

Livelihoods Assessment Guide for protected areas

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1. Introduction

Based on a Livelihoods Assessment carried out in July-November 2017 in communities surrounding the Matura Forest and Coastal Zone protected area, this guide describes the proposed methodology that can be applied to carry out similar livelihoods assessments in other protected areas supported by the “Improving Forest and Protected Area Management in Trinidad and Tobago (IFPAM-TT)” project.

Aim of such study is to assess how local livelihoods are based on the use of the protected area and its natural resources, and identify which livelihoods opportunities based on the sustainable use of natural resources communities would like to develop.

The areas where assessments would be carried out are:

- Northeast Tobago
- Tobago Main Ridge Forest Reserve
- Nariva Swamp
- Trinity Hills
- Caroni Swamp

In order to ensure that the proposed methodology is fit for purpose, exploratory visits were done in communities surrounding Caroni Swamp, Nariva Swamp and Trinity Hills forest on 10-12 November 2017, with Raynaldo Phillips of Forestry Division, to gain an understanding of these protected areas and how their natural resources are used. This was done through background reading, talks with about 10-15 people in each areas and observations whilst driving and walking around.

2. Methodology

The proposed methodology is based on the Modified Sustainable Livelihoods Framework (Figure 1, Schreckenberg et al. 2010) that considers different assets as drivers for livelihood strategies: human assets, socio-cultural assets, physical assets, natural assets, financial assets, political-legal assets as well as drivers for livelihood strategies at the level of individual households, communities and the protected area.

These assets can be measured with indicators at the level of households, the community or the protected area. Indicators represent the sustainable use of protected areas and their natural resources, the benefits that local communities can derive from these uses and the socio-economic strengths communities have.

In order to calculate those indicators, data will be gathered using the following tools.

Household survey with random households in selected communities to gather data on:

- use of the protected area and its natural resources
- the current role of the protected area in livelihoods
- livelihood developments people want to pursue
- key socio-economic indicators

Community meetings in each community to discuss:

- current use of the protected area and of other natural areas in the surroundings of the community
- destructive and sustainable uses and community dependency on those uses
- access, management, decision-making and community responsibility of the protected area
- livelihood opportunities communities would like to develop based on the sustainable use of the protected area and its natural resources, whereby livelihood opportunities can be developments of products and services at the level of an individual, a household or the entire community

Interviews with environmental community organisations to discuss:

- funding streams and their sustainability for local conservation activities and employment
- ecotourism status and trends
- local employment in the protected area, in ecotourism, tour guiding, reforestation programmes, etc.
- training and capacity building of staff and wider communities
- governance and decision-making of the protected area

Relevant **existing data** from Central Statistical Office, Forestry Division, PetroTrin, tour operators,...

The collected data and information is then used to:

- describe how communities use the protected area and its natural resources
- describe how livelihoods depend on the protected area and its resources
- calculate the indicators to measure and visualise the livelihoods assets
- describe the livelihoods opportunities communities would like to develop.

3. Step-by-step guide

3.1. Planning and preparations

A. Compose the research team:

- Decide who will carry out the household surveys and facilitate the community meeting discussions
- Involving one or two community members in surveys and community meetings is very beneficial

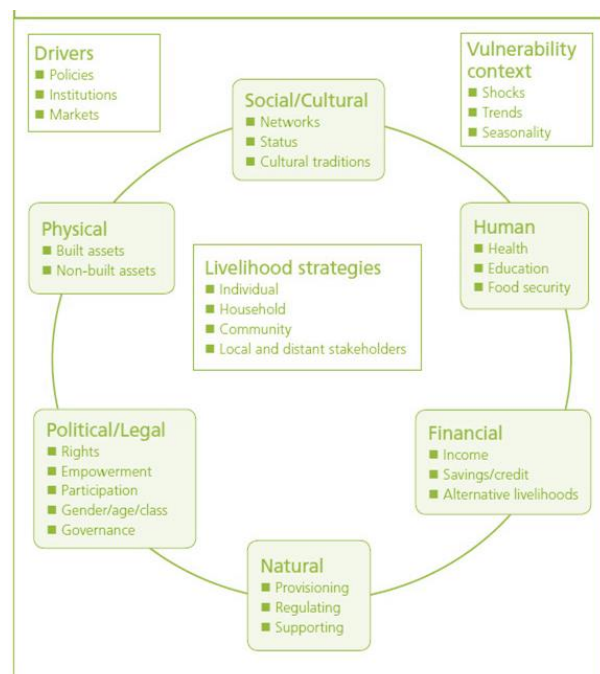


FIGURE 1. MODIFIED SUSTAINABLE LIVELIHOODS FRAMEWORK (SCHRECKENBERG ET AL. 2010)

