What Are the Challenges and Development Spaces for Women and Men If the Sambor Hydropower Dam Is Developed?

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Abstract

The Sambor hydropower dam in Cambodia is still a pending decision. This paper explores the proposed scenario of the development of the Sambor dam and the challenges and development spaces for livelihood options this would present for both women and men. The Sambor project is predicted to impact upon the livelihoods of more than a million fisheries-dependent Cambodians and result in the resettlement of 19,000 people (ICEM, 2010). For this research, 200 families were selected for interview from five potentially affected locations. The interviews were conducted with an equal gender balance.

This study found that both men and women in Sambor currently have similar challenges and opportunities to conduct their respective livelihood strategies and provide a similar share of the household income. Women actively contribute to all income generating activities and contribute a higher percentage of work than men for vegetable and livestock production and generation of household income through self-employment activities. As self-produced and wild-harvested food is not sufficient for meeting the needs of the household, cash income from both men and women is required to purchase additional food. However, women have a greater burden than men as culturally domestic work is often defined as a female role.

If the Sambor hydropower dam proceeds and adopts similar approaches and processes to the provision of compensation that is currently being applied for the Lower Sesan 2 (LS2) dam, a few key gendered livelihood changes would be...
observed: a) women would face greater challenges than men in generating incomes from their existing skills in crop and livestock production as well as facing less viable opportunities for self-employment as the compensation policy provides uncertain livelihood alternatives; and b) men would face greater challenges than women in finding alternative livelihood options to compensate for the loss of income from fishing and raising cattle and buffalo as there is less free river access and grazing areas offered in the compensation policy. Downstream of the dam people would also be impacted upon by changes to water flow, which could affect fishing, agricultural production, and self-employment opportunities derived from agricultural production and fisheries.

The compensation and resettlement policy should be substantially re-adjusted and further developed with full participation and consent from affected communities to ensure fairness and social justice is upheld in the Sambor hydropower development project. Livelihood restoration and the development of alternative livelihood options for both men and women is crucial in both the short and long term for this development intervention.

Introduction

The development of physical infrastructure is one of the key policy priorities and actions of Royal Government of Cambodia (RGC) (RGC, 2014). Large-scale infrastructure such as large hydropower development projects have been promoted as energy sector policy since the first legislature (RGC, 2014). To date, six hydropower dams have been constructed in Cambodia (Oxfam in Cambodia, 2015). One controversial Mekong tributary dam, the Lower Sesan 2 (LS2), has already being constructed. On the Mekong River in Cambodia, two main channel dams have been proposed, namely the Steung Treng and Sambor Dams. Mega projects like these will strongly affect the current livelihood systems of local people (Nguyen, 2013).
From the Draft Law on Environmental Impact Assessment (EIA) (7th version, dated February 05, 2015), local people are defined as ‘project-affected people’ and are subject to receive compensation rather than benefits from hydropower development schemes. There is no mention in the draft EIA Law of a provision for benefit sharing between hydropower developers and local people, who traditionally depend on natural resources for their livelihood in these development areas. If people living in the impact zone of the dam are affected (bearing the cost of the dam) and do not share in the benefits of the dam construction, then the development cannot be considered fair and equitable. Resurreccion et al. (2011), defines equality to include equality of social benefits, costs or burdens, and risks in an attempt to dismiss phenomenon that some people are more equal than others.

In Cambodia, a large gender inequality gap still exists in society (MOWA, 2014). Legal frameworks for conducting EIAs are inadequate and incomplete (MoE, 2015). The potential impacts of such mega hydropower projects disproportionately affect women in the project-affected communities (Simon, 2013). For example, poorer health outcomes due to declining water quality, and the disruption of social relationships and kinship structures due to resettlement (MRC, 2013).

The Sambor hydropower dam is at an advanced stage of development planning and is considered as important for the power sector in Cambodia to replace expensive existing infrastructure and import-dependent electricity generation systems (ICEM, 2010). However, in early 2016, the Minister of Industry, Mines and Energy (MIME) stated that “There will be no construction of new hydropower dams until 2020” (Chea, 2016). This commitment was made in response to protests by affected communities and civil society that were held demanding impacts on livelihoods are considered in relation to the LS2 dam. In addition, commune elections are due in 2017 and the general election in 2018 is approaching. Regardless, whenever the decision to construct the Sambor hydropower dam is made, local people will essentially be forced to forgo their
current livelihoods due to the project. Despite this, these people have yet to be meaningfully consulted or informed about the project.

Even though the construction of Sambor hydropower dam has not yet been decided on, this paper aims to explore the challenges and development spaces for women and men based on the scenario of Sambor hydropower dam going ahead.

