



SILK FOR DEVELOPMENT

-a study on the potentials of silk production as a sustainable livelihood activity in the Paoy Char Commune of Cambodia



Interdisciplinary Land Use and Natural Resource Management

SLUSE, CAMBODIA

6th of April 2009

Supervisors

Andreas de Neergaard
Torben Birch-Thomsen

Authors

Anna Katharina Kramer (ADK07018)
Heidi Kristine Bo Lauritzen (ADK08013)
Md. Harun Ar Rashid (EMA08019)
Nina Tofte Hansen (ADK08016)

Abstract

Rural poverty is a widespread phenomenon in Cambodia. With households mainly relying on rice production for ensuring their livelihoods, there are few viable alternatives for these households to engage in. In order to reduce poverty in rural Cambodia it is therefore important to look at alternative livelihood activities that can improve the living conditions of the households in a sustainable way. This report presents the results of a field study among silk producers in Paoy Char commune in north-western Cambodia. The objective of the study is to assess the potential of silk production as a sustainable livelihood activity for rural households. A questionnaire survey, a range of semi-structured interviews and participatory group discussions among the silk producers in the commune were conducted in order to meet the objective. The study shows that silk production can bring a significant additional income to the rural households while at the same time providing producers with skills and knowledge unique to the traditional silk production in the area. Our study shows that the biggest constraint of the silk producers is the difficulties of marketing their products, indicating current unsustainable economic conditions. The biggest challenge regarding the future of silk production in Paoy Char commune therefore seems to be to ensure the silk producers better access to markets. Stronger cooperation among producers could improve the ability to meet market demands. There could be a potential for new local markets through more organized sale to tourists and better branding of export directed silk products.

Key words: rural poverty, Paoy Char, silk production, livelihood, sustainability

Preface

This report is part of the mandatory course in International Land Use and Natural Resource Management (ILUNRM) of the Agricultural Development programme at the Faculty of Life Science, University of Copenhagen. It is the result of a 10-days field trip to the Banteay Meanchey province in north-western Cambodia in March 2009.

The research was conducted through an interdisciplinary approach with the purpose of using the different resources of the students to strengthen a comprehensive understanding of the issues investigated.

We would like to thank all the silk producers and non-producers of Trapeang Thmor Cheung and Paoy Snuol without who we would not have been able to gather any information about silk production in the area. Also, the key informants and the local facilitator provided us with valuable data and were very helpful. Furthermore, we are grateful to our Cambodian counterparts and the interpreter who had a big influence on this study and made the research possible.

We would also like to thank Prof. Andreas de Neergaard from the Faculty of Life Science and Prof. Torben Birch-Thomsen from the Department of Geography as well as Myles Oelofse and Elena Gioseffi for their support and supervision both in the preparatory phase of the research design and throughout the field trip. Least but not last, we are thankful to the staff from the Royal University of Agriculture in Phnom Penh for providing us with useful information about local conditions.

Copenhagen, the 6th of April 2009

(Nina Tofte Hansen, ADK08016)

(Heidi Bo Lauritzen, ADK08013)

(Anna Katharina Kramer, ADK07018)

(Md. Harun Ar Rashid, EMA08019)

List of Abbreviations

AFD	Agence Française de Développement
DFID	Department for International Development
ECOSORN	The Economic and Social Relaunch of the Northwest Provinces in Cambodia
EU	European Union
GDP	Gross Domestic Product
ITC	International Trade Centre
KSV	Khmer Silk Village
NGO	Non Government Organisation
PASS	Project d’Appui au Secteur de la Soie (Project for Strengthening Silk Sector)
PRA	Participatory Rural Appraisal
PRESNOC	Project for Silk Rehabilitation in North Western Cambodia

Table of contents

1. INTRODUCTION (ALL)	1
1.1 THE STUDY AREA	1
1.2 MULTIPLE LIVELIHOOD STRATEGIES	2
1.3 SILK PRODUCTION AND DEVELOPMENT OPPORTUNITIES	2
1.4 SUSTAINABILITY	3
2. PURPOSE OF THE STUDY (ALL)	4
2.1 OBJECTIVE	4
2.2 RESEARCH QUESTIONS	4
3. METHODOLOGY (ALL)	5
3.1 QUESTIONNAIRE	5
3.1.1 CRITIQUE OF QUESTIONNAIRE	6
3.2 INTERVIEWS	7
3.2.1 CRITIQUE OF INTERVIEWING	7
3.3 PRA	8
3.3.1 CRITIQUE OF SEASONAL CALENDAR AND RANKING EXERCISE	8
4. STRUCTURE OF THE REPORT (ALL)	9
5. SILK PRODUCTION IN PAOY CHAR (MAIN AUTHORS: HARUN & NINA)	10
5.1 PRODUCTION PROCESS	10
5.2 HISTORY OF SILK PRODUCTION IN PAOY CHAR COMMUNE	11
5.3 HISTORY OF KSV	12
5.4 THE SUPPORT OF KSV?	12
5.5 WHO IS DOING WHAT?	14
5.6 CHARACTERISTICS OF THE SILK PRODUCERS OF PAOY CHAR COMMUNE	16
5.6.1 GENDER	16
5.6.2 AGE	16
5.6.3 EDUCATION LEVEL	17
5.6.4 LIVESTOCK AND LAND SIZE	18
6. LIVELIHOOD IMPACTS (MAIN AUTHORS: ANNA & HEIDI)	19
6.1 MULTIPLE LIVELIHOOD STRATEGIES	19
6.2 LIVELIHOOD ASSETS	23
6.2.1 HUMAN ASSETS	24
6.2.2 SOCIAL ASSETS	24
6.2.3 FINANCIAL ASSETS	24

6.2.4 NATURAL ASSETS	25
6.2.5 PHYSICAL ASSETS	25
7. CONSTRAINTS OF SILK PRODUCTION (ALL)	27
7.1 CONSTRAINTS	27
7.1.1 MULBERRY	27
7.1.2 WORM REARING	28
7.1.3 PROCESSING OF THE YARN	28
7.1.4 WEAVING	28
7.1.5 MARKETING	29
7.1.6 GENERAL CONSTRAINTS	29
7.2 RANKING OF CONSTRAINTS	29
7.3 MARKETING	30
7.3.1 DIRECT MARKET ACCESS	30
7.3.2 INDIRECT MARKET ACCESS	31
7.3.3 THE MARKETING SUPPORT OF KSV	32
8. DISCUSSION (ALL)	34
8.1 SILK PRODUCTION'S IMPACT OF LIVELIHOOD	34
8.2 SILK PRODUCTION VS. ALTERNATIVES	35
8.3 THE VULNERABILITY OF SILK PRODUCTION	35
8.4 EMPOWERMENT OF SILK PRODUCERS	36
8.5 POTENTIAL OF BETTER MARKET ACCESS	36
9. CONCLUSION (ALL)	38
10. REFERENCE LIST	39
11. APPENDIX	1
11.1 SYNOPSIS	2
11.2 : QUESTIONNAIRE	B
11.3 SEMI-STRUCTURED INTERVIEW GUIDELINES FOR NGO/KEY INFORMANT	G
11.4 SEMI-STRUCTURED INTERVIEW GUIDELINES FOR SILK PRODUCERS	J
11.5 SEMI-STRUCTURED INTERVIEW GUIDELINES FOR HUSBANDS OF SILK PRODUCING WOMEN	M
11.6 APPLIED METHODS AND COLLECTED DATA	N

List of Figures

Figure 1: Map of Cambodia highlighting Banteay Meanchey Province (Source: ScottAsia Communications)	1
Figure 2: Overview over used methods.	5
Figure 3: Map over study area with indication of questionnaire households.	6
Figure 4: Silk production process.	11
Figure 5: Obtained silk producing skills. (n = 25)	13
Figure 6: Producers involvement in silk production process. (n = 25)	14
Figure 7: Age distribution of silk producers. (n = 27)	16
Figure 8: Education level of silk producers. (n = 27)	17
Figure 9: Livestock diagram showing the distribution of livestock. (n = 27)	18
Figure 10: Land size, diagram showing how much land the producers own. (n = 27)	18
Figure 11 Major source of income. (n = 27)	20
Figure 12 Engagement in waged labour. (n = 27)	21
Figure 13 Changes in Living Conditions. (n = 27)	22
Figure 14 Livelihood framework	23
Figure 15 Access to livelihood assets.	26
Figure 16: Flowchart over production process and related constraints.	27
Figure 17: Marketing chain showing different ways the producers can market their products.	30
Figure 18: Marketing strategy of producers. (n = 23)	32

List of Tables

Table 1: Seasonal variations in silk activities	15
Table 2 Relative importance of income sources	20
Table 3 Results from the constraint PRA exercise.	29

1. Introduction (all)

The Kingdom of Cambodia is located in Southeast Asia. In 2005, its population was 13.7 millions (SCW 2006). Poverty in Cambodia is generally widespread in the rural areas whereas urban areas have gained relatively high living standards. Around 90% of the poor people live in rural areas and the gap between the income of the rich and the poor is increasing steadily. Moreover, there is no equal distribution of raising income and decreasing poverty in Cambodia. So poverty reduction is an important issue for the overall development in Cambodia (Engvall *et. al.* 2008).

1.1 The study area

Our study took place in two villages in the commune of Paoy Char, Phnom Srok district in the Banteay Meanchey province in Cambodia. Banteay Meanchey is located in the north-western part of the country bordering Thailand. It is a province with a high population density of 101.5 inhabitants per km². In 2004, out of 586,571 people living in Banteay Meanchey, 72% lived in rural areas. The province has a poverty level of 31 – 50%, meaning that up to half of the inhabitants of Banteay Meanchey are living below the poverty line¹. The most common land use type is rice fields (SCW 2006).



Figure 1: Map of Cambodia highlighting Banteay Meanchey Province (Source: ScottAsia Communications)

The two villages of our studies were Trapeang Thmor Cheung and Paoy Snuol which were located within a 5 km distance from each other. The villages in the area were all situated along the main road and it was difficult to distinguish the different villages as they were located continuously along this

¹ The poverty line is determined as 1,036 Riel in terms of per capita per day consumption for rural areas in Cambodia (SCW 2006).

road. The area is influenced by the Trapeang lake, an artificial water reservoir built under the Pol Pot regime in the late 1970s. Surrounding the lake there is a protected area and a bird sanctuary which both serve as a tourist attraction.

1.2 Multiple livelihood strategies

With most people living in rural areas and a poverty rate of up to 50%, rural poverty is a widespread phenomenon in Banteay Meanchey. People in the rural areas are mostly dependent on rice as their major source of income but are commonly engaged in a wide array of different activities, mostly related to agriculture, to ensure their livelihoods. These agricultural products are not only used for generating cash income but to a great extent also for home consumption. To engage in a range of different economic activities is often a strategy to escape poverty or to reduce risks of severe economic shocks. When the livelihood strategy of the household is based on several income possibilities, the economic vulnerability is reduced and the chance for sufficient total income enhanced (De Haan & Zoomers 2003, pp. 354-355).

1.3 Silk production and development opportunities

Silk production is a widespread livelihood activity in the commune of Paoy Char. It can be seen as part of a multiple livelihood strategy of the rural households in the area. Silk in Cambodia is usually produced on a small scale and it is a female dominated activity. Men are however assisting in mulberry cultivation and the making of equipment (Earth et al. 2008). Today the production of raw silk in Cambodia is low compared to other silk producing countries like Thailand and Vietnam. The annual production of raw silk in the country is around 7-8 tons, produced mainly in Phnom Srok district. Local production can satisfy only 2 percent of total domestic demand throughout the country. In Cambodia, annual consumption of raw silk is around 400 tons. In order to meet this demand, raw silks are imported from neighbouring countries. Today, 98 percent of raw silks are imported primarily from Vietnam to produce silk products for domestic needs (Kakada & Vuthy 2007).

An increasing number of projects and NGOs engage in silk production promoting activities as a way to reduce poverty in rural Cambodia. The Economic and Social Relaunch of the Northwest Provinces (ECOSORN) is a European Commission funded project that is engaged in silk production in the three provinces of Siem Reap, Battambang and Banteay Meanchey. ECOSORN is very present in the district of Phnom Srok, being involved in many of the silk promoting activities in the area. It states as its main objective to contribute to “the economic and social development of smallholder farmers and their family members [...] in ways that accrue equitably to both men and women” (ECOSORN Project 2007, p.38).

1.4 Sustainability

In Paoy Char, ECOSORN and KSV target silk production in order to promote development in the area. Identified as a rural remote area dominated by agriculture, silk is declared an important sector for promoting development. Today many of the development agencies, NGOs and government programmes targeting poverty reduction work with the concept of sustainable development which has become the hallmark of basically any development strategy. One common definition of sustainable development is the one formulated in the Brundtland Report²:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (WCED 1987)

In that sense, it is essential to look at silk production in a context of economic, environmental and social sustainability in order to estimate its development potential. Concerning economic sustainability, ECOSORN and KSV highlight the fact that silk production is a sector that can contribute to rural development. However, there are also critical voices discussing whether traditional silk production is a good way to reduce poverty. Since much of the silk production in Cambodia, in particular in the north-western provinces, occurs on a very small scale with many producers being involved in the entire production process from mulberry planting to the weaving of the silk yarn, the production system is not very flexible and only partly organised into bigger production units by the cooperation of producers. The question arises whether this is a viable form of production in an increasingly liberalized market connected to world markets and engaged in international trade. Considering the existence of different markets, such as local markets versus export markets, is of course an important issue in this context. Environmental sustainability is determined by whether silk producers use the natural resources that it requires to produce silk in a way that does not prevent future generations from using them. At the same time, environmental impacts such as level of pollution caused by silk production are decisive for whether it is environmentally sustainable. Social sustainability deals with issues concerning amongst others social norms and relations, health issues and cooperation (Goodland 2002).

² Referring to “Our Common Future”, Report of the World Commission on Environment and Development, World Commission on Environment and Development, 1987

2. Purpose of the study (all)

The focus of this study is silk producers in Paoy Char commune. Silk producing households are often involved in both silk worm rearing and weaving activities. As most households in Paoy Char commune rely on agricultural activities for ensuring their livelihood, silk production might constitute an important possibility for a more diverse livelihood. The choices people have concerning their livelihood activities are limited. This project offers us the possibility to look at whether silk production is a sustainable livelihood activity for rural households in Paoy Char commune.

2.1 Objective

To assess the potential of silk production as a sustainable livelihood activity for rural households in Paoy Char commune.

2.2 Research questions

- 1) What is the role of silk production in Paoy Char commune?
- 2) How does silk production influence the livelihood of the producers?
- 3) What are the opportunities and constraints within silk production?
- 4) Is silk production a sustainable livelihood activity for rural households in Paoy Char commune?

3. Methodology (all)

In order to collect data for answering our research questions we used three different methods, a questionnaire survey, semi-structured interviews as well as two different Participatory Rural Appraisal (PRA) exercises, a seasonal calendar and a ranking & scoring exercise. Each method has been used to answer several research questions in order to triangulate the data and thereby increase the validity of our conclusions (Figure 2).

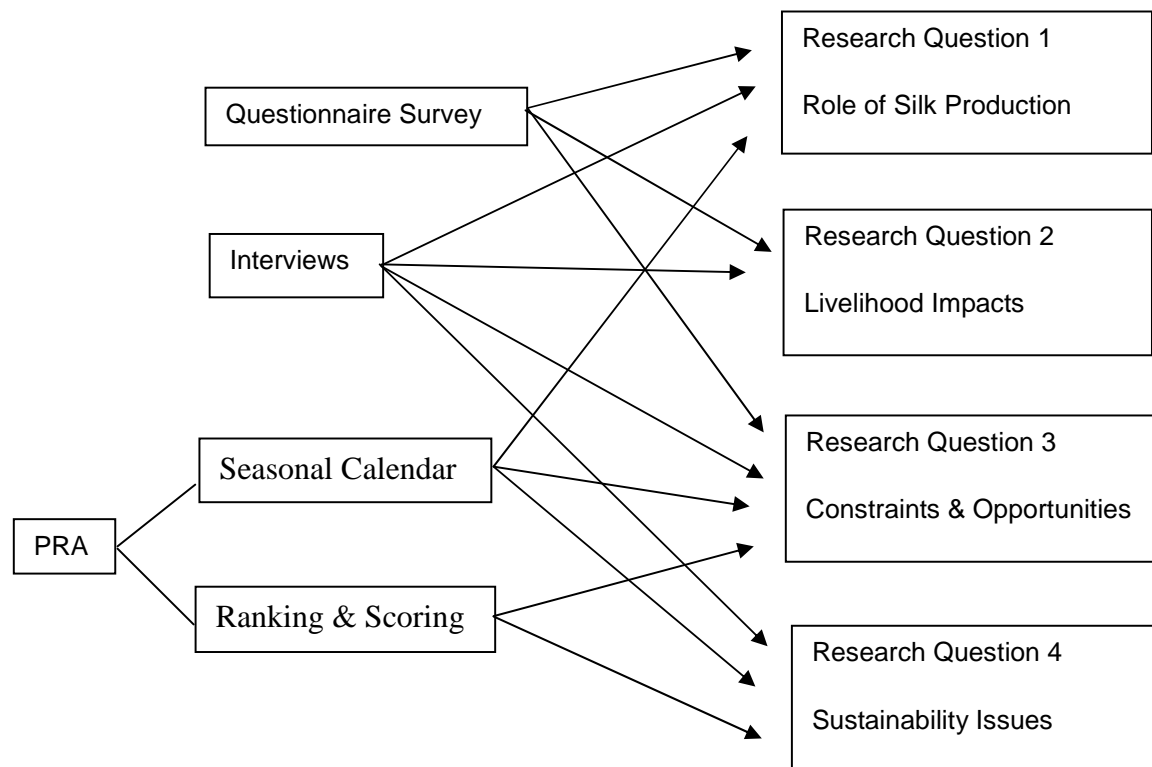


Figure 2: Overview over used methods.

