Poapongsakorn & Meethom, 2013:14).

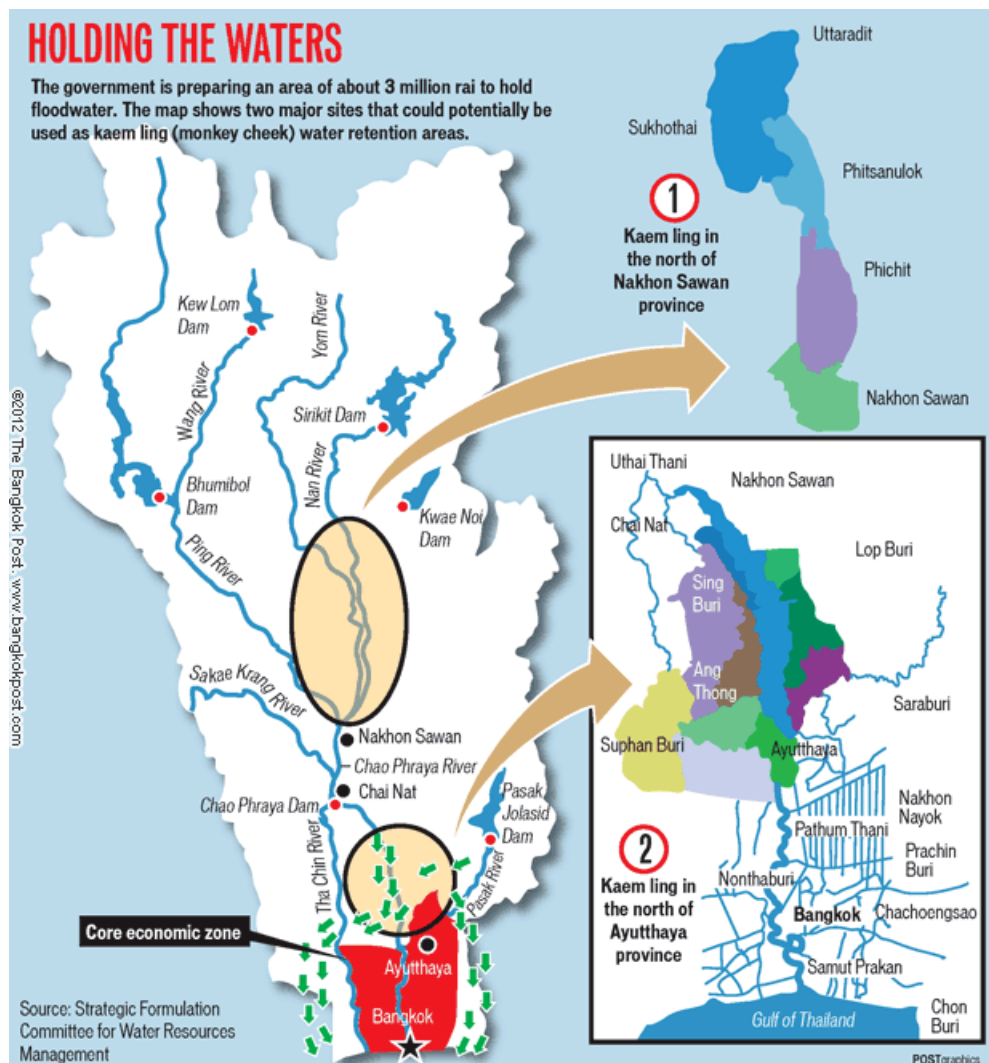


Figure 7. Holding the waters. Two possible 'Kaem ling' areas (source: Bangkok Post, 13-05-2012).

The term Monkey Cheek is a metaphor used by the King to promote local water retention systems. It refers to monkeys' filling up their cheeks with excess food. The project initially started after the 1995 flood, when the King of Thailand devised a flood management plan to solve the problems concerning flooding in the Bangkok Metropolitan area. Between 1995 and 2011, the project saw financial problems and was postponed. After the 2011 flood, the project was slowly gaining funds and eventually saw resurgence when it was also initiated in Lower Northern Thailand. This shift to the north of Bangkok was made for two reasons. The water would be retained further away from the core economic zone in Bangkok, and the lower Northern zone of Thailand is a natural flood plain. It is a lower lying area between and close to the rivers where large amounts of water can be stored. This was perfect for the Monkey Cheek project, since the goal is to retain water in basins during high tide to combat flooding while it also combats drought by draining these basins in times of low tide. One of the agencies in Thailand that was made responsible for overseeing the Monkey Cheek Project and flood management and -mitigation, is the Royal Irrigation Department (Poapongsakorn & Meethom, 2013; Wongs, 2014).

Thailand's institutional framework is highly fragmented. Six national committees, one independent agency, and at least 31 ministerial departments under 10 ministries are involved in water management. The RID is a ministerial department and the most important body under the Ministry of Agriculture and Cooperatives. It is one of the three major ministerial departments in Thailand that is concerned with constructing and maintaining waterways, and flood protection systems. It also has the responsibility of ensuring sufficient water supply for the agricultural sector during times of drought, improving reservoirs, and managing surface water in irrigated areas. Therefore, the RID is the central player in charge of overseeing the Monkey Cheek projects in Thailand (Dutch Ministry of Foreign Affairs, 2016; FAO, 2011).

4.2 Bang Rakam Model 60 and the developments in the villages

The Bang Rakam area is a natural flood plain located between the Yom- and the Nan river. Floods and droughts happen on a yearly basis in the district of Bang Rakam. On average, drought happens 6 times every 10 years. Droughts happen in the period from

January to April because of the hot temperature, the discontinuity of rain, and the fact that there is no big dam or pond in the area to store water. Flooding season is between August and October and happens every year. During these months it continues to rain in the northern part of Thailand, where the Yom river originates. Both droughts and floods negatively affect crops in the Bang Rakam district. Rice farmers in the area depend on rain to plant their crops so they start in May when the drought season is over. By the time the flooding season happens, in August, the farmers have had three to three and a half months' time to grow their crops. This is not enough time since rice takes four months to fully grow. It sometimes happens that farmers are not able to harvest their crops in time before the flood comes. This ruins their crops and costs them their harvests.

According to the Director of The Irrigation Project in Phitsanulok, farmers have been facing this problem for years which is why they have been asking officials for help. The Director could not recall the specific starting point of the Bang Rakam models, but he said the ongoing problems in the area were a big reason for the creation of the project: "Many government departments have been thinking of a way to solve the flooding problem, from which came the idea of the Monkey Cheeks".²

The goal of the Monkey Cheek project originates from the flood management master plan set up in 2011. The three objectives of the masterplan are translated to the Bang Rakam Model 60. Within this model, the RID has changed the cropping and harvesting calendar that farmers follow, and the water distribution calendar that is used by the RID. The project goal is plural. This project combats the flood and the drought problem at the same time. By retaining the water from both the Nan and the Yom river in the Bang Rakam area, lower areas such as Bangkok, which lies roughly 400 kilometers downstream from Phitsanulok, get protected from the flood. The RID provides 250 million m³ water from the Sirikit Dam via irrigation systems to the farmers during the drought season. This way, farmers can transfer from rain-fed land and using groundwater, to irrigation-fed land. Farmers can plant their crops a month sooner than before the BRM 60

² Information obtained from interviews with Royal Irrigation officials and Dr. Sirintipt (see Appendix VI).

and are therefore able to harvest their crops before the flood season in August. To profit from this model, the Director of the RID said farmers have to live with the fact that their land is being artificially flooded for three to four months each year. This is one to two months longer than the natural flood period.

The Bang Rakam Model 60 is the model that is initiated within the Bang Rakam district in the Buddhist calendar-year 2560 which corresponds to the year 2017. The RID chose this area because it is a natural flood plain and subjected to yearly flooding. RID officials mention that the flooding season is embedded in the culture of the farmers in this area, which is why they think the farmers admit to this model and why it works in this area. The Bang Rakam area is also close by the Nan river so the RID is able to supply irrigation water to the farmers via water-gates and canals. This irrigation system makes way for different harvest times. One of the specifics of the BRM 60 is the new harvest calendar that the RID introduced which is essential to the model. Farmers have to register and agree to follow this calendar to be eligible for compensation in the forms of rice seeds. Table 1 shows the harvest calendar of the RID compared to the different harvest calendar farmers used before the implementation of the model. The black parts represent the times of drought and flood when farmers are not able to plant, grow, and harvest crops. The diagonal lines in the month August represent the risk of flood. For farmers it is very hard to predict when the flood will come during the month August which leaves them and their harvests vulnerable during this time.

Rice period													% of farmers
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
3x harvest before BRM 60	2 nd rice cultivation				3 rd rice cultivation				1 st rice cultivation				10%
2x harvest before BRM 60		1 st rice cultivation				2 nd rice cultivation							90%
2x harvest with BRM 60	1 st rice cultivation								2 nd rice cultivation				95%
3x harvest with BRM 60	2 nd rice cultivation				3 rd rice cultivation				1 st rice cultivation				5%

Table 1: Harvest calendars (source: author, 2019).

Besides the introduction of a new harvest calendar, the RID facilitates meetings with farmers that live within the model. These meetings were being held every week during the first year of implementation and are now being held every month. During these meetings, farmers and members of the RID meet and discuss experiences and developments. Farmers can voice the problems and the hardships they face and the RID listens and tries to help farmers find ways to cope with those problems. The RID supports farmers through instruments, knowledge, and food. Helping farmers via monetary means is not an option, since the RID has limited access to governmental funds. The only monetary resources farmers get from the RID is a small compensation of 250 baht (7 European Euro's) per family that attends the meeting with the RID to cover the transportation costs.

Which groups of people get to participate in the meetings, limits public participation in the model. In the case of the BRM 60, only farmers, people that own land, are invited to the meetings. Therefore, only these people get to voice their opinions on the model. Fishermen, who have different objectives than farmers, but do not own land, are not invited and thus have no say whatsoever. This makes for a one-sided public participation in the area, since not all inhabitants are farmers and owners of land.

Regarding the developments of the BRM 60, the RID is focusing on improving and modifying the irrigation system and infrastructure in the area. This is a costly and time-consuming project. The RID only receives budget from the Thai government for distributing the water. For funds regarding infrastructure developments, the RID has to work together with other governmental departments. This cooperation is very difficult since there are as much as 17 different departments that work in some way or form on the BRM 60. The coordination for joint developments between the RID and for example the department of infrastructure is difficult. The Director of the RID said in an interview that overall, he is happy with the developments of the BRM 60. The communication between the 17 different departments is a thorn in his eye. Nonetheless, progress is being made and joint developments like infrastructure are being constructed in the villages.³

³ Information obtained from interviews with Royal Irrigation officials and with expert Dr. Sirintipt (see Appendix VI).

In case of the village Ban Yan Yai, some developments have been made in the past two years. Figure 8 shows four pictures taken of 'work-in-progress' in Ban Yan Yai. There are constructions on the way for building a dam close to the village. The RID hires farmers to help construct the dam. This way the RID helps farmers get some extra work. A pond is being dug out where excess water can be stored. In the background of picture D, an irrigation canal is located with a water gate. The most striking developments that can be seen in the village is the freshly laid asphalted roads. Most roads within the village are non-asphalted roads that are very bumpy. Asphalt roads is something farmers have asked for since the beginning of the implementation of the BRM 60. Now, two years after implementation of the BRM 60, these roads are being constructed. This delay, according to the director of the RID, is due to the difficult cooperation and management between the 17 different departments within the BRM 60.



Figure 8: 'Work-in-progress' in Ban Yan Yai, Bang Rakam District, April 2019 (source: author, 2019).

The second village, Ban Wang Phai Sung, hasn't seen these sorts of developments since implementation. The RID introduced the Bang Rakam Model 60 in Ban Wang Phai Sung also in 2017. Not many hard measures have been taken in the model since implementation. The villagers have been asking for elevating the roads so that these are still available to use during flood time. The Director of the RID mentions that his department doesn't have a budget for heightening the roads. They have been trying to work together with other departments to make sure these developments happen. Farmers mentioned the military bringing trucks with sand for the roads and the ground under their houses. The military didn't help with heightening the roads and the houses, the farmers did this themselves. Another farmer mentioned that the roads aren't high enough yet and are still being flooded during flood season. Therefore, the roads are unable to be used during flood time. The heightening of the roads is a difficult matter because the roads cannot get too high. If they are, they will function as dykes which stops the water from spreading over the whole area and thus conflicts with the concept of the Monkey Cheek.

Another thing that farmers in Ban Wang Phai Sang mentioned, was the need for more dams. Farmers expressed they would like the RID to build more dams near the rivers to enhance the safety of the farmers against higher water level floods. They also asked for more dams to increase the water storage volume for irrigation water during droughts. The RID mentioned that hard measures like infrastructure are difficult to develop since their budget is low.

4.3 Farming life and the influence of the Bang Rakam Model 60

People living inside the area of the BRM 60 live two lives. During 75 per cent of the time per year, people make use of the terrestrial infrastructure and live off the land. During the other 25 per cent of the year, that terrestrial infrastructure and the land on which they cultivate rice are unavailable because of floods. People are forced to switch from the terrestrial infrastructure to aquatic infrastructure. Farmers have to adapt their forms of transport, their daily routines, and how they earn money, every year. With the implementation of the BRM 60, the flooding time in the area is longer and more

predictable. The ratio land life/flood life, that people in this area have been living with for generations, changed with the implementation of the BRM 60. To gain a better understanding of the magnitude of this change, the day to day life of farmers before the implementation of the BRM 60 will be elaborated (4.3.1.) and is then, compared with the life after the implementation of the BRM 60 (4.3.2). Farmer perceptions on the model and how this changed their daily routines, are explained in 4.3.3.

4.3.1. Farming life before the Bang Rakam Model 60

People live in mostly wooden houses with corrugated sheets that are built on top of concrete stilts to protect their house from the flood that rises up to two meters high and in some places even three to four meters high (see figure 9). These stilts vary in height, based on the level of flood seen in that area. Underneath their homes, elevated sitting platforms have been built that function as rest area during the day. This way, farmers can sit in the shade and sit in an open area that is cooler than their houses. In 70 per cent of the houses I visited, portraits of the King of Thailand were hanging on the walls. The King is highly respected in Thailand and is also the creator of the Monkey Cheeks concept. Most of the houses are surrounded with litter (see the right picture in figure 9) that washes away during flood times.

Almost every person that was interviewed for this research cultivates rice as their main occupation. Some also cultivate watermelons for a short amount of time per year and one farmer cultivates flowers throughout the year because these flowers aren't affected by the flood. One farmer holds 7 buffalos and 100 chicken of which 20 are used in rooster-fights. The farmer mentioned that the animals are an extra source of income to compensate for the low price of rice on the market.

Before the BRM 60, 90 per cent of the farmers harvest their crops twice per year due to the recurring floods in the area. Only a small amount of the farmers, who's land didn't get affected by the flood, managed to harvest three times per year. For the cultivation of rice, a large amount of water is needed. Most farmers used to pump the water from the ground or were depending on rain to water their crops. By using these methods, farmers were often struggling to collect enough water for their crops. One of

the farmers told me in an interview that even now with the irrigation system in place, there is competition over water between villages higher up, and lower down the river. Another farmer said that farmers from other villages sometimes come at night and “steal” the water by opening water-gates.

This fight over securing water for the crops, has led and still leads to multiple conflicts and hostilities between villages. The Head of the sub-district Tha Nang Ngam, of which Ban Yan Yai village is a part, mentioned in an interview that he is also Head of Water Usage in his sub-district. He mentioned that in the past, some villagers even resorted to bringing guns during disputes between villages. Because of these intense disputes, he set up the Water Usage group to mediate between villages. The heads of all the villages in Tha Nang Ngam sub-district, who are the representatives of their villages, meet every month to negotiate over the distribution of irrigation water and to talk about problems their villagers face.

Before the BRM 60, not only the amount of water and water distribution for the crops was uncertain, the timing of the flood season was also uncertain. Farmers were never certain when the flood would come but that it would come, was certain. Therefore, the harvest of their rice was a race against the clock. Farmers expressed in interviews that they feared the flood most because there was a chance it would ruin their harvests. This had disastrous repercussions and a lot of farmers mentioned they ended up with debts over ruined harvest. But besides the danger of destroying harvests, 95 per cent of the farmers said the flood is a natural occurrence with which they grew up with. Some said they like the flood season because they can take a break from the hard work they do on the fields. Others do not like the flood because transportation and daily life get unpractical and more costly. This shows the dualistic side of their lives. During flood times, terrestrial infrastructure like roads becomes inaccessible. Farmers are forced to switch to using the aquatic infrastructure. They use small, long boats as transport which use up more fuel and are thus more costly than the scooters they use on land. One farmer said in an interview that getting ill during flood season is a disaster because seeing a doctor is more difficult when a boat is your only means of transport.



Figure 9. Left: A farmers' house, Ban Yan Yai, Bang Rakam District. Right: A farmers' house, Ban Wang Phai Sung (source: author, 2019).

The boats also function within most of the farmers secondary livelihood activity; fishing. During flood time, fishing substitutes working on the land for almost every farmer. The fish caught are used either for own consumption or they are being sold on the market. Other farmers expressed they try and find other jobs, like construction work or making fishing-tools like nets, during the flood season. These farmers said they didn't have the needed skills and knowledge to make a living out of fishing.

