

# Livelihoods assessment

for communities surrounding the Matura forest and coastal zone pilot protected area, Trinidad

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Veerle Van den Eynden

In collaboration with Vera Edwards, Steve Ovin, Ralph Singh, Randall Alexis, Marcia Barker, Richard Phillips and Raynaldo Phillips

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# Livelihoods assessment for communities surrounding the Matura forest and coastal zone pilot protected area

Veerle Van den Eynden, University of Essex, UK

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## Executive summary

A livelihoods assessment has been carried out in communities surrounding the Matura Forest and Coastal Zone pilot protected area. This protected area consists of Matura National Park (MNP) Environmentally Sensitive Area (ESA) – a primary tropical forest area of 9000 ha that was declared an ESA in 2004 - and the three protected beaches at Grande Riviere, Matura and Fishing Pond - declared protected beaches to conserve nesting leatherback turtles in 1990. This study forms part of the “Improving Forest and Protected Area Management in Trinidad and Tobago (IFPAM-TT)” project of the Food and Agricultural Organisation of the United Nations.

Aim was to assess how local livelihoods are based on the natural resource richness Matura National Park and the nearby protected beaches have to offer; and determine which livelihoods opportunities based on the sustainable use of natural resources communities want to develop.

The research was carried out in collaboration with six members of the environmental Community-Based Organisations (CBOs) Nature Seekers, Toco Foundation and Grand Riviere Nature Tour Guides Association (GRNTGA), and Raynaldo Phillips of Forestry Division.

The study was carried out in six rural communities, selected to represent the diversity in economic activities, conservation activities, benefits from eco-tourism and dependency on natural resources that exists in the region. The communities selected are:

- Fishing Pond, which has a protected turtle beach, no ecotourism developments and a budding environmental CBO
- Matura, which has a protected turtle beach with well-established ecotourism activities, a proactive environmental CBO, some tour-guiding activities in MNP, yet also environmental conflicts related to sand and gravel quarrying
- Salybia, which has the main entrance route into MNP, an unprotected beach, some tourism development and no environmental CBO
- Toco, which is far away from MNP, has no protected beaches, receives many recreational visitors on its beaches and proactive local CBOs
- Montevideo, which is nearby MNP boundary, has no conservation or ecotourism development, is far from the sea, with strong dependency on natural forest resources
- Grand Riviere, which has an entrance road into MNP, a protected turtle beach with well-established ecotourism activities, a proactive environmental CBO and high level of employment based on conservation and tourism

The research was carried out based on the Modified Sustainable Livelihoods Framework, in order to gather quantitative and qualitative information on how local communities use and derive benefits from the protected forest and beaches and the natural resources in their environment in general. This allows determining the human assets, socio-cultural assets, physical assets, natural assets, financial assets, political-legal assets and drivers for livelihood strategies at the level of households, communities and the protected areas. Information was gathered via household surveys with 234 random households to assess the use of forest and beach natural resources and socio-economic indicators; six community meetings to discuss livelihood activities based on natural resources that communities would like to develop, interviews with three environmental CBOs on their conservation and ecotourism activities and the employment they provide. Additional existing data were obtained from Forestry Division and the Central Statistical Office. All data files are being published online (Van den Eynden 2017).

The collected information enabled a detailed description of livelihoods in the communities, the main uses of natural resources and natural areas that take place and the dependence of communities on the protected areas. It also enabled the calculation of 36 livelihoods indicators that enable expressing in a quantitative and visual way how well communities are currently set up to benefit from the sustainable use of their natural environment. This allows comparison between the communities (and with communities near other protected areas) and allows monitoring trends over time. Livelihoods are sustainable if they can maintain or enhance their assets over time, whilst maintaining and using the natural resources in a sustainable way. The data could also be used to evaluate livelihoods at the household level, e.g. identifying poorer and vulnerable households.