- their good knowledge of streets and houses in the community makes for easy planning and carrying out of the survey
- they can invite key people from community organisations, village council, etc. to the community meeting
- they will gain new knowledge about natural resource use and livelihoods within their community that can be used by the community to develop new initiatives to improve livelihoods in the community
- Community people already trained to carry out previous KAP surveys can be trained to also carry out these surveys
- Make sure though that community people do not bring bias into the survey, e.g. by selecting households they know for the survey; it is important that the survey is completely random

B. Select the communities

Select the communities to study in such a way that the diversity that exists between communities around a protected area is covered. Diversity can be in terms of:

- Size of a community: make sure to include large and small communities
- Proximity to the protected area, which facilitates direct extractive uses
- Presence or absence of an environmental community-based organisation
- Presence or absence of employment opportunities in the protected area
- Presence or absence of tourism initiatives in a community
- Relative remoteness of a community, which influences access to employment in larger towns, access to markets to sell produce, etc.

C. Plan the time schedule

Allow one week per community to carry out the fieldwork. Optimal would be to carry out household survey on Monday-Thursday and hold the community meeting on Thursday evening. That way, invitations for the community meeting can be handed out to respondents of the survey, as well as to other people in the community.

D. Advertise the activities

Decide how to advertise the research activities in the community, e.g. by using a car with loudspeaker announcing the study in the area, or distributing leaflets via the school.

E. Prepare a handout

Having a simple leaflet that explains the purpose of the study and shows a map of the protected area to handout to respondents of the survey is very useful. Having a larger map available during the survey can help to identify places where resource uses occurs.

F. Prepare an invitation for the community meeting

During the survey, a leaflet inviting people to the community meeting can be handed out. This can be combined with the handout above (example in Annex 1).

G. Know how best to refer to the protected area during survey and meetings

In order to be able to separate natural resource uses that takes place within the protected area, from uses that take place in natural areas surrounding the protected area, and be able to ask the right questions in the survey and discussions, it is important to know whether a local name exists for the protected area and whether people know where the boundary of the protected area is.

During the exploratory visits we found out that people refer to Nariva swamp and Caroni swamp as ‘the swamp’ and to the Trinity Hills protected area as ‘the Sanctuary’, which is positioned within the large Trinity Hills forest area and Victoria Mayaro forest reserve.

3.2. Fieldwork

A. Household survey

A household questionnaire is used to obtain standardised, comparable and quantitative information, by asking exactly the same set of questions to multiple households.

The survey is done using paper questionnaire forms that are completed by the enumerator. Prepare the questionnaire form in advance, by selecting the correct term for the area studied: forest or swamp or ... The questionnaire form is available in the attached zip folder.

The questions are answered by one adult (not multiple people) on the behalf of the entire household. It is important to try to have a 50/50 balance of male and female respondents in a community, to avoid bias. Even if many resource uses are done by men, it is still important to also have questionnaires with women.

Because this is a household survey, it is important to that information that is gathered for the entire household (natural resource uses, employment, benefits, etc.) is indeed noted down for every member of the household, irrespective of who answers the questions.

The questionnaires should be done with a random sample of approximately 40 households in each selected community. The easiest way to do a random selection of households is to start the surveys at the end of a particular street, and survey alternate houses along the street or every third house (larger communities. If someone is not home in a house, the next house can be chosen.

Decide when is the best time of day / week to do surveys in a community to make sure that men and women will be home. Often that is on the afternoon, from 2-3pm onwards. It can also be on Saturdays. On average 10 to 15 interviews can be done per day.