3.1 Questionnaire

We conducted 31 questionnaire surveys in Paoy Char commune, 27 among silk producers and 4 among non-producers. The purpose of conducting a questionnaire survey was to gather some background information about the producers and to get general information about silk production in the area and its impact on the producers' livelihoods. We tested our questionnaire, both in Denmark on fellow students and on three producers in the villages. Based on the results of the testing, we made adjustments to the questionnaire before using it for the larger survey.

Trapeang Thma

Silk - project; Questionnaire survey and village boundaries

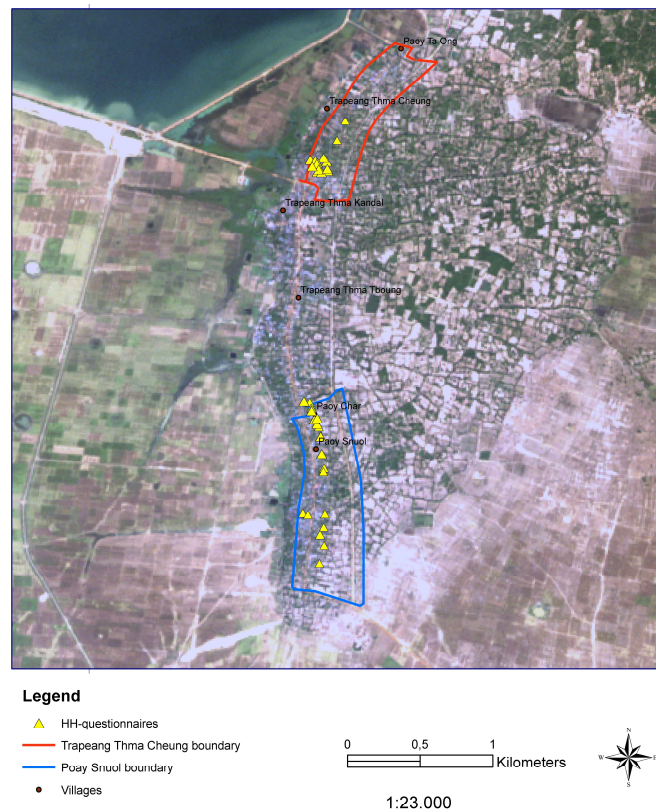


Figure 3: Map over study area with indication of questionnaire households.

Figure 3 shows a map of the study area indicating the location of the surveyed households in the two villages. For the questionnaires surveyed in Trapeang Thmor Cheung we started out doing a random selection of households, but it turned out that all silk producing households were situated in a certain area. As seen on the map (see Figure 3) the households are clustered in the southern part of the village. In Paoy Snuol we started out doing a systematic sampling by choosing every second household but we discovered that there were only a few producers in this village, so we ended up questioning the available producers.

3.1.1 Critique of questionnaire

The use of the questionnaire gave us much valuable basic data of the silk production and producers in the study area. In this regard, it was a good way to quickly gather a lot of information. On the other hand, we soon discovered that some questions were either badly formulated or not fully understood by all group members and, hence, yielded unreliable data. We realized that the formulation and choice of the questions is essential and ideally, we should have had a very clear picture of the analysis of the data

beforehand. But since we did not know what the real circumstances in the commune were like, it was difficult to plan the questions in much detail that furthermore made sense when applied in reality. A practical issue concerning the use of the questionnaire was the fact that three different people conducted the survey and emphasized different aspects and understandings of the questions. This made it difficult to compare the results in some cases.

3.2 Interviews

A major part of our data was collected through interviews. We primarily used semi-structured interviews where an interview guideline was developed before the interview. We conducted 6 interviews with key informants from the local area as well as the major NGO in the area and 11 interviews with silk producers. The key informants were the commune chief, the local facilitator, staff from the local NGO as well as from ITC (International Trade Centre) in Phnom Penh. The interviews with the producers were divided into different categories in order to cover different aspects of our research questions. These categories were history, sustainability, new producers and income. We interviewed the new producers in order to find out about any changes that occur from being a non-producer to being a producer. This was intended to tell us more about the impact of silk production on livelihood. For the income interviews, we used our questionnaire data for the selection of interviewees. We divided the respondents into three groups, rich, medium and poor, and picked one respondent within each group. The division criteria were based on information about land size, amount of cattle and pigs owned and amount of people in the household. In the interviews, we used a combination of asking income related questions and asking the producers to identify their major sources of income and subsequently to distribute a total number of twenty stones between the identified sources according to their relative importance. Finally, we conducted one interview with a former silk producer in order to learn about the reasons for quitting silk production as well as one interview with the husband of a silk producer to find out about dynamics within the household and gender related issues.

3.2.1 Critique of interviewing

The interviews provided us with a more in depth understanding of several issues than any questionnaire could have given. It allowed us to explore the opinions and values of people. Most interviews were conducted through an interpreter, which was a challenge in itself. On the other hand we learned how essential the interpreter is, not only as a translator, but also as a cultural interpreter. Several times we experienced to completely misinterpret the answers and facial expressions of our interviewees due to limited understanding of the local culture, and had good use of our resourceful interpreter to bring us back on the right track.

3.3 PRA

During our field work we conducted two Participatory Rural Appraisal (PRA) exercises – a seasonal calendar and a scoring exercise followed by a pair wise ranking of the scores. For the seasonal calendar we gathered a group of 17 female silk producers. A template of the calendar was prepared in advance and presented to the women who were then asked to discuss and fill in their activities throughout the year. The purpose of this exercise was to find out how the silk activities are distributed throughout the year compared to other activities such as working in the rice fields, fishing, etc. We hoped to get some information about the silk producers' time management and labour burden.

The scoring exercise was conducted with 7-14 women since more kept arriving during the exercise. The women were asked to list all possible constraints in silk production they could think of. The constraints were then grouped into bigger categories before the women ranked them in a pair wise manner. This was done by comparing each identified constraint to another through letting the participants vote for the one constraint that they considered more important. We used a system of stones for the voting. In the end, every constraint was compared to the others and a ranking according to the perceived importance of each constraint respectively was possible. This exercise was carried out in order to find out about the constraints that the women face in their silk production and which ones are considered the most important. This automatically led to propositions of improvements in the production process.

3.3.1 Critique of seasonal calendar and ranking exercise

The two PRA exercises gave us the possibility to try out some more untraditional research methods in the way that we as researchers stepped back and gave more control to the participants. The exercises prevented us from imposing our own ideas of the results on the participants and thereby altering the data in a certain direction. At the same time, the methods are rather time consuming since it both times required a detailed explanation of the purpose of the exercises. Even though communication took place through an interpreter, there was a high degree of vitality and a lively discussion taking place throughout the exercises. Overall, the PRA exercises gave us some valuable data that we would not have obtained by individual interviews since the group dynamics revealed additional information. It was also a fun way to meet the local people and cross some barriers between “us” and “them”.

4. Structure of the Report (all)

In the following we will shortly describe the structure of the result and discussion part of the report. The presentation of our result will start with a general introduction to the silk production in Paoy Char commune. Next, we will cover different livelihood aspects of silk production and in the last chapter of the result section, we will identify the major constraints that people face in the silk production.

Our assessment of the sustainability will of course build on the collected data and will be considered continuously throughout the chapters, but as the sustainability issue implies a higher level of abstraction we will mainly present this issue in the discussion.

5. Silk Production in Paoy Char (main authors: Harun & Nina)

This chapter will give an introduction to the technical aspects of silk production followed by a description of the history of silk production in Paoy Char commune. Because the Khmer Silk Villages (KSV) is such a visible and influential organization in the area, we will account for its history, selection criteria and areas of support before providing a description of the typical silk producer. All this will be done in order to get an understanding of the role of silk production in Paoy Char commune. The findings are mainly based on questionnaire data and key informant interviews.

5.1 Production Process

Silk is a natural protein fibre obtained from the cocoons of the silk moths, *Bombyx mori*. The silkworm species generally complete their life cycle within 45 days from mating of moths to reeling of silk cocoons. The silk worms feed exclusively on the leaves of the different varieties of the mulberry plant (*Morus alba*). Therefore, mulberry production is an important part of silk worm rearing.

The young silkworms are placed in bamboo trays and fed mulberry leaves through four growth stages. When the silkworms are ready to spin they must be placed on bundles of twigs or special bamboo trays to spin their cocoons. When they are fully spun they are boiled in water. The boiling water kills the worms inside the cocoons and makes it possible to unwind them. A number of cocoon filaments are drawn together and pulled from the cocoon. Then, the filaments are reeled and made ready for dyeing. Finally the weave must be prepared and the silk can be weaved into garments.

Silk producers and sericulture specialist in Phnom Srok district explained that there are different qualities of silk thread: The outer layer of the cocoon gives a more rough thread compared to the smoother and shining middle and inner part of the cocoon. The whole silk production process in Paoy Char commune is represented in Figure 4.



Figure 4: Silk production process.

5.2 History of Silk Production in Paoy Char Commune

In order to understand the role of silk production in Paoy Char commune we need to briefly introduce the history of silk production in the area. Silk production has a long history in Phnom Srok district. Some of the elder silk producing women explained that silk production knowledge has been passed from mothers to daughters for generations. Several producers expressed that silk production is very important for them as an old tradition. This point was beautifully expressed by a local, elder man who interrupted our interview with his daughter to proclaim: “there are two things that Khmer people will *never* stop producing; rice and *silk*!”

It was pointed out that most of the activities connected to silk production have not changed much over time. Two areas where changes have occurred are the dyeing and type of equipment used. Until recently, most producers used only chemical dyes imported from Thailand but now several are starting to use natural dyes. These changes have mainly occurred due to the effort of NGOs promoting silk production in the area.

Natural Dyes

In these years the silk producers of Paoy Char commune are experimenting with a new way of dyeing their silk yarns; by natural dyes. A wide range of beautiful colours can be obtained by using extractions of plant parts like bark, coconut coil or leaves from the jatropha plant. The advantages is that most of these dyeing materials can be found in the local environment. Then there is no need to spend money on bags of artificial dyeing chemicals, that are normally imported from Vietnam. Dyeing with natural dyes is more complicated and takes more time, but many of the silk producing women in Paoy Char are interested in learning the technique, as the natural dyed silk products are considered of a higher quality and can be sold for higher prices.



5.3 History of KSV

In 1998 Agence Française de Développement (AFD) started some silk production activities in Phnom Srok district. AFD trained the farmers in the silk production process. When they first visited the village, around 800 households were producing silk but the produced amount was only 1 ton. Silk was mainly produced to be sold to neighbours. Efforts to revive the silk sector can be divided into 3 phases. The first project (PRESNOC) was started in Siem Reap and Banteay Meanchey Provinces in 1998 and ended in 2001. The second project was called PASS (Project d'Appui au Secteur de la Soie) and existed from 2002 to 2005 in the provinces of Siem Reap, Banteay Meanchey and Oddar Meanchey. The 3rd phase of the project was started in 2005 and is still ongoing today under KSV. This association is funded by the European Union through the projects of ECOSORN. KSV involves 800 silk producers and 700 silk weavers in the provinces of Banteay Meanchey and Oddar Meanchey.

We became aware that many silk producers referred to PASS even though they were actually talking about KSV. Therefore, the two abbreviations will be used as synonyms in most parts of the report.

5.4 The Support of KSV?

In principle everybody is welcome to join KSV, both people who already are producing silk, and those who have no experience. In order to find the people who are interested in joining their programme, KSV works closely together with the official authorities on province, district and commune level.

Generally, KSV staff meets with the local leaders and present their ideas for a silk project in the area. Then, they call for a meeting where everybody in the community can meet up and hear about what KSV can offer and what they expect of their participants. Here they can sign up as participants of the silk project, and afterwards join the training. KSV provides training in basic and advanced silk production techniques for rural people. KSV trains for example the producers in rearing and selection of cocoons, and in more modern techniques of dyeing and weaving designs. Concerning the dyeing, KSV specially focuses on introducing natural dyes as an alternative to the imported artificial dyes. Apart from providing training KSV also offers financial support for equipment and tools and facilitate the marketing of the silk products.

Not all are involved with a NGO, but the majority of the producers said that they have obtained some of their skills from the training provided by NGOs as can be seen from Figure 5.

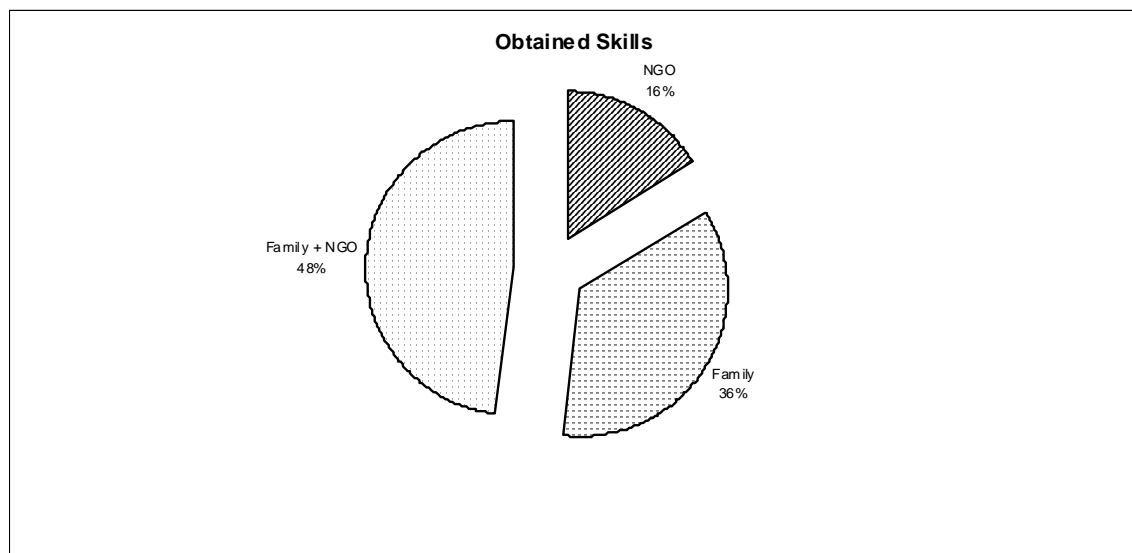


Figure 5: Obtained silk producing skills. (n = 25)

5.5 Who is Doing What?

From our questionnaire data we found that most of the producers in the two villages of Paoy Char Commune where we conducted our research are engaged in different parts of the production process. As it can be seen in Figure 6, 44% of the producers are involved in the whole process while the rest is involved in different combinations of silk production activities.

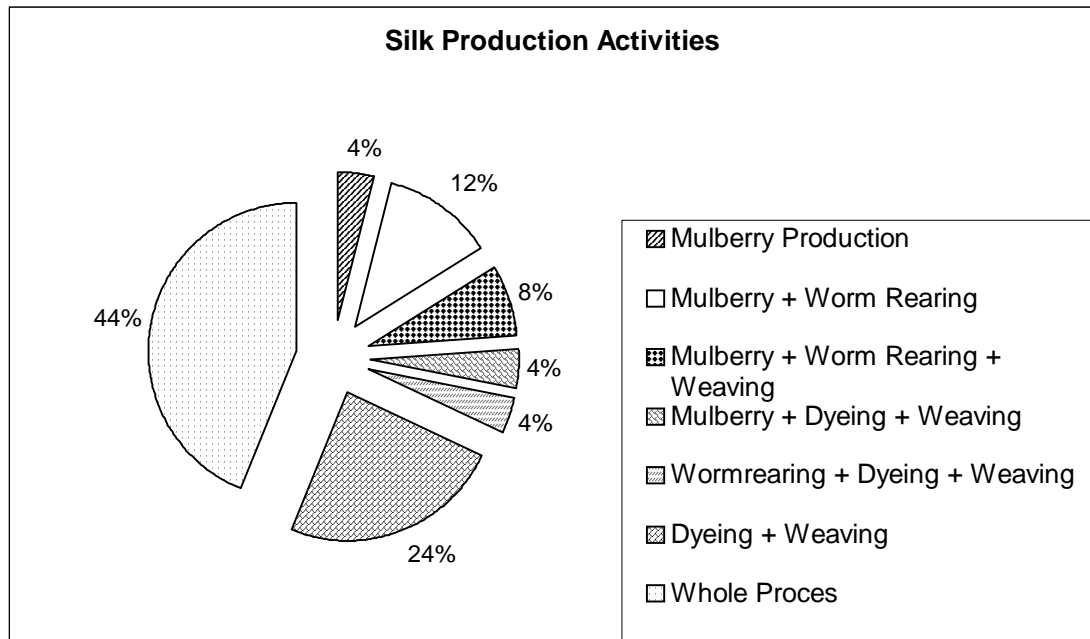


Figure 6: Producers involvement in silk production process. (n = 25)

The purpose of the seasonal calendar was to get a picture of the main activities of silk producing households and how each activity's labour burden is distributed throughout the year. This automatically tells us something about time management and possible constraints for silk production at the times when other activities' peak (for a discussion of the constraints see chapter 7). The result of the seasonal calendar can be seen in Table 1.