**Methodology**

The study uses an ex-ante assessment to consider the scenario that the Sambor dam will be constructed and that similar approaches and processes to that of the LS2 dam will be adopted for the resettlement and compensation of affected people. The paper makes a comparative assessment using the policy context and situation of the implementation of the LS2 dam as this is the most recent experience of large dam being constructed in Cambodia. A review of key laws and policies related to hydropower development and a literature review of the recent experience with the LS2 dam was also conducted and used to reflect on the gendered livelihood impacts in this study.

Data collection was completed between January and March 2016 in collaboration with Northeastern Rural Development (NRD), a local community-based organization operating within the study area. Two hundred families were surveyed using a structured questionnaire, applying a stratified and systematic sampling method. An equal number of male and female participants were interviewed.

Recently, there has been no updated publicly available information for any of the earlier proposed options for a 460MW dam location for the Sambor hydropower project. Therefore, the scenario of the Sambor hydropower dam being built and located based on the plan for an installed capacity of 2600 MW (ICEM, 2010) was used for this assessment. Villages were chosen to obtain a broad representation of different livelihood options and socio-ecological setting.
upstream and downstream the proposed dam site. One hundred households were interviewed from upstream of the dam and 100 families were interviewed from downstream of the dam.

In order to assess the different gendered livelihoods in the study area, the first section of the questionnaire collected data about each family member follow by second section asking about their assets, income generating activities, and domestic work. This enabled an analysis of the gender dimensions of the project and the development of conclusions about the gendered impacts of the dam.

Figure 1: Proximate location of study areas and the hydropower dam

Source: Google map image cross referenced with the dam location from “Assessing Options for Managing Sediment during Design of Sambor Dam” (Annandale et al., 2014)

Officially, where a family with a husband and wife are both present, the husband is recorded as family head. For widowed families, the woman is recorded as family head. However, in reality, many families operate with women taking the
lead in family economy and initiative and in some families, the husband is a person with a disability. However, in these situations, women are still not officially declared as the head of the household in government records. For the purposes of this assessment and analysis, families where incomes from women are higher than that of men, were considered as de facto female headed families and families where the income from men was higher than that of women were considered as male headed families. Subsequently, these family heads were used as a factor in the statistical analysis of the data.

Descriptive statistics were developed and an Analysis of Variance (ANOVA) was performed using the Statistical Package for Social Study (SPSS) program looking for differences or similarities among four family groups regarding livelihoods, assets, strategies, incomes and livelihood shocks. The four sub-groups of families were namely: upstream de facto female headed families, upstream male headed families, downstream de facto female headed families and downstream male headed families.

**Existing legal frameworks for Hydropower Development and Experience from the LS2 Project**

*Legal context in Cambodia*

A 2013 assessment of national policies in Cambodia with a focus on gender and hydropower identified that a legal framework exists that guarantees gender equality, particularly women’s rights in a range of contexts (Simpson and Simon, 2013). And yet, regarding laws that have relevance to hydropower development, the study found there was few protections for women’s rights and no consideration of gender in some of the specific laws relating to the rural livelihoods. The report also identified several international and domestic legal instruments whereby the government as a state party has an obligation to respect, protect and fulfill the rights of affected communities. The key laws include the International Covenant on Economic, Social and Cultural rights (ICESCR), the United Nation Declaration on the Right of Indigenous People (UN-DRIP), the

The Sub-decree on EIAs was adopted in 1999 but was not adequate to enable affected communities to exercise their rights in the case of large-scale hydropower developments. Recently, the Ministry of Environment (MoE) developed an EIA Law, which is higher level than the sub-decree in a legal and policy rank. However, the EIA Law is still in draft form which means the existing sub-decree is still operational. Article 37 of draft EIA Law states that “[…] Project proponents that are required to conduct an EIA shall include public involvement and consultation from local administrations, civil society, community representatives, the project-affected persons and other relevant stakeholders in the EIA process during project planning. […]” (MoE, 2015). Article 39 of the draft EIA Law states that “The public participation process shall ensure that the consent of the project-affected communities to the proposed mitigation measures is based on the free, prior, and informed consent principle (FPIC)”. Article 38 of the draft EIA Law it states that an EIA report shall focus on the issues raised by women and those most vulnerable who are potentially impacted by the proposed project but in case where those opinions are rejected, the project proponent shall provide clear reasons why those concerns were rejected. Thus, it could be said that even through EIA Law (if adopted) requires the project proponent to ensure public participation processes and the inclusion of women’s interests; the acceptance or rejection of public opinion is finally determined by project proponent, stating a clear reason rather than based on mutual agreement between project proponent and project-affected persons. For the time being, the MoE with technical assistance from the Vishnu Law Group is coordinating all relevant ministries to develop an Environmental Code of Conduct for Cambodia. This would be one of the master documents to facilitate sustainable development in Cambodia. The EIA process will be part of the content of this master document (MoE, 2016).