Natural resources and their use continue to play an important role in the livelihoods of people in these rural communities, where only 51% of adults have permanent employment, both to provide income when needed, but also for recreation and out of tradition. The main uses that local communities make of their natural environment are gardening, fishing, recreation, hunting and catching crabs. Of these activities, the last two can have a destructive effect on the protected forest and beaches. Potentially destructive uses such as logging and the extraction of minor products such as fruits and ornamental plants is well controlled and has little importance. Much use of the natural resources is for socio-cultural and recreational reasons, e.g. hunting, fishing as recreation, but less for income and less intensely. The main environmental concerns that people have are hunting outside the season, overhunting, too much extraction of crayfish and crabs and litter left on recreational beaches and riversides by visitors. In addition, uncertainty over potential plans for the construction of a highway to Toco and the effect this would have on watersheds, the protected forest and the communities from Matura to Toco causes concern.

For 35% of households at least one use they make of their natural environment provides some income, from selling agricultural produce, income from employment related to protected areas and tourism, income from hunting and fishing. Income-generating activities can be sustainable (e.g. income derived from employment in conservation activities and ecotourism, from gardening and fishing), but can also be unsustainable (e.g. income derived from marijuana grown in the protected forest, from selling wildmeat, crayfish and crabs). About 13% of households derive income from such activities that can have a negative impact on the protected areas and their biodiversity. Very few people currently derive income from the sustainable use of plant and animal resources from the protected areas (e.g. selling minor forest products and honey). Income generation from natural resources and/or protected areas is particularly high in Monte Video and Grande Riviere. Protected area related employment reduces extractive resource use dependency, as can be seen in Grande Riviere, but is not always secure in the long term as much conservation employment is project-based and visitor-dependent. Remote communities such as Monte Video and Matelot would benefit from increased development of employment opportunities related to conservation and ecotourism

In a quarter of households, at least one person has paid employment directly related to the protected forest, protected beaches or to (eco) tourism. Protected area and conservation-related employment is mainly centred on the two well-established environmental organisations Natura Seekers in Matura and GRNTGA in Grande Riviere. In addition, Fishing Pond Turtle Conservation Group (FPTCG) and Turtle Village Trust provide employment. Ninety people have year-round employment in reforestation programmes, an educational turtle conservation project and as office-based staff.

Another 150 people have seasonal employment during the period March-September for turtle conservation, beach protection and tour guiding. Hardly any employment is related to the Matura National Park. When comparing with a baseline survey on the use of natural forest resources 10 years previously, one can see that increased employment opportunities indicate less natural resource dependency. This is also the case for Grande Riviere.

Tourism employment exists throughout the region, with again hotspots in Matura and Grande Riviere. Ecotourism is well established for the protected beaches in Grande Riviere and Matura. A steady number of about 25,000 visitors annually visit these beaches during the evening, to view nesting leatherback turtles and their hatchlings. The majority of visitors are national, with about fifteen percent foreign. The number of visitors has remained static over the last ten years, with a dip in 2010-2012. Turtle tour guides provide significant income for local employment and the running costs of environmental CBOs. Visitors indicate an interest in diversification of tourism opportunities in the region.

Hunting is an important activity that certainly affects the protected forest. Someone in 27% of households hunts; 9% derive income from hunting and 6% hunt frequently (daily to twice per week). Much hunting is recreational. The estimated 600 hunters in the area far exceed the number that obtain hunting permits (up to 100). Whilst Wildlife Section collects catch records each year, these are currently not processed in a meaningful way to allow analysis and monitoring of the impact of hunting on animal abundance and diversity in Matura National Park.

Forty percent of households use protected areas, forest and beaches for recreation. This may be combined with natural resources uses such as fishing and hunting. Amongst respondents, 67% have visited one of the protected turtle beaches and 31% have visited Matura NP ESA.

