

The Matter of Access to Capitals

– A case study of gender-differentiated vulnerability to flooding in Laos PDR

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Abstract

This thesis analyzes gender-differentiated vulnerability to the flooding in 2011 within a rural community in Laos PDR - the village of Ban Lao situated in the Mekong River basin.

The study employs the Community Capitals Framework (CCF) to explore what resources women and men in the case study had lost in the flooding to thereafter be able to analyze what capitals were most essential for their coping and adaptation capacity. A gender perspective is further applied to reveal the differences between women and men in terms of access to the seven capitals in the framework and how it is essential for gender-differentiated vulnerability to flooding.

The case study illustrates that the women and men responded and used different coping and adaptation strategies before, during and after the flooding of the village. Most common were short term coping such as selling animals and rescue belongings. Long term sustainable strategies labeled adaptation were income diversification, a strategy the prerogative of male household heads.

Gendered differentiations in access capitals do not only restrain the options for livelihood diversification but also determine the choice of which strategy to approach to be able to reduce the impacts from flooding.

Thereby can reductions of vulnerability to future flooding on local level only be achieved by a fuller understanding of the interaction of the seven capitals and how they influence the capacity and choice of coping and adaptation strategy.

Keywords: vulnerability, flooding, gender, access to capitals, Community Capitals Framework, Laos PDR

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Abbreviation

CCF	Community Capitals Framework
DAFO	District Agriculture and Forest Office
FGD	Focus Group Discussion
Laos PDR	Laos People’s Democratic Republic
MMR	Maternal Mortality Rate
NEM	New Economic Mechanism
NGO	Non Governmental Organization
NTFP	Non Timber Forest Products
NTPC	Nam Theun Power Company
NT2	Nam Theun Dam 2
PAFO	Provincial Agriculture and Forest Office
PRA	Participatory Rural Appraisal

1 Introduction

The IPCC 4th Assessment Report published in 2007 concludes that people living in flood prone areas will increasingly have their lives and livelihoods impacted by changing patterns of precipitation and drought.

In many parts of the world flooding is considered normal as well as essential for agriculture by providing nutritious soils, water and sediments to deltas. It also increases fish availability and maintain plant and animal diversity. However, flooding is also considered by many researchers to have profound negative effects on people's lives and more so than other hazards (Wisner et al. 2004).

The objective of this research project is to analyze gender-differentiated vulnerability to flooding in a village located in The Laos People's Democratic Republic, hereafter referred to as Laos PDR. The assumption is that women and men are affected differently by flooding due to gendered access to resources as well as the interaction of formal and informal institutions on the local level.

By applying the Community Capitals Framework (CCF) in the local context of vulnerability to flooding, a deeper understanding can be achieved of gender-differentiations in access and control of resources - defined by Butler Flora & Flora (2008) as capitals. These differences can increase the degree of vulnerability by having a negative effect on women's and men's ability to cope and adapt at the local level. As an outcome women and men are impacted differently in terms of their vulnerability to hazards - in this thesis flooding.

1.1 Laos PDR

The Laos PDR is a landlocked country¹ in Southeast Asia bordering Thailand, Burma, China, Vietnam and Cambodia. (See Figure 1) and is situated in the middle of the Mekong River basin. The river is approximately 4, 800 kilometers and runs through the entire west side of the country to finally reach its delta in Cambodia and Vietnam. The Annamite Mountains are sited on the eastside of the country on the border to Vietnam. (Mekong River Commission 2011a)

The total population of Laos PDR is approximately 6.288 million (The World Bank 2011) and 97 % of the total population resides in the lower Mekong delta region (Mekong River Commission 2011a).

¹ No access to a coastal area.

The climate of this region is tropical monsoonal with a rainy season from May to October. The monsoon occurs at the same time annually throughout the entire country and locally makes flooding an annual event. (Baran et al. 2007; Matles Savada 1994a)



Figure 1 Map of Laos PDR
(Source Asia Disaster Preparedness Center 2012)

Laos PDR is divided into 16 provinces with several sub districts² (Ibid.). The political structure is a one party communist regime with The Laos Revolutionary Party (LPRP) in congress since 1972. The national administrative center is located in the capital and the nation's largest city is Vientiane (Matles Savada 1994b).

The Mekong River and its tributaries are an important resource for the Laos people and the Southeast Asia region. It functions significantly to provide food security and economic stability (such as fish and riverbank cultivation) as well as for transportation (Whitaker et al. 1979).

National economic reforms introduced in the 1980s are moving the country towards a market based economy. These reforms have had positive impacts on national development and reduced poverty at the household level (ADB & The World Bank 2012). Despite great economic development many people are living in poverty. The country is still one of Southeast Asia's least developed. There is next to no infrastructure providing hospitals and railroads and the overall standard of existing roads are still poor. (ADB & The World Bank 2012)

In 2013 Laos PDR joined the WTO. The country is also a member of the Association of Southeast Asian Nations (ASEAN) Free trade Area and ASEAN Economic Community. (WTO 2012) Main trading partners are China, Thailand, Vietnam and Cambodia.

Today the Mekong River is the subject of expanding plans for commercialized hydropower. Three hydropower dams are under construction and another 11 dams are planned along the river and its tributaries. Furthermore The Lao PDR government has implemented an

² District is the lowest level of formal governmental authority (Matles Savada 1994a)

economic development plan which constitutes the production and exportation of electricity to China and Thailand. (Mekong River Commission 2013)

The impacts from the expanding hydropower plants are of great concern for many environmental groups and well debated. Estimated changes in water quality, livelihoods and food security are considerable. Implementation of resettlement programs, upstream flooding, downstream drought and decreased fish availability are expected to disrupt the lives of a large share of the population living in the entire region. (Ibid.)

A large share of the population lives in rural areas with self sufficient agriculture as primary livelihood. Women's participation in agricultural production is significant. Vocational and technical education is generally limited due to lack of financial resources at the household level. Children are expected to provide workforce in the fields. (ADB & The World Bank 2012)

1.1.1 Savannakhet Province

Savannakhet Province is located on the banks of the Mekong River in the southern lowland part of the country bordering Vietnam and Thailand (see Figure 2). The farmers in this province are highly dependent on agricultural outputs and can be directly exposed to changes in rain patterns and other impacts related to climate change. Most cultivation in the province relies on rain fall and a majority of the farmers lack efficient irrigation systems. Additionally most farmers in this province are economically poor and have little or no capacity to cope with external stress. (Chivanno et al 2008)

The administrative center and provincial capital Savannakhet City is today considered by many stakeholders as a transportation hub for the region. The Thai-Lao Second Friendship Bridge is to be found here and connects Laos PDR with Thailand. (Jasmine 2007)



Figure 2 Map of Savannakhet Province and the village of Ban Lao in Laos PDR (Source Radio Free Asia 2013)

1.1.2 The village of Ban Lao

Ban Lao is a part of the Xiaboury district in Savannakhet Province and is located by the Xe Bang Fai River³. The river is the border between the two neighboring provinces: Savannakhet and Khammouane. The village consists of 31 households and 207 people (see Table 3) (DAFO 2012).

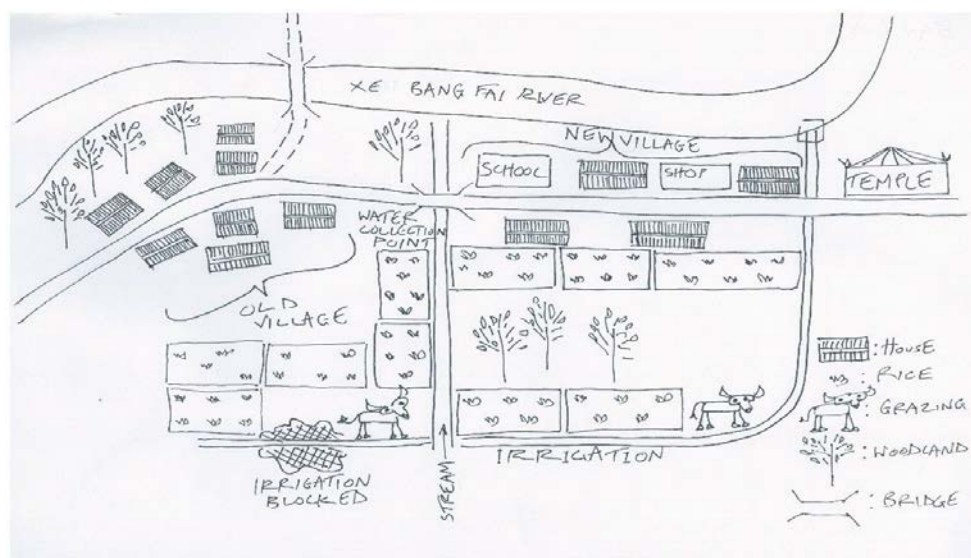


Figure 3 The village of Ban Lao
(By permission J.E. Rigg 2012)

Figure 3 illustrates a map of Ban Lao. The village is split into a “new” (lowland) and an “old” (upland) village with an approximately 100 m long road between the two. The road is surrounded by rice paddy fields. It was mentioned during one of the interviews that the “new” village was established approximately 80 years ago and was a result of shortages of space due to expanding population.

– Typhoon Nok Ten

In 2011 the typhoon “Nok Ten” reached the Province with a month of heavy rains and flooding along its path. Fifteen of the province’s 16 districts composed of 364 villages were impacted by the typhoon, among them the village of Ban Lao. (DAFO 2012) A man living in the village stated during one of the interviews:

“I had already heard on the news that there was severe flooding in Vietnam. After four to six days of heavy rains this village was also flooded. The water raised 2 meters in just six hours and stayed for two months. I lost my entire crop... I cannot now farm my own fields as the irrigation system is destroyed. I am now farming on my cousin’s land”⁴.

The livelihood of every household in the village was interrupted. Flooded rice fields and vegetable gardens, destroyed irrigation channels, devastated housing, lost tools and livestock and destruction of seeds were all consequences from flooding caused by the

³ Tributary to the Mekong River locally referred to Nam Xe (“Fish water”).

⁴ All quotes from the interviews have been translated from Lao to English by the interpreter.

typhoon. (DAFO 2012) A woman stated during the Focus Group Discussion (FGD) that the villager's health was also impacted due to an increase of bacteria accumulated in the flood water.

The villagers of Ban Lao have experienced flooding before⁵. In 2011, however, it was considered exceptional compared to previous years. The water rose steadily during three days and covered the village and its surroundings by up to three meters. It drained gradually over a period of two months. A woman stated during the FGD:

“The floodwater rose to the middle of our stilted house in just 30 min. It was really fast! We did not have any pre warning but we saw that something unusual was happening in the stream behind our house. It behaved differently...”

To ensure food security for affected farmers, the Government, through the Provincial Agriculture and Forest Office (PAFO) and the District Agriculture and Forest Office (DAFO) provided aid (drinking water, rice and fish cans) and seeds for the next season of planting. The aid beneficiaries were based on land ownership and previous agricultural outcomes. Some villagers also received money to compensate for lost livestock and chickens. Several respondents stated during the interviews that the satisfaction with the provided aid was inconsistent among the villagers. Most of them were satisfied with the received compensations, but a few were not.

During the key informant group interview it was mentioned that as a response to the flooding the Laos PDR Government encouraged the farmers to do intensive replanting of paddy rice during the following season and to replant cash crops, forage and vegetables. The clearing of destroyed irrigation channels were assigned to the villagers with no external aid regarding machines, targeted tools or other compensation.

1.2 Why study gender-differentiated vulnerability to flooding?

A substantial amount of research has already been undertaken on climate change and its impacts on people's lives and their everyday environment. The matter is today a part of many stakeholders' and governments' agenda. The subject of climate change is well debated. Whether the changes in temperature and precipitation are a matter of climatic changes or not - the intersection between gender and vulnerability in the context of disaster is an emerging research matter. Empowering women's abilities to cope and adapt to hazards will reduce their vulnerability and improve food security as well as reduce household poverty. (Dankelman 2010)

Vulnerability is highly contextual where a hazards outcome is dependent on the degree of an individual's exposure, adaptation and coping capacity. This explains that the same hazard can have different outcomes on local level due to differences in vulnerability of the individuals as well as groups such as females and males. (Segnestam 2009)

Most people in rural areas are relying on natural resources for maintaining livelihoods. Cultivating fruit, vegetables and crops do not only secure food availability at the household level it can also generate incomes to be used for paying bills and other essentials. In this

⁵ The village was flooded last time in 2003. DAFO (2012) stated that some years are “spell by long drought or flood, especially during July to September or October, in some years both flood and drought are happening.”

context household income is not only dependent on agricultural productivity but also on market forces to secure the households well-being. (Gutierrez-Montes et al. 2009)

Agricultural livelihood strategies are dependent on access to water and other resources such as nutritional soils and financial investments. Therefore changes in access to these resources can have devastating impacts on the household. (Ibid.)