The 2001 Land Law and the 2009 Expropriation Law allow the government to legally expropriate private land for the national and public interest with fair and
just compensation in advance. In Article 19 of 2009 Expropriation Law, where the property owner does not agree with compensation, they can file a complaint to the competent courts (Provincial or Municipal Court, Appeal Court or Supreme Court). However, Article 36 allows for the imprisonment or fining of any individual who hinders the implementation of a decision on the expropriation in bad faith, which blocks the process of execution of projects that are in the public and national interests. Cambodia has been classified as the most corrupt country in Southeast Asia by the Corruption Perception Index 2015 (Transparency International, 2016). Under this context, complainants are placed under undue pressure when approaching and attempting to get justice from a court.

**Policy and practice – the case of the LS2 dam.**

In the case of the LS2 dam, the project was approved in early 2011 (Grimsditch, 2012). The Ministry of Industry, Mines and Energy (MIME) approved the “The Regulation and Legal Procedure for Resolving the Compensation and Resettlement Policy” in February 2014. Then, the Hydro Power Lower Sesan 2 Company (HPLS2) prepared and released “The Compensation and Solution Policy” in February 2014. These policies were officially approved and released only one month before the commencement of dam construction. The compensation policy was disclosed to affected villagers in June and August 2014 after the construction already started (Mekong Watch, 2015).

The EIA report was criticised for not containing clear and detailed mitigation measures and being completed without full participation and consultation with the project-affected communities (Seang. P et al, 2013; Kem, 2015). Kem (2015) also found that the LS2 investment company did not respect the Land Law 2001 regarding fair and just compensation in advance. Affected communities were not fully engaged in the consultation process before reaching a resolution on the compensation packages (Kem, 2015).
In “The Compensation and Solution Policy”, the project provides an 80m² house on 1000m² of residential land and 5 hectares of land for agriculture per family with the cost of fruit trees compensated according to the age of the tree (Harbinson, 2015) to affected families upstream of the dam. Beside this individual family package, the project also proposed to build roads, a school, police post and health center inside the resettlement area. To date, many project-affected families still have not accepted the compensation package and reject the offer to move to the new settlement on the basis that the offer is not sufficient for them to make a livelihood (Mekong Watch, 2015). Downstream communities were not considered as project-affected people and as such under the package were not entitled to compensation (Ongsakul, R.et al., 2013) in “The Compensation and Solution Policy” despite the fact that their livelihoods were also affected by LS2 project (Kem, 2015).

The Compensation and Solution Policy was also developed without meaningful participation and consent from the project-affected indigenous communities as guaranteed by the UN-DRIP. The arrangement of the compensation in the case of LS2 has been assessed as ‘unfair’ because each family gets equal compensation rather than being paid in proportion to the resources they have lost to the hydropower development project (Howard, 2007) and it is not compliant with the 2009 Expropriation Law.

The LS2 is being developed by the HPLS2 Co. Ltd which is a joint venture between Cambodia’s Royal Group (39%), China’s HydroLancang International Energy Co. Ltd. (51%) and Electricity of Viet Nam International Joint Stock Company (EVNI) (10%) (Mekong Watch, 2015). HydroLancang International Energy is a state-owned company of China. So far, China is the largest investor and financier of hydropower development in Cambodia (Heng, 2015, P. 71). Loans from China are traditionally unconditional and rely on the legal systems of the recipient countries (Grimsditch, 2012). Therefore, in the context of weak governance, such as in Cambodia, it is not likely to be expected that Chinese investment would adopt a fair and just principle to their projects.
Livelihood Status in Sabor Gendered

To assess the impacts on livelihood and the gender dimensions of the hydropower project, this analysis draws on the Sustainable Livelihood Framework from Department for International Development (DFID, 1999). Sustainable livelihoods depend on an analysis of five main types of capital or assets required to perform livelihood strategies and to achieve livelihood outcomes. The main elements of this framework are the key assets and economic activities performed by men and women, livelihood shocks and coping strategies. The following outlines the current situation in Sambor district.

Livelihood Assets

Human asset: On average, each family has five members with females constituting for 53% of the families overall. Family members aged between 15 and 60 years-old are considered as economically active members. Among these members, 92% of men and 90% of women were found to have not completed lower secondary school.

Physical assets: Key physical assets found in this study include houses, land and other productive assets such as hand tractors, rice mills, motorcycles, row boats, motorized boats, pumping machines and other assets. When comparing the average size and value of these assets owned by the four sub-groups of families, it was found that there was no significant difference between these groups. However, among families inside each group, there was significant differences from one family to another. This means that regardless of gender dimensions and locations, the physical asset holdings from one family to another are different.