In Matura National Park, hunting and marihuana cultivation are destructive activities, due to the lack of controls on the ground. The survey indicates there to be 600 local hunters, which is much higher than the numbers that obtain hunting permits (max 100). In addition, hunting outside the season is reported to take place. Recreation only occurs on the fringes of the park, e.g. at Rio Seco and Shark River. Much of the forest is inaccessible and therefore little used for hiking. Local people do value the forest highly for its beauty, as habitat for animals and for the environmental protection of watersheds. There are currently no local organisations dedicated to the conservation and management of the forest.

The three protected beaches are very well conserved and managed thanks to the efforts of the three local organisations Nature Seekers, GRNTGA and FPTCG. Turtle conservation and related tour guiding brings much income from visitors to the communities of Matura and Grande Riviere. This is not the case in Fishing Pond as the beach is relatively inaccessible.

The visualisation of livelihoods assets clearly shows the higher assets base that Matura and Grande Riviere have, thanks to the effective beach protection, the turtle-based conservation activities, the strength of the CBOs in bringing benefits to these communities, and the employment and income brought by conservation and ecotourism. Communities such as Monte Video and Salybia have a particularly low assets base, in part through the lack of community organisations that can help bring benefits from protected areas to the community. Overall, human, socio-cultural and financial assets are variable between communities. Physical and natural assets are equally high everywhere. Financial assets (i.e. financial benefits derived from sustainable use of natural resources) are lower compared to other assets categories and political-legal assets are currently particularly.

Vulnerabilities need to be taken into consideration when considering the current livelihoods assets. Much of the assets related to activities in protected area are vulnerable due to seasonality of employment related to protected areas (e.g. turtle conservation employment during nesting season), uncertainty over funding related to conservation activities (e.g. employment by local CBOs dependent on grant funding) and dependency on visitor numbers (e.g. income derived from visitors to protected beaches to view nesting turtles).

Based on the descriptive livelihoods information and a comparison of livelihoods indicators against mean values, the livelihoods status of each community is described. The study shows wide variability across communities (and

households) in northeast Trinidad in terms of employment opportunities, land ownership, natural resource uses and benefits that protected areas provide. Each of the communities studied has a different set-up and each can teach us something about how livelihood opportunities can develop.

Numerous recommendations for further development of livelihoods based on the sustainable use of natural resources were made via the survey and during community meeting discussions. It is known that most successful livelihood developments whereby financial, social and environmental benefits can be created result from expanding, modifying and diversifying existing livelihood strategies rather than developing entirely new activities. There is scope for communities to learn from each other, and from other examples in Trinidad, on how environmental issues are handled and tourism has developed.

Frequently discussion around livelihood developments focused on development people want within the community, for example more activities, more employment, better roads and access to agricultural land; and on development of agricultural production.

Meaningful collaboration and participation of communities and government agencies is important. There is much scope for participatory conservation and tourism development in Matura National Park, similar to the successes that have been achieved in Grande Riviere and Matura with turtle and beach conservation and ecotourism. Communities may lack the capacity to develop initiatives without government support, and government agencies may lack the knowledge and expertise on how to work with community groups. Better collaboration can be achieved through joint events, training of government agency staff on how to engage with communities and by key government stakeholders such as Forestry Division, Environmental management Authority and FAO being frequently present in the area.

Existing and additional tourism highlights can be better promoted and further developed, to offer the 25,000+ visitors more activities, sights and information. Ideas raised include a heritage museum or visitor centre, small businesses that promote local natural resources and products made from them, such as nutmeg and mace, mango, seaweed, coconut, bush medicine and cocoa. Ecotourism developments that highlight the local richness and uniqueness in biodiversity and beauty, such as pawi, birds, forest plants and forest animals, can be combined with the development of hiking trails that provide easy access into the forest. Even lodging could be considered in an area like Zagaya.

Protected areas can be strengthened and widened further. In Toco, people are keen to explore also protecting local beaches or even the entire northeast coastline, including the Toco reef.