Many times in rural areas free market forces can push men towards distant or nearby off-farm employment such as mines, plantations and urban areas leaving women and children behind to farm the family land. (Ellis 2000; Enarson et al. 2007)

What Ellis (2000) calls the feminization of agriculture can therefore not only contribute to increased workload for the women (combining domestic responsibilities and farming) but rural as well as household development are at risk of stagnating as agricultural investments at the household level are lacking. A contributing factor to these shortcomings is often caused by the absence of the individual in the household usually controlling the resources (often the male).

Rapid economic transformations can also enhance women's vulnerability, especially in asset poor households including those who have lost those resources due to natural disasters. Implemented and deeply rooted cultural roles of women and men all too often sustain inequalities. (Ellis 2000) The nexus of these cultural roles and increased exposure to natural hazards on local level do not only keep putting women at risk but can also reproduce gender-differentiations in access to resources and thereby negatively affect women's coping and adaptation capacities after a hazard, in this thesis flooding.

1.3 Objective and research questions

The overall objective of this research is to achieve a deeper understanding of women's and men's vulnerability in the context of the flooding in 2011 in a rural village: Ban Lao in Laos PDR. Further adaptation and coping strategies can mitigate short and long term vulnerability on the local level.

Hence the research question I pursue is:

- How was the access to capitals significant in the context of gender-differentiated vulnerability to the flooding in 2011 in the village of Ban Lao?

In order to pursue answers to this question I shall identify:

- What capitals were lost by women and men in Ban Lao during the flooding in 2011.
- Which capitals were more essential to the adaptation and coping capacities during and after the flooding of 2011 and,
- If there were differences in access to capitals between the women and men in Ban Lao.

1.4 Structure of the study

To answer the research question, this thesis begins with an introduction of the conceptual frameworks that will be used when analyzing gender-differentiated vulnerability to flooding.

This is followed by the Methodology section which focuses on the fieldwork that was conducted for the study at site in Laos PDR.

The empirical data is then analyzed and discussed in the following section; Analysis and Discussion, by applying the conceptual frameworks.

The last section presents the Conclusion.

2 Conceptual frameworks

In this section, selected theories and perspectives are presented. Furthermore the motivation for utilizing the Community Capital Framework (CCF) developed by Butler Flora & Flora (2008) is expounded upon to gain understanding of gender-differentiated vulnerability to flooding.

2.1 Community Capital Framework (CCF)

This thesis uses a modified version of the Community Capital Framework (CCF) developed by Butler Flora & Flora (2008), adapted from Segnestam's ongoing research of gender-differentiated vulnerability to drought in the Nicaraguan context. The framework is developed as an attempt to better understand the nexus of poverty reduction, natural resource management and implementing sustainable projects at the local level. (Butler Flora & Flora 2008; Gutierrez-Montes et al. 2009)

Gutierrez-Montes et al. (2009) stresses that by addressing poverty from the perspective of the poor and engaging local people in the design and implementation of strategies for natural resource management improves economic security and social equity.

This thesis employs the framework to analyze the impacts from flooding among the women and men living in a rural village in Laos PDR as well as their coping and adaptation strategies employed in an attempt to reduce the impacts of flooding.

The CCF is a system approach where capitals are defined as the possession of resources on the individual or community level. Every individual or community regardless of economic status or location has access to capitals which can be used for development through negotiation and/or investments. (Gutierrez-Montes et al. 2009) When resources create more resources short-, mid-, or long term they become *capitals*. They can also be consumed, stored and preserved. The concept is empowering as the analysis is initiated by focusing on the individual's or community's *access to capitals* instead of *lack thereof*. (Butler Flora & Flora 2008)

The CCF draws in part on the capital concept developed by Pierre Bourdieu (1984: 1986), in particular when it comes to his social, cultural and symbolic capitals. His work has deepened the understanding of those assets beyond the merely material ones that an individual have in a social structure, which enable her/him to access a particular position in a society. Whereas Bourdieu in his analyses focus on how social and cultural processes articulate with economic power, Butler Flora & Flora (2008) include material as well as immaterial assets and differentiate between seven distinct capitals. Both Bourdieu (1984: 1986) and Butler Flora & Flora (2008) however, emphasize the interdependency and synergy between the capitals - the use of one capital can have positive as well as negative

effects on the other capitals in terms of the amount of available assets within one capital as well as its accessibility (Butler Flora & Flora 2008; Bourdieu 1984:1986).

Butler Flora & Flora (2008) include seven community capitals in their framework. They are; *Natural Capital, Social Capital, Financial Capital, Built Capital, Human Capital, Cultural Capital and Political Capital.*

Natural capital: Access to this capital provides access to other capitals and includes natural resources such as air, water, soils, forests, landscapes and biodiversity (Butler Flora & Flora 2008; Twigg 2001; Segnestam 2009). Wild animals and plants, crops; mainly rice in this thesis, and livestock are also included, as well as different erosion and flood protections such as weeds, grass and shrubs. The motivation for including these capitals under this category is their significance when analyzing vulnerability (Segnestam 2009) in the context of flooding.

Social capital: Describes and analyses human interactions within the own community as well as across regions and geographical borders. Social capital can be described as individual's participation in organizations and networks (Butler Flora & Flora 2008; Segnestam 2009) and can be analyzed in the perspectives of relationships, attitudes, norms and values which interact with each other on all levels.

Butler Flora & Flora (2008) describe two different dimensions of the social capital. They are *bridging* with groups outside the personal sphere and network specific contexts e.g. relationship between neighbors and coworkers. Bridging social capital "brings diverse people together" (p. 125). *Bonding* social capital refers to the relationships between individuals within a defined social group e.g. between family members and individuals with the same background such as class. Individuals with access to dual social capital have better coping and adaption capacity and are less vulnerable to flooding, for example, than those without (Adger 2003).

Lack of or reduced social capital can also exclude different groups to access networks for a variety of reasons such as gender, ethnicity, age or class. In these cases the individual can be regarded not only as an anomaly within that specific group or network but also as an outside threat. Thereafter the processes of excluding can begin. The individual is hindered from taking part in different networking processes. (Swartz 1997) However, this thesis only analyzes the role of gender and how it can be essential for access to capitals on the local level in the context of vulnerability to flooding.

Financial capital: Refers to incomes, savings, credits and other informal loans and pensions (Twigg 2001; Segnestam 2009; Butler Flora & Flora 2008). For their importance of income and livelihood diversification salaries and remittances are also included in this category. For example many males in the case study are seasonally employed at the nearby eucalyptus plantation and when household incomes are scarce.

Physical capital: Refers to access to infrastructure as well as machinery and other equipment required for livelihood strategies. Infrastructure refers to roads, water systems, constructions, transportations etc. Butler Flora & Flora (2008) refer to *Physical capital* as *Built capital.*

Segnestam (2009) also includes bicycles, clothes, cars etc in this category as they actually are assets that can be transferred into financial capital as coping or adaptation strategy in reducing vulnerability. Segnestam (2009) therefore expands and redefines Butler Flora & Flora (2008) concept in the vulnerability analysis as this capital is a useful coping and

adaptation strategy in the context of flooding. This thesis therefore refers this to the term *Physical capital*.

Human capital: Includes education and skills level, personal health, labor access, access to health care, family size and composition as well as self-confidence and esteem. (Butler Flora & Flora 2008; Twigg 2004; Segnestam 2009) This capital improves the individuals' opportunity to secure employment and their ability to participate in debates and discussions by having its voice heard in decision processes on different levels. It can also contribute to improvements of quality of life. (Bebbington 1999)

Cultural capital: This capital can be compared with *informal institutions*. Norms, traditions, the way to dress and speak are included in this category as well as prevailing power relations between women and men.

Cultural capital is accumulated and embodied since childhood. (Swartz 1997) and it is powerful when having one's voice heard and listened to. For example is this capital also essential for one's ability to influence different decision making processes (Butler Flora & Flora 2008; Segnestam 2009) or processes involving the distribution of food within a household e.g. who eats first (Wisner et al. 2004).

Political capital: Refers to the influence people have over resource distribution within e.g. the community and having access to power, one's voice heard and influence in different organizational and decision making processes. Political capital can also be compared with *formal institutions*.

Butler Flora & Flora (2008) states that the political capital reflects the dominant cultural capital for its ability to set principles, the rules and regulations to follow these principles and to which degree they are implemented (p. 144). Political capital also includes gender and its relations as gender is influenced and formed by interactions of formal and informal institutions (Ibid.). The interactions not only contribute to societal structures on local level but also to gender relations (Butler Flora & Flora 2008; Segnestam 2009). Douglas North (2005) refers to institutions as:

“Institutions are the rules of the game of a society composed of the formal rules (constitutions, statute and common law, regulations) the informal constraints (norms, conventions and internally devised codes of conduct) and the enforcement characteristics of each.” (p. 2)

2.2 Concept of vulnerability

This thesis follows the concept of vulnerability defined by Wisner (2004) and Dankelmans' (2010 p. 9) where the capacity to cope with and adapt to external stress is related to social and economic development. Further, vulnerability is highly contextualized and should therefore not be generalized at any level.

Wisner et al (2004) defines vulnerability as:

[...]“the characteristics of a person or group and their situation that influence their capacity to anticipate, cope with, resist and recover from the impacts of a natural hazard.” (p. 11)

Kelly & Adger (2000) highlights for a researcher to be able to reveal and analyze what resources are not only available but also most essential on the local level; the community's socio-economic well-being shall be emphasized. The individual's vulnerability, with this

approach, is then based on the resources the person has not only access to but also control over.

Individuals and communities have different sensitivities to exposure at a range of scales even when they are hit by the same hazard. However, some are more at risk or exposed to damages, losses and suffering than others. The intersection between dynamic complexities such as of gender, class, ethnicity, age and occupation can additionally expose the individual and community to different kinds of risks. (Wisner et al. 2004)

To be able to receive a fuller insight when analyzing vulnerability and its differentiation Segnestam (2009 p. 155) suggests in her work on drought in Nicaragua the researcher should focus on three different categories:

Exposure: To what extent a social group, geographical location, or an ecosystem is confronted to a recurrent and interrelated hazard.

Adaptation: Strategies to turn around the process of a long term risk minimization and reduce further vulnerability and to a new situation. There are a range of options for adaptation strategies which aim to improve the household's capacity to resist external shocks. Examples of adaptation strategies can include e.g. income and production diversification and asset building activities.

Coping: Strategies and short term responses to unexpected events e.g. move animals and farm implements upland or trade them for money, water or food.

Segnestam (2009) explains this approach that the level of vulnerability is dependent on the interaction by above components. Combining adaptation and coping strategies not only reveal the degree of exposure to a hazard but also to what extent that specific household or individual is confronted with vulnerability.

An important dimension Beckman (2006) points out in her work about flooding in Vietnam is also the scale of time. The impact of a hazard can have consequences for the household at a range of scales. A hazard can have immediate impact on the household's livelihood strategies as well as gradually or over time.

The impact can also produce new or increased vulnerabilities due to insufficient coping or adaptation strategies and thereby undermine the resources and their availability. E.g. the household might have reserved rice seeds for next cropping season. To avoid famine and food shortages after e.g. a bad season they might be required to eat the rice seeds. In this way the coping strategy ought to be seen as a downward spiral that increases vulnerability as the household does not have enough food for the rest of the year. (Ibid.)

Figure 4 illustrates an example of how strategies for coping may reproduce vulnerability whereas adaptation strategies such as income diversification may instead reduce the vulnerability on individual or household level.

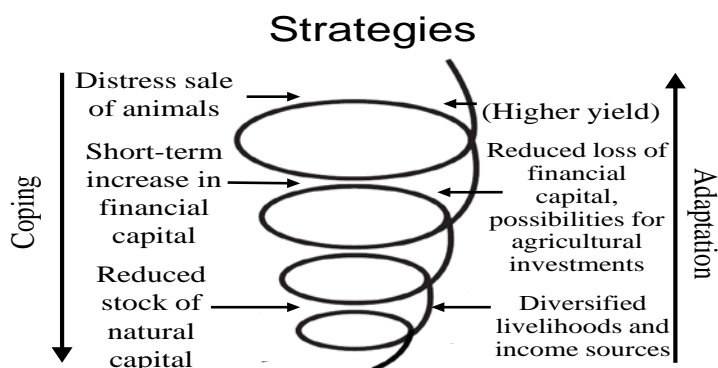


Figure 4 Example of strategies reproducing or reducing vulnerability at individual or household level.

(Modified by the author from Emery & Flora (2006); Segnestam 2009)

The degree of exposure in combination with an unexpected event can put people at risk. Their lives can thereby be negatively affected as not only is their immediate environment impacted; their livelihoods are also suddenly interrupted. (ALNAP 2008) It is then that the event becomes a disaster. This thesis also follows Wisner et al (2012) definition of a disaster as:

“A situation involving a natural hazard which has a consequence in terms of damage, livelihoods/economic disruption and/or casualties that are too great for the affected area and people to deal with properly on their own” (p 30)

Further, marginalized populations tend to be more vulnerable as they lack or have less access to economic resources, few settlement or livelihood choices. Therefore in the context of disaster these populations are prone to be further exposed to risks and marginalization. (Wisner et al. 2012)

Kelly & Adger (2000) argue that poor, marginalized and underrepresented populations are excessively vulnerable when experiencing external stress and therefore prone to not only reproduce but also to embed vulnerability.