The average house size was found to be 52 m² and the biggest house was found to be 156m². The estimated current value of houses was $3,700 on average. Among 200 interviews, there was one house valued at $30,000. For other physical productive assets, such as boats and pumping machines, these were found to be strongly associated with proximity Mekong River.
There are three types of land owned by interviewed families:

**Residential land:** This land is not only used for housing but also for livestock and vegetable production and fruit trees. Residential land is mainly located along river banks where people can access water from the river for their home consumption, livestock and also home crop production. It was found that 99% of interviewed families upstream of the dam and 97% of families downstream of the dam owned residential land. Others without land were found to be staying in the house of their parents or siblings, however, they did own farming land. Upstream of the dam, the average residential land size was found to be 2779 m² with a maximum of 30,000 m².

**Rice fields:** This land is mainly located next to settlement areas. Only rain-fed, wet season rice is grown. It was found that 91% of upstream families and 68% of downstream families owned rice fields. Upstream of the dam, the average paddy field size (a combination of multiple rice field plots in each family) was found to be 1.7 ha with a maximum of 9 ha.

**Chamkar land:** Land located in areas that are higher than rice field, which are used for growing vegetables, annual crops and perennial crops (non-rice). It was found that 15% of upstream families and 10% of downstream families own Chamkar land. Upstream of the dam, the average Chamkar land was found to be 3 ha with a maximum of 8.5 ha.

In total, 99% of interviewed families were found to own land. The majority of them owned both residential land and rice fields but some own all three kinds of land.

**Ownership and control over land:** Land certificates have been granted for the majority of plots by the local authorities upon request by land owners. It was found that 40% of land plots were acquired through maternal inheritance and 25% through paternal inheritance. The remaining plots were purchased after

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1 Refer to land documents indicated that the lands is occupied by someone which is recognized and issued by communal or district authority.
In terms of ownership, 67% of plots were owned by both men and women, 10% were owned by men only and 23% were owned by women only. In families with a married couple, 98% of land plots were operated under the collective decision of both husband and wife. If there was a need to sell land, even if the land was inherited from either the parents of the wife or husband this was upheld. Parents with limited land indicated their intention to pass on their land to their daughters rather than their sons. Parents expected that their daughters, with the inherited land would have power to negotiate with their husband even if she was not able to earn as much as her husband might. On the other hand, parents normally live with and depending on their daughter’s family to feed and take care them when they are old.

Natural assets: Community members in Sambor living along the Mekong River have lived with the benefit of alluvial soil in the flood plains, which has good fertility for crop production, and they have had free access to water from the Mekong River for consumption and livestock and crop production. This free access to common pool resources has allowed people to fish and raise cattle and buffalo with low costs. Forested land is also an important source of food and income, however recently these resources have been found to become more scarce and they now contribute less to livelihood of people in Sambor.

Financial assets: In 2015, 67% of interviewed families accessed loans and half of these families were de facto female headed families. Sources of credit were banks, micro-finance institutions (MFI), private money lenders, friends, relatives and saving groups.
For saving groups, the number of de facto female headed families that had accessed loans was higher than that of male headed families. In the context of an emergency need for cash due to unexpected needs, women are more likely than men to perform the important role of sourcing urgent financial resources to solve a problem. Women prefer to approach saving groups since they are easy to access, loans can be sourced faster and problems can be resolved quickly.

**Social participation:** is defined as the social connection between people for both social and economic purposes. In terms of participation in social organizations, 73% of the upstream interviewees (38% women) and 60% of the downstream interviewees (62% women) were found to have joined one or more groups or community organizations. For instance, community fisheries, chicken raising groups, vegetable growing groups, saving groups, and community forestry groups. They can learn and share techniques, problems and solutions in raising chickens or in vegetable production or other issues through group meetings.
Economic Activities

Economic activities were grouped into six categories, namely crop production, livestock production, fishing and other non-timber forest products (NTFPs) collection, self-employment, waged work, and salary work (including from migration). Self-produced and wild-harvested products from common pool resources that were kept for home consumption that were converted into monetary value are included as family income. For salary work of family members who have migrated for work, only remittances are considered as part of the family income in this study.

In addition, this section considers the gendered aspects of domestic reproductive work (non-income generating activities) which are not perceived as “work” in Khmer society but results in a significant contribution to the well-being of all family members and is also often under-assessed in consultation and planning for resettlement and compensation. In considering these gender aspects, labor contributed from male and female members was assessed.

**Crop production:** 87% of upstream families and 63% of the downstream families grow crops. Among them, income levels were around $626 per year on average, with a maximum of $6600 per year. Crops grown include rice, vegetables, fruit trees, cassava, sugarcane and sesame.

By crop, 86% of upstream families and 58% of downstream grow rice. It was found that 29% of interviewed families (40% in upstream and 17% in downstream) grow vegetables, mainly in the homestead area and along the river bank. The average gross income from vegetable production is $96 per year ($110 in upstream and $63 in downstream) and the maximum was up to $1250 per year.