Try to complete the questionnaire as a relaxed and naturally flowing conversation with the respondent. It is OK to change the order in which questions are asked, to make the conversation more natural. For example, it may be good to already ask early in the conversation how many people live in the house (question on the last page), as this may make it easier to then ask questions about how each of those people use the forest or swamp.

B. Community meetings

The advantage of group meetings is that a group of people can discuss the topics and can agree or disagree on something and discuss it. This gives a broader view of the different opinions that exist in a community. The group can also help each other remember things and produce good lists.

Groups are formed by inviting people from the community, using an invitation leaflet. Invitations can be made during the surveys, also indicating that people are free to invite further people. In addition, key people in the community can be invited, such as representatives of local organisations, the village council, a tour operator, etc. Last reminders can be made on the day itself.

During group meetings, a set of topics that has been decided in advance is discussed (Annex 2 and 3). By discussing the same topics with different groups, differences in perceptions and views between groups will be visible.

Arrange a good time and place for the meeting. For the Matura Livelihoods Assessments, community meetings were held at 4.30pm, for a 5pm start and lasted on average 2 hours. Food and refreshments was provide at the end of each meeting. Catering was done by someone in the community (arranged by one of the community assistants) in order to support local livelihoods.

Steps for a successful community meeting:

- Start with a short introduction, explaining the purpose of the meeting
- Allow participants to introduce themselves
- Take note of names and contact details of participants
- Make sure someone takes detailed notes of the discussion
- Start the meeting with easy topics to discuss, to break the ice and get the discussion going
- When there is conflicting opinions, try to have these differences resolved by the group
- Try to encourage everyone to join the in discussions
- Try to avoid individuals dominating the discussions
- Try to end the discussion on a positive" note
- Explain at the end of the meeting what will happen next (e.g. a reporting back meeting later on)

C. Interviews with environmental community-based organisations or other stakeholders

If environmental community-based organisations (CBOs) or other entities (e.g. tour operators) exist in the communities surrounding the protected area, that play a key role in conservation activities, providing employment related to environmental activities, conservation or the protected area, then these should be interviewed to gather information on their activities, employment, funding, etc. A list of suggested topics questions is available in Annex 4.

D. Gather existing data

If relevant for the protected area, the following external data can be gathered for the period 2007-2017.

Forestry Division:

- annual harvested timber volumes in the forest area
- minor forest produce licences
- hunting permit records and catch reporting recorded by Wildlife Section to investigate hunting levels and trends
- protected area permits (indicating visitor numbers)

Central Statistical Office:

- socio-economic characteristics at community level from the 2011 Census (CSO 2011)

Tour operators

- visitor numbers to protected area
- number of tours with tour guide
- employment of staff in ecotourism activities
- number of registered tour guides

PetroTrin

- number of hunters visiting Trinity Hills (all visitors are recorded at the PetroTrin entrance gate)

Local environmental organisations

- employment of staff in forest, protected area and ecotourism activities
- number of people trained in activities related to protected area and natural resource management

3.3. Data entry

A. Questionnaire data

Enter the responses of all questionnaires into the Household Survey datasheet. The marked up questionnaire form indicates which questions correspond to which variable name. In addition, the datasheet contains a list of variables and their labels and coded values.

Where needed, code free text responses into a limited group of categories and give them codes, e.g.:

- any 'other' responses whereby more than 5 respondents have given the same response (questions 2, 6)
- forest uses listed (question 4)
- products listed for (question 5)
- environmental concerns listed (question 9)
- livelihoods opportunities listed (question 12)
- income sources (personal information)

The spreadsheet also already includes various variables that can be derived from the raw questionnaire responses, in order to calculate the indicators.

B. Community meetings

Write out notes of the discussion.

C. CBO interviews

Write out notes of the meeting.

3.4. Data analysis

Calculate and compose the 36 livelihoods indicators (Annex 5) from the household survey data and census 2011 data for each individual community and for the total population, using the calculation instructions noted in the Assets template.

Enter the indicator values into the yellow cells in the Assets template. Add or remove community columns depending on how many communities have been surveyed. The inserted formulae should automatically calculate the weighted indicators and the total assets value. The graph should automatically be formed based on the calculated values.