Lein (2009) points out that many times in research exploring people in the context of vulnerability and disaster the research has:

“[the] inherent tendency and possibility to classify and label groups of people and societies as vulnerable, may actually serve to reinforce popular and ingrained prejudices”. (p. 110)

It is essential to note that residing in hazardous areas does not necessary imply that the people in these areas are vulnerable. Beckman (2006) stresses in her research that it is the actual circumstances that creates vulnerability not the livelihood strategies per se. Further Beckman (p. 29) stresses that research concerning vulnerability at the local level ought to focus on how and what in these livelihood strategies make people vulnerable. Therefore assumptions regarding peoples or communities vulnerability are risking serving to stigmatization and the creation of the “otherness”. For this reason is it motivated in the context of vulnerability that the research shall focus on people’s capacities as well as the constraints within which they cope with and adapt to a disaster. (Lein 2009)

As Wisner (2004) points out that people are not passive and unable to adjust their livelihood strategies if/when confronted with external stress. When facing changes in their environment they use their resources to bring on precautions (p. 14). Therefore the vulnerability analysis should always strive towards not victimizing people living in hazardous areas but rather towards empowering their capacities.

Sen (1981; 1984) employs the notion of entitlements in his concept of vulnerability at the household level. In his analysis *entitlements* – the rights and opportunities a household or individual can claim are seen to be central to the ability to cope with and adapt to external stress. However, Lein (2009) expands Sen's concept in his work on char dwellers in Bangladesh and points out that *access to* resources ought to be included in the vulnerability analysis as well.

Lein (2009) further claims that to be able to understand the concept of vulnerability focus should also include the capacities an individual's inhabits to be able to make use of these entitlements. Being entitled to a resource does not always entail its accessibility. The individual might not, for several external reasons out of her or his control have access to a specific resource. These reasons can be implemented formal and informal institutions such as interacting norms and traditions in that specific context. Therefore is it motivated that Sen's concept concerning entitlements and resources should be analyzed in the context of *access to* and *control over* rather than just *existence of*. It is only then the actual capacity of coping and adaptation on all levels will be revealed.

Thereby is it prompt to state that Lein's approach also correlates with Butler Flora & Flora (2008) framework (CCF) where access to capitals is essential for the definition and analysis of gender-differentiated vulnerability in terms of coping and adaptation capacities to external stress in this thesis the context of a rural village in Laos PDR.

2.2.1 *Vulnerability and gender*

Research concerning the interaction between natural disasters and its implications for gender relations are given more space in today's research. Despite these insights there are still gaps to be filled in matters concerning who has access to and control over household resources in the context of gender-differentiated vulnerability to a natural hazard. In regions with rapid economic and social development, like Southeast Asia, stakeholders are still challenged by processes of poverty reduction, social vulnerability and sustainable development. (Sultana 2010; Forest Peoples Programme 2012)

Gender relations are contextual as well as dynamic and are shaped by the constant interplay between symbolic dimensions (e.g. cultural texts, representations and stereotypes), institutions (the visible differences between females and males in society, such as division of labor and land ownership) and the individual (e.g. identity). (Dankelman 2010)

Women's visibility and productive role in agriculture have previously been largely overlooked in the discourse of economic development. Assumptions have been made that men are agricultural practitioners and producers and women practice home economics. In processes of mechanizing agricultural production, tools and machines are geared towards men even if it is primarily the women that are working in the fields and growing the crops. (Escobar 1995)

Enarson et al. (2007) stress that women in rural areas often tend to be vulnerable to technical and environmental disasters due to their responsibility and dependency on natural

resources as a primary livelihood strategy. As an outcome can they have less capacity to choose or change livelihood strategy such as off farm labor.

Women are counted for as 60 % of the world's poor, they are likely to own fewer assets, have less access to land and property and have lower wages than men. Further, more women have not only lesser access to knowledge and education but also fewer opportunities to choose and/or develop them. (Ariyabandu in Enarson & Chakrabarti 2009)

Many feminist researchers point out those societal power structures such as class, ethnicity, age and social context ought to be a part of the research matter of gender-differentiated vulnerability due to their ability of affecting gender roles such as access, use and control over household resources. De los Reyes & Molinari (2005) explains that different forms of power relations are defined and executed in the intersection between institutional, structural and individual behavior. Yet this thesis solely analyses the concept of gender and which role it plays for access to the different resources in the CCF framework referred to as capitals.

With the above in mind when attempting to pin down gender-differentiated vulnerability one shall not generalize but acknowledge that it is not only the feminization of poverty (Domosh & Seager 2001 p.63) that solely place women in the vulnerability discourse.

3 Methodology

This section motivates the choice of research approach, methods and strategy used for this study. Further, ethical issues related to the study are briefly discussed as well as some of the challenges encountered during the field work.

This thesis utilizes a mixed methods research approach consisting of ethnographic fieldwork as described by Clifford & Marcus (1986) and Yin (1994) together with Participatory Rural Appraisal (PRA) research techniques.

Fieldwork was undertaken in November 2012 and was carried out with the help of Savannakhet Provincial Agriculture and Forest Office (PAFO) together with Xayboury District Agriculture and Forest Office (DAFO). With their help, appropriate official permissions were applied for and admitted, key informants and village contacts were set up before arrival and translations made by an interpreter during all the field activities. All the activities were also accompanied by officers from the above offices.

3.1 Mapping vulnerability

A combined methods approach can produce valuable insights/results because the research can be triangulated, providing a holistic perspective through diversity and the possibility to produce outcomes that address a range of different needs. (Morgan 2007)

The use of PRA techniques for this thesis included research methods ranging from resource and social mapping where villagers were asked to illustrate a map and draw out key places or resources in the village. In this way valuable information about village structure etc. could be accomplished. Another method was to interview some key informants (Bernard 2002) to be able to capture village history and narratives of important events in the village.

However, the use of PRA techniques to collect research data does not come without criticism. The method has been criticized to maintain power relations, concealed behind the development rhetoric of local participation and empowerment (Cooke & Kothari 2001). In this sense it seems appropriate to ask how participatory PRA is in reality. Local decision-making processes can still be the product of Foucauldian power/knowledge and prolong hegemony (Nilsson 2008). Therefore shall critical reflexivity and positionality remain significant during the whole process and a continuous introduction of the “self” ought to be made during the analysis (Alvesson & Sköldbberg 2009). In this way relations related to the execution of power can be reduced.

3.2 Case study as a research strategy

This thesis employs the case study as an overlapping strategy to approach the research question about gender-differentiated vulnerability to the flooding in Ban Lao in 2011. However the thesis does not employ the traditional style of ethnographic writing as referred by Clifford & Marcus (1986) only the methods. The collected data is instead divided into sections to facilitate a good overview of the analysis and conclusion of the research matter.

The ethnographic research approach highlights field work as an ability to study people in their everyday settings (in this thesis a rural village in Laos PDR). It is through the advantages of the researcher as a part of everyday activities and life, the accomplishment to seize contextualized social meanings and actions can be revealed in the process of collecting empirical data. (Alvesson & Sköldbberg 2009)

By taking advantage of the flexibility of ethnographic research approach and combining different data collection methods in the field, the research matter could be explored.

Robert Yin (1994) explains the case study to:

[...] “Allow an investigation to retain the holistic and meaningful characteristic of real-life events” (p.7).

Further, he explains the case study strategy as:

[...] “Like no other research strategies, is a way of investigating an empirical topic by following a set of pre specified procedures” (p. 15).

To get close to the reality by employing an overlapping ethnographic case study cannot only be determined by the author’s interpretation. Forces shaping people’s reality must be reflected over during the entire process as well as being confronted in the analysis. The validity in what is told during an interview can be determined as the reality through a holistic, interdisciplinary approach where language, rhetoric, power and history are essential for the process of writing. It is essential for the researcher to constantly evaluate and question what is really being told during an interview for the reason that an “outsider” can seldom verify the entire “inside” truth. (Clifford & Marcus 1986)

3.3 Data collecting methods

A triangulated data collection approach was used in this thesis as an attempt to frame the validity in the results. By combining structured interviews, Focus Group Discussions (FGDs), Key Informant Group Interview, continuous participatory observations at site and literature studies, a holistic picture of the villager’s reality was achieved and the intersection between recurrent flooding and gender-differentiated vulnerability could be penetrated and further analyzed.

During the PRA methods the participants were divided in female and male groups. The motivation for this approach was the assumption that there are differences in how women and men experience disaster (Fordham in Wisner et al. 2012 pp. 424) as well as in how women and men use different resources (see further chapter 3.3.2).

Literature reviews were conducted before the fieldwork with the purpose of achieving a more holistic perspective and a better understanding of the context as well as of the research matter.

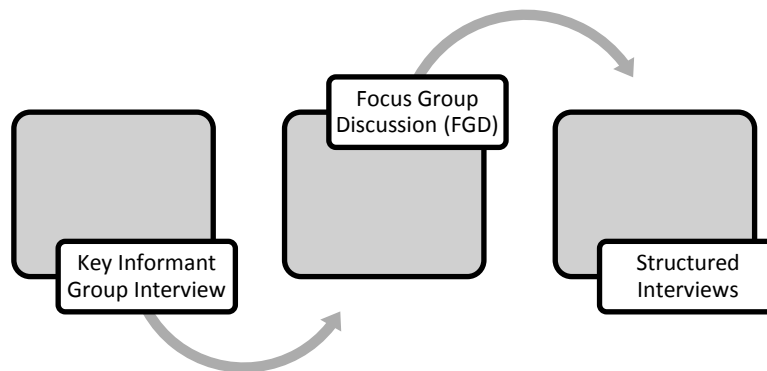


Figure 5 The data collection process.

3.3.1 Key informant group interview

The data collection process started with a key informant group interview. The respondents for this task were identified, selected and already set up by DAFO, the Laos PDR partner, prior to arrival to the village. Selected key informants were: the village head, deputy village head and an older man from the village. Representatives from the village Farmer Association⁶ and Women’s Union⁷ were also present during the interview; in addition they were only observing and did not speak. The selection of respondents was based on their position in the village and organization of representation. They were assumed to provide knowledge regarding historical changes in the village. The key informant group interview was conducted in the local language, with the interpreter, at the village *Wat*⁸. The interview lasted approximately for one hour.

Initially the respondents were asked to draw a historical timeline of the village. The purpose of this activity was to achieve “a sense of place”, an overview of the nature of the 2011 flooding and the people affected by it as well as the village’s social, political and economic issues related to the event.

Kvale & Brinkmann (2009) argue that the purpose of using open interviews for collecting data are to let the stories be brought up spontaneously with no interference by the researcher. By this method the respondents are able to “organize and express meaning and knowledge” (p. 153) to important events in their village. The villagers chose what stories are most central to them and village history is further seen through their eyes. The researcher’s role is to remain a listener asking questions where explanation is needed. To set off the process the interview was commenced with the questions:

Would you please share the village history? When was it found? When was electricity introduced? When was the road built?

When did this village first experience flooding? Would you please share what happened, before, during and after?

⁶ National mass organization established 1975. Operates to protect and the rights and legitimate the interests of the members (farmers). (The Asia Foundation 2010)

⁷ National mass and social organization established 1955. Operates on central, provincial, district and village level to promote and protect Lao women’s rights. (OHCR 2010)

⁸ Buddhist temple complex. Also function as Village Assembly Hall.

During the process a historical timeline including important events were also produced. The purpose with the timeline was to get a good overview of the village and its history. The historical timeline was also shared, at site, with the villagers in both focus groups.

3.3.2 Focus Group Discussion

Focus Group Discussions (FGDs) is a valuable activity when the researcher's desire is to find out several viewpoints of the research matter. The researcher role is to facilitate the activity by initiating the topic (Kvale & Brinkmann 2009) and then to "step back" and observe the participants. It is essential that the researcher does not lead the activity too much and refrain from "putting words in the participant's mouth" (Bernard 2002 p. 229). The group should be able to talk and comment on each other's opinions and thereby lead the discussion themselves (Bernard 2002). The aim of this activity was not to find consensus about the topic.

FGDs should not replace other methods e.g. surveys or interviews. They are rather a complement to the other methods (Bernard 2002) and a part of the triangulation. Bernard further explains the homogeneity for the group is essential as the results validity can be at stake if the participants know each other. The activity was conducted in separate women and men groups with the motivation that their perceptions and usage of resources may differ. For instance, the women focus group brought up the importance of trees in the village during the activity. They stressed that trees were good for relaxing in the shade after a warm day of work. Trees as a resource for relaxation and shade were not mentioned by the male group. Instead the male focus group outlined the location of the eucalyptus plantation while the females pointed out the nature conservation area close to the village where they collect firewood, bamboo and herbs.

Previous research has showed that many times implemented informal institutions tend to shape or influence women's responses or even not prompt them to speak in the presence of a man (Bernard 2002). It was noticeable during the activity that hierarchical structures existed within each subgroup. For instance, when the female groups were asked to draw a map of the village in the activity was initiated by the women's union representative and the elder women in the village. The younger women stayed in the background and only spoke when asked to comment on what had been told during the discussion. The same situation occurred in the male group as well where the initiative was taken by the village elderly and the village head.