It was found that 12% of interviewed families (19% of the upstream and 5% of the downstream) grow annual crops or perennial crops such as cassava, banana, sesame, corn, orange, mango, sugar cane or other crops. On average, farmers earn $300 per year with a maximum earning of $3100 per year from cash crops. The average cultivated area is 1.9 ha per family. In terms of crop production overall, it
was found that 55% of contributed labor was performed by women. For vegetable production, in particular, 70% of contributed labor was performed by women. It could be said that women have more actively contributed to crop production than men in Sambor.

**Livestock production:** Livestock is also part of livelihood profile for majority of families (84% of the upstream and 67% of the downstream) in Sambor. Livestock production includes cattle, buffalo, pig, chicken and duck. There is no significant difference in size of production of each kind of livestock between de facto female headed families and male headed families. Interviewees were asked to estimate value of their remaining livestock at the end of 2015 and income from livestock they earned during 2015. As result, the total value of their livestock was found to be $2350 on average per family with a maximum value of $15,290. Livestock production upstream of the dam was found to have a higher value than that downstream both in terms of assets and the number of families involved.

The most important livestock animals in the area were found to be cattle and buffalo. Even though the production cycle for cattle and buffalo is longer than for pigs and poultry, the production cost is low and production provides a large source of cash income. By gender, the labour contribution to tend cattle and buffalo, between male and female members was found to be quite similar. For pig raising activities, 68% of the people engaged were female household members. For poultry raising activities, this figure was 65% female.
Fishing and NTFPs collection: It was found that 54% of the upstream families and 47% of the downstream families in the study area catch fish on the Mekong River and its tributaries for their livelihood. For upstream families, the amount of fish caught was 224 kg per fishing family for the year 2015. One third of the fish harvest was sold for cash income. For downstream families, the amount of fish caught was only 173 kg per fishing family and 60% of the harvest was sold. The average value of the fish harvest was found to be approximately $389 per family with a maximum of $5475 for one of the fishing families. Among the families who conduct fishing activities, it was found to be a very important component of their current livelihood.

Fishing on a big water body such as the Mekong River is known as a male role in the community. However, it was found that 40% of fishers are women. In the Mekong River, husbands do not go alone and they need their wives to help with fishing especially open water areas with big waves. When the fish is brought back home, both men and women are involved in processing, managing sales and generate income. For some other families, only women manage the fish caught and income from fishing. Overall, 80% of the work related to management of harvests or income from fishing was attributed to a women.
Besides fishing, people also access NTFPs. These include rattan, bamboo, construction wood, mushrooms, vines, liana, wild vegetables, wild fruits, wild birds, snakes, red ants, and other wild-harvested items. However, the free access to these public resources has dramatically decreased in recent years due to the granting of economic land concessions (ELCs) to private companies (Reysoo & Suon, 2017). However, the number of families collecting NTFPs remains at 50%.

Primarily, one or more of these resources are collected for food and also for sale but the volume of harvest was quite small in 2015. The majority of families collecting NTFPs have both male and female family members involved in collecting. For the rest families, half of them have only male members and the other half have only female members involved with collecting the resources.

**Self-employment: refers any kind of businesses:** petty trade or services that are owned and managed by anyone inside the family. It was found that 34% of interviewed families have one or two businesses used to self-employ the family. Each business employs one or two members in their families. By gender, females constitute 64% of employees in this category upstream of the dam and 57% of employees in this category downstream of the dam.

Each family earns on average $1211 per year from self-employment. Upstream of the dam, the average income from self-employment is 10% lower than households downstream of the dam. The maximum income from self-employment is $6000 per year. Most businesses that self-employ householders are closely associated with agriculture and fishing such as working as an intermediary trader, collector or vendor of agricultural products, hand-tractor ploughing services provider, grocer, boat fixer and other such roles.
Figure 1: Fish vendor in Damrae village, Boeng Cha communne

Photographer: by Ms. Tep Sreyneang (enumerator) taken in January 2016

**Selling labor in wage work:** It was found that 73% of interviewed families have one or more members selling their labor irregularly for daily-paid work. By gender, 45% are female laborers. The majority of waged work is available in agriculture sector and includes roles such as rice transplanting, rice harvesting, planting cassava, weeding cassava, harvesting cassava, and land clearing provided by individual farms. Some waged work is also provided by private companies. Other waged work outside of the agriculture sector includes construction, boat building and repairing and other similar roles. On average, each family that engages of waged work earns about $650 per year on average.

**Salary work:** It was found that 20% of upstream families and 25% of downstream families have 1.4 persons on average involved in salary work located in the provincial town, Phnom Penh, other provinces, or abroad (for example, Thailand and South Korea). Female and male workers are employed in salary
work equally. By gender, those who have salary work in public institutions and private sector, 40% are female. For those out-migrate, 66% are female. The majority of out-migrants are teenage girls working in garment factories in Phnom Penh.