4.3.2. Farming life with the Bang Rakam Model 60

The implementation of the BRM 60 changed farmers lives. Life on land changed in multiple ways. With the implementation of the BRM 60, farmers have more secure access to irrigation water. Most of the farmers changed from rain-fed irrigation and pumping out the water from the ground, to getting water through the irrigation system setup by the RID. This positively impacts farmers harvests and gives them a more secure way of income. This water security is closely related to the new harvest calendar from the RID. The Head of the Ban Yan Yai village said in an interview that villagers didn't follow the new harvest calendar from the RID in the first year of implementation. Farmers were wary about the RID promising irrigation water during the drought season. But the promised water came during the drought season and the following year, farmers were using the harvest calendar.

Still not every farmer welcomes the new harvest calendar. One farmer mentioned that the harvest calendar forces him to harvest and sow during March and April. These

are the hottest months in Thailand with temperatures leading up to 45 degrees Celsius. This farmer said that no one in his right mind wanted to work on the fields under the blazing sun in temperatures between 35 and 45 degrees. Still, every villager has to register and sign to follow the harvest calendar. In exchange, the farmers are eligible for compensation.

The military plays an active role in the BRM 60. In the past, water management has caused many clashes and disputes between farmers and the government. To make sure water is managed well in Thailand, the military is involved. It oversees meetings, patrols the village and makes sure that farmers follow the harvest calendar and other changes that follow from the BRM 60. During my fieldwork in Ban Wang Phai Sung, the military wasn't present. In the same village, more farmers mentioned that they still follow their own harvest calendar instead of the one proposed by the RID. In Ban Yan Yai, the military did patrol the village and farmers also mentioned this presence in interviews.

Within the BRM 60, compensation is being granted by the RID to farmers that live inside the models' area and are thus affected by the model. Farmers get 5 kilograms of rice seeds per 1 rai, which is equal to 0.16 hectares. The RID said that per rai, 20 kilograms of rice seeds are needed. Farmers interviewed, explained they are using not 20-, but up to 35 kilograms of rice per rai. There were also differences in the answers from farmers about the maximum amount of compensation. Some farmers explained that they only get compensation for a maximum of 10 rai per household while others were talking about 15 rai per household. These differences in information between farmers and the RID are remarkable since farmers and the RID meet frequently to talk about the details of the BRM 60 and farmers' needs.

From the thirteen farmers interviewed in Ban Yan Yai village, the average amount of land owned per farmer is 75 rai which is about 10 hectares.⁴ This means only one-fourth, namely 15 out of the average 75 rai, of farmers land is being compensated by the RID. For the total of 15 rai, the RID compensates 5 kilograms of rice seeds per rai while farmers say they need up to 35 kilograms per rai. Thus, farmers are getting compensation

⁴ Appendix III shows the amount of rai per farmer interviewed.

for a small portion of the needed rice seeds per rai, while also getting compensated for a small portion of the total rai they own. All in all, farmers expressed this compensation to be not nearly enough for covering their entire owned land and would like to get more.

Besides affecting the life on land for farmers, the Bang Rakam Model 60 also impacts the lives of farmers during the flood season. The most prominent change is the duration of the flood season. Farmers expressed it floods from at least August till November and usually up to four months. The season thus extended from 1-2 months to 3-4 months. This is a doubling of the flood season. This means farmers have to use their boats longer. With this comes higher transportation costs. One farmer mentioned she has to pay 50 per cent more for fuel for the boat alone. An amount that many farmers have difficulties with paying.



Figure 10. Thai women from the Ban Yan Yai village gather during flood season to make spicy paste (poster RID, 2019).

A longer flood season also means a longer fishing period. Farmers are forced to delay their farmer life and live their fishing life for a longer duration. The RID helps farmers with transitioning to other occupations during the flood season. One way of doing this is promoting new forms of work and income by teaching new skills to villagers. Figure 10 shows a group of women from the Ban Yan Yai village who learn to combine different ingredients into spicy paste frequently used for Thai dishes. This paste is then sold on local markets, so farmers have more income during the flood season.

On the village level, things have changed as well. The government is actively engaged in Ban Yan Yai. While visiting the village on a fieldtrip, asphalt roads were being laid down, water-gates were being constructed, water ponds were being dug out, and a small dam was being constructed (see figure 8). Another thing that changed is the military supervision in Ban Yan Yai. Farmers mentioned that the military monitors the level of water in the fields by driving around and taking pictures of farmers' fields. This way, based on the observations from the military, the RID can adapt the amount of water they let through from the Sirikit dam to the irrigation scheme. These kind of developments and military supervision haven't been observed or mentioned in Ban Wang Phai Sung. Farmers in Ban Wang Phai Sung only mentioned the presence of the military during meetings with the RID.

This difference in military presence between the two villages could be assigned to the fact that Ban Yan Yai is part of the Bang Rakam area in Phitsanulok. The model is named after the area and therefore, the area serves as a prime example which needs to succeed. The military presence could be a measure taken by the government to make sure the model runs smoothly in this area and can therefore serve as a success story in the media. The head of the sub-district Tha Nang Ngam also mentioned this military presence. Although he thought it was not the most democratic solution, in his eyes, the presence of the military was good for the model. Because of the military presence, the implementation of the model is faster and runs better.⁵

⁵ See Appendix VI for the interview with the Head of the Sub-district Tha Nang Ngam.

4.3.3 Farmers perception of the Bang Rakam Model 60

After discussing the physical effects of the BRM 60 on farmers lives, it is interesting to know their perception of the BRM 60. On the question what the goal of the BRM 60 is, not all farmers had an answer. 75 per cent of farmers explained that the BRM 60 makes the Bang Rakam area a retention area where they keep the water for a longer period, with the goal to protect lower lying areas such as Bangkok from being flooded. This explanation is similar to what the Director of the Royal Irrigation Department in Phitsanulok, described. 15 per cent of farmers thought the model is put in place to improve the water distribution in the area. 10 per cent of farmers said they didn't know the goal of the BRM 60. One specific farmer answered that a side goal of the BRM 60 is to generate tourism. She said the BRM 60 is a famous point in the Bang Rakam area for tourist. These tourists can see the daily lives of the farmers and they can experience the flood. She thought this is a good development for the village because these tourists also buy fish and other local products from the farmers.

Farmers also mentioned the benefits from the BRM 60. One of the major benefits, that almost all farmers mentioned, is the access to water during the dry season in March and April. The majority of farmers are happy with the irrigation water supplied by the RID. Around 20 per cent of the farmers mentioned that the irrigation water supply is not optimal. Sometimes there is not enough water in the canals. Another major benefit for most of the farmers in Ban Yan Yai is the harvest calendar. This calendar gives farmers security over their harvests which translates into financial security, something they did not always have in the past. With the harvest calendar comes also the anticipation of the flood. The area is now artificially flooded by the RID which means farmers know that at the end of the harvest calendar, the flood will come because the RID will open the water-gates.

Because of the artificial flooding, farmers have seen a change in areas that are being flooded. Since the BRM 60, some hard measures like the heightening of roads have been made. Through water-gates and dykes, the flood is being steered in a different direction, leading some homes to not being flooded anymore. For those whose houses aren't affected by the flood, this major change is welcomed. A last benefit that farmers mentioned are the many projects from the government that are being promised and

initiated in the village. Not all these projects are being executed but most farmers are happy there is a budget for the village. One farmer in particular mentioned he was very happy that money from the government was being invested into his village. He liked the idea of money going from the central level to the local level.

Not every farmer sees benefits from the BRM 60. About 70 per cent of farmers like the harvest calendar, the other 30 per cent is less happy with it. With the implementation of the BRM 60, all farmers had to change to the same sort of rice. In the past, farmers used different sorts of rice that would grow faster. These farmers expressed they used to harvest three times per year, while now forced to harvest two times per year due to the harvest calendar. Another drawback of the model is the longer period of flood in the area. Farmers grew up with the flood, but don't necessarily 'like' the flood. It is unpractical and transport is much more expensive. The longer flood time is costing farmers more money, but the RID isn't compensating them enough to make up for this longer flood time. Besides the flood and the harvest calendar, the presence of the military in the BRM 60 is troublesome for some farmers. Some of the farmers interviewed, felt like they were being forcefully subjected, indirectly by the military presence, to the model and its changes.

4.4 Public participation in the Bang Rakam Model 60

Farmers living in Ban Yan Yai have experienced the BRM 60 in multiple ways and have formed their own opinions on it. Some are facing changes that negatively affect their lives while others are benefiting in certain ways from the model. As mentioned previously in the introduction, recent discourse concerning policy making heavily advocates strong public participation. This has also landed in Thailand, where in 2005, the office of the Prime Minister on Public Consultation in Thailand put a rule in place regarding public participation (B.E. 2548, 2005). This is a serious commitment of the Thai state on public participation. In an interview with officials of the Royal Irrigation Department in Phitsanulok, they explained that the RID is trying to listen to farmers opinions and problems and aspires to help them in befitting ways. This is done through weekly and monthly meetings between the RID and farmers and the RID is actively helping farmers in numerous ways (see figure 11). With this statement, the RID is also making a commitment

to engage the public more into participating in the model. But do farmers from Ban Wang Phai Sung and Ban Yan Yai feel like they are participating, and if so, in what ways are they participating? To get a more complete understanding of the situation regarding public participation in the BRM 60, it is important to look at farmers perspectives on public participation and how they communicate with the RID.

To gain a better understanding of public participation in the BRM 60, it is important to understand the structure of communication and representation in Thailand. Thailand has multiple provinces that are divided in districts, sub-districts, and villages. The head of the village, *Phu Yai Ban* called in Thai, answers to the head of the sub-district, *Kamran*. The *Kamran*, answers to the head of the district, *Nai Amphoe*, who has direct communication with the province and the regional offices of the RID. All communication between RID officials in the two villages goes via the head of the village. The head of the village is chosen by all the people living in the village. The Head of the sub-district is chosen by all the heads of villages in the sub-district and they in turn chose the head of district.

These titles are official titles in the Ministry of Internal Affairs of Thailand and the Thai state provides these men a monthly salary for their services. The head of the village is responsible for registering birth and death and registering the rice production of farmers. He also has the job to translate policies from the Thai government to the villagers and explain them and make sure these policies can be implemented. Therefore, all communication with the RID and the Thai government runs via the head of the village. This places farmers in a position where they rely solely on the head of the village for information regarding governmental plans. At the same time, the head of the village is the only representation towards the government whom farmers chose to represent their interests. When asked how villagers knew about the BRM 60, and how they express their opinions on the BRM 60, farmers replied that all direct communication goes via the head of the village and they get all information from the head of the village.



Figure 11. A monthly meeting organized by the Royal Irrigation Department with farmers in Ban Yan Yai (author, 2019).

To encourage public participation, the RID called into life meetings with villagers. The first year of the model saw weekly meetings between the RID and farmers. These meetings are now happening every month. These meetings, in theory, provide farmers a platform where they can express their opinions and problems about the BRM 60 with the RID. With this feedback, the RID can improve the model.⁶ About 75 per cent of the farmers expressed in interviews that they were invited by the head of the village to join the meetings with the RID. During these meetings, they weren't asked for their opinion on the model. The other 30 per cent were never invited for the meetings with the RID and just heard about the BRM 60 and its implications through other farmers. One farmer mentioned she was asked by the head of the village to join the meeting, so she went. Others said they either don't go to the meetings because they don't have time to go to the meetings or because other villagers already go and carry on the information discussed

⁶ Information obtained from interview with officials of the Royal Irrigation Department, see Appendix IV.

in the meetings to them. Going to the meetings with the RID is not a priority for most farmers.

When farmers do go to the meetings, most of them don't voice their opinions. One farmer said he doesn't have the knowledge to fish during the flood season. When he was asked if he shared his problem with the RID, he said no. He said that other farmers also have these problems and the RID and the head of the village already know about it, so he doesn't have to tell them again. Another farmer said she doesn't voice her problems because she already knows that the RID isn't going to do anything about it. A third farmer mentioned the presence of the military during the meetings. He said the military is always present during meetings to examine and oversee the meetings. These men are in full uniform and armed with guns. When asked how he feels about the military supervising those meetings he said he felt indifferent about it and that it doesn't really bother him. One farmer said he doesn't voice his problems and opinions about the BRM 60. The reason is that he is dependent on the government bank for his loans and the RID is part of the government, so he doesn't want to be on bad terms with them.

Others did voice their problems. They feel like the RID listens to their problems. They are allowed to talk during the meetings and mention their hardships. There were some farmers that said they are allowed to voice their problems, but they feel like the RID doesn't really listen to them. They listen but don't come with solutions. One of the farmers mentioned he told the head of the village about his problems instead. There was a problem with the level of irrigation water, and the head of the village took care of it with the RID.

4.5 Analysis

Chapter two described three different concepts that can be linked to the data gathered for this research. This chapter will discuss (4.5.1.) flood risk management in relation to the data gathered on the content of the BRM 60, (4.5.2.) perceptions in relation to the data gathered on how farmers perceive the BRM 60, and (4.5.3.) the concept of public participation in relation to the data gathered on how farmers are able to voice their opinion in the BRM 60.

4.5.1. Flood risk management and the Bang Rakam Model 60

The Bang Rakam Model 60 is a perfect example of a policy described by Assche et al. (2011). The BRM 60 is a form of tool that coordinates the strategies of the Thai government. The Thai government uses the BRM 60 as a retention policy to fulfill the strategy to manage the yearly floods that afflict central Thailand. The BRM 60 entails a set of measures that can be categorized under multiple flood risk management types. The BRM 60 put into place multiple infrastructural measures such as water-gates, an irrigation system, retention ponds and small dams to retard the water during high water volume times. These measures can be categorized as flood protection and is being realized by protecting valuable assets through using 'hard' engineering.⁷ At the same time, the BRM 60 is a retention area and can therefore be categorized as flood mitigation. Retention areas and similar measures are used to diminish the flood volume, which is the key feature of the BRM 60 policy.

Many authors have made the distinction between hard and soft measures, or structural and non-structural measures (Faisal et al., 1999; Kundzewicz, 2009; Mohit & Sellu, 2013; Wesselink et al., 2015). The concept of 'room for the river', which the Bang Rakam Model 60 applies, can be regarded a soft measured policy. Instead of managing amphibious spaces through terrestrial approaches in the sense of building hard measures like dykes and dams, 'room for the river' recognizes the notion of 'water flows'. It recognizes a dynamic instability and fluidity in nature. By giving the river room, this instability and fluidity is taken into account. It is considered an amphibious orientation on water management that is dominated by soft measures and is distanced from a terrestrial orientation that is dominated by hard measures (Jensen, 2017; Morita, 2016).

Although the Bang Rakam Model 60 can be considered a soft measured policy through its 'room for the river' concept, I consider the BRM 60 a policy that inhabits both hard and soft measures. The concept of 'room for the river' is applied in this model, since an area close to the river is assigned to flood. How much it floods, and which specific areas will flood in this designated area, differs because of the dynamic instability and

⁷ See Wesselink et al. (2015) for categorization of flood risk management.

fluidity in nature. But in the Bang Rakam Model 60, nature can't run free completely. If the river is given complete freedom, there is a big chance it overflows somewhere else where the Thai government cannot control or retain it for a longer period. Since this could endanger Bangkok and therefore Thailand's economy, the Thai government appointed the area of the Bang Rakam Model 60 to artificially flood. As a result, there is room for the river to flow outside the river-boundaries, but only in a designated area that is restricted through hard measured boundaries like dykes and water-gates.

Within the BRM 60, different hard and soft measures can be identified. Hard measures are engineering measures used to control floods and protect human settlements. These engineering measures are present in the BRM 60 through developed infrastructure such as water-gates. Soft measures are adjustments of human activities and societies to mitigate flood damages (Mohit & Sellu, 2013). The harvest calendar is a form of soft measure, focused on adjustments of human activities to keep damages of crops to a minimum. The weekly and monthly meetings between the RID and farmers is another example of a soft measure. This soft measure has the goal to inform and educate farmers with ways to adjust their daily activities to mitigate flood damage. This soft measure doesn't fulfill this goal in practice since most farmers do not feel like they are gaining valuable knowledge to mitigate the flood damages.

Kundzewicz (2002) writes about the shift from hard to soft flood risk measures in the light of sustainable development. Traditional, hard, flood risk measures, aren't sufficient to protect people from floods anymore. In recent years, floods have become more severe and occurred more often. Traditional infrastructure isn't built for these extremes. Therefore, Kundzewicz (2002) argues, to respond to these changing times, the introduction of more soft flood risk measures are needed. These that focus mitigation and adaption through adjustments of human activities. The BRM 60 has aspects of these soft measures, but these do not function well. Furthermore, the model is mostly dependent on hard, infrastructural flood risk measures such as water-gates, dykes, dams and retention ponds. Farmers are also depending on hard measures since they build their houses on stilts. If the water level during flood times keeps rising, farmers will eventually

get wet feet. For farmers living in the Bang Rakam Model 60 area, the model can thus not be considered very sustainable.