The FGD activity was initiated by that the villagers were asked to draw a *resource map* of their village, including houses, the field's, infrastructure and the river. The purpose was not to develop an accurate map but rather to achieve useful information of local perceptions of the village and its resources. This kind of map can be useful to find out the village resource base and to know more about the community (Forest Peoples Programme 2012). The process was initiated by the questions:

Where do the livestock graze? Where is your rice field and vegetable garden? What else do you grow? Where do you collect firewood, mushrooms and herbs (NTFP)? Where do you collect water? Where are the river and the road?

The participants were also asked to draw a *social map* on the same map to show social structures and institutions found in the village. This map can also reveal and provide useful information about existing social and economic differences among the households (ILAC 2008a)

Where do people live? Where is the *Wat*? Where does the Lao Loum⁹ live? Where does the Phu Tai¹⁰ live? Where do the village leaders live?

The resource and social mapping was concluded by the participants who were asked to draw out which areas were affected by the flooding in 2011 and what implications it caused.

The FGDs concluded with the participants were asked to draw a *seasonal calendar* over village activities over the year. This was also done in separate female and male groups and in the local language with the interpreter present.

The purpose of producing a *seasonal calendar* (see Table 1) was for the villagers to illustrate livelihood changes over the year and to show the seasonality of agricultural and non agricultural workloads, food availability, gender-specific income and expenditure, access to resources, flooding and other hazards etc. (ILAC 2008b)

Further the FGDs started off with six villagers but the number of participants expanded as the process proceeded. The location was on the ground in the shade outside the *Wat*. The activity was conducted in the local language with the interpreter present as well and lasted for approximately two hours. The morning activity was then concluded with a long lunch in the *Wat* together with the village head, his deputy and the representative from the Farmers Association and the partners from DAFO.

3.3.3 Structured Interviews

The purpose of conducting structured interviews is to allow selected individuals to respond to the same set of questions to be able make comparisons between the responses. The reason for choosing structured interviews as a qualitative research method was that the main objective for this study was to explore people's perceptions and experiences of a certain matter and to explore how they coped with and adapted to this experience. To be able to reach the aim of interviewing all of the 32 households¹¹ in the entire village, it was necessary to follow a schedule as time in the field was limited. The time given for each interview was approximately 45 minutes.

The interviews were conducted orally face-to-face with the respondents and the forms were prepared and printed before going to the village. The preset goal to interview all the households in the village were possible due to the assisting partners of DAFO as well as Ban Lao is a relatively small village. 31¹² structured interviews were carried out. Preferably, the selected respondent was the household head or her/his spouse, secondly their children or other family members. The interviews took place in the home of the respondent together with the interpreter (unless the interview was conducted by the Laos partner). The interviews were conducted inside or outside the respondent's home and each interview started with a presentation of the project.

The respondents were informed that this research project was not assigned by any development organization and any village developmental work could not be influenced. It was important from the beginning to gain the trust of the villagers by clarifying my own

⁹ "Lowland Lao"; dominating ethnic group in southern Laos.

¹⁰ Theravada Buddhist minority group in the districts of Savannakhet and Khammouane. (Ibid.)

¹¹ Interviews were conducted with 5 female household heads, 5 females in male headed households and 21 male household heads.

¹² One household was not available to be interviewed.

role in the research process and not give any false signals or expectations. It is of importance to initiate any interview by assuring the confidentiality in the answers and to make sure by explaining that the researcher is interested in *their* opinions and observations of the research matter. (Bernard 2002)

Further the respondents were informed their identity was not essential for the study and they could remain anonymous if they desired.

The objective of the structured interviews was to generate an overview of multiple issues where flooding and livelihood strategies intersect and affect the villagers. A so called wealth ranking was also made. The purpose of ranking the households wealth was to achieve a good overview of the village economic status, not to rank the households per se. The ranking was made with the questions of the household's access to infrastructure, assets, and livestock and owned farm implements. An observation of dwelling units' characteristics was also conducted during the interview. Estimated distance to the river was also asked in an attempt to receive a picture of the homestead's vulnerability to flooding.

The interviews started off with the respondent telling the number of household members, age, gender, education and occupation. The respondents identity was protected by every interview received an exclusive code (country/district/village/household/respondent number: 1 = household head, 2 = spouse, 3 = child etc.). The names of the respondents were not essential for the analysis or for the results of the study. The motivation for coding was if there was a need to go back to the field site to compliment any interviews or clarify uncertainties. This was never necessary.

The structured interview followed an *interview schedule* (Bernard 2002 p.205 ff), including questions like the following:

Where you impacted by the flooding in 2011? If no impact, continue to question XX, if yes please continue.

How did you cope with the flooding in 2011? If no coping, please continue to question XX. Why not?

Did you lose any assets during the flooding in 2011? If not, please continue to question XX. Etc.

To be able to receive as sincere and reflexive responses as possible was it essential to give the respondent the time to answer each question in their own time and not prompt any answers.

3.3.4 *Participant Observation*

Participant observation was undertaken in order to get as close as possible to the villagers; making them feel comfortable in my presence to thereafter be able to record their everyday life. Russel (2000) explains participant observation:

“It puts you where the action is and lets you collect data... any kind of data you want, narratives or numbers.” (p. 324)

Participant observation was carried out throughout the entire research process. For instance when sharing meals together with the other villagers in the village heads house I joined the

other women to prepare and serve the meals. As well as to clear the plates and trays after eating and do the dishes. In this sense I could get a better insight and understanding of existing informal institutions around preparing and sharing a meal. I also had tea together with a few women in the shade under the trees in the middle of the day when it was too hot to work in the fields. As I do not speak the native language the conversation was carried out in Lao and English. Communication was achieved through gesticulations and a lot of laughter!

These kinds of situations are good opportunities to get closer to the villagers. I sensed that it made me less of a stranger to the villagers and that they opened up to me. I was later invited to their homes in the afternoon to conduct the interviews and to have some fruit and water. However, I did not have the opportunity to participate in the villager's daily work in the rice fields and gardens in order to for example "observe the making of vulnerability, coping and adaptation" due to too little time at site.

3.3.5 Documenting the data

– Secondary data

The secondary data in this thesis consisted of four different sources: literature (books and scientific articles), organization and local government documents and the World Wide Web. The governmental documents were provided by partners of the Stockholm Environment Institute Asia Center (SEIA) an independent international research institute operating in the region and included flood data of the impacts from the flooding in 2011 on the provincial and district level. These documents were provided to SEIA from the National Agriculture and Forestry College (NAFC) in Luang Prabang in Laos PDR. Some of the other literature used for this thesis was also provided from SEIA.

– Field notes and transcription

The process of keeping field notes was a beneficial and essential task for this thesis. Here notes of village observations, reflections over village structure and wealth as well as the dynamics during the activities and other matters related to the research were made.

Examples of field observations made consist of how a meal was prepared and shared or who went first into the rice fields and gardens in the morning. Additionally all the field notes were reviewed during the entire process whenever clarification was required.

Further, the results from the structured interviews were first categorized into themes and the answers received a specific code. This process was done with the motivation to receive a good overview of the village such as flood impacted livelihoods, lost assets and other matters related to the research on household level.

To be able to capture gender differentiations of flood impacts, access to capitals and coping and adaptation strategies at the local level the respondents were divided into three different groups in the analysis. These categories were: *Females in male headed households*, *Male heads of households* and *Female heads of households*.

A recorder or other devices was not used for the data collection in this thesis. However a camera was used for visual documentation of the village and its surroundings.

3.3.6 *Challenges in the field*

It is of essence for the respondent to feel as comfortable as possible during the interview and therefore the activity should be conducted in a neutral room as possible without any outside interference. (Longhurst 2003) However to carry out interviews on a one-by-one basis proved sometimes complicated; contextual organization of village life sometimes meant private interviews were treated with suspicion by a few villagers.

Further, as the interview was conducted in or near the respondent's home, occasionally household members, or other villagers, would listen in, add or interfere with the respondent's answers. On a few occasions the respondent would consult the other household members before answering. This is always a risk when conducting the interview in an individual's home but considering the nature of the questions and the research matter outside interference did not affect the validity or the reliability of the responses. However, the above incidents reflect the importance of carefully selecting the place to conduct the interview which is something that the ethnographer cannot always decide.

In a few occasions I was asked to wait until the husband came back from the fields before I could interview their household. Sometimes the interview started off with the female in a male headed household to thereafter conclude with the male head. During these occasions observations were made that the female in the male headed household withdrew herself after the male head had arrived and the interview then continued with the male head as respondent. In a few occasions the female of the male headed household was present during the interview but did not say anything unless she was consulted.

Kvale and Brinkmann (2009) and Swartz (1997) point out that the skills of interviewing is a social practice rooted in a socio-political context where power relations are produced and reproduced through cultural capital, processes and institutions. There is a risk that the validity of the interview outcome can be negatively affected since the respondent and the interviewer are not equivalent partners during the interview situation due to different access to capitals as well as me being a European conducting research in a previously colonized country¹³. Sometimes old colonial structures surfaced during the interview as well as the fact that I am a female researcher doing fieldwork in a gender-differentiated context.

Kvale and Brinkmann (2009) also point out the importance of the researcher's practical skills and own judgments and how this might affect the actual situation. Interview skills can only be achieved through practice and the quality of the data collected for the research is highly dependent on the skills of the interviewer.

To work together with an interpreter was another challenge that I encountered on the field. On one hand to use an interpreter was necessary, on the other hand the interpreter can also affect the validity in the responses by misinterpreting the answers or influencing the respondent in different situations.

There were several layers of potential misinterpretation in both answers and translations as neither I nor the interpreter spoke our mother tongue during the interviews. Translations crossed three linguistic barriers Lao-English-Swedish. The risk of misinterpretation increased with each step. Occasionally vernacular differences between Northern and Southern Lao were encountered as the interpreter was native from the Northern parts of Laos PDR. Continuous back translations during the interviews were the most linguistic precautions; however, the dynamics of the actual situation was harder to assume.

¹³ Laos PDR was colonized by the French union 1946-1953 (at this time only Laos) (Whittaker et al. 1979).

Further, FGDs can create a more complicated interpretative challenge than single interviews and can easily run out of hand; however, kept under control their benefits are evident.

There was also a need to understand, and adapt to, local implemented perspectives. Becker (1996:57-60) explains the value of taking on the *Actor's point of view*.

To be able to achieve as accurate results as possible e.g. of village everyday life is it essential that the researcher aims to find out and understand the meaning behind the villagers actions. If not the results are in the risk of just being speculations. (Ibid.)

For example, in Ban Lao the farmers thought in terms of eleven months¹⁴, family relations are categorized differently than in the western culture and the definition of a household was highly flexible. As well as those occasions when the interview started off with a female in a male headed household and when the male head arrived the woman withdrew herself and the situation was "taken over" by the male.

¹⁴ The seasonal calendar year were adjusted during the activity to 12 months.

4 Flood impacts of Ban Lao

4.1 Exposure, flooding and livelihoods at risk

In 2011 South East Asia suffered from several natural disasters such as flooding, cyclones, drought and storm surge. The disasters had many implications for people living in the region ranging from social and economic development setbacks, destroyed infrastructure and unexpected health issues. (UN ESCAP 2011)

People and communities are exposed to external stress at a range of scales. The concept of exposure is therefore highly contextualized and varies from individual to household level, therefore the results from the analysis should not be generalized (Lein 2009).

The exposure to flooding can maintain a condition that is the function of the village resilience, coping and adaptive capacity. As the results from the interviews with the farmers in Ban Lao stated, livelihood¹⁵s are a complex and a diverse assembly of practices therefore the analysis and the results in this thesis of the intersection between vulnerability and gender should be treated as unique for this specific context.

“It is only once you are the owner of land that you are vulnerable to livelihood pressures.”
(Male household head)

All the villagers have farming as their primary source of income; they are self-sufficient, full time farmers, cropping mainly paddy rice. The respondents acknowledged, during the interviews, division of labor within the households being quite clear and “traditional Lao”. The men in the village identified themselves as farmers whilst the women mainly saw themselves working in the family farmland as well as taking care of the children, other family members and the homestead. Many of the households in the village had up to 16 members which indicated a heavy workload within the household as well.

The village agricultural surpluses are picked up and brought to the market in Savannakhet City by a middleman or by the household males. Additionally to rice the farmers cultivate tobacco, chili, cucumbers and other vegetables which are small scale farmed in nearby gardens to be sold at the market as well or consumed by the households. For supplementary income many women in the village, especially in female headed households also produce and sell handicrafts such as bamboo mats, textiles and baskets to the market in Savannakhet City. These items are also picked up and brought to the market by a middleman a few times a year.

¹⁵ Livelihoods are defined as an individual’s or household’s access to different kinds of assets, capacities and activities essential for living. (Beckman 2006: Ellis 2000)

Table 1 Seasonal Calendar of village activities.