Use the information gathered via household survey, community meetings, interviews and the external data sources to describe the main natural resources uses in detail (overall and at the level of communities and protected areas). Assess which uses affects the protected area and may be unsustainable. Describe the dependency of communities on the protected area.

4. Background information on protected areas

The following useful background information on use of the protected areas was already gathered during the exploratory visits in communities surrounding Caroni Swamp, Nariva Swamp and Trinity Hills forest. Note also that previous livelihoods vulnerability research has been done in two communities in Caroni swamp and Nariva swamp in 2009 (Shah et al. 2013): Cacandee (Caroni) and Cascadoux/Kernahan (Nariva). It would be useful to include those two communities in this study, to allow some comparison over time.

Caroni:

- Felicity: landing site for fishing boats, with crematory next to it; fishing boats take the Cunupia river to go fish at sea
- Very little fishing in the swamp; fishing is not allowed and people know this although some still do
- Very little fish can be caught in the swamp, just some tilapia; also oysters?
- Crabs harvest is allowed north of the Caroni river, not south of the channel
- Agriculture: land is good, but there's some problems with saltwater at time backing up into the stream so then there's no water for irrigation
- Caroni visitor centre: some local people are employed here (by Forestry Division) for maintenance and security
- Forestry Division patrol the swamp area by boat
- Three tour operators currently: Kalpoo's (mainly fishing trips, some red ibis viewing tours, most clients are national), Nanan's (mainly red ibis viewing tours), Joe's (fishing trips); some indication about unfair dominance of red ibis tours by Nanan's; but also Madoo bird tours?
- Bamboo1: much agriculture
- Socorro South Extension: industrial area bordered by swamp land; little agriculture; some squatting; the swamp area is very littered
- Sealots: jetty with boats for fishing; no recreational use of swamp; people mostly work in Port of Spain
- Find out whether any interesting data/findings exist from the [Caroni Swamp RDI Project](http://caroniswamprdi.org/research.html), e.g. research was done on "Economic Valuation of the Recreational Resources at the Caroni Swamp Bird Sanctuary" and "Local Community Use of the Caroni Swamp: Use, Attitudes and Perceptions": <http://caroniswamprdi.org/research.html> and <http://www.caroniswamprdi.org/newsletter/newsletter2.pdf>
- Suggested communities for survey: Cacandee (part of Felicity), Felicity (near swamp, pass via river through swamp to access sea, large community), Brickfield (southern end of swamp outside protected area, direct access to sea, small community), Bamboo village 1 (agriculture important, NW of swamp, access to northern swamp area where extractive use is allowed), Sealots (employment in POS, northern end of swamp where extractive use is allowed, small community), Kelly village (far away community).

Nariva:

- Swamp is used to catch cascadox and conch, for swamp tours, very little recreational use
- Hunting for agouti, tattoo, deer in surrounding area
- Kernaham: main employments: Forestry Division (9 staff), Reforestation Programme (15 people; they work daily 7-11am), Ministry of Agriculture, CEPEP, Regional Corporation, agriculture
- Plum Mitán: 21 people work in Reforestation Programme
- Gardening is very important, almost everyone does agriculture, also those with other employment
- Gardening: watermelon, short crops
- Also additional employment in agriculture, e.g. people employed to plough, harvest melon, take melon to market
- People coordinate to take produce to market together
- Gardening on lease land in the swamp, on the edge of the protected area
- Fishing for cascadox in swamp, this fish is marketed, some people fish with nets, other set traps at time of flooding and catch all fish (including small), this is destructive
- Harvesting of conch: very little to find nowadays, this is caught by baiting
- Tours in swamp: 1 local tour operator (Boatline), 3 tour operators based in Port of Spain; they bring visitors directly from there with little local input
- Many ponds in Kernaham, these are used as water supply during dry season, waterlilies are planted to stop evaporation, also fish is kept in them