4.5.2. Perceptions of farmers

The farmers in the villages Ban Yan Yai and Ban Wang Phai Sung have very different perceptions on the BRM 60 and other aspects of life. Perceptions and their experiences on the BRM 60 and other aspects can create an understanding of what role the BRM 60 plays in farmers lives. Tuan (1990) describes that a certain reality, a phenomenon, is perceived differently by each individual. Regarding the BRM 60, perceptions of farmers varied. Some farmers saw the model as something that was put in place to protect Bangkok. They mentioned that the area of the Bang Rakam is used as a retention area to hold the water so that Bangkok won't flood during heavy rains. These people felt as if they had to sacrifice themselves to ensure the safety and prosperity of Bangkok. Other farmers saw the model as something that was put in place for them instead of for Bangkok. They mentioned that the Bang Rakam Model 60 was created to increase water security in the Bang Rakam area and thus secure better harvests. Farmers said that because of the model, they have access to water during the drought period and now know when the flood comes so they can secure their harvests before that time.

Other aspects of life, such as floods, can be seen as boundary objects. A boundary object, as Star & Griesemer (1989) state, is an object that has a common identity across sites but at the same time serves multiple identities for local parties. The Bang Rakam Model 60 area functions as both a terrestrial and an aquatic space and can therefore be identified as an amphibious space. It has different meanings in different social worlds, but at the same time it is common enough to be recognized by all. In the case of the Bang Rakam Model 60, where different actors are involved, different perceptions exist. Star & Griesemer (1989) argue that the central cooperative task of social worlds that share the same space but have different perspectives, i.e. boundary objects, should translate each other's perspectives to create common understanding of that boundary object. This way, the management of the boundary object, or policy in regard to that boundary object, is

more balanced and can benefit more parties involved (Star & Griesemer, 1989; Star, 2010).

The perceptions on flood from local farmers differs greatly from how policy makers perceive the flood. The Director of the Royal Irrigation Department mentioned that the flood is a natural occurrence within the Bang Rakam area and that people living there are used to the flood and know how to live with it. He also mentioned that the flood has many benefits for the farmers like fishing. The perception of the policymakers about flood is portrayed as positive. Their perception is that a flood is not harmful, and that people are fine with living with the flood and at times even benefit from it. This perception of flood differs greatly from the perceptions that local farmers expressed. Most farmers indeed mentioned that the flood is something that is normal to them. They have experienced the flood since they were children. But the flood is not something that is positive, and besides a few exceptions, no one welcomes the flood season. On the contrary, some farmers expressed they fear the flood. Farmers are hostile towards the flood and the negative impact it has on their lives. Most farmers think of the flood in relation to ruined harvests or the impracticalities it bring to their daily lives. They don't see flood as an opportunity like the policymakers do. This plurality of perceptions on flood shows that a flood can be considered a boundary object. Everyone agrees that flood is an increase of water that flows outside river boundaries into other land, but what the flood means to people and how they react to it, differs.

Thus, in the case of the Bang Rakam Model 60, the policymakers decided that it is fine for the people living in the area to experience an extended flood time. Since they think farmers perception of the flood is mostly positive and farmers don't mind the flood and are able to benefit from the flood, they chose a solution that resulted in a doubling of the flood period. In trying to solve the 'flood problem', the RID assigned an area of almost 9000 hectares to flood annually. The question that arises here is: who's 'flood problem' are they solving? That of Bangkok, or that of the local farmers living in the Bang Rakam Model 60 area?

If policymakers and farmers translated each other's perceptions on flood during the policy making process, a better understanding of what the boundary object 'flood'

meant to all parties involved would have been created. This could have possibly led to a different solution and a policy that is more balanced, which represents the interests of all parties involved.

4.5.3 Public participation during the Bang Rakam Model

The information gathered from the interviews shows that different forms of public participation are present in the BRM 60. Most farmers weren't asked for approval or weren't invited during the policy making process of the BRM 60. Farmers expressed they were invited for a meeting with the RID where they were explained the details of the model and were asked to sign for the approval of the model. This form of public participation is called 'public communication', a definition set out by Rowe & Frewer (2005). It is a typical one-sided flow of information between the RID and the public. A passive participation is present, since the RID, is providing information to the farmers without actively engaging them in their policy making process.

Meetings to enhance public participation by the RID have been held monthly in the second year of implementation of the BRM 60. Farmers express that going to these meetings is not a priority for them. Most farmers expressed that they are allowed to voice their opinions. This would suggest an active form of public participation. In the continuum from the International Association for Public Participation, this situation can be categorized under 'involving' the public. The sponsor is making sure that the public can voice their concerns and interests and tries to make sure the public feels understood and considered. This form of active participation is still very limited since no real collaboration or real decisive power is given to the public. This is also how farmers feel. They expressed that they are able to voice their concerns, but they feel like the RID doesn't listen to them and that the RID doesn't take action.

Another element that impacts the flow of information, and thus public participation, is that farmers don't dare to express their concerns about the model. The first reason for this is the role of the military as a mediator during meetings. Farmers expressed they feel discouraged to talk about their problems and are wary to say something negative about the model. The second reason for this is that farmers are

dependent on the government bank for loaning them money that farmers need to buy seeds and hire machines to harvest. The Royal Irrigation Department is a part of the government and farmers are afraid of saying something negative about the model towards a government institution. They think that this will negatively affect their opportunities to loan money from the government bank, something that farmers heavily rely on. These reasons make that farmers aren't willing to provide a flow of information to the sponsor.

5. Conclusion and discussion

The Bang Rakam Model 60 policy was implemented in 2017 and covers two provinces in Northern Central Thailand. Many people living here are affected by this policy. To ensure a balanced policy that benefits all, public participation and non-structural measures are increasingly advocated.

In this light, this research has examined the BRM 60 and farmers perceptions on it. Through the concepts of flood risk measures, perceptions, and public participation, the case of the BRM 60 is analyzed. The main research question that directed this research is *how farmers have adapted and shaped the BRM 60, two years after implementation?* In answering this main question, three sub-questions have been formulated to 1) examine what the BRM 60 entails was and how it developed in the past two years since implementation in 2017; 2) to identify how affected farmers are perceiving the model and how they cope with its effects; 3) to identify if, and in what ways farmers are able to voice their interests and concerns on the model. In an attempt to answer these questions, for this research 29 farmers from two different villages in the BRM 60 area, officials from the Royal Irrigation Department and experts have been interviewed.

5.1 Summary of the findings

The first sub-question discusses how the BRM 60 can be considered a flood risk management policy that entails both structural and non-structural measures. Although the model is portrayed as a model that advocates 'room for the river' by using soft

measures, the model operates in a designated area that is bordered through hard measures.

Furthermore, different types of flood risk management categories are present in the BRM 60. The model can be seen as a flood protection model because it contains structural measures like infrastructure. Dams, dykes, retention ponds and water-gates function to direct the water and retain it in the Bang Rakam area. At the same time, the BRM 60 can be seen as a flood mitigation model because it contains non-structural measures. The Bang Rakam area has been assigned as a retention area. This is a form of land use planning that is considered a non-structural measure. Instead of increasing the height of dykes to keep the water inside the boundaries of rivers during high peak flows, which is a structural measure, the model allocates the function of land to serve as a retention area. Since large areas are functioning as retention areas under the BRM 60, non-structural measures are a big part of the model. Nonetheless, the success of directing the water towards this area and retaining it there, is heavily dependent on structural measures like water-gates and dykes.

If we follow the definition for sustainable flood risk measures from Kundewicz (2002), these traditional, structural measures, won't suffice in present times of increasingly extreme weather conditions. The concept of the BRM 60, which is based on a non-structural measure of flood retention areas, is still heavily reliant on structural measures. The BRM 60 is therefore a hybrid form of flood risk management which has certain benefits, but it cannot yet be considered an entirely sustainable form of flood risk management. Furthermore, the dichotomous distinction of hard and soft measures, in this case doesn't suffice. The Bang Rakam Model 60 is a policy that has measures of both styles and is also a hybrid form of flood risk management. In this light, the notion of hard and soft measures seems limited, therefore it may not be the correct way to look at different flood management practices.

Regarding the second sub-question, the research identified that perceptions on the BRM 60 vary between farmers, and between farmers and the officials of the Royal Irrigation Department. Two main perceptions on the BRM 60 under farmers have been identified. The first perception is that farmers do not like the model because the period

of flood in the area has doubled from two to four months. Different perceptions exist on the flood in the area since it can be seen as a boundary object. The farmers expressed they do not welcome the flood because they have to use boats as their main form of transport. This is very unpractical and fuel for boats is costly.

The second perception on the BRM 60 is that farmers like the model. The model provides water security for farmers during the drought period and during the entire year. Farmers are also able to harvest before the flood comes since the model introduced a set time for when the flood arrives. The RID have the perception that the farmers living in the Bang Rakam Area are used to living with the flood and don't mind a longer flood period. This shows that there are conflicting perceptions about flood. The RID see the flood as something that is not harming to farmers and thus promotes the flood in their policy, while farmers do have negative perceptions about the flood and would thus like to see less flood in the policy.

What stands out here is that the role and perception of local people and policymakers in the case of the Bang Rakam Model 60 case, compared to a lot of research done on 'living with floods', is reversed. It shows a strong contrast with the work of for example Cuny (1991). In his work, local people are promoting flood life and using soft measures to cope with floods, while policymakers are demoting flood life, and try to restrict the flood via hard measures. In the case of the Bang Rakam Model 60, these views are reversed. Farmers are asking the Royal Irrigation Department to restrict the flood via hard measures so they can grow their crops and harvest more, while the Royal Irrigation Department is promoting 'living with floods' to farmers through soft measures.

The final sub-question regards public participation within the model. Farmers have been asked if they feel they can voice their concerns regarding the model and in what ways they do this. Results from the interviews show that during the policy making process, when farmers were invited for the first meeting with the RID, the flow of information was one-sided. The RID was 'informing' the public about their policy and farmers expressed they weren't asked about their opinions regarding the model. In this case, farmers had no say on the design of the model because they weren't asked to take part in the design process of the model.

Since the implementation in 2017, two years have passed. During the first year of the model weekly meetings were held between the RID and farmers. These weekly meetings are now being held every month. Results show that there is a two-sided flow of information within these meetings because farmers have expressed that they are able to voice their concerns and interests. Farmers expressed that even though the RID is allowing them to voice their concerns, they don't actually listen, and no real impact is felt.

Another important note is that a lot of farmers do not want to express their concerns because of two reasons. One has to do with the role of the military that oversees the meetings. The military is present during almost every meeting and they in full uniform including weapons. The second reason is financial dependence of farmers on the government bank. The RID is part of the government so farmers are afraid to say something negative about the model because they think it can negatively affect their chance of getting a loan from the government bank. Therefore, in theory the BRM 60 sees a two-sided flow of information between the RID and farmers since the public is involved and thus participates. In the reality of the farmers, the model sees a one-sided flow of information because the flow of information from the farmers to the RID is either not being heard, or the farmers don't feel safe to share their actual concerns.

Thus, in the case of the Bang Rakam Model 60, public participation is promoted *after* the design of the policy. The framework in which the farmers have to act, was already set by the Royal Irrigation Department. Only after they finished with the policy making process, farmers were invited to participate. The presence of the military, and the dependence from farmers on the Thai government for their loans, can increase the feeling that farmers are obliged to participate and follow the model.

This research shows that, two years after implementation of the Bang Rakam Model 60, the model is a hybrid form of policy that still relies heavily on structural measures; farmers lives are heavily impacted by the model and farmers have trouble coping with the implications; perceptions on the model differ greatly between farmers and the Royal Irrigation Department and are in contrast with other research on 'living with floods'; and public participation within the model, two years after the implementation in 2017, can be considered two-sided in theory, but partially due to farmers dependence on the RID and

Thai government and the military presence in the area, public participation seems one-sided in practice.

5.2 Discussion & recommendation

The research shows that, even though public participation is increasingly advocated in flood risk management⁸, and the Thai government made a commitment in 2005 on public participation through rule B.E. 2548 of the office of the Prime Minister on Public Consultation in Thailand, the situation regarding public participation in the Bang Rakam Model 60 is still lacking. In Thai media, the Royal Irrigation Department is broadly showcasing the successes of the model⁹, but local farmers in Phitsanulok- and Sukhothai province, who are heavily affected by the model, are left out of the radar. Farmers in the Bang Rakam area do not dare express their real concerns because they depend on the Royal Irrigation Department and the Thai government for water security and financial support. Also, the prominent role of the Thai military, that oversees the model, shows how power relations between farmers, RID, government and military are not favoring farmers. In this light, further research is recommended on the power imbalances between different actors within the Bang Rakam Model 60 in relation to farmers representation and peasant politics.

I also want to reflect on my experiences while doing research abroad. During my time abroad, and during my time of writing this thesis, I have been aware, and sometimes troubled by my position as a researcher who is white, tall, and a Western man. Whilst being on the field in rural Thailand, I felt out of place. Since I didn't speak the Thai language, and I didn't know much of the Buddhist faith and the Thai customs and culture, it felt difficult to connect and build trust with my respondents. During some interviews, this may have influenced the answers and attitudes of farmers. There have been multiple times where I felt like a farmer wasn't telling her or his genuine opinion or wasn't telling

⁸ For more on the advocacy of public participation, see: Arend & Behagel, 2011; Carr, 2015; Cleaver, 1999 & 2004; Cuny, 1991; Delli Priscoli, 2004; Diduck et al., 2013; Grant & Curtis, 2004; Guthiga, 2008; Horangic et al., 2016; Mannigel, 2008; Roth & Warner, 2007.

⁹ See translations of Thai News Articles in Appendix IV

the entire story. I have tried to be self-aware of the differences between me and the local farmers in Thailand and I have tried to bridge our differences and create a bond of trust. I have for example changed my clothes during interviews with farmers on the field to match better. I have also asked my interpreter about Thai customs so that I could act more polite at certain times while acting casual at others. Sometimes I was successful in bridging the gap, other times I was not.

For my final note I would like to say that I sincerely hope that I succeeded in being a researcher and writing a thesis that is free of prejudices.

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7. Appendices

Appendix I – Interview topic list

INTERVIEW LIST	TOPIC	SUB-TOPIC	QUESTIONS
EXPERTS	BRM	History/context Goal Policy making process Specifics of the model Developments Results (thus far)	<ul style="list-style-type: none"> - How was the situation before the implementation of the BRM? - Who came up with this idea? - What is the main goal of this policy? - Can you tell me about the process during which the policy was being made? - What are they key features of the policy? - Could you elaborate on the irrigation scheme? - How is water distributed, drained and filled in different areas? - What is the role of the farmers affected in the BRM? - What changes have been made/implemented recently?
RID	BRM	History/context Goal Policy making process Specifics of the model Developments Results (thus far)	<ul style="list-style-type: none"> - How was the situation before the implementation of the BRM? - Who came up with this idea? - What is the main goal of this policy? - Can you tell me about the process during which the policy was being made? - What are they key features of the policy? - What is the role of the farmers affected in the BRM? - What changes have been made/implemented recently? - Has the policy fulfilled the goals or is this still an ongoing process? - When is the policy 'finished'? - Have people affected been informed?
FARMERS	Farmer life	Main occupation Daily life before BRM Daily life after BRM	<ul style="list-style-type: none"> - How do you earn a living? - What kind of crops do you grow? - How did you farm before the BRM?

	Strategies	<ul style="list-style-type: none"> - How does your daily life look like now with the BRM in place? - Did you change anything in the way you are farming now? How did you make that change happen? - How do you deal with effects of the BRM?
BRM	Hard/soft measures Direct implications Indirect implications	<ul style="list-style-type: none"> - What do you think is the goal of the BRM? - What measures have the RID taken that you noticed? - What measures have you taken to cope with the BRM (Hard/soft)? - What explicitly changed for you after the implementation of the BRM?
Perception	Boundary objects	<ul style="list-style-type: none"> - What is your goal/most important? - What means flooding for you? (do you welcome and why or not so much? What does it bring you? What are positives and negatives? - What do you think of the 'Harvest Calendar'?
Public participation	Flow of information Levels of impact	<ul style="list-style-type: none"> - How do you know of the BRM? - Has the RID asked for your approval to implement the BRM? - Have you had any contact with the RID? How did this contact go? - Have you voiced your problems/struggles/issues and possibly solutions to the RID? If so, how did you do that? - Have there been some sort of meetups where you could participate in? - Has the RID asked for your opinion and experiences on the BRM? - What was the last time you spoke to someone from the RID about the BRM? - Have you had contact with other organizations/companies/agencies that were in some way involved in the BRM?