(Based on the results from the FGDs)

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Rainy season												
Flooding												
Landslides												
1st crop												
2nd crop												
Chili												
Cucumber												
Tobacco												
Other vegetables												
Grazing												
Collecting Non Timber Forest Products												
Off farm labor												
Festivals												
Handicrafts												
Food Shortages												

In Savannakhet existing agriculture policies seems, in accordance with the Green Revolution encourage the farmers to move from subsistence to cash crops. National implementation processes together with the belief that rural poverty can be solved by encouraging market relations can represent the ongoing national implementation of the New Economic Mechanism¹⁶ (NEM). Matles Savada 1994 d)

In 2000 the government constructed a village irrigation system as a part of national implementation of double cropping (and as a part of NEM). The initial construction of the irrigation channels was built and introduced by DAFO, with the provision of an excavator and labor (paid off farm work to the villagers). Hence, maintenance was the responsibility of the villagers.

The implementation of Green Revolution generates access to infrastructure, such as electricity and irrigation but additionally it makes livelihoods more complex as well as increase vulnerability. Decoutieux et al (2005) suggests that government policies would not be effective if there is not already a strong attachment to land and community - which the

¹⁶ The Second Five-Year development strategy plan was implemented by the Fourth Party Congress in 1986. By exposing the economy to the world market and encourage foreign and private investors without sacrificing the national goal of food self-sufficiency, the overall economy should thereafter increase. As a part of this process the responsibilities for economic and social development was decentralized (provincial and district levels) and the farmers were encourage to only grow cash crop (rice) for export to Thailand and Vietnam. The achievements did not succeed and the exports only financed 30 % of the imports in 1985-86. A third Five-Year Plan was implemented in 1991. (Matles Savada 1994d)

results from the interviews in the case study also illustrate. The villagers of Ban Lao desire stronger land tenure, improved infrastructure and secure livelihoods.

The changes in climate and weather make environmental conditions arguably more difficult — the exposure to hazards increases and impacts people’s livelihood strategies. It can seem obvious that the need for sustainable adaptation strategies, improved capacities to adapt to and cope with these new conditions and income diversification are emerging as an attempt to reduce vulnerability on the local level.

Generally many villagers perceived the flooding along the Xe Ban Fai River as a result of the construction of the Nam Theun 2 Dam (NT2) in combination with “*a lot of rain*”. The dam construction was completed in 2010 and in following year the village experienced severe flooding. When exploring the NamTheun 2 Power Company (NTPC) the company acknowledges that an “*increase of flooding*” is expected locally in some villages during the rainy season and to compensate affected villages the NTPC Downstream Programme offers a microcredit programme on local level. (NTPC 2013)

Lawrence (2010) mentions in his research on Nam Theun 2 Dam:

“Each of the affected Xe Bang Fai villages will receive approximately 2 million Lao kip (LAK) (USD 200) per household from NTPC, through a village savings fund. Villagers can borrow from these funds for various livelihood projects ranging from fishponds to pig-raising to tomato cultivation” (2010 p. 99)

Hence Lawrence (2010) is reluctant to the effectiveness of the micro credits offered to the farmers making a point that the loans have to be paid back whether or not the investment/project was successful or not. By long or short term payment plans, household incomes can be negatively affected as access to financial capital often then is reduced.

It seems that those in Ban Lao with no land ownership or had lost concrete assets¹⁷ were recipients of flood aid, such as cash and tools. It is thereby assumable that national leadership fails to recognize how the impacts of flooding may affect the village system. While a household without any land may not have lost any agricultural outcomes versus farmers who have lost everything; can they expect livelihood diversification through future employment? It was mentioned during key informant interviews that provided aid was based on how much land each household owned rather than the market value of expected agricultural outcomes.

The monetary value and investment differs whether a farmer crops rice or other cash crops such a cassava and in that way also household income. Thereby is the vulnerability to flooding increased as the household’s adaptation and protection capacities are negatively affected due to lesser incomes.

Crawford’s (2011) research of the intersection of emergency aid and vulnerability and how it may reproduce inequality seems appropriate in this context. The interviews in Ban Lao show that farmers with more access to capitals were generally more satisfied with received community and national leadership assistance compared to the poorer households as well as they experienced their voices were being heard. Crawford (2011) points out those situations like these might partially reflect potential shortcomings within the infrastructure of aid provision.

¹⁷ The interviews showed that in some households the farm land was heavily impacted by floodwater but they had not lost any or few concrete assets and vice versa.

A village is a dynamic entity and should not be perceived as homogenous and equal. Village elite with superior social and political capital can actively provoke aid providers. Therefore unequal provision of aid can often be understood in terms of an ongoing conflict between aid providers and receivers. It is not always necessary that provided aid reaches those who most need it, not even on local level — village structure and access to capitals can set the agenda for what and who should be prioritized. (Ibid) This was confirmed during the interviews - all female household heads in Ban Lao stated they were not satisfied with received aid. The results from the questions around satisfaction and what kind of assistance each household received can very well indicate gender differences in provision of aid on household and individual level. The distribution of aid is worth mentioning in the exploration of Ban Lao's exposure to flooding in the context of gender-differentiated vulnerability given that matter was brought up during the structured interviews. With that said is it assumed that provision of aid may reflect adaptation capacity on individual level.

4.2 Flood impacts in the village

This section explores the sequence of events when the village was hit by flooding. In this section, the intersection of access to capitals and vulnerability to flooding is further discussed. By analyzing the impacts from flooding on the local level it is clear that the households and individuals in Ban Lao were severely affected. The man in points out the level of flood water in impacted rice fields.



*Figure 5 Flood water level in impacted rice fields
(Photo by the author 2012)*

In 2011, flooding destroyed the entire second rice crop for all the village farmers. Following the planting season PAFO advised the farmers not to plant their second crop at all and only rely on the first crop that year. As a consequence some farmers stated they experienced income and food shortages in 2012. During the interviews it became clear that a substantial number of farmers had ignored the advice from PAFO. One respondent planted half her crop, another mentioned he had planted his entire second crop because "that was his way of life".

Shoemaker et al (2001) found in their article of river based livelihoods in Laos PDR, that most farmers considered their second crop as supplementary to their first. Development on household level, with an increase and access to physical capital such as electricity, motorbikes and mobile phones has not only improved overall living standards in rural areas it is also followed by higher costs. Therefore PAFO's advice not to plant following season may have been met with suspicion. It seems clear that the income from second cropping is no longer seen as supplementary and that the households relies on it as an income strategy to be able to meet the costs of living.

When analyzing the collected data it became evident that predominately four capitals were more impacted than the other - namely natural, financial, human, physical capital. All respondents regardless gender did not only mention destroyed rice fields and gardens when touching on the matter but also the impacts from the destroyed irrigation system and road for its importance for food production, income security and for transportation.

When ranking flood impacts on household level the male household heads primarily mentioned impacts such as loss of tools and agricultural equipment, income and disrupted electricity. Female household heads as well as the females in male headed households primarily mentioned health problems associated with the flooding such as ailments and diseases, lack of daily food and drinking water, loss of animals and household equipment.

In general, it may be assumed that there are not only gender-differentiations in access and control over household assets but also how females and males value as well as having responsibility over these assets. Hence, in this context is it worth mentioning that all impacted households did mention both "hard" and "soft" assets but when asked to rank which lost possessions were most essential on household level, it differed between the two.

During the flooding in 2011 the village school had to be closed for approximately two months. Many of the females were concerned with the closure of the school and the loss of supplies. They also expressed concern for long term effects of interrupted education.

Previous research by Martin (2010) about child participation in disaster risk reduction (DRR), children's vulnerability to disasters is categorized as psychological, physical as well as educational. In this research Martin (2010) points out that a school is not only an essential institution for education but also for social interaction. During flooding a child's daily routine is disrupted - it does not only affect the education quality, it can also be emotionally distressing for the child. As a further consequence, fewer schooldays indicate therefore lower accumulations of social, human, political and cultural capital. (Ibid.)

With above perspective flooding not only generates lower levels of education, it can also create barriers for community development as well as increased vulnerability on both household and individual level by sustaining lower levels of education in the entire village.

Appendix 1 illustrates the direct as well as indirect impacts from the flooding in the village (dependent on livelihood strategies) and their interactions.

4.2.1 Natural capital

"We have 1, 5 ha of farmlands. We lost our entire crop; rice, vegetables and watermelons. Everything was destroyed!" (Female household head)

When asked for the villagers own opinion what had caused the flooding a few female heads mentioned deforestation and clearing on the riverbank as a contributory factor. The trees were cut down to clear land for cultivating vegetables and tobacco and for fire wood. To

cultivate on riverbanks is a common agricultural strategy for people living close to rivers. Previous research has showed that it is evident that this is a negative human impact on the environment which increases the risk for flooding and different erosion processes that can result in flooding (see further Goodie 2006).

All households in the different interview groups mentioned the lack of drinking water and food due to the loss of resources such as rice crop, animals and forage. They all stated several times the extent of destroyed fields and gardens. However these impacts were mentioned more often by the females in male headed households and female heads whilst male heads primarily mentioned impacted physical capital.

4.2.2 *Financial capital*

“We did not have any income during the 2 months when our village was flooded. We survived through collecting bamboo, mushrooms, firewood and herbs in the forest that we could exchange for food.” (Female household head)

All villagers mentioned reduced daily income as an essential impact on the household. Overall the male household heads expressed impacts on financial capital to a larger extent than their female counterparts. The loss of income did not only result in food shortages on daily basis for all the households but also created problems with credit payments to the bank as well as other bills (electricity, school fees and petrol). These kinds of problems were experienced by all households. It appeared that credit payments to the bank were the prerogative of male household heads whilst the female heads experienced problem with credit payments to the local store, school fees, electricity and petrol. One explanation could be gender-differentiations in access to financial capital such as formal loans and credits.

Two male headed households received external assistance (national leadership support) after the flooding in 2011. Their interest on loans was reduced that year as a result from accompanying the community leaders to request assistance from responsible decision makers in Savannakhet City.

It appeared evident that the female household heads experienced severely impacted financial capital due to the flooding as an outcome from lacking opportunities for income diversification.

In those male headed households having access to water pumps concerns over having to pay high electricity bills during times of flooding were expressed. The farmers used the pumps to pump out the water from the fields. Further the farmers claimed that by adding extra financial input to their agricultural production the profit margin for the second crop was decreased.

All households considered themselves having little or occasionally lacking access to financial capital during the entire year as they did not have enough finances to buy food, water and other household necessities or to pay bills.

4.2.3 *Human capital*

“I am too old and tired. I just went to bed and waited for the water to disappear.” (Female household head)

A majority of the village females mentioned several health problems in relation to the flooding such as aching backs and joints due to the heavier workload in the rice fields and

from carrying large amounts of water to the fields. They also mentioned other health issues related to when the village was flooded such as diarrhea, infected small cuts and wounds and other problems caused by dirty and contaminated floodwater such as genital and bladder infections. Many women complained over the heavy workload and some stressed that their task was so hard their health and well-being was still negatively impacted.

Additionally agricultural outcomes were reduced due to too little water; the women could not keep up with the water demand from the rice fields and gardens since the village irrigation system was destroyed.

Impacted human capital such as health problems were something that was only mentioned by the female groups. Reflections over their own workload can indicate the division of village labor. Women are generally responsible for the domestic as well as reproductive work. The issue of the double burden with an emphasis on the heavy workload in the rice fields and gardens can indicate that the women are more vulnerable to external impacts related to their own health. Whilst the men are involved in other farm activities than the females or off farm labor they are not exposed to that kind of heavy work to the same extent as the females. However, this statement does not implicate that the men's workload in the rice fields are not profound it only indicates that they did not have double workloads to the same extent that the women did.

Other impacts on the human capital mentioned by all households were the experience of food insecurity and the lack of drinking water. The lack of food and water impacted not only the health of the household members it also had an effect on the member's ability to work in the fields. It was harder to work to their full potential with very little food and water.

Further the two female groups expressed concerns for the health of the village elderly and children during times of flooding. This experienced problem is something the male focus group did not mention. It seemed apparent that in this context caretaking of elderly and children are the prerogative of women.

4.2.4 Physical capital

“This is where I live; this is my house and my land. I am a farmer. Why should I move?”
(Male household head)

The road between the old and new village was financed through contributions of the villagers. It is the only road connecting the village to Savannakhet City. The status of the road is very poor and can be classified as a non all-weather road. It floods every year but in 2011 it got severely damaged due to the high level of flood water. The poor state of the road can indirectly be a contributor to the lack of drinking water, food supply and aid during and after the flooding as the village was disconnected from outside interference for a considerable time. The villagers expressed concerns over the status of the road as they have no money to repair it.

Figure 6 illustrates the bridge across the Xe Bang Fai River connecting Ban Lao to the neighboring village and district Khommuane. The bridge was severely damaged during the flooding in 2011 but was repaired by the NGO who was responsible for its construction in 2008.