On average, each family earns $1475 from salary work. About 10% of interviewed families have at least one family member who has out-migrated (6% of the upstream and 15% of the downstream families). They earn on average $880 of remittances per year per family.

**Domestic work:** Domestic work is referred to as non-income generating tasks. In some families, both men and women do housework together while in other families, only men and some others only women complete each domestic tasks. Regardless of whether families are de facto headed by women or men, the gender division of domestic work is quite similar. Some tasks such as meal preparation, caring children, elderly and disabled family members, buying food, washing clothes and house cleaning are clearly female dominated. Fetching water is the only predominantly male dominated role.

Figure 4: Responsible person for domestic work inside de facto female headed families and male headed families
Family net incomes by the four sub-groups of families

**Diversity of income generation:** In 2015, the annual net income of each interviewed family is $1980 on average ($2160 in upstream families and $1800 in downstream families). The maximum total family income is $10,475 in one year. It was found that 82% of upstream families and 72% of downstream families have two to four income categories. The diversity of income sources under de facto female headed families are similar to male headed families for both the upstream and downstream contexts.

Using an ANOVA to compare the mean income among groups of families with only one, a combination of two, a combination of three, a combination four, a combination of five and a combination of six income categories, it was found that those families having only one income category earn the lowest income ($1,066 per year) and this is significant difference from those have a combination of two and more income categories. A combination of two, three, and five income categories are not significantly different from each other. A combination of four, five and six income sources are similar too. In general, it can be said that when families engage in more income generating activities they can also generate greater income.

**Share of each income category to total family income:** For upstream families, the income from crops represents the biggest share (25%) of income and female members contribute almost half of that income. Waged work (23%) is the second source and female members contribute about one third of that income. Self-employment (18%) are the third but females are shown to contribute up to two thirds of that income. For downstream families, waged work (25%), self-employment (23%) and salary work (19%) are the three main sources of income and women contribute 36%, 44% and 38% of total income of each category respectively.
Comparing average incomes by each of the income categories among families headed by men and families de facto headed by women, no significant difference was found for both upstream and downstream families. By gender, it was found that 41% of total family income is comes from joint efforts of men and women, 25% directly from female members and 35% from male members.

Figure 5 shows that among de facto female headed families, upstream families earn 71% more than national income poverty line and 47% earn higher than international income poverty line. However, for families in other three groups, the majority of families live below both the national and international income poverty lines.

Figure 5: Percentage of families by level of daily income per capita in 2015

Note: In rural areas, national income poverty line is $US 0.93 and international income poverty line is $US 1.25 per capita (ADB, 2014)
Vulnerability, trends, experience of shocks and coping strategies:

There are increasing pressures on the natural assets and livelihoods of people in Sambor. Public resources such as NTFPs are becoming more scarce and difficult to collect due to the loss of access from the granting of ELCs to private companies for investing in industrial crops. Fish and other aquatic resources are also reported to be decreasing due to the low water levels in the Mekong River. The natural lakes and streams on both sides of the Mekong River, which serve as spaces for fish reproduction have low water discharge, which is not conducive to fish reproduction. Climate shocks including increasing temperature and long droughts in the rainy season are reported to affect crop and livestock production.

Livelihood shocks are referred to as any event of critical loss beyond the control capacity of the family. Interviewees were asked to reflect back on the past 5 years and identify the kinds of shocks they have experienced and how they coped with each situation. It was found that 95% of the interviewed families had experienced on average two kinds of livelihood shocks in that time. Some families listed up to six livelihood shocks. Seven main kinds of shocks occurred in both upstream and downstream families as presented in the graph below. Shocks happened similarly to both de facto female headed families and male headed families. By gender, 54% of people bearing hardship as a consequence of livelihood shocks were women and girls.

In terms of the consequences of shocks, 93% of families have had their incomes reduced and 34% of them have had reduced food (nutrition) consumption. To cope with such shocks, 41% of families were found to do nothing, 16% sold properties, 11% borrowed money from friends or relatives, 9% took loans from financial institutions, 9% sold labor for waged work, 7% received assistance from friend and relatives, 3% sold land and 3% withdrew their children from school.
Discussion

For the current livelihood activities in Sambor, women and men are involved in all economic activities. The average annual income generated by women are similar to men in overall. In the de facto female headed families (46% of families), average annual income from women are significantly higher than men and vice versa for male headed families. However, some economic activities are dominated by men such as fishing, selling labor for waged work and salary work in public institutions, while some economic activities are dominated by women such as vegetable production, self-employment (service and petty trade) and pig and poultry raising due to the fact that these economic activities allow women to manage their domestic roles. Other economic activities involve almost equal contributions between men and women such as salary work in the private sector, cattle and buffalo raising, rice production and cash crop production. Therefore, it has been shown that both male and female have opportunities to perform their livelihood strategies.