- Environmental concerns: flooding can damage crops, use of weed killer to prepare land for gardening (does this damage the swamp ecosystem?)
- Environmental CBOs in Kernaham and Plum Mitan for Reforestation Programme; they do not seem to engage in other environmental activities in the area (check!), except for community service (e.g. help with flooding)
- Reforestation work: replanting, e.g. in Bush Bush, clearing fire trails, tending to replanted trees
- Threat to swamp from fires, which are used when catching iguana: hunters clear sandy patches where iguana come to lay eggs, they then set nets to catch iguana (illegal!)
- Good natural resource use information from research by Baptiste and Smardon (2012)
- Suggested communities for survey: Kernaham (near swamp, south side, near sea, much environmental employment), Cascadoux area (Kernahan), Plum Mitan (near swamp, agriculture inside swamp, reforestation employment), Navet (remote, small community)

Trinity Hills:

- Wider natural area is used for hunting, gardening, fishing, oil extraction, beach house rentals
- Guayaguayara has a village council and sports clubs
- Use annual hound shows (5 in Trinidad) as opportunity to liaise with hunters
- There are more than 30 hunting camps along Edward Trace in the PetroTrin compound from Guayaguayara (east) to Moruga (west)
- Visitor attraction: mud volcano; in the past people used to visit it but not now; visitors need permission to enter the PetroTrin compound; local people who may be interested in taking visitors along cannot get a permit from PetroTrin to take visitors; can FAO or EMA liaise with PetroTrin to gain such permission for a community group? (we spoke with 1 person interested in this, who had liaised with PetroTrin but was not successful)
- Protected forest area is named “the sanctuary”; local people seem to know very well where the boundary is; on the E-W running part of the sanctuary all hunting camps are north of the road (which forms a clear boundary to the sanctuary); there may, however, be hunting camps in the part that runs N-S as there the boundary is less clear; also hunters most likely hunt inside the sanctuary there
- Signs along the boundary (Edward Trace) are very deteriorated and could do with renewing
- All hunters entering the PetroTrin area need to request a pass from PetroTrin every year to be allowed into the area; they also have to sign in every time they visit the area, so PetroTrin should have data on the number of hunters
- Most hunters seem not to be from local communities but are visiting hunters from all over Trinidad; seemingly no conflicts between local people and visiting hunters, but this needs discussing
- Rio Claro Environmental Group in Mora settlement
- Mora Valley farm
- Edward Trace community: people live from hunting, fishing, gardening and some occasional (environmental) employment by the oil company to clear areas and reforest areas; this is compensation oil companies do for forest areas destroyed; local people make go hunting with visiting hunters and be paid for this
- No CBO seems to exist in Edward Trace
- No recreation in forest areas; road is too bad
- St Mary’s community: gardening, hunting, many visiting hunters come to the area; local communities do not benefit from such visiting hunters as they bring all their own supplies
- Suggested communities for survey: Guayaguayara (near protected area and route in on east side, by sea), Edward Trace (main route to protected area west side, much agriculture and hunting), Mora settlement (small community north of protected area, seem to have (had) environmental CBO), St Mary’s (hunting route towards northern side of protected area), Moruga or La Ruffin (small community, near sea)

Literature

Baptiste, A.K. and Smardon, R.C. (2012) A review of wetland use and management of the Nariva Swamp, Trinidad. *Caribbean Geography* 17(1/2):73-91.

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Shah, K.U., Dulal, H.B., Johnson, C. and Baptiste, A. (2013) Understanding livelihood vulnerability to climate change: Applying the livelihood vulnerability index in Trinidad and Tobago. *Geoforum* 47:125-137. doi

<https://doi.org/10.1016/j.geoforum.2013.04.004>

(http://www.sciencedirect.com/science/article/pii/S0016718513000766)

Keywords: Livelihood vulnerability index; Climate change; Wetlands; Gendered vulnerability; Trinidad and Tobago; Rural households; Small island developing states

Van den Eynden, V. (2017) Livelihoods assessment for communities surrounding the Matura forest and coastal zone pilot protected area. Report.

Annex 1. Announcing the study and invitation to the community meetings

This is an example of the invitation / announcement used for the Matura Livelihoods Assessment.

A Livelihoods Assessment for communities surrounding the Matura forest and coastal zone pilot protected area has started in the northeast communities Matura, Salybia, Toco, Montevideo, Grand Riviere and Fishing Pond, as part of the “Improving Forest and Protected Area Management” project. Over the next 2 months, we will study how local livelihoods are based on the natural resource richness Matura National Park and the nearby protected beaches have to offer, and which livelihoods opportunities based on the sustainable use of natural resources communities want to develop.