Table 1: Seasonal variations in silk activities

Activities	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Rice	Harvesting											Harvesting
Fishing												
Vegetables												
Livestock			Selling									
Silk production in general												
Mulberry plantation			Land preparation		Planting							
Worm Rearing		No feeding										
Reeling												
Dyeing												
Weaving												

	Dry Season
	Wet season
	High activity
	Medium activity
	Low activity
	No activity

It becomes obvious that a typical silk producing household is engaged in different activities throughout the year, so silk production is not a priority at all times. Especially at the time of rice harvest (from December to February) silk production activity is low. Mostly, there are no rearing activities from February to April due to the lack of water and less mulberries and rearing in October.

5.6 Characteristics of the Silk Producers of Paoy Char Commune

5.6.1 Gender

Silk production in Paoy Char commune is mainly dominated by females, and in all silk producing households we visited we observed women as the main producers. This does not mean that men are not part of silk production, on the contrary men often play an active role in the mulberry production and the feeding of the worms and some will also be assisting with the reeling activities.

5.6.2 Age

The figure below shows the age distribution of silk producers. It is important to have in mind, though, that in general, many household members will be involved in the silk production, and often mother, sister and daughter of the same house will take part. What can be seen from the table is that all age groups from 21 - to above 50 years are well represented.

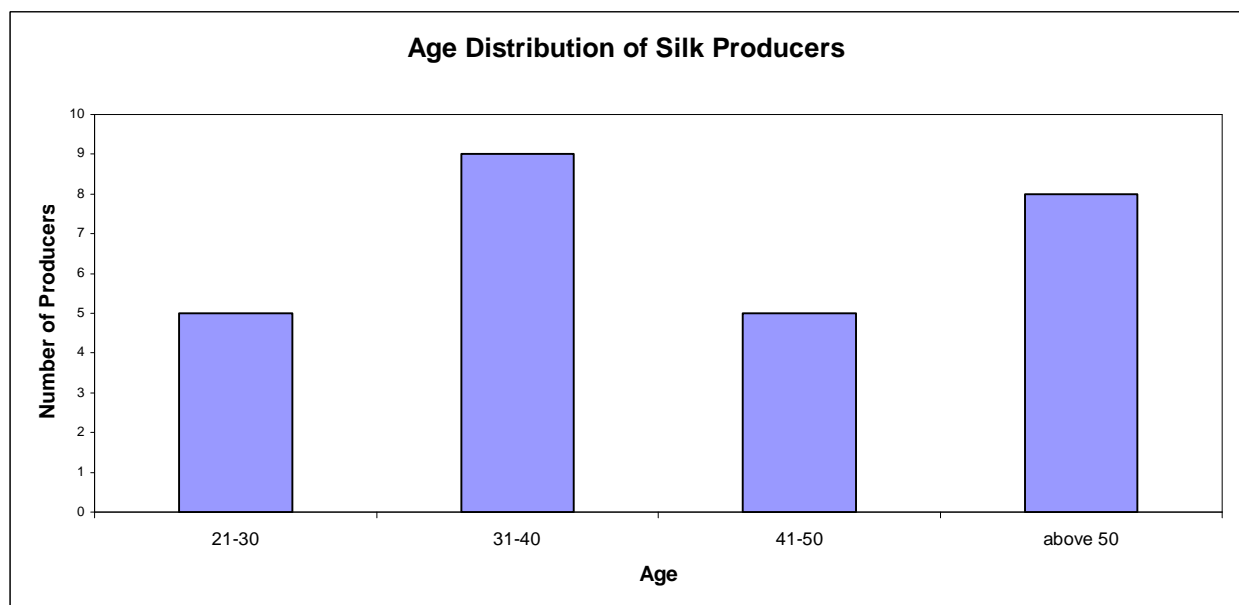


Figure 7: Age distribution of silk producers. (n = 27)

5.6.3 Education Level

Figure 8 shows the educational level of our questionnaire respondents. These numbers give a good impression of the relative low educational level in this area as 9 out of 27 had never been to school and only 1 out of 27 had an education higher than a secondary school level.

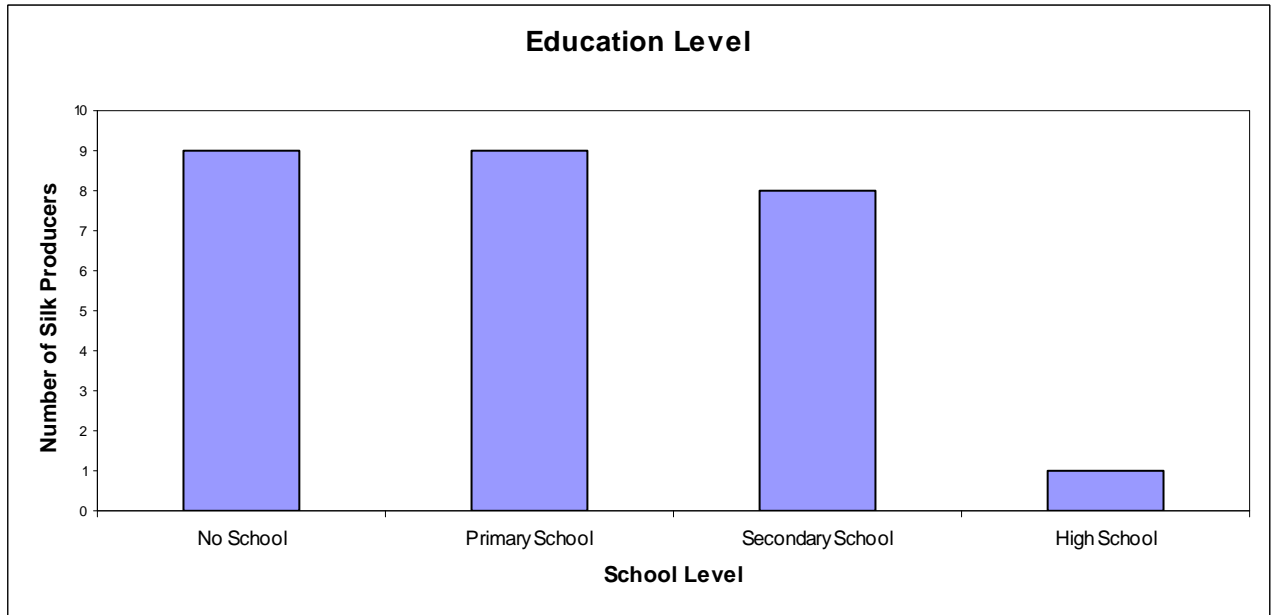


Figure 8: Education level of silk producers. (n = 27)

5.6.4 Livestock and Land Size

The producers owned different amount of livestock. Figure 9 shows that 38% of households owned poultry, 30% owned pigs while 32% owned some cows. Out of this group, only 2% owned 5-6 cows which can be seen as an indication of wealth.

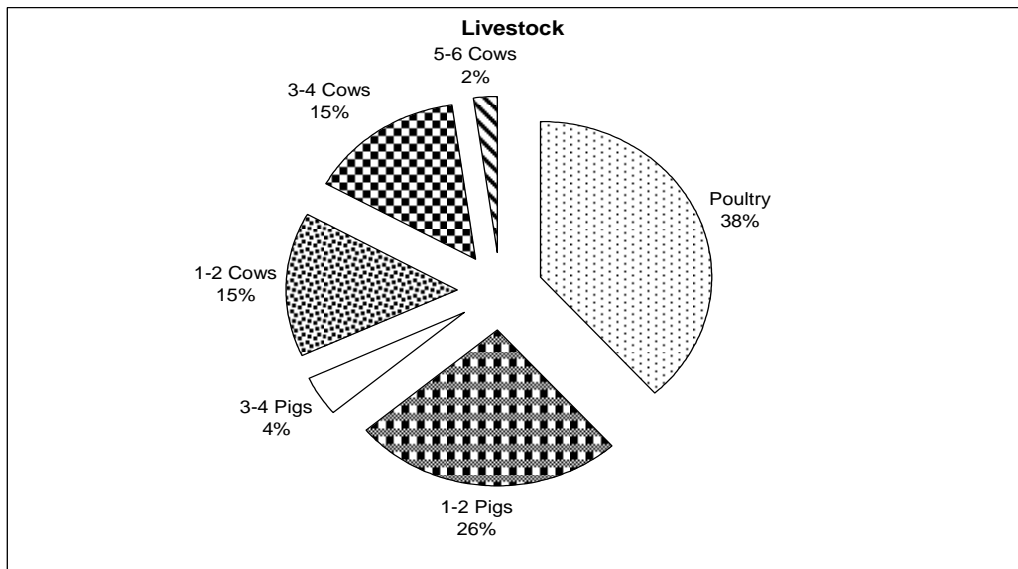


Figure 9: Livestock diagram showing the distribution of livestock. (n = 27)

Figure 10 shows the land owning patterns of the producers. It shows that the majority only owned a small amount of land, 1-2 ha, while only 11% owned more than 3 ha. We used the amount of land owned as a wealth indicator. Consequently, it can be seen that most of the silk producers are considered land poor.

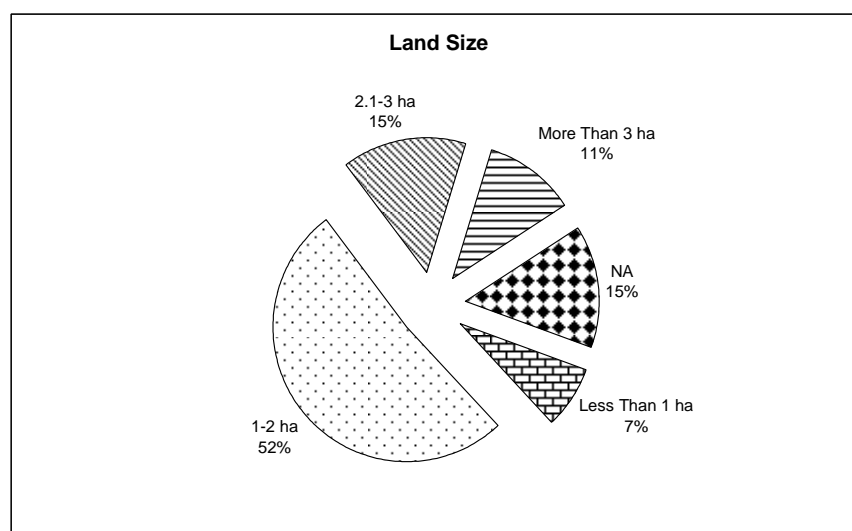


Figure 10: Land size, diagram showing how much land the producers own. (n = 27)

6. Livelihood Impacts (main authors: Anna & Heidi)

6.1 Multiple Livelihood Strategies

The concept of multiple livelihoods is a very commonly used strategy in many rural settings in developing countries. People are engaged in different livelihood activities in order to ensure that household needs are met. Typically, these activities can consist of both income generating as well as subsistence farming activities (De Haan & Zoomers 2003). In this chapter we will analyze the impact of silk production on the livelihoods of the producers. This will be done by looking at the overall livelihood strategies of the silk producing households followed by an analysis of the different livelihood assets according to the DFID livelihood framework. The framework uses the different assets to understand people's strengths, the assets, and how they can turn those into positive livelihood outcomes. People need different assets to be able to achieve positive livelihood outcomes and hence, it is necessary to look at all of them in order to understand people's possibilities for achieving positive outcomes. The different assets are human, social, financial, natural and physical (DFID 2001). Finally, based on a division of questionnaire households into households that own little, medium and much land respectively, we will create asset pentagons for the three types of households and investigate whether there are any major differences between the groups. Asset pentagons are visual presentations of people's access to the different assets, with the centre point of the pentagon representing zero access and the outer perimeter representing maximum access (DFID 2001). The findings in this chapter are based on questionnaire data and semi-structured interviews.

Most households in Paoy Char commune are engaged in a variety of different livelihood activities. All households participating in the questionnaire survey were engaged in agricultural activities; Figure 11 indicates that 52% of households had rice as their only major source of income. 33% of the producers stated rice and silk as their main source of income showing that even though silk is an important income generating activity for these households, the dependence on rice is still very predominant. Other important income sources were silk, fishery, livestock and other agricultural activities.

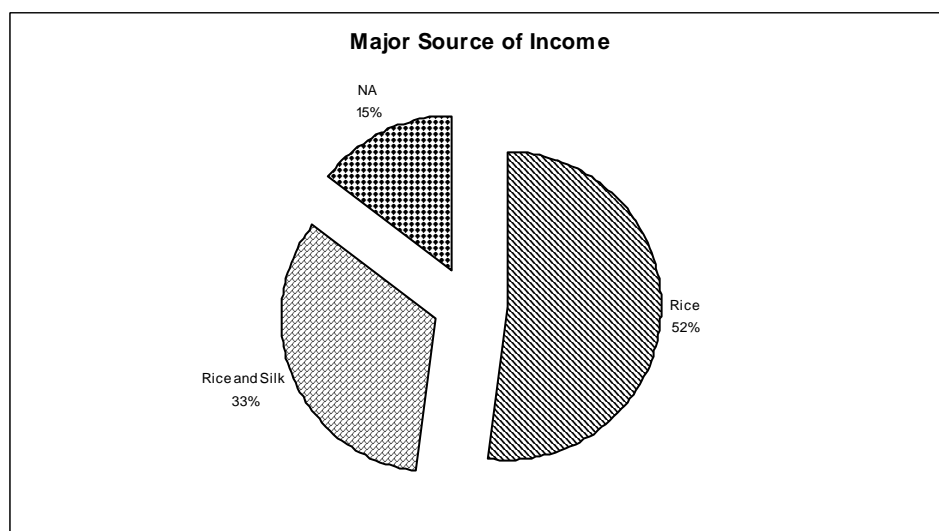


Figure 11 Major source of income. (n = 27)

These income data were confirmed by three in-depth interviews with rich, medium and poor producers respectively in which we asked the producers to show us the relative importance of their different income sources by distributing a total amount of 20 stones among the various sources. The results of this exercise can be seen in Table 2:

Table 2 Relative importance of income sources

Income Sources	Interview I (rich)	Interview II (med)	Interview III (poor)
Rice	65%	40%	20%
Silk worm rearing	15%	25%	---
Silk products	---	25%	55%
Livestock	10%	10%	---
Sewing clothes	10%	---	---
Fishing	---	---	25%

In all cases, rice is an important income source for the households with silk producing activities ranging from 15% to 55%. The table shows that silk production is a more important source of income for the poor household than the medium and the rich. It indicates that silk production increases in importance the less land a household owns since the classification into rich, poor and medium was based on amount of land and livestock owned and number of household members.

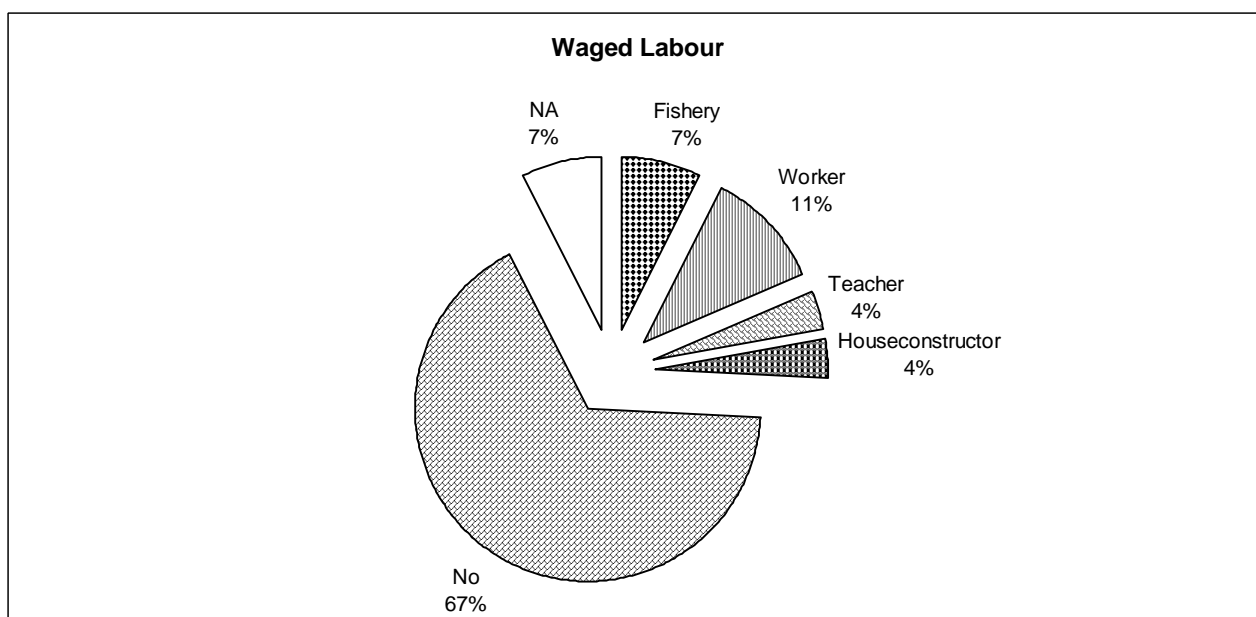


Figure 12 Engagement in waged labour. (n = 27)

Figure 12 shows that 33% of the questionnaire respondents were engaged in some kind of waged labour with the areas of work typically being fishery, construction, teaching or other manual work. 67% were not engaged in waged labour which could be an indication of widespread involvement in subsistence farming or self-employment.