Appendix II – Operationalization scheme

CONCEPTS	DIMENSIONS	VARIABLES	QUESTIONS
FLOOD RISK MANAGEMENT	Types of FRM	Structural measures	- What kind of permanent measures have been implemented?
		- Engineering measures	
PERCEPTION	Boundary objects	Non-structural measures	- What kind of flexible/soft measures have been implemented?
		- Insurances	
		- Land use management	
		- Awareness raising	
		- Emergency/recovery policies	
	Boundary objects	Common structure	- What common structure can be identified?
		Internal content	- How is the object described?
		Type of object:	- What type is the Boundary object?
		- Infrastructure	
PUBLIC PARTICIPATION	Passive participation	- Policy	
		- Artefact	
		One-sided flow of information	- In what ways is the public being consulted?
	Active participation	Level of participation = "inform or consult"	- How is communication being facilitated?
		Way of communication	- Is there a possibility for responds/feedback?
		Two-sided flow of information	- In what ways is the public being consulted?
		Level of participation = "involve, collaborate, empower"	- How is communication being facilitated?
Actors	Actors	Way of communication	- Is there a possibility for responds/feedback?
		Government	- Who is taking part in the participation process?
		Companies	- Which actors are invited/excluded?
		NGO's	
		Civil society	

Appendix III – List of interview respondents

Number	Interview code	Occupation	Place	Amount of rai	Date
1	Expert 1	Professor at Naresuan University	Naresuan University	-	03/12/2019
2	Expert 2	Professor at Naresuan University	Naresuan University	-	03/12/2019
3	RID Officials	Director of the Irrigation Project and Head of Water Management Sector	Office, Royal Irrigation Department, Phitsanulok	-	03/19/2019
4	Farmer 1	Farmer	Home, Ban Wang Phai Sung	-	03/15/2019
5	Farmer 2	Farmer	Home, Ban Wang Phai Sung	-	03/15/2019
6	Farmer 3	Farmer	Home, Ban Wang Phai Sung	-	03/15/2019
7	Farmer 4	Farmer	Home, Ban Wang Phai Sung	-	03/15/2019
8	Farmer 5	Farmer	Home, Ban Wang Phai Sung	-	03/15/2019
9	Farmer 6	Farmer	House of head of village, Ban Wang Phai Sung	-	03/20/2019
10	Farmer 7	Farmer	House of head of village, Ban Wang Phai Sung	21	03/20/2019
11	Farmer 8	Farmer	House of head of village, Ban Wang Phai Sung	15	03/20/2019
12	Farmer 9	Farmer	House of head of village, Ban Wang Phai Sung	-	03/20/2019
13	Farmer 10	Farmer	House of head of village, Ban Wang Phai Sung	53	03/20/2019
14	Farmer 11	Farmer	House of head of village, Ban Wang Phai Sung	-	03/20/2019

15	Farmer 12	Farmer/local shop owner	Home, Ban Wang Phai Sung	12	03/25/2019
16	Farmer 13	Farmer	Outside, Ban Wang Phai Sung	50	03/25/2019
17	Farmer 14	Farmer	Outside, Ban Wang Phai Sung	19	03/25/2019
18	Farmer 15	Farmer	Home, Ban Wang Phai Sung	40	03/25/2019
19	Farmer 16	Farmer	Home, Ban Wang Phai Sung	20	03/25/2019
20	Head of sub-district 1	Head of sub-district Tha Nang Ngam	House of head of village, Ban Yan Yai	-	04/01/2019
21	Farmer 1	Farmer	House of head of village, Ban Yan Yai	143	04/01/2019
22	Farmer 2	Farmer	Outside, Ban Yan Yai	50	04/01/2019
23	Farmer 3	Farmer	Outside, Ban Yan Yai	15	04/01/2019
24	Farmer 4	Farmer	Outside, Ban Yan Yai	50	04/02/2019
25	Farmer 5	Farmer	Home, Ban Yan Yai	25	04/02/2019
26	Farmer 6	Farmer	Home, Ban Yan Yai	20	04/02/2019
27	Farmer 7	Farmer	Outside, Ban Yan Yai	60	04/02/2019
28	Farmer 8	Farmer	Home, Ban Yan Yai	68	04/04/2019
29	Farmer 9	Farmer	Home, Ban Yan Yai	50	04/04/2019
30	Farmer 10	Farmer	Outside, Ban Yan Yai	65	04/04/2019
31	Farmer 11	Farmer	Home, Ban Yan Yai	110	04/04/2019
32	Farmer 12	Farmer	Home, Ban Yan Yai	33	04/04/2019
33	Farmer 13	Farmer	Small restaurant, Ban Yan Yai	300	04/04/2019

Appendix IV – Coding List

Core categories:

1. Bang Rakam Model 60
2. Farmer life
3. Public participation

Codes	Related to core categories 1 2 3
RID Influence	1
Flood life	2
Land life	2
Being a farmer	2
Bang Rakam Model 60	1
Public participation	3
Farmer submission	2 3
For the greater good called Bangkok	2
Unfair	2
Two different villages	1 2 3
Military	1 3
Compensation	1 2
Kaeng Sua Ten Dam	1
Harvest calendar	1 2
Flood perception	2
Thai bureaucratic hierarchy	1 3
Village head / Communication	3
Farmers dependence on Thai state	2 3
Certainty vs. uncertainty	2

18.03.19
Amarin Lagoon Hotel, Phitsanulok.

• Today I e-mailed Andres & Nicolas about last Friday and how the interviews went. It didn't go well. The students were not able to translate sentence to sentence so I was not interviewing at all, they were just asking the questions I set up. This needs to change so I asked Andres and Nicolas for help on how to handle this. I need to talk to Thanida and she will understand that it doesn't work, have hope to find another translator, fast. It gives me an awkward feeling to have to say to the student who I bonded with and are trying to be so helpful, that they aren't good enough but it is hurting my research so much, I have to do it. On another note, I'm getting less and less patient about having to explain myself 5 times because literally no one seems to speak English. Haven't had a face-to-face convo in 2 weeks now which makes me feel a bit lonely from time to time.

Diary

15.03.19

Interview

#2 farmer

Same as farmer 1 in most. But how you feel: It's good for her: When flood come, she can fish. Worry about R1D maybe stall water for per.

Later afternoon

Observation

#3

House on poles, ghost ones. People are going under house. Lots of watermelons outside the house. Is more clean than #1 but less than #2. Lots of children, only women, many are washing. They have no floods. Cut open for use.

#3 farmer

4.8.18

Dang Rahm in good -> Car sometime droughted -> Now guarantee from irrigation department so her harvest are guaranteed. Before BRM used raised to assure harvest.

15.03.19

Observation

#5

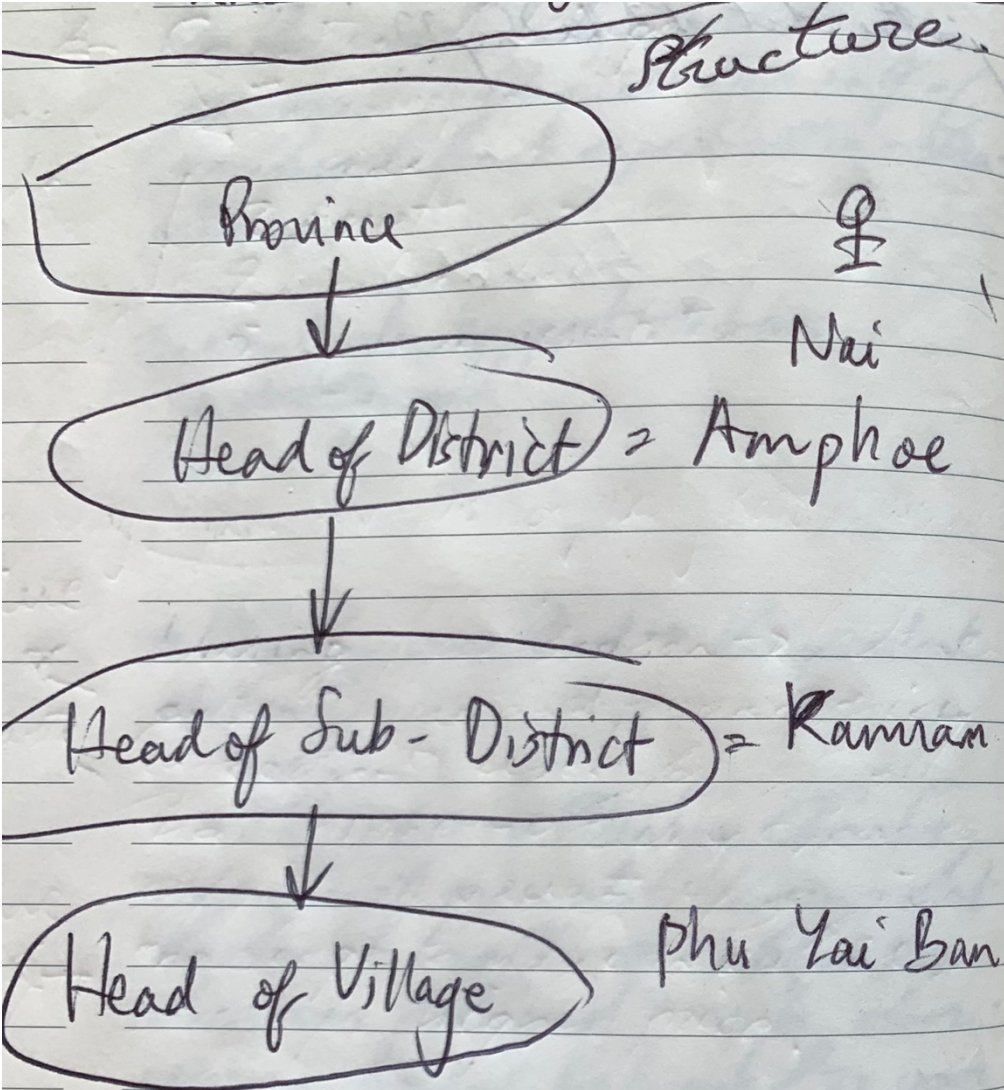
Large house, 1 lane walks on an asphalt road. Big area. Tegely on the ground. Klein beetle, a few more not beet weevil. Very few beet -> apple bladerd.

Today was a long, fun, tiring, hot day. It was the first day that I got to interview farmers.

I had a driver and four students as translators who had to do their own research and also asked questions for me. The students aren't that good in English, actually, the three girls can't say a full sentence in English so they rely on the guy to communicate with me. The guy knows some English but it is very difficult to have an multilayered conversation/interview with farmers. I also notice that there are little follow-up questions I can ask because of the translator not understanding my question or the

Journal

Structure.



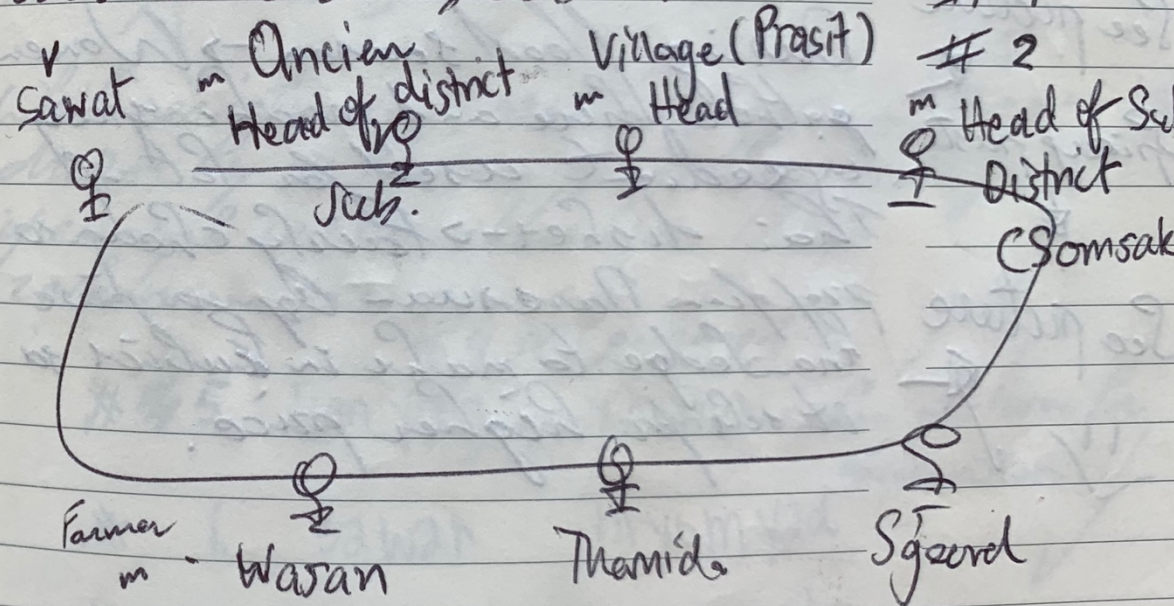
♀

Nai

Phu Yai Ban

House of village head, a lot of pictures of royal family and monks. Very big house. Tiled with shiny stones first floor / screen I see hanging on the wall. Located on road. Have area where there are posters and infographics on wall. Interviewed 2 farmers + Village head together. I get offered water out a bottle, ice cold.

Observe a lot of toys for kids.



1

2

Head of Sub-District Somsak

Farmer

Waran

Thamida

Sgeerd

Setup meeting/interview

Appendix VI – Interview analysis

Expert 1: Introducing Expert interview Dr.Boonwanno about the context of the BRM (12-03-'19)

The left side of the Yom river is within the area of the RID. The life of the farmers in this area depends on the distribution of the water. The RID is responsible for this. The RID use the dam to distribute the water to the fields and to flood the area. The right side of the Yom river is within the BRM model 54 is outside of the RID irrigation scheme. In this area the farmers don't have canals, so they have to pump the water. The farmers that live on the left side of the Yom river can use the canals. This is also why the RID can say to the farmers that they have to use a certain harvest calendar because they control when the water comes in the canals so that the farmers can sow for a second time during April. Not all the waterways can be controlled. They cannot control the level of the amount of water so there is a project now where they construct new canals from the pond where they store extra water so that they can control the level of water in the canals better. So, the villages are 1 in the Kongkrait district in the Sukhothai province and the other in the Bang Rakam District in Phitsanulok province.

Expert 2: Expert interview Dr. Sarintipt about the context of the BRM (14-03-'19)

The BRM is within the area of Bang Rakam and this place sees flooding every year. They have trouble with flooding because they are located in low land between the Nan and the Yom river. In the upstream there is no dam to control and stop the water so every year it depends on the amount of rain if it floods or not. Since 2011, the great flood of Bangkok, the RID got an idea to stop Bangkok from flooding. They wanted to retain the water upstream. The Bang Rakam area is a natural flood plain, so they chose this area to retain the water to protect Bangkok from flooding. To make this happen they told the farmers to all follow a certain harvest calendar so that they can flood the area 1 month sooner and the farmers will still be able to produce and harvest their crops before the entire area floods. As a counterweight, the RID will guarantee that the farmers will get their water for their fields. The farmers in this area have to harvest their crops sooner than the rest of the farmers in the country and the RID will guarantee the water. There are two ways of agricultural land, (1) irrigation fed land and (2) rainfed land and groundwater. In the beginning of the project the RID went to the farmers and asked them for their consent. The government also guaranteed the farmers that they will get some form of compensation, something like 1000 baht per rye. But as Dr. Sarintipt went to the fields a couple of times she noticed that farmers complained that the government didn't give them any money. But as a side note Dr. Sarintipt said that they only heard the side of the story from the farmers, not that of the RID. An official from the RID told another story. The area that they use for flooding get a lot of resources from the RID, including compensation and the official said that the farmers that complain do not live within the area of the irrigation scheme. But Dr. Sarintipt isn't sure which side of the story she believes. During the flood season the RID will lead the water into the fields of the farmers. This means they cannot grow rice during that time but to make up for that the government tries to help the farmers to earn money via alternate ways like fishing or other jobs like construction etc. Dr. Sarintipt says that if the project is working well, the farmer should change their

normal life from growing rice to doing an alternative job during the flood season. The farmers need the support from the government to help them to find a secondary job next to their job as a farmer. Dr. Sarintipt says she doesn't know whether the farmer is actually getting this support from the government. The farmer needs knowledge from the expert on how to handle the fish they catch, how to preserve, how to sell them, how to make sure they don't overfish and fish in a sustainable way.

She says that when the farmer talks about compensation they only focus on money. Dr. Sarintipt thinks this is a problem because it is not sustainable. She thinks compensation also has to come in knowledge so that farmers will be more resilient and sustainable on their own so that they can work on their future, rather than getting money that they use for short term things like buying food. She went to meetings and saw that the RID is facilitating farmers to help them with getting secondary jobs. But she doesn't know whether this support is continuing or if it was mostly for show and just happened in the beginning. She says she saw some evidence, but she can't guarantee if the RID is still helping them.

She says that Thai society is stuck in populist politics. Almost every government just spread the money to the farmers, but they don't want to build the capacity of the farmers. They just give the money instead of trying to enforce the position of the farmers so that they can get more self-reliant and resilient. All the farmers will happily take the money that the government proposes to them instead of getting knowledge. For farmers it is easy money and less straining than going to training programs and try to work really hard to try and develop themselves for other jobs. So, this is not sustainable.

The Bang Rakam area is naturally a flood plain. The people in the Bang Rakam area are used to flood because it happens every year. So, they don't have that big of a problem with the flood. So, Dr. Sarintipt thinks this model and the 'success' is used like a bit of propaganda that says, "look how good the model is because the people here don't have problems with the artificial flooding time". But she thinks this is not really fair because the people there are already used to the flood so the people can use this success-story of the BRM for their campaigns. So, for these people they already build their houses on stilts "floating houses" but for people outside the area that are also affected by the flood weren't prepared for the flood and don't know how to deal with it, but you don't hear those stories.

RID Officials: Interview with officials from Royal Irrigation Department (19-03-2019)

Interviewees:

- Director of the Irrigation Project, Phistanulok Province
- Head of Water Management Sector, The Third Bureau of Irrigation Department.