*Figure 6 The bridge over Xe Bang Fai River (Nam Xe River)
(By permission of J. E. Rigg 2012)*

Electricity was provided to the village in 2010 as a part of a national development plan implemented by the government. There were several blackouts during and after last flooding and all households lacked electricity for long periods of time. The electrical poles tipped over as the ground became lubricant from the flood water.

Figure 7 illustrates the village irrigation system which was introduced in 2000 as a part of the national implementation of Green Revolution technology in the southern parts of Laos PDR. By introducing second cropping, agricultural outcomes would improve overall economy of the households in the rural areas.

During both FGDs (male and female) the participants stressed the need for the irrigation system to be repaired and the need for new concreted channels to be constructed to avoid future impacts. Existing irrigation system is an open system with no concrete. The response from responsible authorities still lacked behind.

When digging the system, excavated soil, gravels and rocks were left beside the channel. The village head said that he had reported to DAFO that following rainy period “mini-mud-slides” from the edges had deposited the excavated materials right back into the channels and had blocked several hectares of farmland which no longer had any access to irrigation (see Figure 7). Neither DAFO nor PAFO responded back to the village and two years after the construction, in 2002 the system was unusable, preventing the farmers to double crop. The irrigation system was further destroyed during the flooding in 2011.



Figure 7 Irrigation channel of the village
(Photo by the author 2012)

Further, many women lost their weaving looms and other handicraft equipment and materials. They all expressed concerns that their household could not afford to replace them. The loss was especially noticeable in female headed households during times when financial capital was scarce as producing handicraft was an essential supplementary household income.

“We used to have a weaving loom, as many other women in this village. But we and many other women lost both their looms and materials in the flooding 2011. We cannot afford to buy new looms... Or materials...” (Female in a female headed household)

Table 2 Gender-Differentiated Impacts¹⁸ on local level.
(Based on interview results)

	Women in male-headed households	Male heads of households	Female heads of households
Natural capital	Loss of small animals forage, crops and seeds.	Loss of large animals, forage, crops and seeds.	Loss of small animals, forage, crops and seeds.
Financial capital	Reduced daily income. Difficulties to pay bank credits. Loss of income diversification from selling handicrafts.	Reduced daily income. Difficulties to pay bank credits.	Reduced or lack of daily income. Difficulties to pay store credit. Difficulties to pay bills such as education and electricity. Loss of income diversification from selling handicrafts.
Human capital	Ailments and diseases. Aching back and other		Ailments and diseases. Aching back and other

¹⁸ Impacts relevant to all three categories at household level are mentioned in each column.

	joints. Genital and bladder infections. Heavier workload due to caretaking of sick family members.		joints. Genital and bladder infections. Heavier workload due to caretaking of sick family members.
Physical capital	Loss of household equipment. Loss of handicraft tools and materials. Loss of agriculture tools. Destroyed road.	Loss of tools and other equipment. Destroyed road.	Loss of household equipment. Loss of handicraft tools and materials. Loss of agriculture tools. Destroyed road.

4.3 Access to capitals in the village

4.3.1 *Natural capital*

The surrounding streams and nearby river (see Figure 8) serve multiple purposes such as for hygienic reasons, washing clothes and dishes, for collecting drinking water for the animals and to water the fields and gardens during the dryer period. No clean drinking water is available in the village and bottled water has to be purchased at the local store.

Collecting water is a time intensive, physical and debilitating labor carried out by the women and sometimes with the help from the smaller children. The stream is approximately 0.5 km from the village and potentially further to reach distant rice fields.



Figure 8 Xe Bang Fai River (Nam Xe)
(Photo by the author 2012)

Ban Lao is located downstream from the commercial eucalyptus plantation; Birla Lao Pulp and Plantation Company which sometimes contribute to contaminated watercourses. During the FGD the women claimed that each year approximately 15 cows and goats were poisoned by drinking the stream water.

The women also mentioned during the FGD that the surrounding forest is classified as Nature Conservation area implemented by the Laos PDR government as a part of a national Nature Conservation and Heritage program and to protect the national forest areas from

slash and burn, a traditionally common practice. The villagers are assigned by the authorities to manage and protect the forest without any interventions. They are allowed to collect dry wood for cooking, NTFPs and to fish at assigned river and stream areas and to hunt small animals (e.g. squirrels and monkeys). They are not allowed to cut down any trees, branches or use fire for any reason in the forest area. The forests together with the harvested rice fields are used for grazing.

As discussed in section 4.2.1, land and livestock are also included in this category. Females in male headed households have access to land but none had ownership. Formal and informal institution such as societal structures and traditions only allow men to inherit land. If no sons are born, ownership is passed on to the oldest daughter's family, sometimes when the widow is still alive. Land ownership is female in female headed households and is passed on to the son or son in law after the female head is deceased.

No respondents mentioned the quality of land except the matter of lacking water due to the destroyed irrigation channels during the dryer period.

Animal ownership is highly gendered; women own smaller animals (chickens, ducks, goats and pigs). Many of the male household head claimed ownership of the small animals belonged to the household. Hence, larger animals, especially cows and water buffalos were solely seen as properties of men.

All households were dependent on their small animals, mainly eggs, chickens and ducks and they were often sold for supplementary incomes, especially in the female headed households or for household food.

4.3.2 Social capital

The difference between how much the female and male groups participate in formal social networks (here defined as memberships in local organizations) within the village are clear. Most farmers (except for two) in both male and female headed households are active in the local Farmers Association which is working on food production, agricultural improvement activities and issues concerning the village irrigation system. A few males were also involved in formal networks (bridging) such as political parties and a local military group such as Volunteer Security Brigade whilst none of the women were involved in any local organizations. However one female head and a female in a male headed household were members of the village Women's Union.

Respondents in all households mentioned several informal networks such as assisting other family members or members of the village in different ways. The help consisted for example of watching children, providing food and shelter in case of emergency or with agricultural tools, amenities or labor and sometimes even small informal loans. It seemed apparent that access to social capital was important within the village and the social networks were embedded within it. However, some male heads expressed grief of not being able to return received assistance due to lack of resources such as money, food or animals. The male villagers also worked together, after the flooding, to clear the village, fields, gardens and homesteads.

“I woke up in the middle of the night by people crying out for help. I went out in my boat to fetch them. As my house was not badly impacted by the water I let several families stay at my house while theirs was flooded. I also delivered the food aid to all households who did not have a boat.” (Store owner and male household head)

Further, the village pub is essential in the context of social networking (bonding) between the village males. Here they informally engaged with each other. The women had access to the pub but seldom went there as drinking beer at a pub seemed to be the prerogative of men. Instead the women gathered at the local shop or in the shade under the trees in the afternoons. The local *Wat* also functions as Assembly Hall and is used for different religious celebrations/festivals and weddings.

4.3.3 *Financial capital*

The villagers have to have access to sources of income to be able to buy products the household did not produce themselves such as drinking water, oil, sugar, clothes, petrol and for children's school supplies, medication and electricity. During times of dryer periods and after the first crop, the men had access to paid labor at the nearby eucalyptus plantation leaving women and children in the village to work in the fields and garden plots. The respondents considered the off farm work to be a valuable supplementary income to the household. However livelihoods remained intimately connected to the own land all year especially for the females in male headed households and female headed households.

During dryer periods five male headed households had access to electrical water pumps to pump water into the fields, but the male heads of these households expressed they had problems paying the high electricity bill during this time. The pumps were before used for pumping water into the fields but now they were used to pump water out of the fields during flooding. Therefore were the male heads required to work extra shifts at the plantation during and after flooding.

The issue of remittances was never brought up during the interviews. It is assumable that remittances are not an essential supplementary income for the majority of the households in this village or the processes of long term migration as described by Segnestam (2009) in the Nicaraguan rural context¹⁹ has not yet been implemented in this context.

After the flooding some households received some sort of short term relief such as lower or no interest on loans and/or postponed payments to the bank.

In the FGD the males mentioned that their income throughout the year was highest during the months they could work at the plantations. No women had access to off farm labor. During these times the women when not collecting NTFP engaged themselves in producing handicrafts, such as fabrics bamboo mats and rice baskets, to sell at the market at Savannakhet City. Twice a year a middleman arrived in the village to collect and buy their produce.

Male heads of household generally had larger access to credit and formal loans as they can use their property (land) as collateral. It seemed they had better contact with the representatives of DAFO and other outside organizations offering credit and loans to farmers due to their engagement in the local Farmer's Association.

Credits accessible to the female household heads seemed mainly informal such as loans from relatives or credit at the local store. These households were to a larger extent dependent on the total income of the entire household.

However, it is important to note that the analysis concerning different income sources do not provide the complete picture of *absolute access* to financial capital. To receive the full

¹⁹ Segnestam (2009) describes how remittances are an essential part of household income in Nicaragua. It is not uncommon both men and women migrate to urban areas for work leaving elderly and children behind.

picture a comparison between absolute versus control of incomes has to be made. Questions regarding this matter were not brought up in the questionnaire neither did it come up during the interviews. Therefore is the matter not discussed in this thesis.

4.3.4 *Physical capital*

In all male headed households the buildings and house for living were owned by the male heads. Overall standard of the living houses were relatively good with the majority high elevated and on stilts (see Figure 9). The more recent constructions had concrete stilts; teak walls, tin roofs and official blue signs above the doors, showing the houses in the village have been counted and registered by government officials. The area underneath the house was also used for living and cooking area and to produce handicrafts and to store building and other materials. The indoor area is used for sleeping and for watching television. The houses of the female headed households were predominantly made of thatch and wattle (see Figure 10) as well as the houses for storing rice, seeds and fodder. The cattle is kept overnight fenced in or tied up at the homestead.

The motorbikes of the households are mainly considered as male property and are used to go into town or to the eucalyptus plantations. The fact that they were seen as the prerogative of men can have the effect of excluding the village females from larger social networks, such as towns and markets, and to require them to stay at the homestead and its surroundings instead. The females had access to the motorbikes but only when the males did not need them.

Twenty one households did have access to a hand tractor which the male heads also used for transportation. The households owning hand tractors considered the ownership on household level. The females in the village generally walked everywhere if they could not get a ride from a male family member or a neighbor. Further, none of the female headed households owned hand tractors.



*Figure 9 Example of more recent constructed house of a male headed household.
(Photo by the author 2012)*

A female household head ran the only local pub in her house as a supplementary income (see Figure 10). One male household head owned and ran the only village store. These two

establishments were only open during the evenings and on holidays as both owners were full time rice farmers during the day.

“I sold all my cattle to invest in a small shop selling candy and cookies. Now I have this big store selling everything! I think my life would have been different if I did not have this store. I would have been affected differently by the flooding... It is the food bank for me and my family... I think we are lucky!” (Storeowner and male household head)



*Figure 10 Example of the house construction of a female headed household
(By permission of J.E. Rigg 2012)*

There is a primary school in the village since 1986. The construction of the school building is simple, not on stilts and has no window glass or shutters and no door to close. All school materials are financed and bought by each household.

There is only one toilet in the village (a hut with a hole in the ground) by the local *Wat* primarily for monks and other guests. Overall the sanitary facilities are poor and the villagers use the river and its surroundings for their needs. Further there is one simple gas station for motorbikes owned by the storekeeper (see Figure 11).



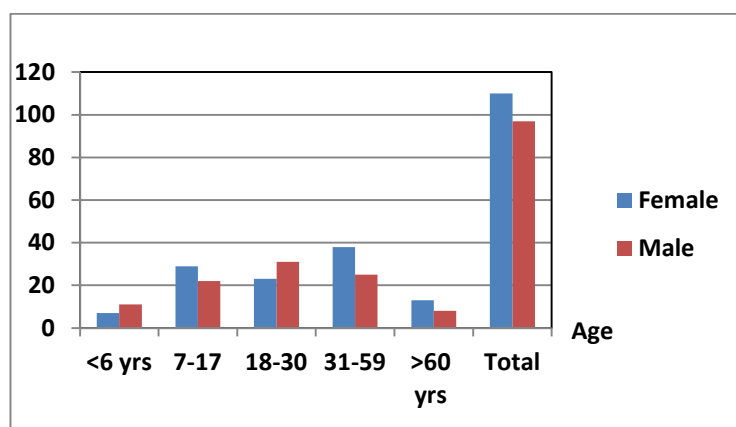
*Figure 11 The village gas station
(Photo by the author 2012)*

The management of the irrigation systems was controlled by the male heads organized in the Farmer’s Association and discussions were ongoing, between DAFO, the village head and a number of other male village elites around the possibility of restoring the system. The Majority of the villagers do not have any access to water pumps at all.

4.3.5 Human capital

Table 3 illustrates the demographic spread of the village. Totally there are more females than males in this village. The age distribution may indicate an aging population with a relatively low birthrate on local level. It is assumable that this might have future implications for village development and possibly migration.

*Table 3 Demographic spread on individual level by age and gender
(Based on structured interview results)*



During the interviews many villagers expressed the importance they place on education (even more so for lack of education) as a way out of poverty, improving life quality, household stability and having your voice heard in decision making processes.

A few female household heads stated when asked to motivate the experienced lack of proximity to community and national leadership as:

“I have no money, no education, and therefore no power”.