Our findings indicate that all studied households were involved in several livelihood activities not relying on only one income source. It seems that the presence of PASS in the area furthermore has opened the possibilities of diversifying livelihood activities related to silk production. When interviewed about her experiences as a relatively “new” silk producer, one producer highlighted the fact that before the cooperation with PASS her main income sources were rice farming and silk worm rearing while today she also does the weaving. This has improved her living conditions compared to the past. However, her income would still only cover basic needs.

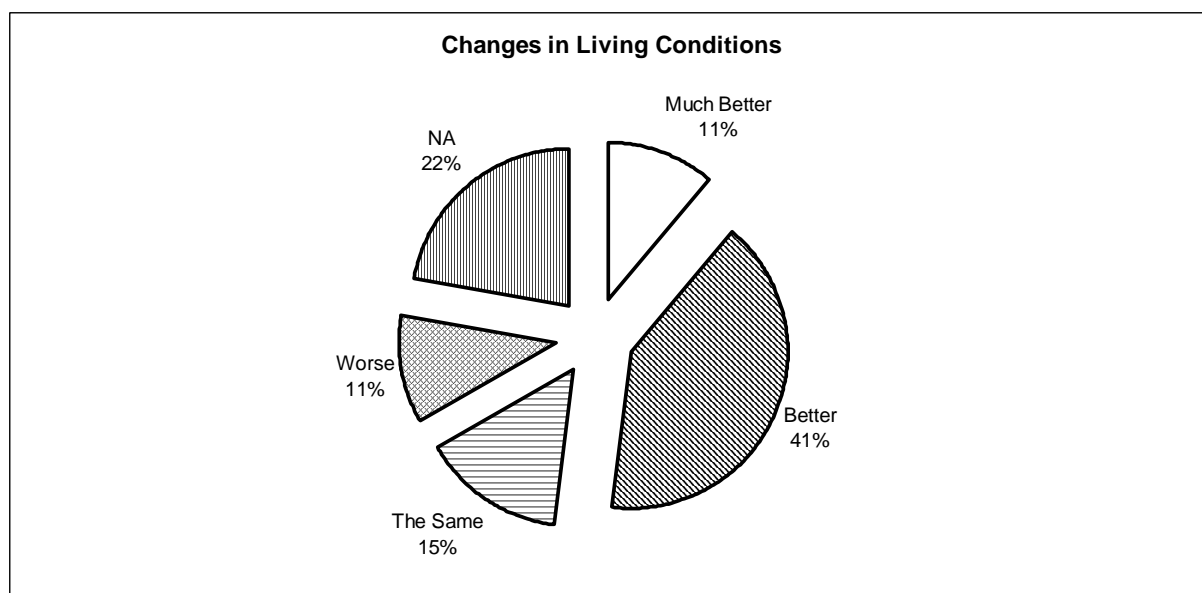


Figure 13 Changes in Living Conditions. (n =27)

Concerning the question whether silk production is perceived as a worthwhile livelihood activity we got contradictory answers. On the one hand, we met many proud producers who had produced silk throughout their lives and would never stop doing it. Silk production has given them a better income and made them economically less vulnerable in difficult times. On the other hand, the younger generation was not interested in silk production to the same degree and would prefer to find other jobs. This tendency was backed up by the fact that many producers had recently stopped with parts of the production process because it was no longer viable for them. Several producers started to become engaged in other garment production activities than silk. This was mainly weaving with cotton and sewing of clothes for Thai buyers. Both of these activities are, as far as we understood, mostly a matter of selling labour: The middlemen provide the raw materials, give their orders, and then come back to pick up the finished products. We got the impression that this type of work was relatively new in this area but was becoming increasingly popular. Whether silk production is a sustainable activity depends also on the availability of labour in the future and the appreciation of it as a worthwhile activity. These factors determine its social sustainability to a large extent. But even though there were tendencies to find other jobs than silk production, the overall perception among silk producers of whether silk production has improved their living conditions was positive. 52% thought that their living conditions have improved through silk production while only 11% thought that they had become worse (see Figure 13).

A Life with Silk



Every time we walk the main road of Paoy Snuol we see her. She is sitting at the weave at the balcony of her wooden house, patiently pushing the shuttle forth and back adding a new millimeter of the shining fabric for every movement. Mrs Krong lives in the village of Paoy Snuol, here she is born and has lived for most of her life. She has survived some of the most turbulent years of Cambodian history, but with one continuous element of her life: Silk. "My mother was a silk producer. As was her mother", she tells. "I was taught by my mother from I was a little girl". And even today Mrs Krong spend most of her awake hours working with silk production. "My eyes are not as strong as they used to be, and perhaps the quality of my fabric is not as high as in my best years", she says with an excusing smile that draw beautiful lines in her wrinkled face, "-but I can't stop weaving, it's what I've always done, it's what I will continue doing"

6.2 Livelihood Assets

An important part of our field study was to look at how people's livelihoods were influenced by the production of silk. In order to do this we chose to focus on the five livelihood assets as used in the DFID livelihood framework (see Figure 14) and tried to identify these for the producers.

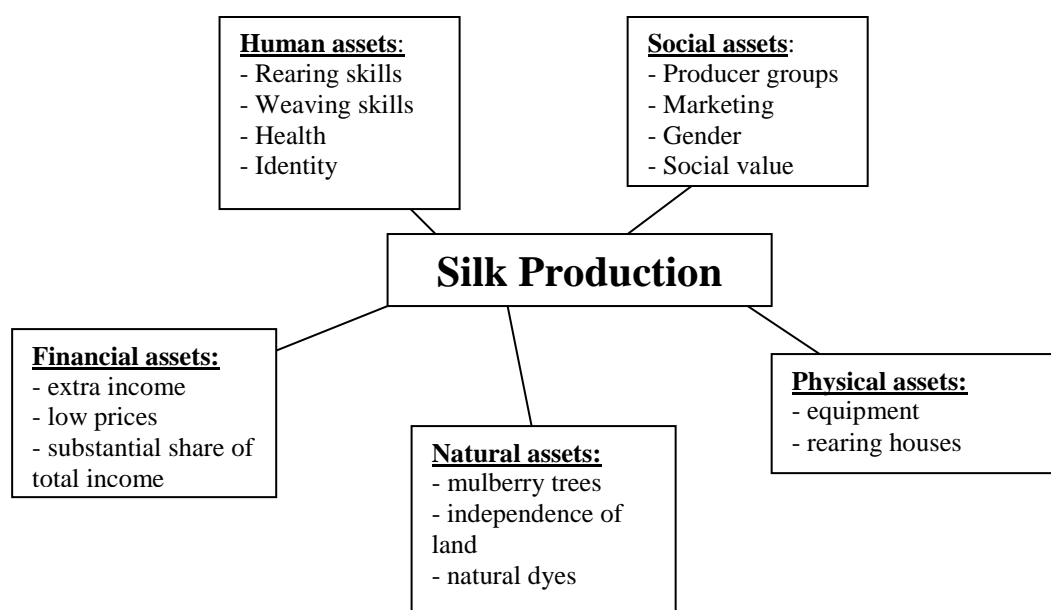


Figure 14 Livelihood framework

In the following, our findings will be presented for the five assets respectively

6.2.1 Human Assets

Through the interviews that we conducted it became clear that it requires certain skills to produce high quality silk. Those engaged in silk production have either obtained their skills from their mothers or from PASS/KSV as part of the NGO's training programmes. KSV provides training in basic and advanced silk production techniques for rural people. One producer who has recently started the collaboration with PASS confirmed that she had received 1 month of training in rearing and selecting cocoons and 3 months of training in weaving and was now able to produce different silk products. When asked about any impacts on health by silk production, most producers could not identify any problems specifically related to the production of silk but the long working hours and often lack of sufficient light in the late afternoon posed some problems to the eyes. A final dimension to the human assets related to silk production is the notion of identity. In particular, older producers who had produced silk always felt that silk is a very central part of their lives and contributing to their self-definition.

6.2.2 Social Assets

Silk production has several impacts on the social assets of the silk producer. KSV works on a basis where it organizes the producers into groups. KSV supports the groups financially in the beginning but, in the long run, the goal is for the groups to be independent of KSV. Furthermore, KSV wants to improve market access by connecting local producers to the market. Consequently, those producers associated with KSV benefit from a larger network through access to a broader market and cooperation with other producers. Through the interviews with the producers, however, it became somehow questionable to what degree both the producer groups and the improved market access benefit the producers. Most producers said that even though the groups exist, much of their activities are carried out individually and it does not influence on their social life to be organised in these groups. For the constraints concerning the marketing opportunities through KSV see chapter 7. Another aspect of the social assets of silk production is the social value associated with it. Because of the long tradition of silk production in the area there seems to be a general appreciation of silk as part of the cultural qualities. The same applied to the husbands' perception of their wives silk activities; they appreciated the additional income and would help out whenever their time allows it.

6.2.3 Financial Assets

For all producers who we talked to silk was an important additional income source. As mentioned above, it would most often be the second most important income source after rice production and it constitutes a considerable portion of total income. However, if compared to the time and labour spent

on silk production the income was not particular high. Prices for finished silk products lie typically in the range of \$5-12 for products that take 1-2 days to produce. These prices apply to sales to end consumers, so products sold to middlemen yield even lower income. Local producers stated their annual income from silk being around \$300-400 which is a quite considerable amount taking into account that in 2004, GDP per capita was \$357 (NIS 2005).

6.2.4 Natural Assets

Silk production includes the cultivation of mulberry trees for feeding of the silk worms. 72% of households were involved in the production of mulberry trees which requires access to some land. Many households grow mulberries in small plots in the backyard while only a few had bigger plantations further away from the home. As opposed to many other agricultural activities silk does not require large areas of land. Hence, it is a good opportunity for rural households with limited access to land. The possibility of buying the cocoons and only doing the rearing and weaving part of the production process even makes producers independent of any access to land, and in situations of limited land access silk production constitutes a valuable alternative to other agricultural activities. The use of natural dyes is another issue when considering natural assets. Those producers using natural dyeing techniques find the raw materials in their near environment. This means that access to forest and common land is crucial for the use of natural dyes which, if used increasingly, also implies some negative impacts on the environment and the people in the form of possible overuse of the resources or a need to travel further in order to find the right plants. Although many producers preferred chemical dyes because of their easier use, natural dyes were used to satisfy especially the western market. Products for local markets were exclusively dyed chemically.

6.2.5 Physical Assets

Silk production is a very visible activity in the households. It takes place in the homes of the producers; the weaves and worm baskets typically placed in the open ground floor of the house between cooking facilities, space for livestock and other “living space”. The biggest impact silk production has on the physical assets of producers is the provision of equipment by KSV. Those producers involved with KSV typically receive nets, wire nets for the rearing of the worms and reeling machines. Furthermore, PASS had financed rearing houses in the villages.

Apart from looking at the impacts that silk production has on the livelihoods of the producers we want to look at whether there is any variation in access to assets between different types of producers. We use a classification system based on information about how much land the producers own to look at the access to the livelihood assets for the different groups. The different types of producers are consequently grouped into a) little land, b) medium land and c) much land³. In order to estimate their

³ a) less than 1 ha, b) 1-3ha, c) more than ha.

access to the different assets we use a scoring system with different indicators for the assets. These were level of education and health related indicators for human assets, waged labour and migration information as well as cash crops and livestock for financial, amount of land owned and access to natural dyes for natural and involvement with a NGO and availability of people for helping with e.g. rice harvest for the social assets. Unfortunately, we were not able to gather enough information about access to physical assets. Figure 15 shows the asset pentagons for the three producer types.

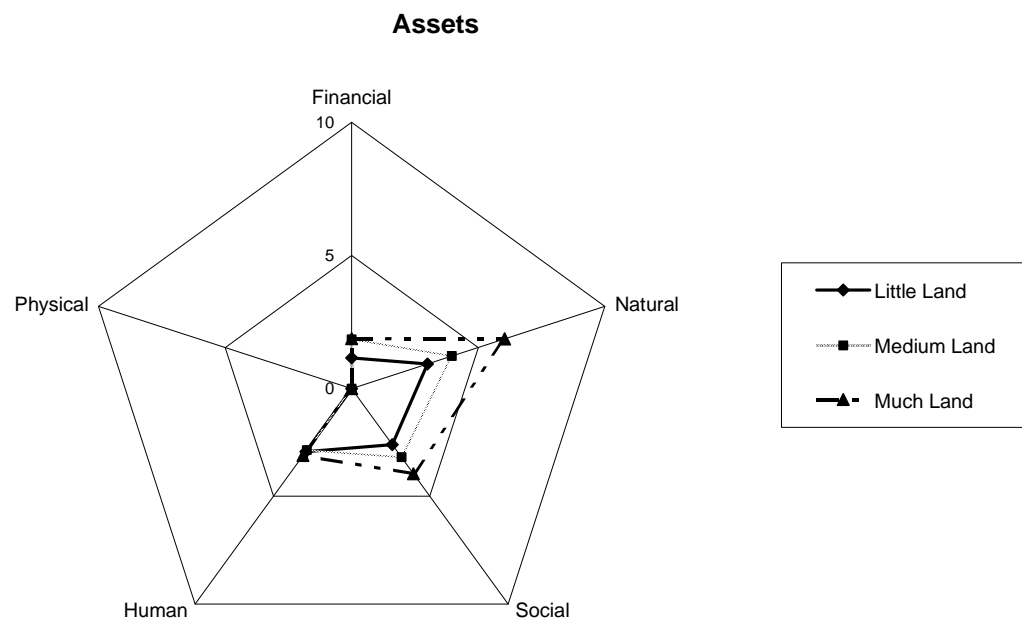


Figure 15 Access to livelihood assets.

Overall, the figure does not show any great difference in access to the different assets between the producer groups. However, we can see that those owing much land have slightly higher access to all assets, especially the natural. This is mainly due to their access to land. There is no difference in access to human assets between the groups but we can see that the group owing least land has lower access to financial, natural and social assets than the other two groups.

The findings of this chapter show that the major impact that silk production has on rural households is the provision of additional income. Especially, land poor households could benefit from higher access to financial, social and human assets through silk production. Apart from this, it can be argued that silk also is an example of a regional knowledge and skill base that offers producers the possibility of diversifying their livelihood activities in a way typical for the region. As such silk production has a traditional value in addition to the more practical values of income generation and development of skills.

7. Constraints of Silk Production (All)

In order to assess the potential of silk production, it is relevant to look into the weak points of the current production. By identifying the constraints of silk production it is possible to point out the focus areas of potential improvements. This chapter will go through different constraints that we discovered through our interviews with the local people of Paoy Char commune, present an overview of the importance of the constraints and go in depth with the biggest constraint, marketing.

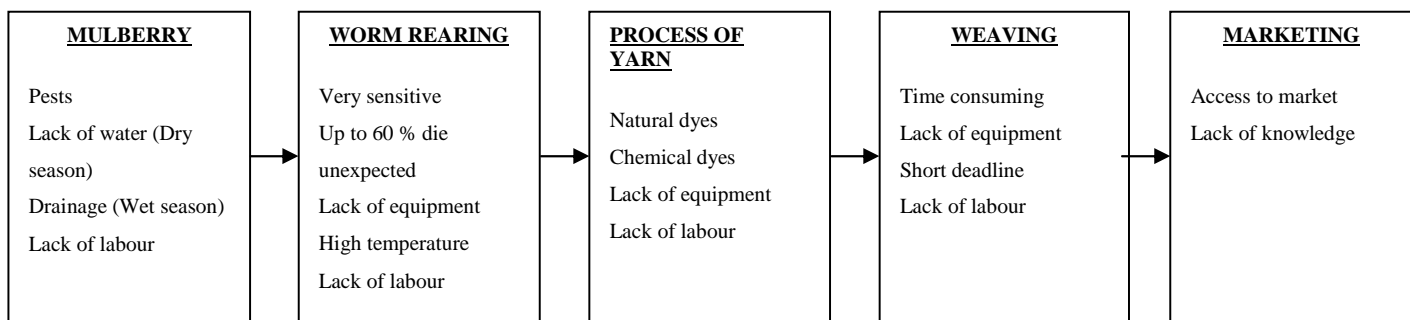


Figure 16: Flowchart over production process and related constraints.