Both de facto female headed families and male headed families, own a similar value of assets including house, land and other productive assets. The livelihood
outcomes of both men and women in general are not different. The change in fishing mainly affects the income of men but this has a more significant effect on women in terms of food security. Women are faced with climate shocks resulting in livestock disease or death. The low productivity of agriculture due to climate shocks also slows down the self-employment activities, which mainly involves women.

The livelihood system of the riverine population in Sambor is strongly depending on fishing and agriculture, which is highly associated with the Mekong River, the fertile alluvial soil of agricultural land, as well as other common pool resources. Women are one of the major contributors to household income in their families but are not officially recognized as the family head in a married family.

The “resettlement and compensation policy” implemented for LS2 dam is a one-size-fits-all compensation package applied to displaced households in upstream communities (Kem, 2015). It was developed without consultation and consent from affected communities. The key shortcomings in this policy are that there is no consideration on number of families living together in one household (counting households but not families) as number of units for compensation packages, no common resource compensation to upstream communities, no compensation for the opportunity costs during the transition period, and no support policy or compensation to affected communities in areas downstream of the dam.

The current land size and house size of each upstream family, regardless of whether headed by a male or female member, are very different from one to another. If Sambor dam is constructed, it is not appropriate to apply a one-size-fits-all policy, which creates unfair and unjust compensation for those have bigger land sizes and higher value than what is offered in the compensation packages.

In Sambor, families own many land plots located in different ecosystems, allowing people to produce diversified food and non-food crops, contributing to
better coping strategies and risk minimization. They have appropriate residential land size and water access especially for the 84% of families that raise livestock and the 40% of families that grow vegetables upstream. Compensated residential land of 1000m² as was provided for LS2 is not appropriate for households in Sambor as it is too small to allow for fruit trees, vegetables and livestock production, which is mainly managed by women and this constrains the generation of income by women. Remarkably, income from women was found to be very important in securing food for family needs.

During the transition period, displaced families are unable to either produce food or earn cash to support their families because agricultural production on new land takes time and high investment costs to establish. This is similar to a livelihood shock. Previous livelihood shocks experienced by the Sambor population show that 41% of families have no coping strategy except for reducing food consumption in their families, 19% sold properties, 20% take loans and 9% sell labor for waged work. Therefore, it is crucial to provide proper compensation for the opportunity costs during the transition period to avoid affected families repeating coping strategies, which results in weakened livelihood outcomes. In such hardship conditions, teenage girls are more likely be taken from school and out-migrate to earn income for the family. When both the husband and wife leave home for jobs, children are kept at home without proper care.

Waged work is not regularly available and not preferably provided to elderly people (weak physical strength) and also to women for some specific work that needs strong physical strength (Reysoo & Suon, 2017). This leaves displaced elderly people and women with no cash income. Construction work is often available for the short-term during the building of a dam, but this is dominated by men (Chandy et al., 2012).

Waged work opportunities in farming in Sambor are mainly dependent on good potential for agricultural production. In terms of the implementation of the LS2 dam, the compensated farming land provided was of poor soil quality, far from
the river (water supply) and not appropriate for agriculture. Low agricultural potential will also result in a low productivity of crops, low income and create less opportunities for self-employment and this will affect women who are mainly involve in petty trade of agricultural product sandfish. Low agricultural potential also creates less waged work job opportunities.

Displaced people changed their strategies from more self-produced and wild-harvested food dependency to more cash dependency for food access due to the loss of access to productive assets and common pool resources also in areas affected by ELC, example Kampong Thom (Reysso & Suon, 2017). A lack of urgent and long-term development support would impoverish affected people especially women, children and elderly people. Reysso and Suon (2017) have found that in a situation of extreme poverty of food and cash income, people will reduce their daily diet but in terms of quantity and quality, and women will devote part of her food to the family head (men) who she considers as main labourer for the family.

Without compensation for loss of access to common pool resources, 51% of families who earn income and save capital from buffalo and cattle raising would be strongly affected. Riverine people are able to freely access water currently. Access to common grazing land, water bodies and community fisheries, and irrigation systems should be assured and legalized in the new resettlement location to compensate for what riverine people have lost in terms of access. Best practice would ensure that common pool resources are compensated by common pool resources with similar or better quantity and quality. This should be negotiated with input and consent from affected peoples. Options should also be provided for people to choose and priorities their compensation needs.

The right to and control over land that was previously influenced by maternal or paternal lines or both depending on how the land was acquired, will change as the compensated lands will be granted to a household, which both the husband
and wife have co-ownership of 2. This will affect previous prerogative rights to land. Decisions about land transfer will be influenced by the de facto person who contributes the most to the total family income. The power of women may be weakened through this process. In addition, a household unit and family needs also to be considered. A household that consists of more than one family often holds more land or productive assets. The compensation for LS2 has taken into account only the household unit, which undermines the social structure of the household composition. This could lead to the intra-household conflict, which relates to the ownership of the compensated package when a household consists of more than one family.