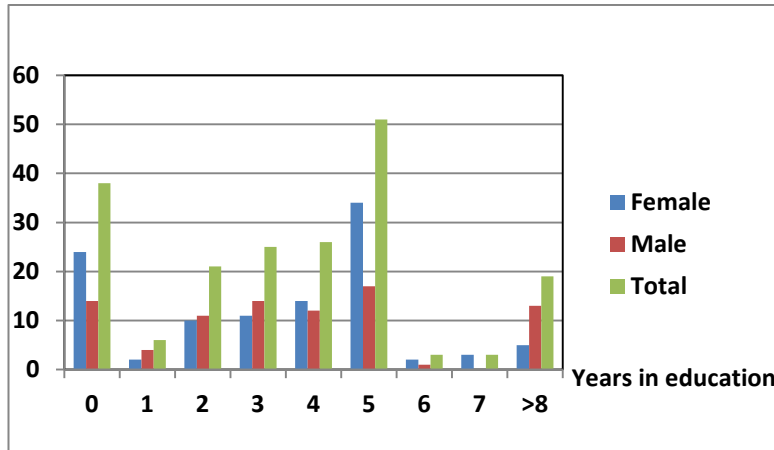
They experienced their voices did not matter in the village decision processes. This statement not only illuminates the importance of human and political capital but can also illustrate the implementation of hierarchical and gendered structures in the context of having your voice heard in the village.

Table 4 illustrates years in education on the local level. The village *Wat* provides Temple education. A few times every month monks are arriving to the village to educate the villagers to read, write and about Buddhism. This is a relative important factor when measuring education on the local level. To receive the full picture one should reflect over an individual’s claim to have spent several years within the school system but can be said to have little access to human capital as this person is only attending school a few times a month.

However, the subject of village adult literacy is beyond the scope of this thesis and was never touched upon by the respondents. It is assumable that questions regarding the matter

would have provided a fuller picture on the local level rather than the question of how many years the respondent had spent in education.

*Table 4 Years of education by age and gender (>6 yrs)
(Based on structured interview results²⁰)*



Despite the Laos PDR government ratifications of the ILO conventions No. 182 - The Worst Forms Child Labor, 1999 (ILO 2013a) and No. 138 - Minimum Age, 1973 (ILO 2013b) in 2005, it was recurrent that the villagers were required to interrupt their children's education at age 11 for the provision of extra labor in the rice fields and garden plots. Many villagers expressed the need for extra labor. Before starting school at age 6 the children helped out with smaller chores such as feeding the chickens and/or collecting grazing animals for the night. After school the children up to 11 years helped out to collect water, feed the chickens, ducks, graze and collect cattle and goats as well as extra workforce in the rice fields and vegetable plots.

Since the irrigation channels were blocked the water has to be collected by foot from the nearby stream (see Figure 3). This activity was found to be highly gendered. The female farmers expressed exhaustion at collecting water for their fields and gardens. The women had to spend more time collecting water in these occasions when the water got contaminated by the eucalyptus plantation as the distance between the village and the next fresh stream increased. The women expressed concerns for their own and their family's health due to the impacts on the water quality.

Further, the village has no medical service, clinic or village healer. Medical supplies are provided by volunteers arriving to the village a couple of times a year. The closest clinic is located in Savannakhet City, approximately 3 hours away by pickup or longer by motorcycle. The closest hospital is in Thailand.

When touching the subject whether the households received any external assistance during the flooding the female household heads claimed they never asked for any help as they did not have any education, courage or could not access support as their voice were not heard on national level. It is assumable that these statements clearly reflect the importance of strong human and political capital. The results from the interviews clearly shows that many

²⁰ Three respondents replied that they did not know how many years they had attended school. Therefore are they not included in the table. Likewise were there 12 children in the village under the age of 6 years which are neither included in the table.

of the females in the village are lagging behind the males in matters concerning higher education and having their voices heard in the community.

4.3.6 *Cultural capital*

Cultural capital is more difficult to define if the researcher does not spend a considerable time at study site. However, gendered structures regarding norms and traditions became obvious during meals. The male head chooses which chicken to kill and the woman prepares and cooks the meal. During this time the males rest, socializes and awaits the meal. When the food is ready the male household head is expected to eat and finish before the women of the household are allowed to eat. When men drink beer, it is only the woman who is expected to serve. It is rare that women are expected to drink alcohol together with men.

Religion and spirituality seemed important in the village. This was established by the village *Wat* (built in 1968). There are several religious festivals during the year. During festival times all farmers are off work to attend the celebrations in the local *Wat*. However, not all surrounding villages have access to a village *Wat*. It is not uncommon people from nearby villages arrive to Ban Lao to join the celebrations at their *Wat*. The children are also off school during these festivals.

Concerning the matter of whom makes household decisions it was clearly the male head of households (see further 3.3.6). In female headed households the decisions were made by the female head.

In the community a patrilineal system was generally practiced. When the daughter was married she leaves her family and moves to the husband's family home. If he is not the oldest they are required to move to the bride's family home and there after work on the family farm to eventually inherit the land, if there are no sons in that household.

In the Laos context intergenerational household structures are common and both men and women can own land but the cultural traditions are dominant; the women have access to the land but ownership belongs to the men. (See 4.3.1)

4.3.7 *Political capital*

A majority of the villagers considered themselves having proximity to community leadership. They experienced their voice was being heard and that they could reach out to the leaders for a problem. They also considered they could ask the village head and the DAFO for information on agriculture and irrigation related issues. However, female household heads considered they did not have enough knowledge and power to ask for any help neither from community leaders or DAFO. Below statement illustrates the voice of a female household head:

“Do you feel any proximity to community or national leaders? No...

Why not? I do not know how to...I have no money, no power or education...”

In one occasion a female head stated she did not have any proximity to the village head because she had no time. She was working too many hours in her rice fields and vegetable gardens.

Overall it seemed the villagers had a lot of trust in their village head and relied on him for support and village development. Village structure is democratic but still with a top down

approach. Most respondents did not experience they had any proximity to or voices heard by national leaderships. It became apparent during the interviews that the dissemination of government information takes a top down approach. Information from district, provincial or national level tended to be transferred to the villagers through the village leaders. Therefore the claim that the villagers had no contact or did not feel any proximity to national authorities may not be interpreted as they had not received national office information, the villagers had to be communicated to through the village head.

The details concerning the matter of this relationship might have been revealed through a more informed question form. However, the importance of the village head as a conduit between the local and national level was reinforced by the dependency on village administration to channel information to the villagers.

Adger et al. (2005) stresses that cross-scale interactions are maintained by authoritative stakeholders to promote their own interest. They identify people in terms of relative winners and losers. The winners are usually the stakeholders themselves and the losers are e.g. the people in the community. By maintaining these cross-scale linkages in local resource management different power relations can be exercised through the processes of command, conflict and collaboration and the roles of powerful and not so powerful players are maintained.

Further Adger et al. (2005) stress that empowering processes of participatory resource management systems on the local level can result in both stronger social and political capital in this way also the avoidance of top down processes can be achieved.

Many respondents felt they did not have the competence or enough education to speak with national leaders or the village is too far from Savannakhet and the capital Vientiane. They also experienced they did not have any power in the processes of changing policies, strategies or laws to mitigate their vulnerability to future flooding.

Laos's village structure allows three males of male headed households to be assigned as community leaders (village head and deputies). These roles involve different decision making processes for village or agricultural development and collaborated with DAFO as well as with other village members and functioned as extension service between different levels.

All processes concerning the village are made by the village head and through consensus by the other leaders. The position as village head is made through elections every five years. To be elected the candidate should be a role model and inspiration for other villagers as well as for the village development. Many times village leadership is generational. In Ban Lao, previous village head was the father of the present.

With above capital analysis it appears evident that female headed households on the local level have less access to capitals than the male headed. It became obvious during the process that female household heads are also generally poorer than their male counterparts.

In male headed households the females have access to all assets but most ownership is the prerogative of males. Therefore when analyzing vulnerability to flooding assumptions can be made that women are more vulnerable than men to flooding due to gender-differentiations in access to capitals as well as they have less freedom to choose which adaptation and coping strategy to approach when experiencing outer stress. (Please see Appendix 1 for summary on gender-differentiated access to capitals in Ban Lao.)

5 Strategies for coping and adaptation

“There is nothing you can do except for wait until the water to go away and replant everything.” (Female household head.)

“I think in the future we need to monitor the water every day during the rainy season so we can be well prepared if the village floods again so we can evacuate upland.” (Female in male headed household)

Several coping strategies were identified in the village. However, a majority of the female headed households stated that they did not know how to cope with the flooding. Their perspective was predominately a fatalist view of the problem or reflections over lack of power and education or the overall lack of coping and adaptation capacities.

Overall the most common coping strategies were:

- Moving materials, belongings and animals upland.
- Allowing the floodwater to naturally drain.
- Stocking food supplies and drinking water during the rest of the year.
- Collecting NTFPs.
- Replanting destroyed crops and vegetables.
- Working together with other villagers to clear the village after the water had drained.

And adaptation strategies:

- Making sandbags.
- Preparing medicine for people and animals as well as stocking up.
- Income diversification through off farm employment at the nearby eucalyptus plantation.
- Better constructed houses on stilts made of concrete.
- Replanting trees and scrubs on the riverbank.
- Build or buy a boat.

For the local strategies to be understood in terms of access to the different capitals in the CCF Segnestam (2009) divides the strategies into three categories, namely:

1. *Basic short term loss-management strategies* which do not require any other capitals such strategies are *collecting NTFPs, allow the water to naturally drain, fatalism* and *preparing medicine*. The only use for these strategies is natural capital in terms of plants, mushrooms and herbs. To prioritize the food security on household level was the prerogative of both the women groups.

Strategies belonging to this category do not necessarily lead to sustainability. This coping strategy can rather be an immediate response to the flooding.

2. *Strategies depending on one or more capitals (except for natural capital) to be achieved. These strategies include income diversification by off farm labor and the utilization and support of social networks to reduce vulnerability.*

These strategies were mentioned by all male heads as well as the females in male headed households in terms of the supplementary household income provided by the male heads off farm employment at the eucalyptus plantation.

Why the female heads did not mention this category at all might be explained by the local division of labor and livelihood opportunities. Many times the females have to prioritize the care taking of older relatives and children and other domestic chores therefore was she forced to work in the fields and gardens surrounding the village. These households were to a larger degree self-sufficient in rice and vegetables compared to the male headed. Additionally were these households smaller than the male counter parts due to fewer children. The female headed households did not mention the value of social networks to the same degree as the male heads. The importance of social networks were emphasized in terms of looking after the village and own property during flooding as well as repairing flood damages.

3. *Strategies dependent on other strategies for successful implementation such as replanting crops, building or buying a boat and stocking up on food and drinking water throughout the year.*

These categories mainly require access to financial capital or physical capital in terms of assets for trading or selling. This category was limited for the all the females including those in male headed households as informal and formal institutions, gender differences in access to formal loans and credit and income diversification opportunities.

It appeared evident that male headed households are less vulnerable than their female counterparts through opportunities of income diversification. Since they had better access to financial capital more options were available of which strategy to choose to reduce the flood impacts. Female headed households are thereby more vulnerable to flooding due to the lack of income diversification and lesser capacity to choose successful coping and adaptation strategies in times of flooding.

During periods of food shortages all the women in the village collect NTFP in the nearby forest for food supply and to trade or sell for food at the nearby town market as well as for diversifying household incomes.

All female headed households mentioned the value of owning a boat to rescue household assets, family members and animals. It was mentioned during the interviews that the village head had applied for financial support from DAFO for future purchase of a village boat. He still awaited the reply.

Both female and male groups mentioned they moved materials, belongings and animals' upland when the village was flooded. However both female groups emphasized the moving of primarily household belongings and animals whilst the majority of the males prioritized tools and agriculture equipment. This information can once again indicate gender-differentiations in how women and males value of assets, which assets are more valuable to the household and division of household responsibilities.

All respondents said they only waited and allowed the flood water to naturally drain. This statement can indicate the view of fatalism, lack of education or implemented local knowledge how to lead the water away from the village by digging ditches and channels. It can also indicate the importance of a day water system in the village core and the need for water pumps. However the villagers are poor and would need external aid, subsidies or incentives to realize this kind of infrastructure on the local level.

While the flood water resided in the village the women collected NTFP to prevent and ease household famine while the males remained in the village to protect and save assets and property. Adams and Gillogly (2011) have examined the Laos peoples' relationship to their house - emphasizing the amount of time, economic investment, and personal pride that is placed on homemaking such as investing in materials, supplies and the time spent on "nesting". A majority of the male heads indicated their house to be the object of strong attachment. The males also expressed their identity as a part of their property. As a male household head expressed during the FGD:

"My house, my land – this is who I am..."

"We will not move all I own is here in this village. No family member has ever moved..."

None of the female groups did express such attachment to their house. This could reflect strong implemented informal and formal institutions such as property ownership and patriarchal structures on all levels and available alternatives for the women if they would like to move from the village. It became clear that females are not property owners in this context unless the household is female headed. Not having access to property ownership can create restrictions of women's space in terms of their mobility as well as power and control over household resources.