Figure 16 shows the different steps of silk production from the cultivation of mulberry trees to the marketing of finished silk products and the constraints related to each step. In the following these different constraints are explained.

7.1 Constraints

7.1.1 Mulberry

Constraints in the mulberry production are mostly related to problems of water availability. In the rainy season there is too much water on the fields which causes some drainage problems whereas the trees lack water in the dry season. The yield of mulberry leaves during dry season is therefore significantly lower than in the rainy season. Some of the producers use mulching on the fields to keep the soil moist. Another problem with the mulberries is pests like mealy bug and stem borer, which cause considerable damage in the mulberry fields as the producers cannot use pesticides because it is poisonous for the silk worm.

7.1.2 Worm Rearing

It is a very difficult process to rear the silk worms. This is because the worms are very sensitive to their environment e.g. high temperatures, moist, light and pollution. Apparently the use of pesticides by rice producers has been an increasingly important constraint for silk producers in Paoy Char commune. Several producers told us that their rearing process had been disturbed by polluting pesticides from neighbours, either directly or through the mulberry leaves. Another huge problem in this process is that many of the worms die at a late stage of the rearing process. In fact the producers experienced that up to 60 % of the worms in a batch die. The reason for this high mortality rate of the worms is unknown for the producers. According to Ms Sola from KSV there is currently some research going on trying to solve this problem. Furthermore, the rearing process demands a lot of equipment such as baskets for worms, netcovering to avoid contamination from flies etc. It showed that lack of equipment is a limitation for the producer.

7.1.3 Processing of the Yarn

The reeling process does not seem to be a problematic process for the producers, in this sub-process no constraints were mentioned by the producers. KSV and former NGOs in the area have provided training that has introduced new knowledge among the silk producers especially concerning the use of natural dyes. The producers want to use natural dyes because of the higher market demand for this kind of product, but unfortunately natural dyes are difficult to use. It takes more time than dyeing with chemical dyes and it can be difficult to get precisely the colour the buyer ordered. Compared to the chemical dye which colours the silk right away, the silk has to be dyed several times with the natural dye before the desired colour is obtained.

7.1.4 Weaving

Time is the big limitation in the weaving process. It takes a long time to produce a piece of garment; it takes up to 2 days to weave 1 meter of fabric. Due to the long production time the weaver can have difficulties to fulfil the order from the buyer in time. As one producer explained: “It’s too hard to be on time for the demand”. This constraint is further worsened by the fact that many buyers tend to give short deadlines to the producers. Another challenge is to keep up with the demand for new designs. This requires flexibility and good market information.

7.1.5 Marketing

Since the marketing issue has been identified as by far the major constraint in the silk production process, it will be dealt with in a separate chapter.

7.1.6 General Constraints

There are a few constraints that are not related to any specific step in the production, but which are relevant throughout the whole process. In general, lack of labour is a problem. In most households the other members contribute to the production of silk but due to the involvement in other livelihood activities, time is often a constraint. The time and labour constraint can be seen in the seasonal calendar. It shows that silk production is lower when the rice has to be sown or transplanted and in harvest time. In general, skills and education are important to get a high yield and high quality product. It is surprising that lack of skills is not mentioned by any producers, even though many have received training. After the training they were able to expand their production with for example worm rearing or weaving.

7.2 Ranking of Constraints

In order to get an overview of the importance of the different constraints the producers were asked to rank the different constraints in the PRA ranking exercise. The results of the ranking can be seen in Table 3.

Table 3 Results from the constraint PRA exercise.

	Mulberry dies	Lack of materials	Rearing	Marketing	Lack of irrigation	Drainage
Counts	2	3	3	5	0	3
Rank	3	2	2	1	4	2

The lack of material, rearing and drainage issues is ranked equally important. This may be due to that it can be difficult to distinguish the constraints from each other, because each sub-process is somehow connected to the others. If the mulberries give a low yield there will not be enough food for the worms, these will not produce enough yarn and hence, silk production is low. As mentioned before, the marketing got the highest votes and will be dealt with in the next chapter.

7.3 Marketing

Marketing was identified as the most important constraint among producers of Paoy Char commune. In this chapter, we will first describe the current marketing strategies and thereafter discuss different aspects of the constraint.

It is important to clarify that the silk products are diverse and that different products are directed to different markets. As described in chapter 1 some producers produce only raw silk, which is internally sold on to other producers who produce the silk garment products. However, in the following we will focus only on the marketing of the final silk products, as the sale of raw silk is not a problem since the current demand is higher than the supply.

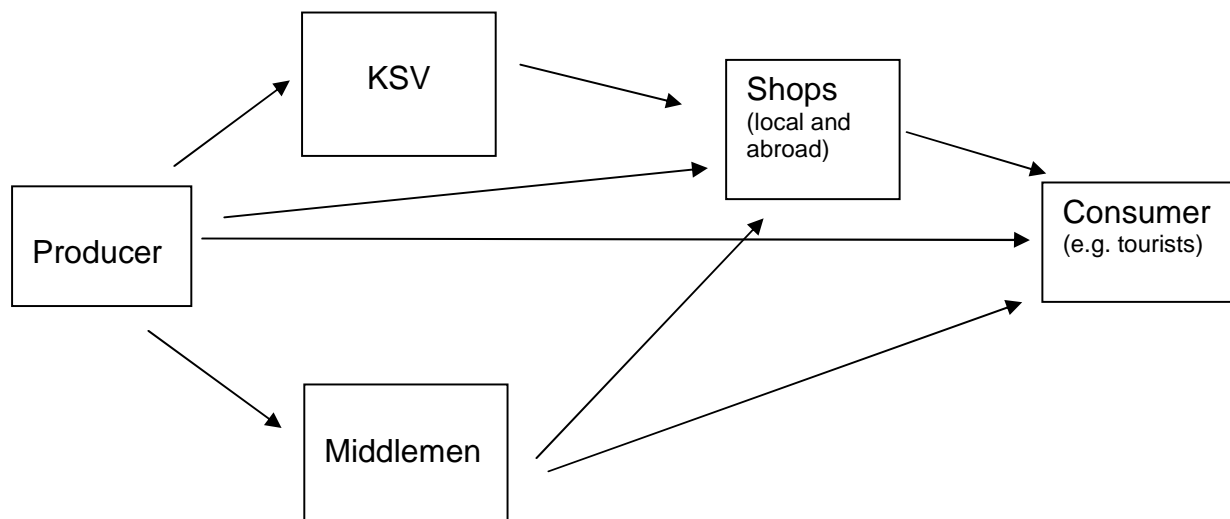


Figure 17: Marketing chain showing different ways the producers can market their products.

7.3.1 Direct Market Access

Some producers are able to market their products individually (Figure 17). This is the case where the producing households have relatives living abroad or in larger cities like Phnom Penh who were helping them with bringing the products directly to the shops. Furthermore, many producers sell some part of their products to tourists who visit the area.

Sale to tourists

The members of the silk producer group in the southern part of Paoy Snoul are lucky to receive an organized tourist group from Khmer Silk Villages from time to time. The silk organization brings the tourists from Siem Reap as they arrange a combined tour of



visiting the crane sanctuary in the area, seeing the local silk production and buying silk products directly from the producers. The 10 members of the Paoy Snoul producer group receive a group of tourists about 2-3 times a month. The reason that they prefer to sell their products to tourists is clear, - the profit is absolutely highest when a silk scarf can be handed over directly from the women who has weaved it, to the women who will wear it.

7.3.2 Indirect Market Access

Many producers market their products through others, either through middlemen or through KSV.

According to the local field coordinator of KSV, Mr Nao, the marketing support is in fact one of the big areas of support that KSV offers to the producers. KSV organizes the producers in groups. In Phnom Srok district there are 13 groups with 13-20 members who all have one representative. A KSV field coordinator collects the silk products from the groups and passes them on to the marketing director in Phnom Penh, Mr. Chomnab, from where they are distributed further to a range of buyers within Cambodia as well as in Japan and EU.

Several producers explained that it is primarily when they cannot sell to KSV that they will sell through local middlemen. According to the local KSV field coordinator there are 3 middlemen in Phnom Srok district. The sale to middlemen is sometimes done in cooperation with neighbours. The price provided by the middlemen is significantly lower than the price that KSV offers. As an example we were told that a middleman would pay 3 dollars for a silk scarf, which KSV would pay 5 dollars for.

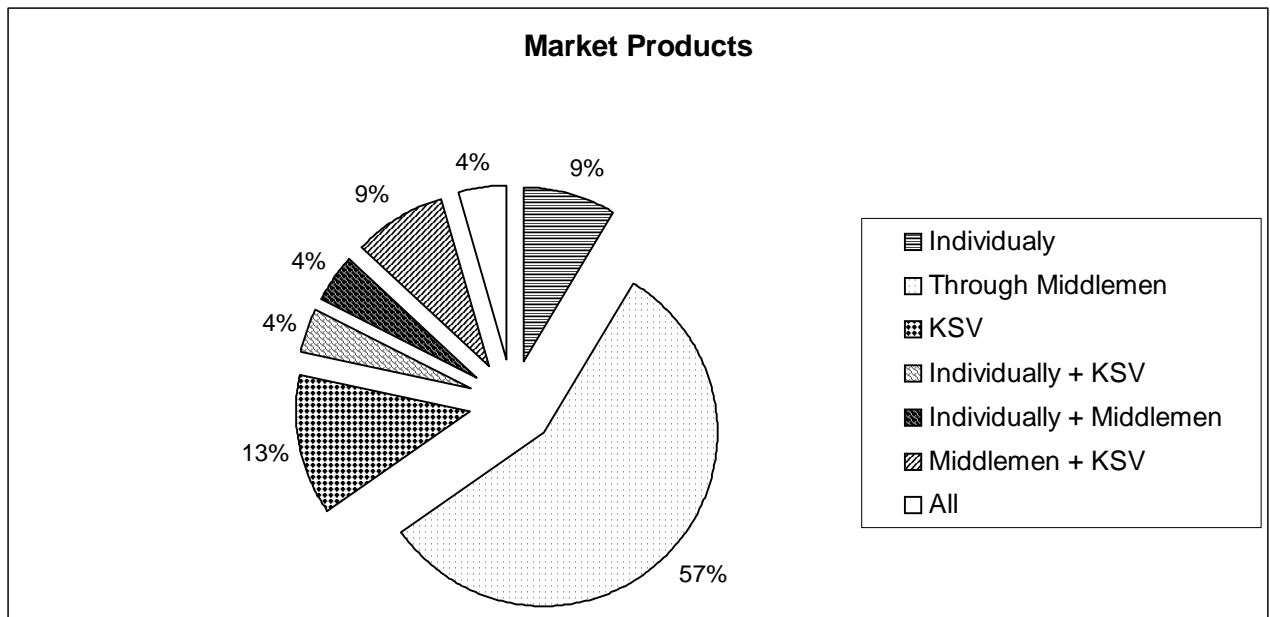


Figure 18: Marketing strategy of producers. (n = 23)

The results from the questionnaire survey (Figure 18) shows that a majority of 57 % sell their products only through middlemen where as 30 % are in different ways selling through KSV. From our talks with the silk producers we got the impression that proportion of producers selling through a NGO has decreased during the last years.

7.3.3 The Marketing Support of KSV

The marketing facilitation of KSV is highly welcomed and several of our interviewees said that they will rather sell to KSV than through middlemen. However, there seem to be issues concerning the effort of KSV that could be improved. This was discussed during a group discussion following the PRA exercise of the seasonal calendar in the village of Trapaeng Cheung. The producers here experience that the marketing has become more difficult after the time of PASS and claimed that many producers today must sell their products through middlemen. We experienced a general critical attitude towards the marketing through KSV, and a general opinion that “everything was better during the time of PASS”.

Several silk producers implied that the buying of KSV is irregular and the payment slow. Members of a producer group in Paoy Snuol explained that there can be several weeks of delay of the payment from KSV. Hence, when the field coordinator of the area collects the silk products of the producer groups, it can take 2-3 weeks before the producer receive the money for their products. For a household with a general low income, this is a long time to wait. The late payment increases the temptation of selling products to the middlemen who offer a lower price but immediate payment.

Several producers gave us the impression that the communication between KSV and the silk producers could be improved. This point was also supported by the comments of Mr. Nao, the local field coordinator of the area. He explained us that market is there and producers are there, but the challenge is to make the producers produce what the market want. This makes the problem complex and some how contradictory; on one hand producers have difficulties producing the amount and the quality that KSV demand in time, on the other hand they find themselves stuck with a lot of products ready to sell but not enough costumers.

8. Discussion (all)

8.1 Silk Production's Impact of Livelihood

There has been silk production for many years in the area of Paoy Char commune and silk production is like rice farming considered an important part of people's life and identity. As described in chapter 6, silk production has an impact of people's livelihood. The clearest effect of silk production seems to be the impact of the financial assets of the households as silk production is first of all an income generating activity. Different households are depending differently on the income of silk production as illustrated by the income data presented in chapter 6, but for all, the income from silk production is constituting a substantial part, from 15% to 55 % of the total cash income. Apparently silk production has most to offer for the poorest households. This is partly explained by the fact that silk production, or at least the weaving activities, can be performed also by those households that have little or no access to land. These households have bad opportunities within traditional agricultural activities as rice farming, and hence silk production income can to some extent compensate for low natural assets of poor households.

Nevertheless, when silk production is to be evaluated in a broader perspective, it is not enough to consider the benefits of silk production, but also the costs that are connected to this livelihood activity. Silk production does bring a cash income to the households, but is the size of this income worth the many needed inputs in form of equipment and ingredients and, most of all, *labour and time*? In an Indian study from 2008 the silk production in three different states is evaluated by elaborating a cost-benefit analysis of the silk producers (Lakshmanan *et al.* 2008). The study evaluated the profitability of silk production by setting a value for labour and time spent, adding these cost to other input costs of the production and compare total input to the final total output. The result of this specific, Indian study is that silk production does actually yield a profit, as the final outcome is higher than the input. It could be very interesting to conduct a similar study in Paoy Char commune to get a more reliable evaluation of the profitability of silk production.

Through a short study like our field study in Paoy Char commune we can only assess the profitability of silk production based on our general observations and talks with the producers. From our general observations we got the impression that the amount of time and labour needed for silk production is huge compared to the relative low income that the final products will yield. However, when we discussed the issues of labour burden and impacts on health with the local producers, the general comment about silk production was that: "it's not worse than any other job". When discussing the potential and sustainability of silk production this is an important point; silk production might be hard work, but what are the alternatives?

8.2 Silk Production vs. Alternatives

The Banteay Meanchey province where Paoy Char commune is situated is considered very poor as one third to half of the inhabitants are living below the poverty line (SCW 2006). There are not many opportunities in this area. As mentioned in chapter 6 there seems to be new opportunities of other garment production activities than silk production, like weaving with cotton and sewing of clothes for Thai buyers. When considering the weaving of cotton it seemed it was typically former silk producers who had switched to this easier alternative. In some way the cotton weaving therefore could be seen as a threat to the old silk tradition in the area. It is important to point out though, that there is not much point in wanting to produce silk for the sake of silk. Seen from the point of view that silk production first of all should be a way to reduce poverty by providing an additional income, there is no need to worry about competition of other type of jobs. It was clear from our interviews with the silk producers, that they dream of better living conditions for their children. Several wished their children to *not* become silk producers but wanted them to get a higher level of education which could bring them better opportunities. The question is whether it is constituting a sustainability problem that there apparently will be less silk producers in the future in Paoy Char commune? The parents should not be blamed for having such wishes on behalf of their children. After all, to improve the life of future generations is basically what development is all about. Perhaps the tendency could be seen a sign of a completely healthy distribution of labour towards more profitable livelihood activity?

Reducing poverty is mainly about increasing the economical security of poor people. Hence providing an income, from one or several sources, which is sufficient constant and sufficient high. How suitable silk production as a tool to poverty reduction is therefore mainly a result of how successful silk production is in offering this.

8.3 The Vulnerability of Silk Production

Silk production is in many ways an insecure business. It involves a lot of interlinked production steps and each of these is vulnerable to external factors. Silk production is like any other agricultural activity highly susceptible to environmental impacts. The mulberry production is completely reliant on appropriate climatic conditions and is also easily affected by factors like pests and disease. The silk worms are exceptionally sensitive animals to work with. They are easily disturbed by climatic conditions as well as any form of pollution. As mentioned in chapter 7, the pollution of pesticides used by neighbours was mentioned as a serious problem for silk producers in Paoy Char commune. The pesticide use for farming has increased during the last years and there is no reason to believe that it will not keep increasing in the coming years. There is therefore an actual risk that the pesticide pollution could become a bigger future constraint, and in that case there will be a need for negotiations between silk producers and non-silk producers.

It is not only the unpredictable environmental impact that makes the silk production a risky business, but also the unreliable marketing conditions. The demand is fluctuating following the varying desires of

the consumers within the garment market. As described in chapter 7, it is a major constraint in itself to get the silk products on the market. It is difficult for these rural people in Paoy Char commune to have any overview of their different marketing options and close to impossible for them to plan any marketing strategy when they have no information about the structure and the demands of the silk market. While the KSV is still in the area they are to some extent able to facilitate the marketing, but what will happen when they are no longer there? Concerning the long term economical sustainability of the silk production, it is important to make the producers able to be in charge of the marketing.