The team carrying out this study is Veerle Van den Eynden in collaboration with members from the environmental NGOs Nature Seekers, Toco Foundation and Grand Riviere Nature Tour Guides Association (GRNTGA): Vera Edwards, Steve Ovin, Ralph Singh, Randall Alexis, Marcia Barker and Richard Phillips.

The study consists of households surveys in the communities, to look at the importance of forests, protected beaches, plants, animals and natural resources for local livelihoods.

This is followed up with a community group discussion evening in each of the six communities to discuss the livelihoods opportunities communities would like to develop:

- Wed 9 August at 4.30pm in Matura at the office of Nature Seekers
- Wed 16 August at 4.30pm in Toco at the Radio Station Hall
- Thu 17 August at 4.30pm in Grand Riviere Visitor Centre
- Wed 30 August at 4.30pm in Montevideo Bar
- Wed 6 Sept at 4.30pm in Salybia Primary School
- Wed 13 Sept at 4.30pm in Fishing Pond.

You are invited to the forum in your community, to share your knowledge and your wishes for the future.

Annex 2: Discussion topics for community meetings

Aim:

- Discuss, identify and prioritise livelihood opportunities for the local communities based on the sustainable use of protected areas and natural resources
- Livelihood opportunities can be developments at the level of an individual, a household or the entire community
- This can be the development, production and marketing of products or services such as ecotourism, tour guiding, etc.

Method:

- Give a brief overview of the livelihoods assessment project and the aim for this discussion group
- facilitator guides the group through the various discussions topics and takes notes
- Prepare a flipboard-sized table to use for topic 1, which contains the different land use areas that exist around the community and the major uses to expect (see example in Annex 3)

Discussion topics

1. Identify which uses are the most important for each of the following natural areas for the “livelihood” of people in the community: protected forest/swamp, non-protected forest/swamp, estates, abandoned estates, farming land (gardening), sea,...
(Remove any natural areas or uses that are not relevant in a community, or add any extra rows or columns)
Rank the uses in order of importance: 1, 2, 3 (leave any that are not relevant 0)
2. Identify which protected areas exist near the community, e.g. protected forest, protected swamp, For each of the areas, which current uses are destructive (do damage or destroy the environment) and which are sustainable (do no harm or no damage)?
 - a. Protected area:
 - i. Destructive uses:
 - ii. Sustainable uses:
3. Which local livelihoods depend on protected areas? For example: employment, activities and products people sell to make their living
4. For the protected areas, who can access the area, who takes decisions about the management of the area and which responsibility do people of the community have?
5. Which livelihood opportunities can be developed from the protected area or from natural resources in general (this can be ideas for products, or projects, business ideas, ecotourism activities and facilities, training or capacity building that can help develop livelihoods), for:
 - a. Protected area
 - b. Communities
 - c. Individuals and households
6. (Optional: When all the ideas for livelihoods opportunities have been listed, each person can indicate their three priorities with stickers.)

Annex 3. Example grid of main uses in natural land use areas

This is an example of the grid used for Topic 1 in the community meeting. This is an icebreaker topic that helps to focus participants on the purpose of the meeting

Community name	protected forest	other forest	protected beach	other beach	estate	abandoned estate	farming land	sea
Food				X		X	X	X
Hunting		X						
Tourism	X							X
Recreation	X		X	X				X
Timber		X						
Market products		X		X			X	
Employment	X					marihuana	X	X
Craft								
Research			X					X
Environmental functions	X		X					
Overall wellbeing	X							

	PROTECTED FOREST	OTHER FOREST	PROTECTED BEACH	OTHER BEACH	ESTATE	ABANDONED ESTATE	FARMING LAND	SEA
OVERALL WELL-BEING								ILLEGAL
FOOD								
HUNTING								
ECO TOURISM								
RECREATION								
TIMBER								
MARKET PRODUCTS								
EMPLOYMENT								
CRAFT								
ENVIRONMENTAL FUNCTION								
RESEARCH + EDUCATION								

Annex 4. Questions for CBO interviews

Funding:

- Sources of income:
 - External, e.g. FD, EMA, Green Fund
 - Visitors, entry permits, guesthouse, visitor centre, ...
- Sustainability / vulnerability of each funding source
- Seasonality of each funding source
- % funding from different sources
- Does external funding come with conditions?
- Does CBO have say in how external funding is applied?
- Can income from visitors sustain conservation activities?