History/context

The villagers have been asking officials for help for a long time. The area has floods and droughts, both are damaging the crops badly. The director doesn't know the specific starting point of the BRM, but he said these ongoing problems in the area are a big reason for the creation of this idea. Many government departments have been thinking about

how to solve the flooding problem from which came the idea of the 'Monkey Cheeks'. In the area, drought happens an average of 6 times per 10 years, while flooding happens 10 times per 10 years on average. The drought season is in the period of January till April and the flood season happens between August and October. Drought happens because of a couple of reasons. (1) The hot temperature, (2) discontinuity of rain, (3) there is no big dam or pond in the area that stores water. The raining season then happens because of continuous rains in the north. The area is situated quite low (geographically speaking, low land). The Yom river comes from higher up land and flows into the area of Bang Rakam. It takes 4 days for the water to flow from the Phrae province to the Bang Rakam area which is a distance of 550km. The Bang Rakam area is in between the Yom- and the Nan River. There is no dam in the Yom River. The rice farmers in the area depend on the rain to plant their crops so they start in May. But if they depend on the rain, they often don't harvest on time because the flooding will come before the crops are fully grown. This costs the farmers their harvests. The rice takes four months to grow (May-June-July-August) but in August the flooding season already begins. The problem thus is, they can plant their rice but cannot harvest it on time. This is a problem that farmers face every year.

The Thai government tried to buy up certain pieces of land to use it for areas that can be flooded but the Director said, "The government tried to do that, but the villagers intruded and seized the land". This is problematic for the Thai government because it is very costly to buy out people.

BRM 60 (60 is the year from 2060 which is from the Buddhist calendar).

Goal

Retain the water from the Yom and Nan river in the Bang Rakam area to protect the lower areas (including Bangkok). At the same time, they can provide water to the farmers in the Bang Rakam area during the drought season so farmers can plant their crops a month earlier and are thus able to harvest them before the flood season in August. As a consolation, farmers need to live with the area being flooded for 3 to 4 months.

The RID only works on how to improve the canals, how to improve the water ways and the water regulator.

Also, a goal is to level out the roads and up them, so they aren't affected by the floods. This was a request from the villagers. But this is not a job for the irrigation department alone. A problem here is that not all the roads can be levelled up because otherwise they will become a sort of dyke. This means the water level will rise in certain places and houses that were safe for the flood at first, are now not high enough and will get flooded. But the main roads have to be higher for sure.

Another goal is to bring local products to the market to help farmers utilize their second profession. This is something they discovered when the project was already implemented.

Specifics of the model

So, they told the farmers to plant on April, but April is still the drought season which is a problem. They cannot depend on the Yom River because there is no dam. To deal with this, the RID allocates the water from the Nan river to the farmers' fields through the irrigation system so the farmers have enough water to plant the rice seeds in April. In the Nan river there is the Sirikit Dam (named after the Queen Sirikit), I had to write this down. This dam is used to distribute the water in April to the rice farmers. The distribution of water from the Sirikit Dam doesn't reach every farmer in the area. Only the farmers close by (the Bang Rakam Area) and that is why this area is called the BRM. They cannot distribute it further because they don't have the infrastructure to lead the water.

So RID changed the harvest calendar from May-August to April-July. In July they harvest before the flooding. After the harvest in July, the area is flooded for 4 months. The flooding season is embedded in the culture of the farmers in this area (the Director is saying this). The farmers cannot plant crops, so they have a second profession which is fishing (this is their culture and have been doing it for generations, so they already have the knowledge and tools to fish). The Director says this is why the villagers admit to the BRM project. And they have the irrigation system also to retard the water by using a water gate. They retain the water here for 3 to 4 months to protect the lower areas (Bangkok pretty much). They retain 500 million cubic meter water. After this time, they will gradually drain the water. This is a huge advantage for the lower areas because the Bang Rakam area will get flooded while the lower areas won't. And in this area, the villager gets the advantage by having water during drought season. The farmers start Dec-March for their first harvest and April-July second harvest.

There is a big impact in the area though. When the flood comes, everything gets flooded, not only the fields but also the roads. This is because the RID cannot control the level of the water coming from the Yom River. There is no infrastructure to control the water level. All they have is the water gate and an irrigation regulator, but these aren't able to control the water level when during the flood season. There are 17 departments working on the BRM.

Meetings happened every week in the first year with all the village heads and officials from the RID. Now every month in the same form. If the villagers have problems, they ask the village head who makes contact with the RID. They try to help them through instruments, knowledge, food but not money. They distribute rice seeds as a compensation. 20kg normally is needed per Rye so the RID supply 5kg, not at 20. The reason of this compensation is to help them to reduce the investing cost. They have to register to be eligible for the compensation. They have to register at the agricultural department of their district.

2 major needs that the villagers have expressed during meetings are (1) the need to up the road because it is a basic necessity of the villager. The second need is the second profession. What do they have to do during the flood season because not every villager fish for a living? They recommend villagers to do other jobs that are related to the fishing

industry. To salt and dry fish, or plant vegetables that can be planted in the water during flooding season or get life stock. They only provide knowledge. They also help with how to put the products on the market.

Developments

The model will be more complete (says the Director) if they can modify and improve the irrigation regulator in the project. This is the next step they are working to. They are trying to improve the infrastructure, but it is very costly. They get the money from taxes but there are a lot of different departments that they have to work with who all have their own budgets. The RID only gets budget for distributing the water. But to fix the damages on roads as a result of flooding, the RID cannot estimate how much it costs because they have no specialization in that subject. This makes that the RID cannot say how much budget is needed for developments within the project. This also means that the RID cannot repair damages on roads and such. They are thus trying to work together with the different departments. This is very difficult because of Thai bureaucracy; all the departments have to listen to their superiors.

The solution is no really sustainable so why didn't the government construct a dam in the Yom river? Now it is very difficult because in the upper land where the Yom river lies a lot of foreign investors have bought land there so if the government wants to buy a dam, they have to buy it back which is very costly.

There have been little developments since the implementation of the BRM. They listen to the villagers and their problems and try to help them (for example supply sand to up the road). But they have very little budget so they can't build big infrastructure.

Results (thus far)

He is happy with how the model is going so far but they have to improve a lot about the communication between the 17 departments. Because he just asks for help from other departments, but he doesn't have authority and can't enforce anything.

Within the area of the Bang Rakam Model, the Director says he thinks farmers are overall satisfied with the model. He thinks the people outside of the area are less satisfied and want to be inside the BRM because they want to have access to the water during drought as well. But the director says they need infrastructure to make that happen and create a bigger irrigation system.

The big thing is the BRM didn't solve the main problem from the Yom River. There needs to be project in the Yom river. But for this, he depends on the government, as RID he has no influence on this.

Quote from Director of the Irrigation Project, Phistanulok Province: "He has to use his own area to solve the problem, but the origin of the problem doesn't lie within his area, his reach. This area is used as a case study while waiting for help from higher up (higher

officials, government)". But he says that they have to solve the problem in this area by themselves because if they do nothing and just wait for higher officials to start a project in the Yom River will be a trap and nothing will happen in this area. They have to be assertive.

Observations

We arrived in a big conference room, sitting across the table, pretty far away from each other. We forgot the letters from Nicolas back in the car. These letters are in Thai and tells them why I'm here and what I'm working on. Thanida told me that this is how it works in Thailand. You always have to have permission from higher up. There is a photographer taking pictures and she is also taking notes during the interview. She takes a lot of pictures. Before we can start interviewing, they ask me a lot of questions about me and why I want to interview them, why the BRM, why Thailand? This goes on for about 10 minutes and I thought I was here to interview them haha. There are a lot of pictures from the royal family and there is an altar behind the PowerPoint screen with a large portrait of the king and flowers and chandeliers all in gold color. There are a few other men in the room, five in total while I'm here to interview only two of them. They have prepared a sort of PowerPoint and we stand by the screen while he explains the PowerPoint and I ask questions about it. The building was nice compared to other buildings and fairly new. It had windows that blinded the light of the sun and good air-conditioning.

Head of sub-district 1: Interview Head of Village, Head of Sub-District, and Head of Sub-District

The village head, RID, and head of district who notify villagers. Every village has a small unit, like a clan, to notify the farmers if something happens. In the first-year farmers were notified. Most villagers were not obedient to the call from the RID to plant and harvest at set times. In the second-year farmers saw that there was water during the drought period so now they start following the harvest calendar. But again, they are expected to know the times themselves.

RID sets a quota for how much water goes through and gets distributed to the farmers in the village (see Mint's thesis).

Canal is not man made (so it's not a canal) but it was the old Yom river that is now being filled with water through other canals and thus works as a canal for the irrigation system.

Water irrigation system is the big change. They can manage the water better now. They have water for sure now via irrigation. Before they used water wells from the ground. Before there was competition between villages higher up and lower down the river but now there is a system in place so there is more security in terms of water security.

Head of sub-district says advantage of BRM is that farmers have secure water resource during drought season.

They set a quota in the Sirikit Dam for 250 million cubic meters of water for the BRM. They changed it from the first year when it was less. 180 mil was first year but he says they don't need more than 250 mil because usually after they drain the water out in November there is still water in the canal so for the first planting the farmer will first use the water in the canal.

Head of sub-district says it is not a very sustainable solution, he knows very well that they are sacrificing the farmers here in this area. He said the head of Irrigation department said it is because there is no dam in the Yom river. Since 30/40 years there is a project at Phrae Province which is called Kaeng Suea Ten Dam, but they are fighting to build it, but it isn't going through because at that area is a forest for tea and the local people there are protecting that forest. If in some way, we can build a dam in the Northern part of the Yom River the flood will be reduced in the Bang Rakam area. Not only is there a tea forest but there is a forest used for its wood as well so there are a lot of people who are blocking the Dam policy. This is partly the reason the Bang Rakam Model happened. They haven't been able to build the Dam up North in the Yom river, so they try and solve the problem by implementing the model here because people already live with the flood, so it is the least radical change and still solves the problem.

The BRM builds on the geography of the area. There is very little infrastructure needed for the area to keep the water in this area. A water regulator and a few water-gates have been built.

About hierarchy in Thai villages:

Province → Head of district (Nai Amphoe) → Head of sub-district (Kamnan) → Head of village (Phu Yai Ban) → Head of clan (not administrative but is there to control the villagers).

Head of Village gets chosen by all the villagers.

Head of sub-district comes to power by the vote of the heads of the village. Head of village is an official title in the ministry of internal affairs. So, they get voted in the title by the villagers and they earn a salary from the government. This is the same for the head of the sub-district. The head of the village can be in the position until the age of 60, that is when they retire.

Job of the head of the village:

- Register birth and death in the village
- Translate the policy from the government (any ministry) to the villagers and explain the details + implement it.
- Register the rice production, the farmers have to give the production numbers to the head of the village.
- By duty he is the representative of the rice farmers in the village. He explicitly said, "by duty".

There is the village committee which is composed out of the (1) head of the village, (2) the head of village assistants and (3) members of the local administration department and the (4) representative of the villagers (around 5 people) that are selected by the head of the village. In total 1 head, 3 assistants, 2 local representatives, 5 farmer representatives. This group of people is the committee of the village and it function as taking decisions for all of the villagers. They cannot listen to all of the villagers which is why they have a representative group. Around 185 households live in the village, around 600 villagers.

Head of sub-district) is head of sub-district but at the same time he is the head of water usage in this sub-district (Tha Nang Ngam Sub-District, Bang Rakam district). In this sub-district there were a lot of disputes between the villagers because of the division of water. Sometimes they had to guns (not shoot but just to show) to keep things in control. That is why he set up the group of water user to set a stage for negotiations between the disputing groups. This group composes of every head of the village in Tha Nang Ngam sub-district. Here they ask for the needs of the villagers from every head of village. He as head of sub-district and head of group of user works as a mediator between the villages and the RID. The RID also joins in. He thinks he is the representative of the heads of the village. We cannot invite all the villagers because it will be chaos.

The Military is an organization that participates in the BRM. They join and participate in the practice when there is a non-obedient rice farmer the military will order the rice farmer to stop pumping water for a certain period. He thinks that this model could be successful under a different government where the military isn't this big, but he thinks that because of the military being there the model progress is more rapid.

During flood time, the women gather at the place of the head of the village to make spicy paste which is used for Thai dishes. A professor from the Naresuan University introduced a machine so that the paste is made in cubes which is more convenient for selling + sells for a higher price.

1) News article translation 1: Thai PBS NEWS (02-09-2018): Bang Rakam Model Project: The changing from flooding to collecting water:

The first article writes about how farmers are hired by the RID to help fix the dam during flood season. They construct the dam. During flood time they fish. The article talks about how the BRM is a success story because no other was flooded during the first year. The Bang Rakam area can retain 550 mil cubic meters of water. Out of a meeting with the farmers came they wanted more help for work during the flood season.

2) News article translation 2: Prachachat (31-03-2018): The government is planning to extend the Bang Rakam Model area in year two by 860.000 Rai:

The second article writes about how in the second year the BRM is expanding the area with 382.000 rai so the area can retain more water. They report that last year no rice was destroyed by the flood. Thus, the model is really successful. The head of agricultural ministry said, "farmers can harvest all their seeds". They want to expand the BRM from

265.000 to 382.000 rye. The harvest calendar starts their second harvest on April first. They changed the harvest calendar from May to April to avoid rice destruction. They also put small fish in the water during flood time to sustain the fish population while farmers fish during the flood.

3) News article translation 3: PP TV (24-12-2017): Open the plan for the Bang Rakam Model: to exceed the area for collecting water by 800.000 Rai.

This article frames the BRM a bit more negatively compared to the first two articles. The government build the dam, but farmers are negatively affected by it. Their area is being flooded and farmers have complained. The prime minister told the Minister of the agricultural ministry to send people to listen to the farmers and explore the area. The problem is that there was too much water in the Yom river in 2017. They separated the water in three retention areas and released the water which negatively affected the farmers.

4) News article translation 4: BBC Thai (21-09-2018): Fishing during the flood: Listening to villagers in the Bang Rakam Model project.

This article is about farmers during the flood time. Before the flood was 2/3 months, now it is 4 months according to farmers. Farmers earn 200 Baht per day from fishing. Says he has to get used to it (fishing) because it is their area. The Mayor of Phitsanulok says the BRM is there to prevent flooding in Bangkok. But still the flood sometimes reaches Bangkok. Another farmer says the RID doesn't always release the water at the same time. Farmers outside of the BRM are also flooded and getting negatively affected by the BRM while they aren't even getting to enjoy the pro's like more secure water supply. Roads were also destroyed because of the BRM and transport is difficult. A farmer said she believes her area gets flooded because of the BRM. Some villagers say they can't earn a living because there is not enough fish in the water. Farmers say they can't do much during the flood season. Some don't have the knowledge to fish, so they have to find other jobs. The article also mentions that the government has a maximum of 3000 Baht for farmers, but only if they register.

Article translation: Thepsitthar, Y. & Boonwanno, T. (2018). Reconstruction Bang Rakam Model: The Inequality in public duty. *CMU Journal of Law and Social Sciences*, 11(2), pp.142-167.

The article writes about how some farmers have no voice and just have to follow. Some farmers have to sacrifice their land for the swamp to collect water (Monkey Cheeks), but these farmers didn't get compensation. There is a law about how the government has to compensate but this time they don't have to because they found a loophole. Officially it is not wrong, but farmers do get negatively affected. Farmers in this area are not equally treated compared to farmers in other areas. This is about the concept of fairness. The farmers in the BR area have to accept flooding and the argument the government makes is that it is normal for the farmers. But some farmers can't get enough money because of the increased time of flood and they have to pay more money to safe their assets like cars to put in other areas during flood. During this time there is also the danger of their assets

being stolen. The RID/government only compensated with food. During the policy making process the government didn't explore/analyze the future amount of effect/devastation of the model for the farmers. Things like sanitation was an issue because some farmers their water was cut out and they had to do their business in the river which was also the river they used to wash and cook with. Another negative effect is the damages that roads sustain by the flood. No one is responsible for most of these roads. The government didn't let the farmers participate at all. Village head was forced by the RID to tell farmers about effects but not in detail. Villagers have to accept to sacrifice without the option to accept, decline or negotiate.

Findings:

- There is no juxtaposition between the benefits and devastations for farmers.
- The Thai government saves 200 billion Baht because of the BRM but in the BR area there is a lot of destruction. They compensate/invest very little of that 200 billion Baht in the BR area to deal with the destruction from the model.
- There is a law that when the flood occurs the government has to pay for the family per person. In the BRM they didn't put in details that the government is responsible so the BRM doesn't say when farmers have the right for help/compensation.
- Because the RID came with the harvest calendar they told farmers when to harvest so that the government is not responsible for damages (another detailed loophole in the law).
- The "Urgency Law Natural Disaster" says people need to be registered to get compensation and only compensate seeds, nothing else.

Appendix VII – Standard code form for interviews with farmers

Village 1: Ban Wang Phai Sung, Kongkrait District, Sukhothai Province, Thailand

Farmer #1

Farmer life

- Farmer style
 - o Land life:
 - Same style as before Bang Rakam Model 60
 - Changed to use harvest calendar
 - Plant and harvest faster, 2 times. Same time, different period (before plant Nov/Dec, harvest Feb/March)
 - Different sort of rice (RID proposed)
 - o Flood life:
 - Prepare boat+fuel and move things to higher up.
 - After BRM at least aug-nov flood, before just 1 month
 - Fishing
- Impact crops
 - o Nothing changed

BRM/RID (what have RID undertaken?)