8.4 Empowerment of Silk Producers

Overall, the biggest success of KSV and similar organizations would be if they managed to build up a local silk production body that would be strong enough to make any further effort of the NGO unnecessary. In order to enhance the long term economical sustainability of silk production it is important to empower the silk producers. The question is how this is done in practice. A step towards a higher degree of empowerment of the producers would be to promote the producer groups and possibly transform these into actual independent cooperatives. Like Mr Sisowath from ITC said “the long term ambition is to empower the producer groups so they will be able to take their own good decisions regarding marketing and other issues”. If the producers were organized in cooperatives and members of the cooperatives were trained in basic skills of market analysis and sales techniques they would stand stronger when negotiating with the middlemen.

8.5 Potential of Better Market Access

There is an opportunity to take more advantage of the potential local market in Paoy Char commune. As described in chapter 7, the silk producers get the absolute highest profit of their products when they are sold directly to the tourists. Some producers told us that they have plenty products and could sell more if the demand was higher. There could be future opportunities for selling more silk products to tourists in the area. The bird sanctuary nearby has a big potential to attract tourists from Siem Reap (Goes 2004) and it is likely that some of these tourists would be interested in buying local silk products. From our own observation it takes some effort to buy silk in Paoy Char commune if you are not part of an organized group of tourists. There are no advertisements, no signs, and the absolute majority of the local people speak only Khmer. A group of silk producers expressed their wish of establishing a shop in the area, selling silk products to tourists. This idea seems very recommendable.

From our talks with producers we mainly noted how the use of natural dyes is considered to offer new, exciting opportunities for silk production in the area. The demand for natural dyes follows a general trend within the garment industry that is especially dominant among western consumers; the demand for environmental friendly and ethically sustainable products. The natural dyed, hand made Khmer silk products have a great potential to be sold for good prices on the western market or among western tourists. However, access to this new, blooming market depends on the ability of the producers to brand

their products. It is about telling the good story behind their silk products and as we see it, these local producers have really a good story to tell!

9. Conclusion (all)

Through many generations silk production has played an important role in the life of people in Paoy Char commune in Cambodia. The domestic small scale silk production is dominated by women but considered a part of the identity of the whole household. Silk production mainly contributes to the livelihood of the people of Paoy Char by bringing a significant additional income to the household. This can be especially helpful for households with little access to land as silk production is a type of agricultural activity that does not require much land.

The additional income from silk production can minimise the risks of the rural households that are relying mainly on agricultural activities. In principle, there could be many other alternative income sources than silk that could serve the same purpose and silk might not be the most recommendable activity. Whether it is or not depends on the potential of silk production of providing a stable and sufficient income. Our study shows that the biggest constraint of the silk producers is the difficulties of getting their products sold, indicating current unsustainable economic conditions. The biggest challenge regarding the future of silk production in Paoy Char commune therefore seems to be to ensure the silk producers better access to markets.

10. Reference List

- De Haan L. & Zoomers, A. (2003): Development geography at the crossroads of livelihood and globalisation. *Tijdschrift voor Economische en Sociale Geografie*, 94(3): 350-362
- DFID (2001): Sustainable livelihoods guidance sheets, DFID (Department for International Development), London.
- Earth, B., Lapanun, P., Tassniyom, N., Narasaj, P., Ruchuwarak, P. & Keola, S. (2008): Intensification Regimes in: Village-Based Silk Production, Northeast Thailand: Boosts (and Challenges) to Women's Authority in Resurreccion, B. P., Elmhirst, R.: Gender and Natural Resource Management: Livelihoods, Mobility and Interventions. Earthscan, London.
- ECOSORN Project (2007): 2nd Progress Report: July to December 2006. ECOSORN Project, Siem Reap
- Engvall, A. Sjöberg, Ö. & Sjöholm F., (2008) Poverty in Rural Cambodia: The Differentiated Impact of Linkages, Inputs, and Access to Land, [*Asian Economic Papers*](#), MIT Press, vol. 7(2), pages 74-95.
- Goodland, R. (2002): Sustainability: Human, Social, Economic and Environmental. In: *Encyclopedia of Global Environmental Change*, John Wiley & Sons, Ltd, Washington DC
- Goes, F. (2004) Ang Tropeang Thmor Sarus Crane Reserve, *Cambodia Bird News* 12 July 2004. [online] available on: http://www.wcs.org/media/file/CBN_12_ATT_No_Birdlist.pdf
- Kakada, D. & Vuthy, C. (2007) Export Diversification and Value Addition for Human Development. Economic Institute of Cambodia
- Lakshmanan, S., Munikishnappa, M., Mallikarjuna, B., Geethadevi, R.G. (2008) An economic appraisal of silk cocoon production in Southern India. *Indian Journal of Sericulture*. Vol. 47(1), pp 40-44.
- MoC (2005) according to Kakada, D. & Vuthy, C. (2007): Export Diversification and Value Addition for Human Development: Economic Institute of Cambodia
- NIS, (2005) Statiscal Yearbook 2005, National Institute of Statitics , Minestry of Planning, Phnom Pehn, Cambodia

SCW (2006) Atlas of Cambodia: National Poverty and Environment Maps. Save Cambodia's Wildlife, Phnom Penh, Cambodia

WCED (1987) Our Common Future, United Nations World Commission on Environment and Development, Oxford: Oxford University Press

World Bank (2006) *Cambodia: Halving Poverty by 2015? Poverty Assessment 2006* (Phnom Penh: World Bank).

11. Appendix

11. 1 Synopsis

SLUSE

Interdisciplinary Land Use and Natural Resource Management

(ILUNRM)

February 2009

Silk Production

- a way to improve women's livelihood in Trapeang, Cambodia?

Synopsis



Nina Tofte Hansen (ADK08016)

Anna Katharina Kramer (ADK07018)

Heidi Kristine Bo Lauritzen (ADK08013)

Md. Harun Ar Rashid (EMA08019)

Table of contents

<u>1. BACKGROUND</u>	- 2 -
1.1 TRAPEANG IN THE PROVINCE BANTEAY MEANCHEY	- 2 -
1.2 IMPROVING WOMEN’S LIVELIHOOD IN CAMBODIA	- 2 -
1.3 SILK AS A MEANS TO IMPROVED LIVELIHOOD FOR WOMEN	- 3 -
<u>2. PURPOSE OF THE STUDY</u>	- 4 -
2.1 OBJECTIVE	- 4 -
2.2 RESEARCH QUESTIONS	- 4 -
<u>3. METHODOLOGY</u>	- 6 -
3.1 OVERVIEW OVER THE RESEARCH QUESTIONS AND PROPOSED METHODS	- 6 -
3.2 COLLABORATION	- 8 -
<u>4. TIMELINE</u>	- 9 -
4.1 POSSIBLE CONSTRAINTS	- 10 -
<u>8. REFERENCES</u>	- 11 -
<u>APPENDIX 1: DESCRIPTION OF METHODS</u>	- 12 -
<u>APPENDIX 2: SAMPLE SIZE AND SAMPLING METHODS</u>	- 14 -
<u>APPENDIX 3: QUESTIONNAIRE DRAFT</u>	- 15 -
<u>APPENDIX 4: SEMI-STRUCTURED INTERVIEW FOR NGO/KEY INFORMANT</u>	- 18 -
<u>APPENDIX 5 SEMI-STRUCTURED INTERVIEW GUIDE FOR SILK PRODUCERS</u>	- 19 -
<u>APPENDIX 6: SEMI-STRUCTURED INTERVIEW FOR HUSBANDS OF SILK PRODUCING WOMEN</u>	- 21 -

1. Background

1.1 Trapeang in the province Banteay Meanchey

Our study is going to take place in the commune of Trapeang which is located in the district of Phnom Srok in the Banteay Meanchey province. The province is located in the north western part of Cambodia close to the border to Thailand. Cambodia has a total area of 181.035 km² out of which Banteay Meanchey constitutes 6.679 km² (National Institute of Statistics 2008). Partly due to its low elevation (0-100m), Banteay Meanchey is the province with the lowest annual rainfall in Cambodia. Banteay Meanchey is a low land province with a high population density of 101.5 inhabitants per km². In 2004, out of the 586,571 people living in Banteay Meanchey, 72% lived in rural areas. Rice fields are the most common land use type. The province has a poverty level of 31 – 50%, meaning that up to half of the inhabitants of Banteay Meanchey are living below the poverty line⁴ (SCW 2006).

1.2 Improving women's livelihood in Cambodia

The United Nations state the goal of promoting gender equity and empower women as one of their Millennium Development Goals. The specific target is to “eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015” (UN 2005). The focus on women in a development context is partly due to the general lower status of women in many societies but also because it is believed that women, once introduced to more income generating activities, will have other priorities in spending the income than men typically have. These priorities concern mainly health care and children's education. Hence, it is believed that targeting women in development projects leads to greater development especially in terms of human capital.

Cambodia is a society in which hierarchical orders determine social relations. Generally, women are considered of a lower status in this hierarchy than men although the status is also influenced by factors such as age and wealth. Women are guaranteed equal rights with men but in reality these rights do not necessarily apply, e.g. the Labour Law enacted in 1996 protects equal wage between men and women but in reality women get considerably lower wages. Male workers' wages are on average 15% higher than female workers'. Women are typically hired as low-waged or non-waged workers in agriculture, retail or service industries (Gorman et al. 1999; Yukawa 2007).

Traditionally, men participate in public affairs to a greater extent than women while women are more influential in the household. Women are mainly considered as the managers of the household. Often, it is the oldest woman in the household, who controls the little money the household might have, but few women feel that they actually have the power to limit expenditures by other household members (ADB 2001). The cash reserves of a rural household are typically low since cash generating activities often are limited among poor farmers in peasant economies. Women in rural areas often face a strong working burden - managing the household, engaging in agricultural activities, caring for the children - but commonly their work is less valued than the work of men (Gorman et al. 1999).

It seems that there is a correlation between the decrease of the natural resource base and an increase in the amount of women's daily work in order to ensure that basic household needs are met. Women's work contributes to a large extent to meet basic needs on a daily basis while the

⁴ The poverty line is determined as 1,036 Riel in terms of per capita per day consumption for rural areas in Cambodia (SCW 2006).

work of men primarily does so on a more seasonal basis. In their poverty assessment, the Asian Development Bank (ADB 2001) estimates that poor women in Cambodia today have to spend more time on ensuring that basic subsistence needs are met than in the past. With a reduced amount of traditional female work carried out at the home in today's Cambodia, this poses a high pressure on these women.

Improving women's access to education and employment opportunities would be an important step towards higher gender equity but also deeply rooted social values seem to be highly determining for the status of women in Cambodia (ADB 2001).

1.3 Silk as a means to improved livelihood for women

Silk production has a long tradition in Cambodia which dates back to Angkor times. Silk is a natural protein fiber obtained from the cocoons of the silk moths, *Bombyx mori*. The larvae of this silk moth, the 'silk worms', feed exclusively on the leaves of the mulberry plants.

Therefore, mulberry production is an important part of silk worm rearing. The silk worms complete their life cycle within 45 days from mating of the moths to reeling of silk cocoons. The delicate silk thread can be obtained from the cocoons, dyed and spun into silk yarn which can furthermore be weaved into different types of silk garment, such as scarves, skirts or carpets (Earth et al. 2008).

Today the production of raw silk in Cambodia is low compared to other silk producing countries like Thailand, Vietnam, etc. The annual production of raw silk in the country is around 7-8 tons, produced mainly in Phnom Srok. Local production can satisfy only 2 percent of total domestic demand throughout the country. In Cambodia, annual consumption of raw silk is around 400 tons. In order to meet this demand, raw silks are imported from neighbouring countries. Today, 98 percent of raw silks are imported primarily from Vietnam to produce silk products for domestic needs (Kakada & Vuthy 2007).

Silk in Cambodia is usually produced on a small scale and it is a female dominated activity. Men are however assisting in mulberry cultivation and making wooden frames, bamboo trays, spools and other tools (Earth et al. 2008). Silk is presently identified as an area of comparative advantage that has potential export earnings in addition to providing employment opportunities for rural women which is essential for poverty reduction (MoC 2005 according to Kakada & Vuthy 2007). Silk worm rearing and weaving might be one solution to give women more economic alternatives for income generation so that they can exert control over financial issues in society as well as in the family (Yukawa 2007). An increasing number of projects and NGOs engage in silk production promoting activities as a way to reduce poverty in rural Cambodia. The Economic and Social Relaunch of the Northwest Provinces (ECOSORN) is a European Commission funded project that is engaged in silk production in the three provinces of Siem Reap, Battambang and Banteay Meanchey. It states as its main objective to contribute to "the economic and social development of smallholder farmers and their family members [...] in ways that accrue equitably to both men and women" (ECOSORN Project 2007, p.38).

Silk production can be seen as part of a multiple livelihood strategy of poor families. To engage in a range of different economic activities is often a strategy to escape poverty or to reduce risks of severe economic shocks. When the livelihood strategy of the household is based on several income possibilities, the economic vulnerability is reduced and the chance for sufficient total income enhanced (De Haan & Zoomers 2003, pp. 354-355).

2. Purpose of the study

The focus of this study is silk producing women in Trapeang. These women are both engaged in silk worm rearing and weaving. As most households in Trapeang rely on agricultural activities for ensuring their livelihood, silk production might constitute an important possibility for a more diverse livelihood. Silk production is a female dominated activity and as such this project offers us the possibility to look at silk production as a potential way of improving the livelihood of women in Trapeang while having in mind that the women are part of a broader livelihood strategy within the household.

2.1 Objective

To assess the potential of silk production in improving the livelihood of women in Trapeang.

2.2 Research Questions

What is the history of silk production in the area of Trapeang?

How does silk production influence the livelihood of women?

What are the opportunities and constraints in silk production?

Is silk production contributing to the livelihood of women in a sustainable way?

We have been able to gather only little information about the specific situation of silk production in Trapeang and our knowledge about this area is therefore limited. Thus, in order to assess in which way the silk production contributes to the livelihood of women in Trapeang, we need a basic understanding of the context of silk production. The conditions and the extent of silk production in Trapeang have changed essentially throughout the dramatic history of Cambodia. Research question 1 is intended to give us an overview of the history of silk production. We wish to cover how the role of silk production has changed over time as well as how the role of women might have changed due to silk production. Silk production is considered to have the potential to improve the livelihoods of women in Cambodia (Yukawa 2007). However, not all women in the area of Trapeang are engaged in this production. Therefore, we want to investigate on what basis the NGO selects the participants of the NGO supported production and try to create a picture of a typical silk producing woman. This will allow us to investigate whether there is a correlation between the engagement in silk production as a part of the livelihood strategy and e.g. the specific income, household size, age, etc. of the producer. It might as well give us an understanding of why some women are engaged in silk production while others are not.

Research question 2 addresses the livelihood aspect of our objective. We want to use the livelihood framework⁵ as a point of departure for investigating how silk production influences the livelihood of women. In applying this framework, we need to consider each of the five assets (human, social, natural, physical and financial) and try to find out whether and in what way these are affected by the silk production. In order to be able to assess the influence of silk production on the women, we also need to look at the dynamics inside the household and how these might have changed due to the women's engagement in silk production. The women do

⁵ For background information on the livelihood concept see DFID 2001.

not live in isolation but are part of a social context. The interactions with other household members could give us a valuable insight into the possible potential in silk production related to the empowerment of the women as well as development in a broader context.

As mentioned above, silk production is believed to have the potential of improving the livelihood of women in Cambodia. By asking research question 3, we want to investigate both the opportunities and constraints within the production. This question focuses on the future aspect of silk production by looking at the factors that limit the production today and, hence, limit further expansion. These could be factors related to e.g. technical issues, finance, natural resources, marketing, demand or infrastructure. This will give us some answers as to where the production might be improved. Research question 2 and 3 overlap to some extent since it is not only the silk production influencing the livelihood of women but also the livelihood affecting the production. In this way, some aspects of the livelihood could also act as limiting factors in the silk production.

Research question 4 could be regarded as an extension of research question 3 while bringing in a new aspect of silk production. Here, we want to look at the sustainability dimension of the silk production. ‘Sustainable production’ is in this context understood as a production form that will not deplete resources - social, natural as well as economic – for future generations’ use. Our main focus lies on the environmental and economic sustainability which both could turn out to be a major constraint in the silk production. Environmental sustainability includes e.g. considerations about the mulberry production, nutrient flows and the use of natural dyes. Economic sustainability deals with factors such as e.g. labour burden, time management and revenue. This question leads our attention to the assessment of silk production as a feasible economic alternative for poor rural women as well as a possible empowerment tool.

3. Methodology

The data of this project will be collected during 10 days of intensive field work in Trapaeng in the Banteay Meanchey province of Cambodia. The data will be gathered by using a range of qualitative and quantitative methods. Quantitative information about the silk producers of the area will be collected through a questionnaire survey, whereas more qualitative information regarding the conditions and concerns of the silk producers will be obtained through semi-structured interviews with producers as well as other key informants. Additionally we have chosen to try out some of the practical tools that Participatory Rural Appraisal (PRA) methods offer in covering some of the more complex questions for the silk producers.