Other strategies mentioned by the females in all households were replanting crops, trees and scrubs, preparing medicine and stocking up on foods and drinking water in case of recurrent flooding and overall making sure the household were ready for the next hazard. The males prioritized the making on sandbags and the importance of social networks. The male heads also emphasized the importance of working together with other village men to clear and repair the village after the flooding in 2011. This information reflects the time the males remained in the village during and after it was flooded and once again a strong attachment to their property.

"When our village was flooded our children and I evacuated upland. My husband remained here in the village to protect our property." (Female in a male headed household)

During the key informant group interview the village access to a rice seed bank in case of hazards was mentioned. DAFO supplies rice seeds on household level to those who are whenever impacted by a hazard. However, received seeds have to be replaced immediately following cropping season as a security for future hazards. After the flooding in 2011 the village received 2 tons of rice seeds as relief under the condition for the same amount to be returned following crop season. The seeds were distributed by the village head to the farmers. Amount of received seeds depended on how much land each household owned. A few males mentioned during the interviews that received seeds were of poor quality and speculated whether the quality of the seeds declined over time or if they had receive another village seed bank not aimed to their soil quality and experienced poorer crops than usual from following season.

Those not owning any land or had not lost any physical assets did not receive any “aid seeds” at all. However additionally every households received 40, 000 – 45, 000 LAK²¹ each and 120 kg rice as food aid from the same office.

Above findings can call for several analytical interrogations. It became evident that male headed households with more assets were generally more satisfied with the support they received from community and district leadership. It became evident when analyzing the results from the interviews that male household heads that experienced their voices was heard by local and national leaderships were more satisfied with received support.

Crawford (2011) claims in his work about humanitarian responses and vulnerability that this problem might to some extent indicate shortcomings within the infrastructure of aid provision. It reflects not only the political and social structure within the village - it might also reproduce vulnerability for the people who received less support.

Overall the female headed households mentioned fewer as well as diverse types of strategies than the male headed households. Belonging to a household which had access to all the strategies mentioned by both females and males generate more strategies on household level per se.

The importance of social network also seemed essential when rescuing belongings from the flood water, looking after own property and the rest of the village as well as clearing debris and repair damages caused by the disaster.

All the above indicates that higher opportunities for choosing as well as opportunities to diversified coping and adaptation strategies together with social networks generates less vulnerability to flooding on local level. Therefore does access to capitals matter in the context of gender-differentiated vulnerability in the context of a rural village in Laos PDR.

²¹ 100 000 LAK = USD 13.08 (2013-05-26). The value of this amount can be illustrated by a bag of imported candy cost 7 000 LAK at the local shop.

6 Conclusion

Above analysis illustrates the complexity of the dynamic lives of the women and men in Ban Lao when they were confronted to the severity of flooding in 2011. The intersection of interrelated capitals, the impacts of flooding and the dependency of livelihood diversification show an array of coping and adaptation strategies on the local level.

Gender-differentiations in access to the seven capitals shaped by cultural and political institutions impacts the women's capacity to choose which coping and adaptation strategy to employ when faced with flooding. For instance, access to natural capital in terms of land ownership is mainly male household heads. By owning land generates larger access to financial capital as land can be used for collateral for loans and credit. By not having land ownership - as the females in male headed households can increase vulnerability to flooding as of its limitations of which strategy to employ. Likewise in female headed households the need for extra workforce in the rice fields and gardens was emerging and could only be only be filled by the children of these households. As a consequence the children of female headed households had lower access to human capital, such as education and long term to other capitals as well, which in turn can prolong a life in poverty.

Key findings from the interviews show that households with low accesses to natural, financial, social and human capitals are more vulnerable due to their relative lack of resources, decision making power and increased dependency on agricultural production as main household income. Aforementioned analysis illustrates thereby how access to capitals was significant in the context of gender-differentiated vulnerability to the flooding of Ban Lao in 2011. By the females generally having lower accesses to most of the capitals in this context compared to the males they also have fewer options to choose long term adaptation strategies and to be lifted out of poverty.

The case study clearly indicates that a majority of the identified strategies were short term and mainly intended to reduce financial impacts and to avoid food insecurity – a risk generally higher among the women also due to lack of ownership, natural resource dependent livelihoods and access to the seven capitals in the framework. Strategies labeled adaptation with the intention to minimize risk and to reduce future vulnerability were only a few. Most common adaptation strategy was income diversification the prerogative of male household heads.

By being required to work in the family rice fields and garden plots the women in this context had limited options for off farm work compared to the males. Their main occupation was to assure the food security for the household from their own produce, make and sell handicrafts as well as take care of other family members well being, animals and the homestead. Additionally by not having access to transportation to the same extent as the males tends to restrict women's space and their patterns of movement. As they were obligated to walk by foot everywhere and stay close to the homestead, the women's space was limited to the village and surrounding rice fields, garden plots and forest.

By diversifying household incomes, negative effects on the financial resources can be reduced or avoided. However, income diversification appeared not to be an option for the female household heads. As an outcome the female headed households in this context were generally poorer than male headed as access to many of the capitals are also determined by access to financial resources.

The analysis also illustrates that coping strategies such as selling animals and chickens, replanting crops, store food or waiting for the water to disappear were most common among the female headed households. However, to sell assets reproduces and increases the extent of the individual and households' vulnerability. The depletion of capitals is a short term flood response which creates a downward spiral of less access to capitals and thereby fewer opportunities to choose sustainable risk minimization strategies and livelihood diversification. This downward spiral is then continued into the next hazard and creates more barriers for the individual and household to be able to be lifted out and break the negative situation.

The results of this study indicates that reductions of gender-differentiated vulnerability to future flooding on the local level can only be achieved by the attaining of a fuller understanding access to the interacting seven capitals and how they influence the capacity of coping and adaptation and which strategy one can chose. Thereby can more targeted interventions be achieved in efforts to reduce women's vulnerability to flooding at local level.

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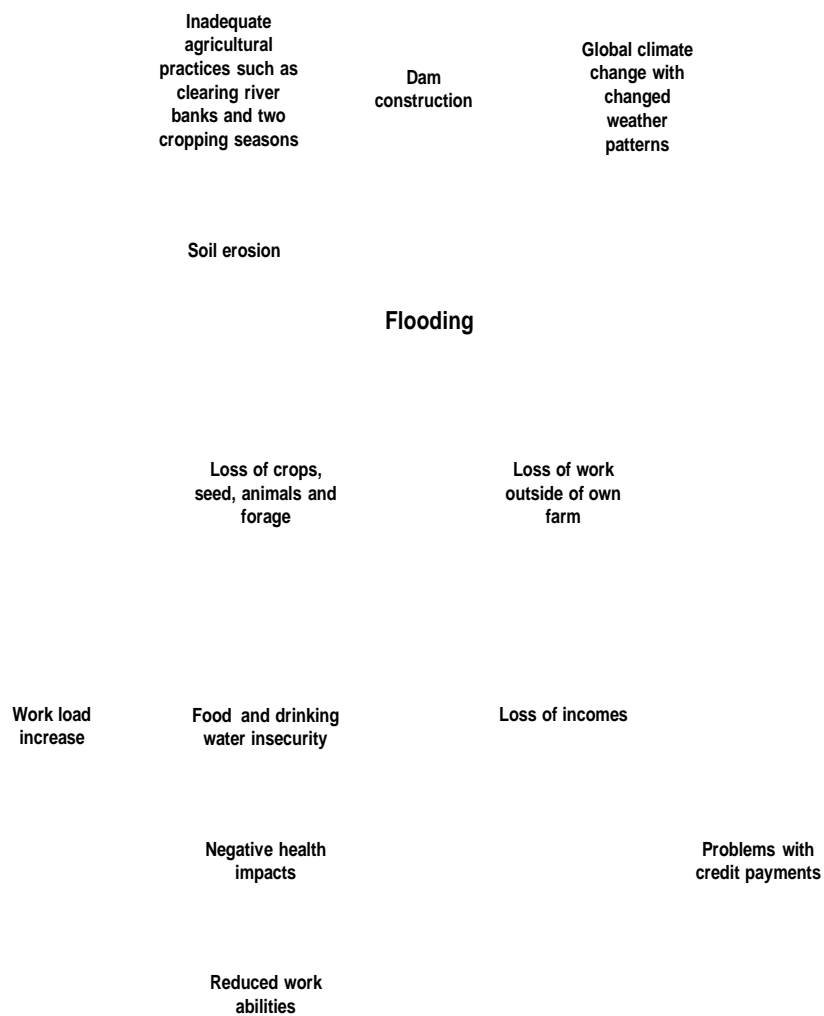
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Appendix 1

Figure 12 Flood impacts at the local level
(Modified by the author from Segnestam 2009)

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Appendix 2

Table 5 Gender-Differentiated Access to Capitals in Ban Lao.

(Based on the interviews)

	Women in male-headed households	Male heads of households	Female heads of households
Natural capital	<p>All have access to at least one water resource.</p> <p>All mentioned problems with water quality.</p> <p>Own small animals.</p> <p>Access to land but no ownership.</p> <p>All collect NTFP as a supplementary food resource.</p> <p>Less capacity to choose a natural based livelihood strategy than male household members.</p>	<p>All have access to at least one water resource.</p> <p>Own large animals.</p> <p>Own land.</p>	<p>All have access to at least one water resource.</p> <p>All mentioned problems with water quality.</p> <p>Almost all own small animals.</p> <p>Half also own larger animals.</p> <p>All collect NTFP as a supplementary food resource.</p> <p>Own land.</p> <p>Less capacity to choose a natural based livelihood strategy than male household head.</p>
Social capital	<p>All participated in informal social networks.</p> <p>Only one participated in formal social networks.</p> <p>Almost all received assistance after the flooding.</p>	<p>All participated in formal and informal social networks.</p>	<p>All participated in informal social networks.</p> <p>One participated in formal social networks.</p> <p>All households are intergenerational.</p> <p>Almost all received assistance after the flooding.</p>
Financial capital	<p>No access to off farm labor.</p> <p>Half had access to income diversification through handicraft production.</p>	<p>All have access to off farm labor.</p> <p>Access to income diversity.</p> <p>Larger access to credits.</p> <p>Only one has access to micro credit (Rotating Savings and Credit Association; ROSCA).</p>	<p>Greater dependency on other household member's incomes than male heads of households.</p> <p>Less capacity to access financial capital for food and other basics (electricity, bank interest etc) than their male counterparts.</p>

			<p>To some extent access to income diversity through handicraft production.</p> <p>To some extent access to informal credit/loans through informal networks.</p>
Physical capital	<p>Gender-differentiation in agricultural inputs on household level.</p> <p>To some extent access to farm implements (hand tractor).</p> <p>All have access to mobile phone.</p> <p>All have access to TV.</p> <p>Few have access to a boat.</p> <p>One has access to a car/truck.</p> <p>Most received assistance after the flooding from the local <i>Wat</i>.</p>	<p>.Own houses.</p> <p>Access to farm implements (hand tractor).</p> <p>All have access to mobile phone.</p> <p>All have access to TV.</p> <p>Few have access to a boat.</p> <p>One has access to a car/truck.</p> <p>Less agricultural inputs than female headed households.</p>	<p>Own houses.</p> <p>No access to farm implements.</p> <p>Almost all have access to mobile phone.</p> <p>Almost all have access to TV.</p> <p>No one have access to a boat.</p> <p>No one has access to a car/truck.</p> <p>Larger agricultural inputs on household level than male headed households.</p> <p>All received assistance after the flooding from the local <i>Wat</i>.</p>
Human capital	<p>High workload.</p> <p>All expressed exhaustion in collecting water for fields and gardens.</p> <p>Fewer years in education than the males on household level.</p> <p>Less or no capacity to choose off farm labor.</p> <p>Identify themselves primarily as self sufficiency farmers and housewives.</p>	<p>Spent more years in education than the females on household level.</p> <p>Identify themselves as farmers and plantation workers.</p>	<p>High workload.</p> <p>All expressed exhaustion in collecting water for fields and gardens.</p> <p>Less productive manpower as single headed households.</p> <p>Low or no level of education.</p> <p>Less or no capacity to choose off farm labor compared to male heads of households.</p> <p>Identify themselves primarily as self sufficiency farmers and housewives.</p> <p>Less capacity of livelihood and income diversification than male heads of households.</p>
Cultural capital	<p>No power over incomes.</p> <p>Power over purchases</p>	<p>Informal norms and institutions provide</p>	<p>Power to decide over income distribution</p>

	such as food.	larger access to resources and power. Power over incomes and distribution.	within the household.
Political capital	Half were satisfied with the assistance. Most experienced they did not have their voice heard on local and/or national decision making level. Do not feel any proximity to local leadership and/or decision making.	Formal institutions provide larger access to resources and power. Almost all experienced having their voices heard on local and/or national decision making level. All felt proximity to local leadership and/or decision making.	Do not experience their voice is heard on local or national decision making level. Do not feel any proximity to local leadership and/or decision making.