Downstream of Sambor, half of total families that have a fishing livelihood component will face greater challenges linked to decreasing fish stocks due to the change of natural water flow and fish pass blockages in the Mekong River. Most families consume fish as major source of protein. The change of water flow and the river water level will affect agricultural and livestock production as well as self-employment opportunities that are derived from agricultural activities. From the experience of LS2, downstream people were not included in the compensation package as they are not subject to direct displacement (Seng et al., 2013). Downstream affected communities need to be legally included as project-affected people, and the impact on them evaluated in the EIA for Sambor Dam in order for them to be entitled to get support for their livelihood restoration and development. Resettlement policies should consider the minimum standards for compensation packages that would enable displaced families to make a proper living for those who have few assets, such as widowed women headed families. More than this, there should be a compensation policy based on actual market price and size of previous assets for those will lose more assets than the minimum standard compensation package.

2 Based on the interview with River Coalition Cambodia of the NGO Forum on Cambodia who follow up the case of LS2 compensation policy and implementation. The report of compensation of the resettlement of LS2 is not available yet during the period of this study but the compensation has taken already.

3 Based on qualitative interviews author’s research team with 220 households in Kampong Thom, Ratanakiri and Kratie.
Besides farming on compensated lands, the creation of livelihood options and economic opportunities are very important to the displaced families since agriculture alone cannot feed entire families. Some productive assets are not appropriate to use in new settlements such as motorized boats, row boats, and pumping machines. Such assets should be substituted with other kinds of productive assets. Options for substitute assets should also be provided for people to choose to best fit for their own new livelihood strategies in the new settlement location.

Hydropower development is built upon the potential of natural resources where local community people used to live and depend on for generations. Expropriation of their right to these resources, therefore should consider benefit sharing with them. In Laos PDR, there are several examples of benefit sharing with affected communities related to hydropower development and learning from this experience could attract public support for the development of this sector (Gibson et al., 2010). A good example is Nam Mang 3 hydropower dam in Laos PDR. Displaced people who resettled in the area close to reservoir could have to access to fish and other aquatic resources and improved food security (Sayatham and Suhardiman, 2015).

The RGC have signed international treaties (ICESCR, ICCPR, CEDAW and UN-DRIP) and recognize them as stipulated by article 31 of the national constitution. As a signatory state, the RGC has an obligation to respect, protect and fulfill the economic, social, cultural, civil and political rights of all the affected people related to hydropower development. The state also has an obligation to guarantee equal enjoyment and exercise the realization of these rights by right claimants regardless of gender. Failure to bring fair, just and equal gender rights to hydropower development will mean that the RGC has not taken sufficient measures to protect and fulfill the rights of the project-affected communities.
Conclusion

Related to hydropower development, the implementation of the existing legal framework in Cambodia is inadequate to protect the rights of project-affected communities and gender equality. From the example of the LS2 dam, the implementation was found to be unfair and non-compliant with free, prior, and informed consent due to lack of collective expression of support for the proposed project by potentially affected communities before the commencement of the dam construction and many other reasons. Downstream communities of the LS2 dam were neither included in the EIA nor in the compensation package. If the Sambor hydropower project is going to be developed, an assessment of the impact of the downstream communities should be included in the EIA scope of study and compensation for downstream affected communities should also be proposed.

The compensation and resettlement policy should be reviewed to consider the gender dimension of the project as it develops. A full gender impact assessment should be conducted using participatory methodologies, and a gender action plan developed. Full participation and consent by the affected communities should be guaranteed. Compensation should be made at least one year ahead of construction commencing so that affected communities can prepare themselves for relocation. Livelihood restoration and the development of livelihood options for both men and women is crucial. The affected communities should receive a start-up support in the early stage of the resettlement as soon as possible so they can better cope with new livelihood systems. The livelihood assessment of this study found that losing one or two livelihood activities would cause affected people to fall under poverty line.

Government and hydropower investors should ensure open discussion about the compensation policy. The compensation package is at the cost of investor. The investor will use it for proposing price of the electricity generated from the proposed hydropower project. Subsequently, the users, who are mostly urban people and industrial sectors will pay the cost. This would fair even though the
electricity users pay a higher electricity bill due to the reasonable provision of compensation to affected communities.

Finally, prior to investment in hydropower development, the government should facilitate access to the right financial support for the social and technical studies required to shape a sound decision-making in regards to hydropower development. This would most likely result in a minimum negative social and environmental impact of the hydropower dam project. Furthermore, it would also ensure a more sustainable economic return from this hydropower development.
References


MRC. (2013). Regional Scoping Workshop on Gender and Sustainable Hydropower. Bangkok