The box below gives an overview of the different methods, showing how each method logically corresponds to the research questions. A more detailed description of the research methods can be found in Appendix 1.

3.1 Overview over the Research Questions and Proposed Methods

Issue	Research Question	Sub-questions	Data required	Proposed Methods
Silk Production History & Producers	What is the history of silk production in the area of Trapeang?	<p>How has the role of silk production changed over time?</p> <p>Has the role of women changed in relation to silk production?</p> <p>What are the characteristics of a typical silk producing woman as opposed to a non-producing woman?</p> <p>How is the silk production process?</p>	<p>Major events in history</p> <p>Changes in production</p> <p>Basic information about (non-) producers</p> <p>NGO selection criteria</p> <p>Production process</p>	<p>PRA (timeline with elder women)</p> <p>Semi-structured interview with NGO (1)</p> <p>Questionnaire (30+30)</p> <p>GPS mapping</p> <p>“Transect walk” through production process</p>
Livelihood Impacts	How does silk production influence the livelihood of women?	How is the role of the women affected by the silk production?	<p>Labour division in household</p> <p>Income, sources & distribution</p>	Semi-structured interviews with producers including PRA on income

		<p>What are the impacts of silk production on the intra-household dynamics?</p> <p>How does silk production influence the different livelihood assets of the women?</p>	<p>Degree of independence</p> <p>Husband's perception</p> <p>Power relations</p> <p>Skills</p> <p>Social network</p> <p>Physical changes</p> <p>Land use</p>	<p>distribution (10)</p> <p>Semi-structured interviews with husbands (5)</p>
Opportunities & Constraints	What are the opportunities and constraints within silk production?	<p>Natural resources</p> <p>Technology</p> <p>Marketing</p> <p>Social</p> <p>Other resources</p>	<p>Mulberry</p> <p>Silk worm rearing</p> <p>Weaving</p> <p>Time management</p> <p>Labour</p> <p>Financial capital</p> <p>Culture/traditions</p> <p>Knowledge/skills</p> <p>Technology</p> <p>Land</p> <p>Equipment</p> <p>Climate</p> <p>Dyes</p>	<p>PRA on constraints (group discussion, ranking)</p> <p>PRA seasonal calendar</p> <p>Semi-structured interviews with producers (10)</p>
Sustainability	Is silk production contributing to the livelihood of women in a sustainable way?	<p>Environmental</p> <p>Economic</p>	<p>Dyes</p> <p>Mulberry</p> <p>Nutrients</p> <p>Time</p> <p>Income (revenue)</p> <p>Demand/Trade</p>	<p>Theoretical nutrient flow</p> <p>N-content in soil?</p> <p>Semi-structured interview with producers (10)</p> <p>Semi-structured interview with NGO (1)</p>

3.2 Collaboration

This project will be conducted through interdisciplinary and intercultural team work. Once in Cambodia our group will merge with a group of four local students and the data sampling in Trapeang will take place in close collaboration with these Cambodian colleagues. The Danish and the Cambodian part of this research team have not been able to communicate much beforehand. Therefore, we expect that we will need to do important adjustments of our methods, and spent time to agree on how to coordinate our activities during the field work period in order to distribute our time and skills most efficiently.

4. Timeline

Day	Daytime tasks	Evening tasks
1	Village walk (with key informants) – mapping with GPS Informal conversation (key informants) Arrange interview with NGO	Upload and treat GPS data Overview over institutional networks
2	Semi-structured interview with NGO(?) Arrange visit to producers	Make a “production map” of the area (distribution of producers) Overview over institutional networks
3	Questionnaire survey Mapping with GPS Arrange for timeline session	Analyze questionnaire data Upload and treat GPS data
4	Questionnaire survey Mapping with GPS PRA - timeline	Analyze questionnaire data Upload and treat GPS data Sample for interviews, PRA
5	Semi-structured interview with producer (including small PRA income exercise) and husband Be part of production process (“transect walk”)	Note down interview data Draw production process
6	Semi-structured interview with producer (including small PRA income exercise) and husband	Note down interview data
7	Semi-structured interview with producer (including small PRA income exercise) and husband	Note down interview data Find out what’s missing
8	PRA-constraints and seasonal calendar among a group of producers	Analyze data
9	Holiday – visit to Banteay Chhmar	
10	Buffer day	

Tasks/Days	1	2	3	4	5	6	7	8	9	10
Village Walk										
GPS mapping										
Prod. Process										
Questionnaire										
Interviews										
PRA										

Research	Holiday	Buffer day
----------	---------	------------

4.1 Possible constraints

We are aware of the fact that many external factors are likely to affect the successfulness of our data sampling in Trapaeng. Our background knowledge about the area we are going to work in is limited, and hence we must prepare to be highly flexible regarding methods and time planning.

Possible constraints for our project could be:

We cannot assume that staff of the silk NGO will be available. It is not clear whether the NGO has an office in the area of Trapaeng, and if not, whether we still have a chance to talk to them. Hence we will be prepared to look for other key informants in the area, possibly a local representative of the silk producers of the village.

We are assuming that our informants in the village are home and have time to talk to us. Possibly people will be very busy and we will have to adjust our timeline to the local circumstances.

We must be aware that it could be a challenge to get to talk to the female members of the households, because of the male being the traditional representative of the household. We will discuss with our Cambodian counterpart how best to tackle this challenge.

8. References

ADB (2001): Participatory Poverty Assessment in Cambodia. ADB (Asian Development Bank), Manila, Philippines, chapter 6

De Haan L. & Zoomers, A. (2003): Development geography at the crossroads of livelihood and globalisation. *Tijdschrift voor Economische en Sociale Geografie*, 94(3): 350-362

DFID (2001): Sustainable livelihoods guidance sheets, DFID (Department for International Development), London.

Earth, B., Lapanun, P., Tassniyom, N., Narasaj, P., Ruchuwarak, P. & Keola, S. (2008): Intensification Regimes in: Village-Based Silk Production, Northeast Thailand: Boosts (and Challenges) to Women's Authority in Resurreccion, B. P., Elmhirst, R.: Gender and Natural Resource Management: Livelihoods, Mobility and Interventions. Earthscan, London.

ECOSORN Project (2007): 2nd Progress Report: July to December 2006. ECOSORN Project, Siem Reap

Gorman, S., Dorina, P., Kheng, S. (1999), Gender and Development in Cambodia: An overview, Working Paper 10. Cambodia Development Research Institute, Phnom Penh

Kakada, D. & Vuthy, C. (2007): Export Diversification and Value Addition for Human Development. Economic Institute of Cambodia

MoC (2005) according to Kakada, D. & Vuthy, C. (2007): Export Diversification and Value Addition for Human Development: Economic Institute of Cambodia

National Institute of Statistics (2008): General Population Census of Cambodia. Provisional Population Totals, Ministry of Planning, Phnom Penh, Cambodia

SCW (2006): Atlas of Cambodia: National Poverty and Environment Maps. Save Cambodia's Wildlife, Phnom Penh, Cambodia

UN (2005): The Millennium Development Goals Report, United Nations, New York

Yukawa, H. (2007): Women Empowerment in Cambodia through Silk Production by an NGO: A Case Study. The Institute for Khmer Traditional Textiles, Fukuoka University review of economics, 51(4): 129-150.

Appendix 1: Description of methods

In order to investigate our objectives we will collect data during our 10 days field work in Trapeang using a range of quantitative and qualitative methods.

In the following we have tried to identify appropriate methods for each of our research question.

1. What is the history of silk production in the area of Trapeang?

During the first days in the village we have planned to do some basic mapping of the villages using the GPS to plot in the silk producing households. This is thought of as a visible tool that will be useful for the rest of the research. Furthermore, it might show us some patterns in the distribution of the production processes. We have planned to visit one or several producers and to follow the activities throughout the day. Possibly this could be done in combination with conducting the interviews. The purpose of this “transect walk in time” is to get an overview over the different production stages and to understand the process (from mulberry leaves to scarfs!). This will hopefully help us to understand some of the technical aspects of silk production as well as give us an idea of possible constraints in the production. General observations throughout the entire field work will hopefully give us some additional information that the formal methods might not yield. It could open our eyes for aspects that we have not thought of in advance.

To get an overview of the history and the current role of silk production in Trapeang we hope to be able to collect data from the French NGO that works with silk production in the area. Possibly written data exist, but we can not rely on this. Instead we will do a semi-structured interview with some of the experienced staff from the organisation, which can hopefully provide us with an overview of the historical context in the area. Furthermore, we wish to gather information among the local people of Trapeang. Through a PRA exercise with a group of elder women we will conduct a timeline of the local history of silk production. We are aware of the fact that the version of the history we will get through a small exercise like this might not be in exact agreement with the more scientific version of the history, but argue that the personal viewpoints we will hear through this PRA exercise will give us very valuable insight in the local context. In order to answer this research question, we will furthermore conduct a questionnaire survey to get an impression of the characteristics of the typical silk producing woman as opposed to a non-producing woman. We will conduct this questionnaire survey both among a sample of the producers and the non-producers. While conducting the questionnaire survey we will be able to talk to many of the silk producers and make appointments with some, who are so kind to agree to help us with PRA-exercises and semi-structured interviews. We will analyse data from the questionnaire survey directly after, and choose informants for research question 2-4 on the basis of this information. It is our hope that the local NGO will as well be helpful with creating an overview of the characteristics of the silk producers in Trapeang. Possibly there is data available about those producers involved in the silk programme of the NGO, this data we will try to gather during our interview with the NGO staff.

2. How does silk production influence the livelihood of women?

In order to investigate the influence of silk on the livelihood of women we will conduct around 10 semi-structured interviews with the silk producing women followed by small PRA exercise on household income distribution. We hope to get some answers to questions such as how their

role in the household and society might have changed due to the silk production as well as how silk production affects the different livelihood assets in the livelihood framework. We will also conduct some semi-structured interviews with the husbands of some of the producers because we want to look at intra-household dynamics. A change of the role of the women might influence the other household members too and we want to investigate some of these effects.

3. What are the opportunities and constraints in silk production?

A group PRA exercise combined with a group interview can give us valuable data to assess the different constraints in silk production in the area of Trapaeng. We will gather a number of silk producers who agree to take time off for the session. We will conduct a ranking exercise with this group. First we will ask them to list all the experienced constraints of silk production, - related to mulberry supply, silk worm rearing as well as silk weaving and product marketing. Afterwards the group should rank these constraints by prioritising them systematically, with our supervision. We will carefully note down the interactions among the group during the whole session. We will furthermore conduct a PRA exercise to create a seasonal calendar that might reveal some constraints related to other activities throughout the year. This is done by graphically showing the different tasks and activities at different times of the year. Additionally we will gather data about the constraints through semi-structured interviews. As described we conduct individual semi-structured interviews among silk producers to answer research question 2, and during the same interviews we plan to ask a number of questions concerning the constraints too.

4. Is silk production contributing to the livelihood of women in a sustainable way?

Here, we will look at some sustainability factors of silk production. This will be done by e.g. considering the nutrient flow in the mulberry plots. We might be able to make some measurements of the N-content in the soil to see whether the level is sufficiently high (maybe by comparison with some of the other groups' findings). Semi-structured interviews with producers and the NGO will hopefully tell us something about if the time management of the producers and the revenue from silk production allow a sustainable production for the women. The interviews will also cover the subject of the natural dyes; where do they come from? How are they harvested and to what extent?

Appendix 2: Sample size and sampling methods

When conducting questionnaires, semi-structured interviews as well as PRA exercises, we need to select a sample among the population in Trapaeng. Hence we need to carefully consider the sample size needed and the sampling method.

Sample size

Questionnaire surveys: We estimate that 5-10 surveys can be conducted within a day. We have only one interpreter, but if our Cambodian counterparts agree to assist us on this, we could split up in 4 groups and thereby conduct max (10 surveys x 4 groups =) 40 samples per day. When spending 1.5 days for questionnaire survey, we hope to reach a sample size of 60 surveys.

Semi-structured interviews: For this purpose we need the interpreter and therefore we can only conduct one interview at a time. It is probably realistic to conduct 2-4 interviews per day. We will spend 3 days for this and consequently we can carry out 6-12 interviews.

Sampling method

We will collect data from 4 different silk producing villages in Trapaeng. We wish to sample respondents for the questionnaire surveys randomly from each village among producers and non-producers. We need to get an overview of our field work area and discuss the situation with our Cambodian counterparts before we can take final decision on how to practically carry out the random sampling. On the basis of our findings from the questionnaire, we want to identify some strata for our interview sampling. We still need to negotiate with our Cambodian counterparts on the criteria for these strata.

Appendix 3: Questionnaire Draft

Introduction:

Present our selves and our project and explain how this questionnaire survey is part of our project.

Explain that it will take up to an hour, - ask if it is acceptable.

Ensure the respondent, that what she tells us will stay with us, - we will use the information for our report, but we will never mention her by name.

Date	
Village	
Interviewer	

Producer: ____

Non-producer: ____

Background information

Name of respondent: _____

Age:

20 or below ____ 21-30 ____ 31-40 ____ 41-50 ____ above 50 ____

Respondent's years in school: Primary ____

Secondary: ____

High School: ____

University: ____

Respondent's occupation: ____

Marital status:

Married ____ Single ____ Divorced ____ Widow ____

Husband's occupation: _____

How many people in household: ____

Number of children (according to age):

Age (years)	Number of children	Number of children in school
0-5		
6-10		
11-15		
16-20		

Livelihood

Major source of income: _____

Are you engaged in waged labour: Yes ____ No ____

Is someone in your household engaged in waged labour: Yes ____ No ____

Are you engaged in agricultural activities: Yes ____ No ____ (go to 2.5)

What kind of crops are you growing (please indicate below):

Crop	Mainly for home consumption	Mainly sold on market

Do you own land: Yes ____ No ____
 If yes, how much: <1 ____
 1 – 2ha ____
 2.1 – 3ha ____
 > 3ha ____
 If no, do you have access to land: Yes ____ No ____
 Do you hire labour for your agriculture: Yes ____ No ____
 Do you have livestock: Yes ____ No ____
 If yes, how much? Poultry ____
 Pigs ____
 Cattle ____
 Buffalo ____
 Other: _____

Silk Producers

Numbers of years in silk production: ____

What parts of silk production are you engaged in:

Mulberry production: ____ (if yes, remember 3.2.1)

Silk worm rearing: ____

Dying: ____

Silk weaving: ____

Mulberry production:

Do you face problems in the production in the dry season: Yes ____ No ____

If yes, what is the major problem: Pest ____

Irrigation ____

Nutrients ____

Other: _____

Do you use fertilizer: Yes ____ No ____

If yes, what type: _____

Where/how did you obtain your skills?

NGO ____ Family ____ Other: _____

Are you part of a silk producing cooperation? Yes ____ No ____

Who manages the money in your household: _____

Do you consider silk as an important income source for your household?

Yes ___ No ___

What do you use the money from the silk production for:

	Much	Medium	Little	None
Food				
Children's education				
Health Care				
Silk Equipment				
Clothing				
Savings				
Personal spending				
Other, please specify: _____				

How are your living conditions today compared to before you started producing silk?

Much better ___

Better ___

The same ___

Worse ___

Much worse ___

Closing:

Further comments are most welcome. (add them separately)

If you have any questions for us, we will happily try to answer them.

We wish to thank you very much, your answers will be a big help for us!

We will need to do some interviews with some silk producers, would it be okay if we come back to you and ask some more questions? _____

Appendix 4: Semi-structured interview for NGO/Key informant

Name of respondent: _____

Gender: _____

Professional level/position in the NGO: _____

1. History of silk production

When did silk production start out in these villages?

Was it an old tradition in the village or was it started by people from outside the village?

Did they produce silk the whole year round or was it limited to some season?

What is the peak silk producing seasonal period?

Do you think that there have been any changes occurring in silk production technology (marketing, organisation, tools...) from past to present times?

2. Typical silk producers

2.1 Who are the actual silk producers in the villages?

2.2 Do you know whether silk production is confined only to some inhabitants in the villages or are all the families in a village involved with silk production?

2.3 How is the NGO involved in the silk production process?

2.4 How does the NGO select the target families for silk production?

2.5 Why are certain families not involved in this activity?

2.6. How many families are actually involved in the silk production in a village?

3. Opportunities and Constraints of silk production

3.1 Who are the actual competitors in the market?

3.2 Do you think that silk producers have easy access to the market or they have problems related to the marketing of the products?

3.3 How is the quality affecting the marketing of the produces?

3.4 Did the producers directly market their product or some other persons buy their products from their place of silk production?

3.5 What are the problems related to mulberry growing like soil, climate or season?

3.6 Did any problem faced by the silk producers during silk worm rearing and silk weaving?

3.7 Do you think that silk production would be an important income source for improving the livelihood of women in future?