Educational and information activities to raise awareness about the protected area should be developed more, for example via signs, information of the area and its biodiversity and possibly a visitor centre. Ecological research activities that frequently take place in the area should be coordinated with the local environmental CBOs, to ensure that organisations are aware of ongoing research, that knowledge gained is shared (local organisations can hold a library of knowledge learned through research), that local people have the opportunities to be trained or employed in such activities. Researchers could also be encouraged to involve the public in the research, and to share their expertise about the biodiversity, resources, species, wildlife and ecosystems in the area with communities, through a series of biodiversity talks in the area, especially for tour guides.

Local environmental community organisations play a key role and should be strengthened and further developed. Their funding is often project-related, limited in time and seeking funding can be challenging. CBOs can benefit from support to develop funding proposals and a wider range of activities in their community. Since no CBOs dedicated to conservation and ecotourism activities in Matura National Park exist, establishing dedicated organisations should be encouraged. Salybia and Monte Video are key communities for this due to their proximity to the protected forest, the intensive use and knowledge they have of the forest through hunting and the fact they currently lack a CBO, which is key to strengthening their livelihoods.

In all local conservation activities, effective co-management and decision-making should be aimed for. Now, CBOs have no direct decision-making power on how protected areas are managed and how financial decisions are taken, although

they are involved through dialogue and consultation in management decisions for protected beaches. There is scope for a more meaningful co-management model for protected beaches and Matura National Park.

Many livelihood developments that communities want overlap with proposed projects and programmes in the Sangre Grande Regional development Plan (2010-2020) and therefore could be taken forward in collaboration with the Regional Corporation.

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## 1. Introduction

The project “Improving Forest and Protected Area Management in Trinidad and Tobago (IFPAM-TT)<sup>1</sup>” is currently being implemented by the Food and Agricultural Organisation of the United Nations in six pilot protected areas: Northeast Tobago, Tobago Main Ridge Forest Reserve, Matura Forest and Coastal zone, Nariva Swamp, Trinity Hills, and Caroni Swamp. The overall project goal is to conserve globally important biodiversity and ecosystems in Trinidad and Tobago by proposing a new protected areas system for conservation of biodiversity, increasing the management effectiveness of protected areas and increasing the capacity for sustainable financing of protected areas management.

Project implementation is guided in each pilot protected area by stakeholder subcommittees. The subcommittee for the Matura forest and coastal zone pilot protected area included in their work plan an assessment of feasible livelihoods based on the sustainable use of natural resources using participatory, evidenced-based analysis.

The Matura forest and coastal zones consists of the Matura National Park Environmentally Sensitive Area and the protected adjacent beaches of Grande Riviere, Matura, Rincon and Fishing Pond (Figure 1).

Matura NP ESA is a 9000 ha protected forest in northeast Trinidad, consisting largely of undisturbed primary tropical forest at altitudes ranging from zero to 575 m. The area was declared an ESA by law in 2004. Recent remote sensing vegetation monitoring using Landsat images (2013-2015) shows that less than 5% of the area has disturbed vegetation (Narang et al. 2017). The forest has a high biodiversity value. Over 200 species of trees and lianas have been recorded in the forest, including nine endemics plants and one endemic tree fern (Van den Eynden et al. 2007; Baksh-Comeau et al. 2016); 95 bird species have been recorded including Trinidad’s two endemics Trinidad motmot and paw (piping guan) (White et al. 2015). Recent biological monitoring in the protected area recorded eight amphibian species, 14 reptile species, seven freshwater fish species, six decapod species, 13 dragonfly, eight damselfly and 59 butterfly species and eleven terrestrial mammal species (Narang et al. 2017). Less than 5% of the national park area is currently inhabited and/or farmed. Very few people (less than 10 households) live within the boundaries of the Matura National Park. The park is surrounded by 15 coastal communities, with a total population of 7621, whose livelihoods depend partially on the resources of this protected area (Figure 2, Table 1).