Employment:

- Employment level in different activities of the CBO: patrol, tour guiding, guesthouse, office,...
- Trends over time for employment, e.g. last ten years
- Sustainability of employment
- Seasonality of employment

Activities:

- Different conservation activities the CBO is involved in: forest, river, craft, litter,...
- Have there been changes in strategies in past? And why?

Capacity building / training CBO provides to:

- Staff
- Wider community / communities
- Other local organisations
- Registered tour guides

Collaboration / conflicts:

- Collaborations with other CBOs / NGOs / communities
- Umbrella organisation in TT for environmental activities?
- Collaboration with international conservation agencies: WWF, IUCN, Conservation International,....
- Conflicts with other tour guides
- What do they do when they see poachers

Governance of protected areas:

- Do they have say in planning and managing protected areas (with FD)?
- Do they have say in determining expenditure from PA activities (permits, reforestation programme)?
- Do they have say in expenditure in PA activities?

Governance of local CBO:

- Governance of CBO and various components / activities
- Legal structure
- Who takes decisions for:
 - Planning

- Management
- Finances

Promotion:

- Promotion / advertising of activities
- Gather feedback from visitors?

Community:

- Which other socio-cultural organisations exist in the community?

Future plans / wishes:

- What would they like to improve
 - Own activities
 - Collaboration with government
- Their wishes for future

Annex 5. Indicators for livelihoods assets

Human assets

1. Education: percentage people with secondary or tertiary education
2. Health: percentage people without chronic illness
3. Percentage women in employment
4. Percentage adults in regular employment
5. Training in protected area related activities available in the community: low, medium, high

Social/cultural assets

6. Number of social organisations in the community
7. Socio-cultural value of protected area: percentage households that score recreation in protected area as important use
8. Protected area important for recreation people do: percentage households that have visited protected area x percentage households that visit at least weekly x 100
9. Protected area important for tourism: annual number of visitors for tours, hikes, etc., over last 3 years (2014-2016) calculated as proportion of highest visitor number in the area
10. Protected area supported by CBO: Yes, No
11. How people feel represented by local environmental CBOs to handle environmental concerns: mean of scale score
12. Relative level of environmental concerns in the community: low, high

Physical assets

13. Percentage households with private house ownership
14. Percentage households with private land ownership
15. Average number of people (adults and children) per house
16. Road access: percentage households not mentioning to have concerns over roads

Natural assets

17. Perceived benefit from natural resources: mean of scale score
18. Percentage households with access to farming land
19. Percentage households where someone hunts
20. Average number of natural resource uses per household: values range 0-4
21. Value of protected area to local community: high when protected area near community, otherwise low

Financial assets

22. Percentage households with income from hunting
23. Average number of commercial uses per household: values range 0-4
24. Ease of access to employment/income with environmental CBOs: mean of scale score
25. Average number of days per month that people are employed in protected area / natural resources: ratio of 21 (max number)
26. Percentage households where someone in the household works in protected area or tourism
27. Percentage households with access to markets or vendors to sell natural produce from gardening, hunting, etc.
28. Percentage households that use plant and animal resources in protected areas intensely (daily to 3 times/week)
29. Tourist expenditure in protected area: low, medium, high
30. Share of tourism revenue going to communities: Yes, No

31. Percentage households where main income is from natural resource use (agriculture, fishing, hunting,...)

Political/legal assets

32. Equal access to benefits from protected areas through employment with CBOs: number of people employed by CBO as percentage of total population
33. Presence of controls over natural resource use in the protected area: level of controls through legislation
34. Presence of controls on the ground (patrols) to monitor adherence to prohibited resource use
35. Local involvement in planning and managing protected area: estimate score
36. Local involvement in determining expenditure from protected area activities