4. Household income

4.1 To what extent do the producers earn from silk production?

4.2 Is the silk production their only additional income source or totally covering the household?

5. Sustainability

5.1 Do you use any inputs for your mulberry production?

5.2 Have you experienced that the yield of mulberry leaves has declined during time?

5.3 What are the advantages of using chemical dyes?

5.4 Are there any disadvantages of chemical dyes.

5.5 What are the advantages of using natural dyes?

5.6 Are there any disadvantages of natural dyes?

5.7 Do you think that there will be any demand for silk production in the future market?

Appendix 5 Semi-structured interview guide for silk producers

Name of respondent_____

Educational level_____

Activity in silk production_____

Impact on livelihood

Financial

1.1 Do you think that silk production is an important income earning process in your family?

1.2 Is silk production an additional income source in your family or does total household income depend on it?

1.3 How much does silk production contribute to your family income?

1.4 Is there any NGO involved in this income earning process and if so how are they involved?

1.5 How is the income from silk production distributed to your family?

1.6 Is there any labour division in household found in the production process?

Human

1.7 Do you feel more or less independent now when you have an income from silk production?

1.8 Do you feel more or less responsible for your family now when you produce silk?

1.8 Is your husbands' attitude to the silk production positive, neutral or negative?

1.10 Does the silk production improve your skills?

Social

1.11 Does the silk production establish any social network between you and other women here in the villages?

Physical/Natural

1.12 Has the silk production changed your land use for mulberry production which you otherwise would have used for other purposes?

1.13 Have there been physical changes in or around your house due to the silk production?

2. Opportunities and Constraints

2.1 Have you easy access to the market or any problem of marketing your product?

2.2 Who are the actual competitors in the market?

2.3 Do you feel that producing silk causes you too much labour?

2.4 Do you have any problems in mulberry production related to land, soil, climate or season for producing quality leaves?

2.5 Did you face any problem during silk worm rearing and silk weaving?

2.6 Do you think silk production is a lengthy process?

2.7 Do you have any financial problems (capital) and unavailability of equipments?

2.8 Do you lack any technical knowledge or skills in the silk production?

3. Motivation

3.1 What is your motivation to be involved in silk production?

3.2 Is there any NGO motivated you to involve in these activities?

3.3 Do you think that silk production empowered you in your family and in the society as a means of income source?

3.4 Have silk production improve your social status in the local livelihood?

3.5 Are the men motivated to do silk production or it is completely managed by women?

4. Sustainability

- 4.1 Do you have any inputs for your mulberry production?
 - 4.2 Have you experienced that the yield of mulberry leaves has declined during time?
 - 4.3 What are the advantages of using chemical dyes?
 - 4.4 Are there any disadvantages of chemical dyes.
 - 4.5 What are the advantages of using natural dyes?
 - 4.6 Are there any disadvantages of natural dyes?
 - 4.7 Do you think that there will be any demand for silk production in the future market?
- Appendix 6: Semi-structured interview for husbands of silk producing women

Name of respondent _____
Educational level _____

Involved in silk production?
How _____

Livelihood Impacts

Income

- 1. Do you think that silk production is an important income earning process in your family?
- 2. Is silk production an additional income source in your family or does total household income depend on it?
- 3. How much does silk production contribute to your family income?
- 4. Is there any NGO involved in this income earning process and if so how are they involved?
- 5. How is the income from silk production distributed to your family?

Women

- 6. Do you think that women are more skilled and dominating in the silk production than men?
- 7. Do you feel that your wife is more or less independent now when you have an income from silk production?
- 8. Do you feel that she is more or less responsible for your family now when you produce silk?
- 9. Has the silk production empowered your wife in the household (financially)?
- 10. Does the silk production establish any social network between women in the society?

Physical impact

- 11. Has the silk production changed your land use for mulberry production which you otherwise would have used for other purposes?

12. Have there been physical changes in or around your house due to the silk production?

General

13. What do you think about the fact that your family produces silk?

14. Do you think that silk production has improved your households' conditions?

11.2 : Questionnaire

Introduction:

- *Present our selves and our project and explain how this questionnaire survey is part of our project.*
- *Explain that it will take up to an hour, - ask if it is acceptable.*
- *Ensure the respondent, that what she tells us will stay with us, - we will use the information for our report, but we will never mention her by name.*
- *Tell her not to hesitate to ask if the meaning of a question is unclear.*
- *The () after each choice of answer is for data analysis.*

Date	
Interviewer	
Village	
GPS code/name	

Producer(1): ____

Non-producer(2): ____

1. Background information

1.1. Gender: Female(1) ☐ Male(2) ☐

1.2. Age:

1.2.1. 20 or below (1)____ 21-30 (2)____ 31-40 (3)____ 41-50 (4)____ above 50 (5)____

1.3. Nationality:

1.4. Respondent's years in school: No school (1) ____

Primary (2) ____

Secondary (3) ____

High School (4)____

Further (5) ____

1.5. How many children in household: ____

1.6. Marital status:

1.6.1. Married (1)____ Single (2)____ Divorced (3) ____ Widow (4)____

1.7. Husband's occupation(s): _____

1.8. Members of household :

No	Age (a)	Gender *(b)	Education (c)	Involvement in silk production *(d)	Other occupation (e)
1.8.1					
1.8.2					
1.8.3					
1.8.4					
1.8.5					
1.8.6					
1.8.7					
1.8.8					
1.8.9					
1.8.10					

*(b) Female = 1, Male = 2, *(d) Yes = 1, No = 2

2. Livelihood

2.1. Major source(s) of income: _____

2.2. Are you engaged in waged labour (apart from silk production): Yes (1)___ No (2)___

2.2.1. If yes, what kind:

2.2.2. Salary:

2.3. Is someone else in your household engaged in waged labour: Yes (1)___ No (2)___

2.3.1. What kind:

2.4. Other economic activities (please specify):

2.5. Has a member of your household migrated to find labour: Yes (1) ___ No (2)___

2.6. Is your household engaged in own agriculture: Yes (1) ___ No (2) ___ (Go to 2.7)

2.6.1. What kind of crops are you growing (please indicate below):

	Crop	Mainly for home consumption *(a)	Mainly sold on market *(b)
2.6.1.1			
2.6.1.2			
2.6.1.3			
2.6.1.4			
2.6.1.5			

* Yes = 1, No = 2

2.6.2. Do you have other cash crops (crops sold on market) than those mentioned above (please specify)? _____

2.6.2.1. Do you experience food shortage during the year: Yes (1) ____ No (2) ____

2.6.2.2. If yes, when: _____

2.6.3. Do you own land: Yes (1) ____ No (2) ____

2.6.3.1. If yes, how much: <1 (1) ____

1 – 2ha (2) ____

2.1 – 3ha (3) ____

> 3ha (4) ____

2.6.4. If no, do you have access to land: Yes (1) ____ No (2) ____

2.6.5. Do you hire labour for your agriculture: Yes (1) ____ No (2) ____

2.6.5.1. If yes, how many workers:

2.7. Do you have livestock: Yes (1) ____ No (2) ____

2.7.1. If yes, how much?

2.7.1.a Poultry ____ (Yes = 1, No = 2)

2.7.1.b Pigs ____

2.7.1.c Cattle ____

2.7.1.d Buffalo ____

2.7.1.e Other: _____

3. Silk Production

3.1. Numbers of years in silk production: ____

3.2. What do the women in your household do in the silk production:

3.3. What do the men in your household do in the silk production:

3.4. Where/how did you obtain your skills?

3.4.1. NGO (1) ____ Family (tradition)(2) ____ Other: (3) _____

3.5. Is any NGO involved in your silk production? Yes (1) ____ No (2) ____

3.6. If yes, how? _____

3.7. What parts of silk production is your household engaged in:

Mulberry production: (1) ____ (if yes, remember 3.7.1)

Silk worm rearing: (2) ____

Dying: (3) ____ (if yes, remember 3.7.2)

Silk weaving: (4) ____

3.7.1. *Mulberry production:*

3.7.1.1. *What variety of mulberry do you use: Traditional: (1)*

Hybrid: (2)

Other: (3)

3.7.1.2. *Do you face problems in the production in the dry season: Yes(1)___No(2)___*

3.7.1.2.1. *If yes, what is the major problem:*

Pest(1) _____

Irrigation(2) _____

Nutrients(3) _____

Other:(4) _____

3.7.1.3. *Do you use fertilizer: Yes(1)___ No(2)___*

3.7.1.3.1. *If yes, what type: _____*

3.7.2. *Dyeing:*

3.7.2.1. *What kind of dye do you use: Chemical(1)___*

Natural(2)___

3.7.2.2. *If natural dyes, who taught you how to use it:*

3.7.2.3. *What raw material do you use for your dyes:*

3.7.2.4. *What quality is better: chemical (1)___ natural (2)___*

3.8. Is silk an important income source for your household? Yes (1) ___ No (2) ___

3.9. Who manages the money in your household: _____

3.10. Do you use the money from silk production for particular purposes: Yes (1)___ No (2) ___

3.10.1. If yes, what do you use the money from the silk production for:

		Much	Medium	Little	None
3.10.a	Food				
3.10.b	Children's education				
3.10.c	Health Care				
3.10.d	Silk Equipment				
3.10.e	Clothing				
3.10.f	Savings				
3.10.g	Personal spending				
3.10.h	Other, please specify: _____				

3.11. How do you market your silk products: By yourself (1) ☐
 Through middlemen (2) ☐
 Community (3) ☐
 Other (please specify) (4)_____

3.12. How are your living conditions today compared to a non producer?

Much better (1) ____

Better (2) ____

The same (3) ____

Worse (4) ____

Much worse (5) ____

Closing:

- *Further comments are most welcome. (add them separately)*
- *If you have any questions for us, we will happily try to answer them.*
- *We wish to thank you very much, your answers will be a big help for us!*
- *Suggestions for us*
- *We will need to do some interviews with some silk producers, would it be okay if we come back to you and ask some more questions?_____*

11.3 Semi-structured interview guidelines for NGO/Key informant

Name of respondent	
Gender	
Professional level/position (in NGO)	
Interviewer	
Assistant	
Code (GPS, strata)	

1. History of silk production

- 1.1. Have there always been silk production activities in these villages?
- 1.2. When did it **start** (old tradition)? Where there any **interruptions** or **major changes** in the production history?
- 1.3. How did the silk **production technology** change over time?
 - 1.3.1. Changes in equipment? Mechanisation?
 - 1.3.2. Division of work?
- 1.4. How did the **NGO**'s engagement in the area change the production?
 - 1.4.1. Increased production?
 - 1.4.2. Better marketing opportunities?
 - 1.4.3. Training?
- 1.5. How is the **NGO** involved in the silk production?
- 1.6. Is silk produced all year round?
- 1.7. Would you describe silk production as a **female activity**?
- 1.8. Has silk production **changed the life** of the producers?
 - 1.8.1. Economically?
 - 1.8.2. Socially?
 - 1.8.3. More self-confidence etc?

2. Typical silk producers

- 2.1. On **what basis** does the NGO choose the silk producers?
 - 2.1.1. Mainly richer families?
 - 2.1.2. All families?
- 2.2. Why are some families **not involved** in silk production?
- 2.3. How would you describe the **typical silk producer** in the village?
- 2.4. **How many** families are actually involved in silk production in the village?
- 2.5. Do producers usually work in some form of **cooperation**? Do they work together?

3. Opportunities and Constraints of silk production

- 3.1. How do producers **market** their silk products?
 - 3.1.1. Easy access?
 - 3.1.2. Direct marketing? Cooperations?
- 3.2. Who are the **competitors**?
 - 3.2.1. Other villages?
 - 3.2.2. Other countries?
- 3.3. What do you think are the **main constraints** for silk producers in the village?
 - 3.3.1. Mulberry production?
 - 3.3.2. Marketing etc.

4. Household income

- 4.1. Do you think that silk is an important **income source** for the producers?
- 4.2. Are most of the producers engaged in **additional cash-generating activities**?

5. Sustainability

- 5.1. Would you say that silk gives the producers a good **revenue** (surplus)?
 - 5.1.1. Do they get a **good price** for their products?

- 5.2. Is there a good **market** for silk products?
 - 5.2.1. Where? Domestic/foreign?
 - 5.2.2. Who buys the silk products?
- 5.3. Is silk production a very **time** consuming activity?
 - 5.3.1. Are producers complaining about time constraints regarding the production?
 - 5.3.2. What about the other household activities (rice, children care etc.)
- 5.4. Do the producers have any problems with **soil fertility**?
 - 5.4.1. Do they use fertilizers/manure?
- 5.5. Are **mulberry yields** stable/decreasing/increasing?
- 5.6. Are there problems with the mulberry plants in the **dry season**?
- 5.7. How is the **dyeing process**?
 - 5.7.1. Chemical dyes? Advantages?
 - 5.7.2. Natural dyes? Advantages?
 - 5.7.2.1. What kind plant material?

11.4 Semi-structured interview guidelines for silk producers

Name of respondent	
Educational level	
Activity in silk production	
Interviewer (assistant)	
Code (GPS, strata)	

“Opening questions!”

4. Impact on livelihood

Financial

Who in your household is involved in silk production?

Do you think that silk production is an **important** income earning activity in your family?

What **other income generating activities** are you involved in?

Do you know **how much** you earn on silk production?

Does the **money from silk production** go into overall household expenditures or do you use it for something in particular?

Human

Do you feel more or less **independent** now when you have an income from silk production?

Do you feel **more or less responsible** for your family now when you produce silk?

Do you work together with a **NGO**?

Have you had any **training** in silk production?

Have you learned **new skills** through silk production? What in particular?

Social

Do you **work together** with other silk producers?

Do you **market** your products together with others?

Does the **NGO** help you with the production/marketing?

Does the silk production establish any **social network** between you and other women here in the villages?

Physical/Natural

Do you grow **mulberry plants**? Where?

Have you grown **other crops** there **before**?

Would you like to grow **more** mulberry?

Have there been **physical changes** in or around your house due to the silk production?

Do you need to replace your **silk production equipment** often? Is that a problem (financially)?

2. Opportunities and Constraints

Have you easy access to the **market** or any problems in marketing your products?

Who are the **competitors** in the market?

Do you feel that producing silk causes you too much **labour**?

Is silk production a **time consuming** process? Would you rather spend the time on other things?

Do you have any problems in the **mulberry** production related to:

- Land use

- Soil (fertility)

- Climate (temperature etc)

- Season (dry/wet season)

Did you face any **problem** during silk worm rearing and silk weaving?

Do you have any **financial problems** (capital) or unavailability of equipments?

Would you like to produce **more** silk?

Is your **husband** involved in the silk production? What does he think about it?

Do people in the village like the silk production?

Do you think that your production could **improve**? How?

4. Sustainability

Do you use any **fertilizer/manure** for your mulberry production?

Have you experienced that the **yield** of mulberry leaves has declined during time?

What **kind of dyes** are you using?

What are the advantages of using **chemical dyes**?

Are there any disadvantages of chemical dyes.

What are the advantages of using **natural dyes**?

Are there any disadvantages of natural dyes?

Do you think that there will be an increasing **demand** for silk production in the future market?

11.5 Semi-structured interview guidelines for husbands of silk producing women

Name of respondent	
Occupation	
Involvement in silk production	
Interviewer (assistant)	
Code (GPS, strata)	

Livelihood Impacts

“Opening questions!”

Income

Do you think that silk production is an **important** income earning activity in your family?

Is silk production an **additional income** source in your family or the only one?

How much does silk production contribute to your family income?

How is the income from silk production **distributed** to your family?

Women

Do you think that women are more **skilled and dominating** in the silk production than men?

Do you feel that your wife is more or less **independent** now when you have an income from silk production?

Do you feel that she is more or **less responsible** for your family now when you produce silk?

Has the silk production **empowered** your wife in the household (financially)?

Does the silk production establish any **social network** between women in the society?

Physical impact

Has the silk production changed your **land use in favour of mulberry** production which you otherwise would have used for other purposes?

Have there been **physical changes** in or around your house due to the silk production?

General

What do you think about the fact that your family produces silk?

Do you think that silk production has **improved your households' conditions**?

11.6 Applied methods and collected data

Used methods	Obtained data
<p>Semi-structured interviews</p> <p>6 Key informant interviews</p> <p>6 In depth interviews with producers</p> <p>4 Interviews with NGO officials</p> <p>1 Interview with cotton weaver</p>	<p>History and role of silk production in Paoy Char Commune (major events in history, changes in production, basic information about producers and non producers)</p> <p>History and income of silk producing households (production process, labour division in household, income sources and distribution, degree of independence, husband's perception, power relations, skills, social network, physical changes, land use)</p> <p>History and marketing of silk (NGO selection criteria, changes in production)</p> <p>Livelihood impact (comparison with silk producer and their perception)</p>
<p>Questionnaires</p> <p>30 with producers</p> <p>4 with non producers</p>	<p>Role of silk production, typical producers, NGO involvement</p> <p>Attitude about silk production and comparison with the producers conditions</p>
Group discussions	Opportunities of silk production
Ranking exercise	Constraints of silk production (mulberry production, worm rearing, silk weaving)
Seasonal calendar	Overall activities of the silk producers round the year (silk production, agricultural and other income earning activities)
Transect walk with GPS mapping	Map of the villages and silk producing households
Informal conversation	Some basic facts about silk production (tourist attraction, communication with other producers, selling the products with middleman, etc.)