- Soft measures
 - o Flood incoming
 - Communication between farmers (Was already in place, not because of BRM)
 - Radio (Was already in place, not because of BRM)
 - o RID tries to guide farmers by giving information on how to deal with floods, how to prepare and when to start farming/harvesting
 - Harvest calendar
- Hard measure
- Impact
 - o 50% more pay for the fuel for the boat, costs money.
- Compensation
 - o Sometimes she gets living costs, some years yes, some years no.

Perception

- BRM
 - o Own perception
 - If she can choose, she prefers not to have BRM. But she says she has no choice (it is part of the area) and need to learn to deal with the problem.
 - o What they think the goal of RID with BRM is:
 - Store water so central area of the country doesn't flood.
- Flood

- Unpractical, change from car to boat and need to prepare fuel for the boat which is costly
 - Flood is ok, it was always there in the area, even before BRM, she just wished it was shorter.
- Most important in life?
 - Family
- Voice
 - "RID already knows problems" She doesn't feel the urge to voice her problems to them.
 - If she could choose, prefer no BRM but she feels like she doesn't have a choice and has to deal with it. This says a lot about how she looks at the power of her own voice as a farmer (which is pretty non-existent if she thinks she just has to deal with it).
- Awareness of BRM
 - Know via village-head who told them BRM was happening and they got a meeting from RID on what was going to happen.

Public Participation

- Information flow
 - Farmer knows via the head of the village
 - General meeting RID and farmers
 - RID has not asked opinion and experiences on the BRM (1sided flow).
- Communication
 - Communication through village head → If problem, she tells village-head who tells RID.
 - They know about problems she said, doesn't say if she actually told them the problem or just expects RID to know.
 - 3 to 4 times per year there is a meeting between RID and farmers
 - If problem, let RID know and RID comes back and discuss and try and help farmer

Observation

First farmer where I observe. Home stands on stilts. There are a lot of dogs and birds they keep as pets, I asked them if they have any special purpose, but she tells me they are just pets. There is a poster hanging on a pole which portrays the king of Thailand. On the stilts I can see the marks of the height of the water during flood time. She tells me the water is usually around 140cm high. Under the house there is an elevated square of wood where I'm asked to sit on while we interview. The ground is very dry, there is a lot of garbage on the ground, remains of plastic, coconut, glass, shattered pieces of buckets (in my perspective, A LOT of garbage, thinking to myself "How can you live in this place, it looks like a garbage dump right beneath and surrounding your house"). The farmer has cut a watermelon in half, but we aren't offered a piece of it.

Farmer #2

Farmer life

- Farmer style
 - o Land life
 - Grow rice, harvest in April/May
 - Changed to use harvest calendar. Before 3 times harvest, now 2.
 - o Flood life
 - Fishing during flood
 - Flood doesn't come that high in their area, so it doesn't affect her that much
 - Move stuff to higher place.
 - Flood is longer now
- Impact crops
 - o Less harvest per year

BRM

- Soft measures
 - o Help with problems through giving information
 - o Giving compensation: 5kg rice seeds per Rai.
- Hard measures
- Impact
 - o Before 3times harvest per year, after BRM just 2 times. It's not worse, just a change.
- Compensation
 - o 5kg rice seeds per Rai.
 - o Sometimes help through information about strategies to take for farmers on how to deal with flood

Perception

- BRM
 - o Worry that RID will flood the area for longer time in the future
 - o BRM is good because when the flood comes, she can fish
 - o Doesn't know the goal of the BRM. Government does it and she doesn't know much about that she says.
- Flood
 - o Danger for crops that aren't harvested yet, it will destroy it
 - o It's part of their lives, they ok with it.
- Most important
 - o Life and good harvest
- Voice/communication
 - o She can voice problems she has, but RID never asks for their opinion or their approval for things.
- Awareness
 - o Heard via village head who told her RID was coming to explain.

Public participation

- Information flow
 - o She can tell them their problems, but no real say in things
- Communication
 - o Goes via village head
 - o She can't remember the last time she attended a meeting of the RID

Observation

The land they own is large. The house is bigger and on stilts, but the ground area is tiled and there is a kitchen on the ground area. The people who live here are older. We are asked to sit on a table, apparently that is normal in Thailand. The woman is getting interviewed while the man is talking to the assistant to the village head who is there to guide us to different farmers. The man is not joining in the interview at all, has no eye for us and just talking with the assistant in another area. This house is her second house, she has a boat that lies next to her other house. There is a calendar hanging on the wall that portrays the King. The house is located on a higher area, when the flood comes, it only floods for 10 cm in her house so she moves some stuff up the house but besides that she can still live and cook on the lower ground kitchen. There is a large stall where two big machines are stalled. Compared to the house of farmer #1, these farmers look like they have a lot more money. Their house looks sophisticated compared to the first one, little trash on the ground and the fact that the ground and walls are tiled instead of wooden planks shows a real contrast.

Farmer #3 & #4

Farmer life

- Land life
 - o Grow rice (have to grow sooner now because of BRM)
 - o Grow watermelon during limited time per year
- Flood life
 - o Fishing

BRM

- Soft measures
 - o Harvest calendar
- Hard measures
- Impact
 - o Flood is longer
 - o More stability because during the drought season the RID provides water through the irrigation system, before they were depending on rain.
- Compensation
 - o Doesn't know about compensation

Perception

- BRM
 - o Harvest calendar is good
 - o Stability of water through irrigation system is good
- Flood
 - o Flood is ok, it was always there. It's just longer now
- Most important
 - o Good harvest
- Voice/communication
 - o RID didn't ask for approval of the model.
- Awareness
 - o She thinks BRM is there to mitigate floods in other places.
 - o Know of BRM because of meeting with the RID and Provincial Agricultural Extension Office

Public participation

- Information flow
 - o 1 sided, info goes through village head, they attend meetings sometimes.
- Communication
 - o Through village head.
 - o Goes to meetings
 - o Isn't asked for opinion/approval

Observation

The house is on stilts, the stilts aren't that high. Underneath the house is a small space where they sit in hammocks and on a sort of table. There are a lot of watermelons outside the house, haven't seen that much on one place in my life. It is cleaner than house #1 but less clean and luxe than house #2. There are a lot of children, about 5. All the women are sitting under the house with the children, the men are working outside in the heat on the field. They say the flood is only in the fields, not in the area of the house. They have cut open a watermelon and offer me a piece which is so juicy and good, nothing like in Holland. There is a shack next to the house where they keep machines. I cannot spot a calendar of the King like in the houses of farmer #1 and #2. Maybe it is inside their house, but I haven't been in there.

Farmer #5

Farmer life

- Land life
 - o Grow rice (have to grow sooner now because of BRM)
 - o Grow watermelon during limited time per year
- Flood life
 - o Doing other work, construction work

BRM

- Soft measures
 - o Harvest calendar
- Hard measures
- Impact
 - o Flood is longer
 - o More stability because during the drought season the RID provides water through the irrigation system, before they were depending on rain.
- Compensation
 - o Doesn't know about compensation

Perception

- BRM
 - o Harvest calendar is good
 - o Stability of water through irrigation system is good
- Flood
 - o Flood is ok, it was always there. It's just longer now
- Most important
 - o Good harvest
- Voice/communication
 - o RID didn't ask for approval of the model.
- Awareness
 - o She thinks BRM is there to mitigate floods in other places.
 - o Know of BRM because of meeting with the RID and Provincial Agricultural Extension Office

Public participation

- Information flow
 - o 1 sided, info goes through village head, they attend meetings sometimes.
- Communication
 - o Through village head.
 - o Goes to meetings
 - o Isn't asked for opinion/approval

Observation

The house is located next to an asphalt road. It is built on stone walls; this is a difference with the other houses I have seen which were built with wood and iron plates. It is a large area where the house stands on with a large shack in the back of the house that holds the machineries. The floor is tiled. There is not that much garbage on the ground. The paint on the house is peeled off. There is no calendar with the portrait of the King.

Farmer #6

Farmer life

- Family composition
 - o Mother, father and son (24) who just went to Bangkok 1 month ago.

- Land life
 - o Before harvest Sep/Oct. Now with BRM harvest before August.
 - o Grow rice
- Flood life
 - o Before BRM, only fields were flooded because of rainfall. Now with BRM the flood has come into her house, 120cm.
 - o She uses boats, needs to prepare fuel for boats which is costly.
 - o She fishes, but not to sell but for food for her own family. She already did this before the BRM was in place. She knows how to fish and has the equipment.

BRM

- Soft measures
 - o Guarantees that water comes to the field.
- Hard measures
- Impact
 - o She needs to adjust the date of harvest, not a problem, she just does it sooner.
 - o Prepare boat, food and move things higher up for when the flood comes.
 - o Besides, no real changes.
- Compensation
 - o She doesn't get help from the RID, sometimes gets help from the head of the village.
 - o She gets 1100 baht per Rye. Maximum of 13 rye (not from RID, but from government)
 - o Sometimes rice seeds, sometimes money. She doesn't know what depends on when she gets rice or money.

Perception

- BRM
 - o She doesn't know what the goal of the BRM is.
 - o Good: For sure she has water for the crops and that works, she likes the harvest calendar also.
 - o Bad: Sometimes there is flood and she needs to prepare and money for the fuel before the flood comes.
- Flood
 - o Flood has been there since she was young, she got accustomed to it.
 - o Not too much problem because her house was on stilts already, but she doesn't like the area under her house is getting flooded.
 - o Fuel is expensive and transport is difficult because of the flood.
 - o No flood is more practical, but if flood comes, she can just use the boat. She says that it's not that she doesn't like the flood, but she has to adjust which is not practical.

- Before she didn't like flood, but because of BRM trade-offs with constant water and such she is now OK with flood.
 - She has to fix her problems by herself, the RID cannot help her she says.
- Most important
 - Family
- Voice/communication
 - She feels like she can talk about her problems and feels like the RID is listening to it and trying to help her.
- Awareness
 - Knows about BRM from head of the village.

Public participation

- Information flow
 - RID didn't ask her for her opinion or experiences regarding the BRM.
- Communication
 - RID meets 1 time per month.
 - She can voice her problems via village head or during meeting.
 - RID didn't ask her for her approval before implementing the model.

Observation

The farmer is a woman, very energetic and a bit older. There is a meeting from the RID and we asked her to join us in a separate place to do an interview, so we are not at her house. The RID provides food (quite a lot) for the farmers who are attending the meeting. The farmers also get 200 baht per farmer for travel costs when they attend the meeting.

Farmer #7

Farmer life

- Land life
 - He has rice fields (21 Rye) and 1 Rye of flowers. The flowers don't die when the flood comes.
 - Plants and harvests 2 times a year.
 - Not much changed. He plants rice sooner now.
- Flood life
 - They had floods before the BRM
 - He grows and sells his flowers
 - He fishes mostly to feed his family and sells a small amount.
 - He can still use the roads, they aren't flooded.

BRM

- Soft measures
- Hard measures
- Impact

- Plants rice sooner now.
- Compensation

Perception

- BRM
 - He doesn't know the goal of the BRM, also doesn't know about the measures of the BRM. Only knows the harvest calendar.
 - It is good because it is guaranteed there is water for his crops. → Safety
 - He doesn't want to comment on what he thinks of the harvest calendar.
- Flood
 - A little bit of a problem because of the long flood and he needs to prepare fuel for the boat which is costly.
 - Flood is part of life in this area. His field is flooded but his house area just a little bit, so he has no problem with it.
 - Roads near him aren't flooded so he can just use his car.
 - Overall, flooding is inconvenient.
- Most important
 - money
- Voice/communication
- Awareness
 - Knows about the BRM from the village head.

Public participation

- Information flow
 - RID hasn't asked him for his opinion/experiences.
- Communication
 - He can voice his problems during meetings.
 - He can't remember the last time he spoke to someone from the RID.

Observation

The farmer is a man, makes a lot of jokes, is a bit older. There is a meeting from the RID and we asked her to join us in a separate place to do an interview, so we are not at her house. The RID provides food (quite a lot) for the farmers who are attending the meeting. The farmers also get 200 baht per farmer for travel costs when they attend the meeting.

Farmer #8

Farmer life

- Land life
 - She owns 7 Rye of land and borrows 8 Rye from her sister. It's all used for rice cultivation.
 - She's 64, lives with her husband and their son who is 47.
 - Before the crops were rainfed, now it is through the irrigation scheme from the RID.

- Flood life
 - o The flood only comes in the fields and just a tiny bit in the area where her house is.
 - o She doesn't need a boat to use for transport.
 - o Her son uses the boat in the fields to fish for their family. They don't sell the fish.

BRM

- Soft measures
- Hard measures
- Impact
 - o Guarantees there is water for her crops.
 - o Has to grow her rice sooner (start sooner, not grow faster).
- Compensation
 - o She says RID compensates by giving her 2000 baht per Rai

Perception

- BRM
 - o Doesn't know the goal of the BRM. Doesn't know measures the RID has taken.
 - o It gives her safety for her crops and the floods aren't affecting her that much, so she sees only benefits.
 - o She thinks the harvest calendar is good.
- Flood
 - o Flood is not affecting their transport, only their rice fields but they fish during that time, something they did even before the BRM and is just a part of their normal life.
 - o The water can't drain away
- Most important
- Voice/communication
- Awareness
 - o Knows from the head of the village.

Public participation

- Information flow
 - o She heard from the BRM from a friend (farmer). She only knew about it when it was already implemented.
- Communication

Observation

Older woman of 64. There is a meeting from the RID and we asked her to join us in a separate place to do an interview, so we are not at her house. The RID provides food (quite a lot) for the farmers who are attending the meeting. The farmers also get 200 baht per farmer for travel costs when they attend the meeting.

Farmer #9

Farmer life

- Land life
 - o Grows rice
 - o Before BRM she waited to harvest rice but usually it was already rain season.
 - o After BRM there is water and rice don't flood, life is better now. Mostly because she uses harvest calendar and harvest sooner now.
- Flood life
 - o Not flooded after BRM because of barrier, before house area was flooded.

BRM

- Soft measures
- Hard measures
 - o The roads are upped but it is not the RID who did that, it is another department from the government.
- Impact
- Compensation

Perception

- BRM
 - o The model is good because of the irrigation scheme, it provides a steady flow of water for her crops.
 - o It is not good because of the flood, it is longer, it is difficult with transport and more costly.
- Flood
 - o Flood is part of life, was there before the BRM. They fish during flood period. It is not very practical with transportation, but the flood is not a problem.
 - o She prefers to not have flooding, doesn't see pros to it.
- Most important
- Voice/communication
- Awareness
 - o Knows of the BRM from the head of the village.
 - o She thinks the goal of the BRM is to store water for the fields to have steady flow of water for the fields.

Public participation

- Information flow
 - o Head of the village was contacted and told the farmers. The farmers had no say in the policy process and couldn't voice their problems.

- Communication
 - o All communication goes via village head.

Observation

There is a meeting from the RID and we asked her to join us in a separate place to do an interview, so we are not at her house. The RID provides food (quite a lot) for the farmers who are attending the meeting. The farmers also get 200 baht per farmer for travel costs when they attend the meeting.

Farmer #10

Farmer life

- Land life
 - o Grows rice. Uses the harvest calendar now.
- Flood life
 - o She fishes during flood time and she sells a lot of the fish.
 - o House/roads are flooded, was also the case before the BRM.
 - o She uses a boat for transport and gets fuel from sub-district administration organization.

BRM

- Soft measures
 - o Doesn't know about any measures.
- Hard measures
- Impact
 - o Grows rice sooner due to harvest calendar.
- Compensation
 - o Last year she got seeds.
 - o She can apply for compensation when she registers at the government, but she can get a maximum of compensation for 15 Rye. She thinks that's unfair because she has over 50 Rye of land but can only get money (1200 baht per Rye) for 15 rye while farmers who have 15 Rye get compensation for all their land. For her, the compensation is not nearly enough since she has so much land. She feels like she gets punished for having a lot of land. She got this money from the government, not from the RID. She doesn't get the money every year, she says it depends on the government, if they have money that year to give her.

Perception

- BRM
 - o It is ok because she gets steady water flow, but the flood is longer now which she doesn't like.
- Flood
 - o She doesn't like that the flood is long.

- But the good thing about the flood is that the flood drains away rats, insects, pesticides so that the field is fresh again.
- Most important
 - Money is the most important thing for her to be able to maintain the fields and buy food for her family.
- Voice/communication
 - She doesn't voice her problems because she says that she already know the answer (which is that they aren't going to do anything about her problems).
- Awareness

Public participation

- Information flow
 - Head of the village told all the farmers about the BRM.
- Communication
 - All communication via village head.

Observation

A younger woman, she looks at the ground a lot. Doesn't look up to make eye contact. I have the feeling she's a bit overwhelmed by all of us and maybe feels a little insecure answering questions. There is a meeting from the RID and we asked her to join us in a separate place to do an interview ,so we are not at her house. The RID provides food (quite a lot) for the farmers who are attending the meeting. The farmers also get 200 baht per farmer for travel costs when they attend the meeting.

Farmer #11

Farmer life

- Land life
 - She grows rice. Follows harvest calendar. Before she planted 3 times a year, now 2 times.
- Flood life
 - The road/fields/house area is flooded before, the house is flooded less now. Transportation is a problem because she has to use a boat which is expensive.
 - She fishes during the flood to feed her family.

BRM

- Soft measures
 - Harvest Calendar
- Hard measures
 - Upping road (just a little bit, not enough)
- Impact
 - No real difference except for less harvests.
- Compensation

Perception

- BRM
 - o She likes because there is water always.
 - o She thinks the goal of BRM is to retain the flood in this area. They do it because this is a low area.
- Flood
 - o If she could choose, she would choose no flooding because it is very inconvenient.
- Most important
 - o Money is the most important thing for her.
- Voice/communication
- Awareness
 - o Via head of village.

Public participation

- Information flow
 - o Village head told her about BRM → Meeting with villagers and RID. RID told her how she should farm now and what the BRM was going to be like.
- Communication
 - o She told the RID about the roads being low and they acknowledged it. She tells them every year and the RID tries to help but it there is not very much happening. The help is not enough.

Observation

There is a meeting from the RID and we asked her to join us in a separate place to do an interview ,so we are not at her house. The RID provides food (quite a lot) for the farmers who are attending the meeting. The farmers also get 200 baht per farmer for travel costs when they attend the meeting.

Farmer #12

Farmer life

- Land life
 - o He owns a local market where the villagers buy a lot of their groceries.
 - o He owns 12 Rye of rice fields. He doesn't grow the rice that the RID prescribed. He grows rice that his past generations of family also grew.
 - o He doesn't follow the harvest calendar because his fields aren't being flooded so he can farm the entire year (he harvests 3 times a year, instead of two). But he is in the irrigation scheme, so he gets water all year round. 1: Nov-March, 2: April-July, 3: Aug-Nov.
- Flood life

- The fields don't flood. There have been times where it has been flooded, the last time was 13 years ago that it flooded in their house. The area is located higher up.
- Roads don't flood so he can just use his car.
- The flood season doesn't affect his business (market) so he can keep selling during the flood season.

BRM

- Soft measures
- Hard measures
 - Irrigation scheme.
- Impact
- Compensation

Perception

- BRM
- Flood
- Most important
- Voice/communication
- Awareness

Public participation

- Information flow
- Communication

Observation

This farmer has a large house which is not on stilts. He owns a small market where villagers buy their groceries. He isn't affected by the flood. There is a calendar that portrays the King.

Farmer #13

Farmer life

- Land life
 - Own 50 Rye of land. They grow rice.
 - They harvest 2 times because of the flood season. It depends on the water if they follow the harvest calendar set by the RID. It depends on when the flood season comes when they harvest.
- Flood life
 - Flood life is long now with the BRM (4months). Before, it used to be 2 months.
 - They fish during the flood season.

BRM

- Soft measures

- Irrigation scheme
- Hard measures
- Impact
 - They feel like they get impacted by the BRM because when they want to grow the rice, the water is not always available.
 - They think that before the BRM it was better. Because the flood is longer now (4months). The harvest is worse than before the BRM they say.
 - They have to borrow money from the bank now because they aren't able to manage.
- Compensation
 - They get no monetary compensation at al. Because the flood has always been there nothing has changed so there is no need for compensation they heard.
 - Before the BRM they got compensation for 15 Rye, but now after the BRM they don't get it anymore. They don't know why, and they haven't asked.
 - They get 5kg seeds per Rye. This is not enough. They need 35 kg per Rye so they have to buy 30 out of their own pocket which they can't so they have to loan money.

Perception

- BRM
 - He doubts the BRM because it affects his harvest and life too much (but he didn't tell this to the RID)
 - If they can choose, they prefer to not have the BRM.
- Flood
 - Before the flood season was 2 months and they didn't mind because it was short, now with the BRM it is longer which puts them back and makes them less mobile which they do not like.
 - They say the having nothing to do during the flood season except for fishing (doesn't sound very exciting).
 - They don't like the flood, prefer to not have the flood at all.
- Most important
 - Good harvest is most important to them.
- Voice/communication
 - They don't talk about their problems they have. They feel like they don't have to right to ask so they decided not to voice their problems.
 - They don't tell them about their money problems because they are dependent on the government bank to loan them the money and the RID is part of the government.
- Awareness

Public participation

- Information flow

- They know about the BRM from the head of the village.
- The RID didn't ask for the approval of the villagers.
- Communication
 - They don't talk about their problems during meetings.
 - The military is present at the meetings almost always. He doesn't really mind it.
 - They talk very little to the village head and they immediately say it doesn't help talking to her about their problems.

Observation

I interviewed these two farmers on the road next to their fields. They were having a break from working on the field. Two people from around 40. During the interview, a lot of other farmers who were traveling the road stopped and listened in.

Farmer #14

Farmer life

- Land life
 - He owns 19 Rye. It is close by the irrigation system.
 - He grows rice for a living.
 - Not much has changed before the BRM and after.
- Flood life
 - His land is getting flooded. He has upped the land on which his house stands so it doesn't get flooded. He did this himself, RID didn't help.
 - During the flood season they fish and look for other jobs in construction.
 - He wishes the RID build dams near the river for more flood security.

BRM

- Soft measures
- Hard measures
 - The soldiers help them by bringing sand in large containers to the villagers so they can up their house.
- Impact
- Compensation
 - They get 5kg rice per rye and sometimes they get money (he got 13.000 baht in total). They also got money before the BRM during flood time from the government.

Perception

- BRM
 - He thinks the goal is to prevent the flooding in Bangkok.
 - He likes the BRM because it helps farmers and brings more jobs he says.
 - He doesn't mind the BRM. He just finds other jobs during the flood season.
- Flood

- Floods are normal for him. It always happens. He has no problem with it.
- Most important
 - Good harvest is the most important.
- Voice/communication
- Awareness
 - He knew of the BRM because of the contact-person from the RID because he is an assistant to the village head, so he was with the meeting.

Public participation

- Communication
 - They listened to the presentation from the RID about the BRM and had to sign to agree with the model. The RID asked their opinion.
 - He thinks they listened to the opinion of the farmers.
 - He goes to the meeting every month.
 - He told the RID he wants dams near the rivers for more security but the RID haven't built them yet.

Observation

One of the farmers who stopped and listened when I was interviewing farmer #13. We went to his small hut with shade next to his field to interview. He was in his mid-40.

Farmer #15

Farmer life

- Land life
 - He cultivates rice, 40 Rye.
 - And raises fish.
- Flood life
 - Flood season is sept/oct/nov, sometimes 2, sometimes 3 months. He travels by boat during the flood season and fishes.
 - When the flood comes the fish, he raises are gone with the flood, but new fish come. It comes and goes. He uses the fish to sell and eat.

BRM

- Soft measures
 - Sometimes he follows the harvest calendar. Depends on the water if he follows the calendar.
- Hard measures
- Impact
 - The water comes slower during flood season because it has to go through another area also.
 - They have to share the water with other provinces which is bad because these villages start competing for the water and conflict happens. There have been times where people from the other village have opened the

gates during the night to “steal” the water from him. There is competition for the water.

- There is less flood than before the BRM.
- Compensation

Perception

- BRM
 - Doesn't always use the harvest calendar. He decides for himself based on if he thinks there is enough water.
 - He wishes for another dam in the river so that there is always water for him to use for his crops.
 - He doesn't like the harvest calendar because the first time he used it didn't go well, and he didn't make a profit.
 - He likes the BRM because it is predictable, he knows when the water comes.
 - He doesn't like that the farmers in other villages are keeping the water to themselves.
- Flood
 - They are scared of the flood because if the flood comes before they harvest.
 - They are used to the flood.
- Most important
 - Family and good harvest.
- Voice/communication
- Awareness
 - He knows about the BRM because he went to the meeting from the RID.

Public participation

- Communication
 - He didn't talk to the RID about wanting another dam because there is another village further up who don't want the dam. There is controversy between different villages.

Observation

Their house is on stilts. They have two kids, wife and husband. There is no photo of the king. There is very little litter lying around. A scooter is hanging on the stilts that is missing its back tire. Two more scooters are standing next to the house. The house is fairly small compared to other houses I've been in the village.

Farmer #16

Farmer life

- Land life
 - She cultivates rice. She has 20 Rye of land.
 - She hires people to do the work on the fields.

- Flood life
 - o Her house is being flooded, the roads and the field also. They use a boat for transport.
 - o She fishes and sells them.
 - o Her cousin works in another province and sends money to her.

BRM

- Soft measures
 - o She doesn't use the harvest calendar. She says it depends on the stand of the water when she decides to plant the rice.
- Hard measures
- Impact
 - o Floods are longer now which she doesn't like at all.
 - o The water is not more stable with the BRM now compared to before.
- Compensation
 - o The RID has given her a little bit of rice for compensation. 5KG per Rye, and dry food if there is a big flood (which doesn't happen often).

Perception

- BRM
 - o It is very difficult because of transportation and the water comes fast when they open the gates and if she doesn't harvest by then, all the rice goes to waste. She doesn't like the BRM.
 - o She doesn't know what the goal of the BRM is.
 - o She wishes to have the time before the BRM because the flood was less before the BRM.
 - o
- Flood
 - o The flood is impractical for her niece when she wants to go to school (her niece lives with her).
- Most important
 - o She wants to get a high profit for her harvest.
- Voice/communication
- Awareness
 - o She knows about the BRM from the meeting with the RID.
 - o She doesn't know anything about the BRM in detail.
- RID
 - o Sometimes they help but mostly they don't. They only help during big floods.

Public participation

- Communication

- She voiced her problems during the meeting, but the village head said if they don't flood here some other province will get flooded so they have to balance.

Observation

This house is very big. There is a large area on the main ground. It is a very big and nice house compared to the other houses I visited. Neat is the word I think I would describe it with. She has a lot (like A LOT) of frames from the royal family hanging in her house.

Village 2: Ban Yan Yai, Bang Rakam District, Phitsanulok Province, Thailand

Farmer #1

Farmer life

- Land life
 - He grows rice. He has chickens but those are used to consume.
 - He owns 190 Rai land. Not all of it is in the BRM. 57 Rai of it is outside the BRM.
- Flood life
 - Area in the BRM is flooded every year, was also the case before the BRM. Now farmers get alerted before the flood comes.
 - Flood period is around 3 to 4 months. It's not natural because we retain it in this area.
 - His house is flooded (1st floor, ground) and lives in second floor during flood season. Flood can be as high as 3 to 4 meters.
 - He uses a boat for transportation.
 - He fishes and he gathers (not plants, it's just there) morning glory (a kind of plant that is used for eating with rice). It can grow in areas that are flooded but also in drought, it is very resistant, he didn't plan to plant it but it is a local vegetable for the lowland area that flood every year so it is appropriate for the vegetable (he uses it to feed his animals and also sells it but it is very cheap compared to the price of rice. It is worth it because he has little else to do during flood time, so he gathers it and sells it. He earns about 300 baht per day selling morning glory (which is around the minimum wage in Thailand). He doesn't sell it in this area because it is normal in this area so everyone can get it, so he has to go to a different area to sell them. He also has rice fields outside of the BRM so he can just keep farming those Rai's. He makes fish sauce also. He does it alone, not with other farmers, they all do it solo.

BRM

- Soft measures
- Hard measures
- Impact

- Quantity of water during flood is not different. Mainly impact that farmer has to do follow harvest calendar.
- Compensation

Perception

- BRM
 - Advantage is that farmers know when they have to harvest, before the flood period. → Harvest calendar, plant in April, harvest before august.
 - Is the model that improves the water distribution system from unsystematic to good distribution of water.
 - The farmer likes it more to be in the BRM because he has more water security that way (he says this while the head of the village and two head of sub-districts are sitting next to him so I am not sure if he is telling the truth or if he's giving the "right" answer.
- Flood
 - Flood is the over-quantity of raining in the area.
 - Flood is stressful for him. The difficult moment when he face the flood is when he is sick, it is very difficult for him to visit the doctor, the doctor than comes to him.
 - 3 good things from flood
 - Fishing during flood time
 - Filtering the soil and regenerating it
 - The rats that are in the fields are being flushed away/drowned
- Most important
- Voice/communication
- Awareness
 - He heard from head of village because head of village is informed by head of sub-district etc.

Public participation

- Communication

Observation

I interviewed this farmer at the house of the Village head. The house is very spacious. It has a lot of pictures of the royal family and a fair amount of monks (like 15 portraits in total, pretty much the entire walls are covered with it). The ground is tiled with shiny stones. There is a flat screen hanging on the wall (literally the first flat-screen I've seen in a village (I'm 4 weeks in here)). It is located near the road. There is an area next to the house that has infographics and posters about the BRM, and people can gather there for meetings. There are a lot of women with children in the background in the house and we are sitting on a long table with 1 farmer, the head of the village and two head of sub-districts. People are dressed very casually, soccer shirts or polo's and shorts but except for the farmer the others have a pretty nice watch around their wrist.

Farmer #2

Farmer life

- Land life
 - o He owns 50 Rye, plants rice.
- Flood life
 - o His house is not being flooded because he upped the ground on which the house is placed.
 - o The roads aren't flooded each year, it depends on the amount of water.
 - o He fishes during the flood period. Mostly just for food for his family.

BRM

- Soft measures
 - o Harvest calendar → The military indirectly forced the farmer to use the harvest calendar. They were on control to see if the farmers were sowing and harvesting on the dates set by the harvest calendar. The farmer feels like he has to follow the harvest calendar because of the military. This year, the second year, the military didn't check him, but he still follows the harvest calendar because he feels like if he doesn't follow the harvest calendar, they won't distribute the water from the irrigation channels to his fields.
- Hard measures
- Impact
 - o Everything is fixed now. The period of planting and harvesting is fixed. He gets told via the meeting.
 - o The military participate and control the sowing of the land. He doesn't think it is a good thing. This year there was no military but the first two years the military came and supervised the area during flood time
- Compensation

Perception

- BRM
 - o He thinks the BRM is a model that makes this area as a retention area. This will protect Bangkok.
 - o He doesn't think too much from the model. For him it doesn't play a large part of his life. He doesn't have a strong opinion about it. He can't say if the BRM is better or no. The BRM is good for the villager because there is water for planting even during the drought season and there is a lot of construction work in the village which means there is a budget from the government to improve the infrastructure in the village. He really likes that and feels like there are money and resources being invested into his village. Money from the central to the local which he likes.
- Flood

- He thinks of the flood as something that is normal, it occurs every year since he was a kid. It doesn't matter for him. It hasn't changed much in his life because he always lives with flood. He says the flood isn't that different compared to before the model. Before the model it flooded in the end of August and it drains out at the end of October. With the model now in place the water drains out around the end of November, which is about 1 month longer. For him it isn't much of a problem.
- Most important
 - Family is most important to him.
- Voice/communication
 - Mouth to mouth.
- Awareness
 - The head of the village invited the villagers to join the meeting with the RID.

Public participation

- Communication
 - If the villager has anything, he wants to talk about they can see the head of the village or the assistant to the head. Officially they go to the house and ask for a conversation. He hasn't asked for such a conversation ever.

Farmer #3

Farmer life

- Land life
 - He owns 15 Rye, all of it is rice.
- Flood life
 - During the flood season he fishes for consuming.
 - His house is flooded but not each year. The roads aren't flooded where he lives. Not every road is flooded.

BRM

- Soft measures
- Hard measures
- Impact
 - Everything is the same for him, nothing changed since the BRM.
- Compensation

Perception

- BRM
 - He thinks that in his position he has no say and just has to deal with it.

- Before the harvest calendar it was better for the farmer. Now they have to harvest and sow in April which is the hottest season of the year. That moment is not suitable for doing that kind of work in the sun.
- There is more water in the canal now for the fields which is good. But not everywhere there is enough water.
- Flood
 - The flood is natural for him. He is used to it and he has to adjust to the flood, that's what he thinks.
- Most important
 - Money is most important to him.
- Voice/communication
- Awareness

Public participation

- Communication
 - He hasn't been asked to share his opinion on the BRM before it was implemented.

Observation

I interviewed them between the fields where they were sitting under a small shack, they made to protect them from the sun. There were 4 farmers and they all owned different fields but in turn helped each other with their fields.

Farmer #4

Farmer life

- Land life
 - He grows rice, 85 Rye he owns. 50 rye is inside the BRM.
 - He follows the harvest calendar.
- Flood life
 - He fishes during flood season. He ferment the fish to sell for in the papaya salads.
- Rents the land for 20 years already.

BRM

- Soft measures
- Hard measures
- Impact
 - Before the BRM he got the water from the dam and he pumped it into his fields but with the BRM it is better now.
 - They have flood problems; it is too long.
 - What he thinks is good from the BRM is the fish, that he can fish.
- Compensation

Perception

- BRM
 - o He likes the BRM because of the water irrigation system and the model provides him with good harvests.
 - o The situation is better now than before the BRM.
 - o He likes the BRM.
- Flood
 - o He doesn't like the flood because it remains for so long and it causes bad harvest.
- Most important
 - o Everything is important. Money is most important.
- Voice/communication
- Awareness
 - o He doesn't know much about the BRM because he rents the field from someone else, he is from outside of the village.
 - o He thinks the BRM is to separate the water in the rice fields, so it doesn't flood somewhere else.

Public participation

- Communication
 - o He was invited for the meeting with the RID. He says when have a problem they can talk to the RID, but they don't really help. He says when the villagers have a problem, they can loan money from the government bank.

Farmer #5

Farmer life

- Land life
 - o His land is 12 and he rents 13 Rye. In total 25 Rye. He grows rice and vegetables (chili/corn) and he holds chickens.
 - o Before he got his water from the river and pump the water to his fields, now he also pumps the water. Before he didn't have enough water, now he has enough water because of the BRM.
- Flood life
 - o During flood he fishes and eats them and sells them, also catches crabs. The flood comes to 180cm and his house is on stilts. The roads also gets flooded.

BRM

- Soft measures
 - o He does follow the harvest calendar but for him it is pretty much the same when before the BRM.
 - o The military comes and checks the water level in the fields by making pictures and patrolling to see if there needs to be more water from the irrigation scheme or if it is enough.

- Hard measures
- Impact
 - o Farming has been the same for him compared to before the BRM.
 - o Before, the water would come later and slower, now faster and earlier.
 - o He likes it better with than without BRM.
 - o He has to follow the calendar but if he doesn't follow it's also ok, he thinks.
- Compensation

Perception

- BRM
 - o He doesn't know much about the BRM only that he gets water now.
- Flood
- Most important
 - o Money is most important because he can
- Voice/communication
- Awareness

Public participation

- Communication
 - o The government went to examine the field around him and then they set the model. He didn't participate in the meeting for the BRM implementation. He didn't get invited for the meeting at all.
 - o He doesn't want to go to the meeting because of his health.

Farmer #6

Farmer life

- Land life
 - o She grows rice and vegetables like papaya, chili. She has 20 Rye. She can plant 3 times a year because of no flood. She has enough water also to be able to plant and harvest 3 times a year.
 - o She doesn't use the irrigation water from the government. She pumps it from the ground. Nothing changed in how much water there was/is.
- Flood life
 - o Since the BRM she doesn't have flood anymore. In the past it was around 200cm high.

BRM

- Soft measures
 - o She followed the harvest calendar in the first year but now she doesn't follow it anymore. She wants to plant and grow the crops sooner than in April and she says she is able to because she can pump enough water out of the ground.
- Hard measures

- Impact
 - o Before the BRM there was a lot of flood, now with the BRM not anymore.
- Compensation

Perception

- BRM
 - o She likes it with the BRM because she is not affected by the flood and has enough water to plant 3 times a year.
- Flood
 - o She doesn't mind the flood; it doesn't affect her too much. In the past she fished. It is a weird question that I ask if she likes flood. She doesn't like it because it is hard to move by boat. She doesn't miss the flood and the pro's like the rat dying/flushing away, she says the rat will go in the trees and they will come back once the flood is over, so the flood doesn't help her too much.
- Most important
 - o Money and health are the most important she says.
- Voice/communication
- Awareness
 - o She knows about the BRM from the local radio.

Public participation

- Communication
 - o She has never been to the meetings. She has no reason to go she says.

Farmer #7

Farmer life

- Land life
 - o He is a farmer (rice), 60 rai, and holds 100 chicken (20 of which are to fight with) and has 7 buffalos. The animals are sold, or for eating. He says his fields are only capable of farming rice on. Because of the economy now with the low price of rice he decided to also hold buffalo's and chickens to have different ways of gaining income.
 - o He doesn't follow the harvest calendar because if he follows it the flood will come too soon, and it will spoil his harvest, so he follows his own timing.
- Flood life
 - o The flood comes every year and the height depends on the rain but sometimes comes to the roof.
 - o During the flood time he fishes to sell them and for his family to eat from.
 - o During the flood time he transfers his animals to land near the temple. That is not his own land but from the government, but he just puts them there. The government is ok with that because he says the villagers have

a hard time, so the government doesn't pay too much attention to the rules during that time.

- During flood time he says there aren't enough fish for all the villagers when everyone is fishing, that is a problem.

BRM

- Soft measures
- Hard measures
- Impact
 - He says the rice is cheap now compared to before the BRM, but he says it has to do with the economics, has little to do with the BRM.
- Compensation
 - During flood times they give him dry food like rice/noodles.
 - Money as well.

Perception

- BRM
 - The BRM is not really of interest to him, it is mostly the low price of rice that he is concerned about.
- Flood
- Most important
 - Family is most important
- Voice/communication
- Awareness
 - He went to the first meeting and was asked to sign for approval of the BRM. The village head said it is really good for the village because the government will invest money in the village and it is good for the future because it can attract tourist also, that's why it was a good model and they should sign. He said he followed the other villagers and signed.

Public participation

- Communication
 - The harvest calendar doesn't work for him and he already told the head of the village and the head talked to the RID. The RID didn't do anything with it so now he just doesn't follow it and does his own thing.
 - He always goes to the meetings. The military is always there he says. It doesn't really bother him, he doesn't think too much about it, as the translator says, "he feels so-so". He thinks they are there to examine and oversee everything.

Observation

During this interview, my translator almost fainted and we had to stop pre-emptively.

Farmer #8

Farmer life

- Land life
 - o He's a farmer (rice) and does engineering work, fixing the refrigerators, motorcycles etc. He owns 68 Rye.
 - o His harvests are going well if he works hard.
- Flood life
 - o His house is not flooded anymore since the BRM, he fishes during the flood time.
 - o During flood time he relocates all his electronics to his cousin's house or his own house.

BRM

- Soft measures
- Hard measures
- Impact
 - o Before the BRM his second harvest got wasted by the flood a lot of times. Because he follows the harvest calendar, he doesn't have that problem any more.
 - o The water in the dam that they release for the second sowing time in April causes a bit of problems for him. Sometimes there is too much water being let into the irrigation canals and sometimes there is too little water.
- Compensation
 - o Per Rye he gets 10kg rice seeds per Rye. Others get less but he says it is because of the quality of the rice he grows.

Perception

- BRM
 - o Dam to collect the water and follow the calendar so we can harvest two times. The model is there also because otherwise the province below will flood (Phitsanulok) so he thinks he has to follow the harvest calendar.
 - o He has to follow the harvest calendar and he follows it because otherwise the flood comes before he harvests his rice.
 - o He likes the BRM because he has more access to water for his fields now and there is less flood where he lives. It doesn't flood near his house, only in the fields now.
- Flood
 - o He wants the flood to come when he finishes harvesting. During the flood he can fish and doesn't have to work on the field which he likes, and the flood also gets rid of the rat in the field.
- Most important
 - o His health is the most important thing for him.
- Voice/communication

- Only head of village has contact with the RID.
- Awareness
 - He was invited by the head of the village to go to the meeting with the RID, that's how he knows about the BRM.

Public participation

- Communication
 - He doesn't go to the meetings often. He doesn't have to go because other farmers carry on the information from the meeting to him, so he doesn't have to go every time.
 - He (and a lot of other villagers) told the head of the village about the problem with too much/or too little water. He said the head of the village took care of it and he says it is better now.

Observation

It is very chaotic in the house. There are a lot of stuff lying around, much of it is electronic devices. There is also a portrait of the king hanging on the stilts.

Farmer #9

Farmer life

- Land life
 - He has 50 Rye of land, all within the BRM.
 - The rats and the bugs are affecting his rice which is a problem, but he says there is no need to tell the government about this because the government help the endangered species, so they won't do anything about this.
- Flood life
 - He fishes during flood season. He ferments the fish to sell, and he also uses for feeding his family.
 - His house is not flooded.
 - The flood is a natural occurrence for him, so he is used to it.
 - He says he doesn't benefit anything from the flood. Fishing doesn't benefit him much because he doesn't have a lot of knowledge about fishing.

BRM

- Soft measures
- Hard measures
- Impact
 - Before BRM he could 1, sometimes two harvest and then it would flood a lot but after BRM he can do two times.
 - Before the BRM the roads were usually flooded but after the BRM it's less.
 - His house was flooded before the BRM, now not anymore.

- Compensation
 - o If it floods and he register, he gets money from the government.

Perception

- BRM
 - o He has enough water since the BRM. It is better than before. He follows the harvest calendar and now is able to harvest twice without problems.
 - o The harvest calendar works good for him.
 - o He thinks the goal of the BRM is to fix the flood. The RID has a dam to separate the river so that other areas aren't flooded.
 - o He likes it now with the BRM more than before the BRM.
- Flood
 - o Flood doesn't take care of the rats and the bugs, so he doesn't like that.
- Most important
- Voice/Communication
- Awareness
 - o He knew about the BRM from the head of the village that gathered all the villagers in a meeting with the RID.

Public participation

- Communication
 - o He doesn't have the knowledge to know how to fish and he hasn't told the RID that he doesn't have the knowledge
 - o He goes to the meetings.

Farmer #10

Farmer life

- Land life
 - o She has 65 rye of land. All of it is rice.
- Flood life
 - o She fishes + fermenting the fish, during the flood time and she makes nets for fishing that she sells to the other farmers.
 - o Her house is not flooded during the flood time. Her fields are flooded. The roads are also flooded.

BRM

- Soft measures
- Hard measures
- Impact
 - o There have been some tourists to the place to look at how the BRM goes into effect and how high the flood is in the area, to see the rice fields and to buy the fish from the farmers.

- Before the BRM the flood reached her house. With the BRM in place, the flood doesn't reach her house anymore. She thinks this is because of the dam that is now in place because of the BRM.
- The BRM negatively impacts her harvest because before the BRM she could harvest 3 times a year, now with the BRM in place she can only harvest two times. Before the BRM she planted different sort of rice seeds that grew only 2/3 months so she could do three harvests before the flood comes. Now she cannot do that anymore because she says she has to follow the harvest calendar. She has to follow this because now she is forced to register her harvests and what seeds she plants. This was not the case before the BRM, so farmers could choose for themselves what kind of rice they wanted to grow. Again, she says she cannot do three harvests because she has to follow the law of the harvest calendar.
- Compensation
 - She says that a reason that she has to register is for compensation. When the flood comes, and things/harvests gets destroyed she can apply for compensation because she registered. If she doesn't register, she isn't eligible for compensation.
 - She says the compensation depends per case; per Rye she can get 1200-1500-1800 baht per rye.
 - She gets 5kg per Rye for a max of 20 Rye.

Perception

- BRM
 - The BRM is the famous point for the Bang Rakam district to attract tourists.
- Flood
 - She is used to the flood, because since she was born, she encounters the flood almost every year.
 - She likes the flood because during the flood time she can relax more, she can't work on the fields so that is a nice change for her.
- Most important
 - Her health is most important to her. Money is a close second.
- Voice/Communication
 - All the communication goes via the head of the village.
- Awareness
 - She knows about the BRM from the meeting with the head of the village and the RID.

Public participation

- Communication

- She got asked for her approval of the system. She said all the villagers had to decide if they wanted it and then tell the RID. She followed the other villagers.

Farmer #11

Farmer life

- Land life
 - He's a farmer and he grows rice. He only grows rice because this is the BRM area and you can only grow rice here because of the flood. He has 110 rye of land.
 - Before the BRM he used to pump the water from the ground to water his crops. He still uses this because the water from the irrigation system doesn't reach his fields. But he is in the BRM because he said to the RID that there is no need for him to get the irrigation water because he can just pump the water from the ground.
- Flood life
 - It floods in his fields. It depends on the season and the rain. His house is far away from here. Sometimes the area where his house is floods, other times it doesn't. His house is in the BRM area.
 - During the flood time he fishes and eats the fish.

BRM

- Soft measures
 - He follows the harvest calendar.
- Hard measures
- Impact
 - He can harvest before the other districts because he is in the area of the flood. This is good because it is an advantage for him because he can anticipate to the time when the flood comes because the RID regulates that now.
 - He likes it more now with the BRM because he can harvest two times and the harvest won't get spoiled by the flood.
- Compensation
 - He says that sometimes he gets compensation. He mentioned 600 Baht per rye.

Perception

- BRM
 - He likes the harvest calendar because now he can harvest his crops before the flood comes and there is enough water to grow his crops during March/April.
 - He likes the BRM because now he can harvest two times a year without his second harvest being wasted because of the flood. There is more security which he likes, it also works.

- He thinks the BRM is there to collect the water here so that other provinces don't flood and here they can make a dam to collect all the water in this area (he said he doesn't know much about the BRM, but this answer seems like he knows what's up).
- Flood
 - Flood means nothing to him. For some villagers its good because they are fishers as well but for him it doesn't have an advantage like that. He feels indifferent about the flood. He thinks the flood is good for washing away the topsoil and other things like leaves and stuff, so the ground gets refreshed.
- Most important
 - Good harvest is very important to him.
- Voice/Communication
 - He says he can't do anything about problems because he says the government already knows because the head of the village is also a farmer and he already told the RID the problems, so he says there is no need for him to tell them about their problems.
 - He says everyone knows about the problem of the money, but no one does anything so he doesn't feel like he should try to tell them anymore.
- Awareness
 - He knows about the BRM from the other villagers. He didn't go to the meeting because he says he is very busy working on his 110 rye of farmland.

Public participation

- Communication
 - He doesn't go to any meetings because he is too busy working on the fields.
 - He says he wishes that the government can increase the price of the rice so he can sell the rice for more.
 - He says he can't do anything about problems because he says the government already knows because the head of the village is also a farmer and he already told the RID the problems, so he says there is no need for him to tell them about their problems.

Farmer #12

Farmer life

- Land life
 - He's a farmer and fisherman for a living. He grows rice on his fields. He has 33 rye all within the BRM area.
 - They get water from the irrigation canals. This was also the case before the BRM. Now there is enough water in the canals because of the BRM. This was not the case before the BRM.
- Flood life

- He fishes during the flood season. He sells these fish.

BRM

- Soft measures
- Hard measures
 - She says there was a project for upping the roads, so the roads don't get flooded but she says they haven't implemented that project. She knows that from the head of the village.
- Impact
 - He says everything is the same as it was before the BRM. But he also says before the BRM there was a flood but now near his house it doesn't flood anymore.
 - Before the flood was 1 month, now 2 months.
 - There is enough water in the canals for their land now.
 - He is following the harvest calendar because he says he has to because he has to register.
 - The price of rice is lower than before which is bad.
- Compensation
 - She gets 1200 baht per rye for only 10 rye. The government told her that they only give compensation for 10 rye.

Perception

- BRM
 - He thinks the BRM is there to collect the water in this area so that a flood is prevented in other lower land areas.
 - He likes the BRM better than before because there are a lot of projects and even though most of the projects aren't happening right now, he thinks in the future they will happen. So, he feels like the government is paying more attention to the village and is investing more money in the village which is a good thing.
 - He still thinks there can be more water in the canals for the crops, even though there is more water already there can be even more water because still sometimes it is dried out and they don't have water.
 - He thinks the harvest calendar is good.
- Flood
 - The transportation during flood time is not good, expensive and not comfortable for him.
 - Fishing is the only benefit he can think of that comes from the flood.
- Most important
 - Family is most important to him.
- Voice/Communication
 - They didn't tell the RID that they need compensation for more rye. She said that they don't say that because the villagers have no power to talk.

When asked what would happen when they do talk about it, she answered: nothing happens, it is like talking to air.

- She doesn't have contact with other organizations outside the RID.
- Awareness
 - He knows about the BRM via the rest of the villagers who told him.

Public participation

- Communication
 - He doesn't go to the meetings with the RID, his wife does go.
 - He wasn't invited for the first meeting with the BRM when they wanted to implement the BRM.
 - He hasn't had any contact with the RID because all the contact goes via the head of the village.

Farmer #13

Farmer life

- Land life
 - He grows rice on 300 rye, all of it in the BRM area.
- Flood life
 - Her house is not in the BRM area and it doesn't get flooded.
 - During the flood she doesn't really fish. She has more rye in another area where she grows crops during the flood time.
 - She says that there is fish but not much.

BRM

- Soft measures
 - She has to follow the harvest calendar because she has to register.
- Hard measures
 - She gets her water from the canals. There is enough water now with the BRM. Before the BRM it depended more on the raining seasons but now it is not affected by the raining season.
- Impact
 - She says it is pretty much the same for her now.
- Compensation
 - If she doesn't register, she won't get compensation.
 - Per family you can only get compensation for 10 rye. Per rye it is only 1800 baht. She receives seeds for 1 rye, 700kg per rye, but only for 10 rye in total. Everyone gets 500kg, not 5kg per rye. Why she gets 700kg instead of 500kg is because it depends per field and how much the flood affects the field for how many seeds she gets.

Perception

- BRM

- He thinks that the BRM is the dam that collects the water to distribute it to all the fields, so the farmers have enough water. Also, to prevent the flooding in other areas.
- She thinks the BRM doesn't take into account the position of the farmers. She wants to harvest three times, but she can't.
- From a position of a farmer she doesn't want the BRM because she can't harvest 3 times.
- From a position of the fisher she wants BRM because she can fish longer.
- The harvest calendar doesn't help her. If she didn't have to follow, she can harvest more, she can use different rice.
- They rather not have the BRM. But they also say it is not dry anymore during the summer/dry season so that is a good thing
- Flood
 - During the flood time she has a lot of free time because she can't work on the field. She thinks the flood time is really boring, she says she can take a rest.
 - Flooding is normal for her; she doesn't think too much of it because she is used to it.
- Most important
 - Money is the most important.
- Voice/Communication
 - She doesn't talk to the government/RID about her problems because she says that this government doesn't support the farmers. She already knows the answer and that they are not going to help her. She doesn't have the feeling she can talk about her problems. She says that everyone already know the problems, but nothing gets done.
 - She didn't talk to other organizations.
- Awareness
 - The head of the village told her about the meeting with the RID and she went to it.

Public participation

- Communication
 - During the first meeting the head of village and RID asked for the opinion of the farmers and if that was ok the farmers had to sign to agree.