The turtle nesting beaches of Grande Riviere, Matura, Rincon and Fishing Pond (Figure 1) were declared prohibited areas under the Forest Act in 1990. Access is prohibited from 1 March until 31 August during the night in Grande Riviere (6pm-6am) and 24 hours a day on the other beaches. Co-management arrangements with local community groups were established by Wildlife section (Forestry Division) with the creation of Nature Seekers (Matura) in 1990, Grande Riviere Environmental Awareness Trust (GREAT) in 1992 (Harrison 2007) and Fishing Pond Turtle Conservation Group (FPTCG) in

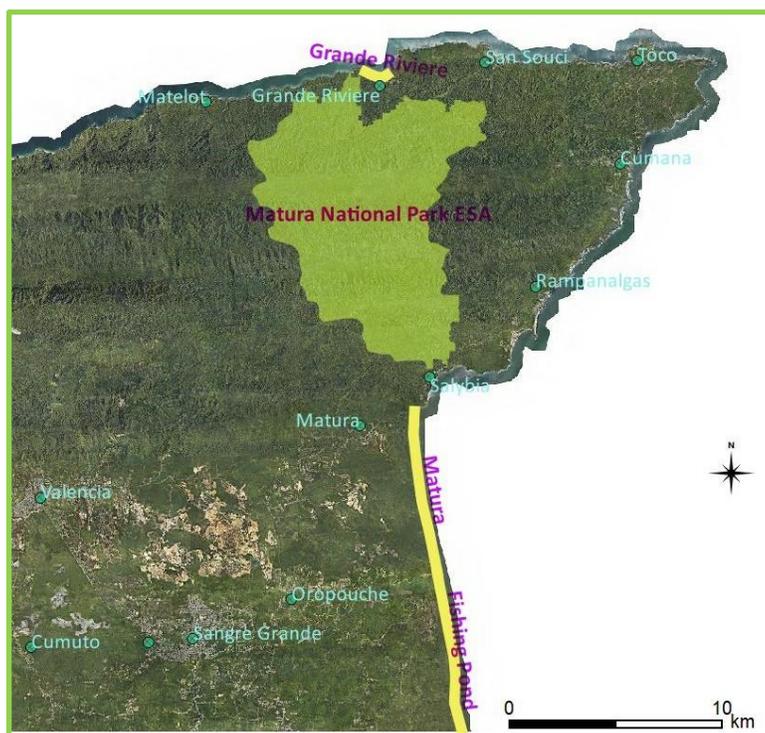


FIGURE 1. MATURA FOREST AND COASTAL ZONES PROTECTED AREA

<sup>1</sup> <https://www.protectedareastt.org.tt/>

2005. These three groups have since become well-established advocacy groups for turtle conservation and other environmental projects in the area. GREAT has changed into Grande Riviere Nature Tour Guides Association (GRNTGA).

In 2005-2007, a Matura National Park ESA participatory biological baseline survey (Van den Eynden et al. 2007) was carried out with local community NGO's, community participants and Forestry Division, to study how people in the communities surrounding Matura NP ESA use the various natural forest resources of Matura National Park and surrounding forest area, and how their livelihoods depend on the forest and its resources. This study found that hunting, catching birds, catching crayfish and marihuana growing are natural resource uses that occur within Matura NP; some of

which have a negative/destructive impact on the park. Marihuana is grown in small forest clearings that are made for which trees are cut down. More importantly, it poses a safety problem for other forest users as often trap guns are placed to protect the area. Hunting potentially had a serious effect on the wildlife population. Although accurate figures on the population size of mammals in the area do not exist, and hunting rates are not recorded in an objective way either, many people reported serious declines in wildlife and with up to 20% of the total adult population hunting, this figure is much higher than the numbers recorded through hunting permits by Wildlife Section. Similarly, declines are reported for crayfish and birds that are caught. Recreation is also a use with overall positive impact, although littering and human waste pollution give problems at some riverside spots.

## 2. Aim and objectives

The aim of this current study was to assess the livelihoods in the communities surrounding the Matura forest and the adjacent protected beaches in order to identify which livelihoods opportunities based on the sustainable use of natural resources communities want to develop. For this assessment, six communities were selected: Matura, Salybia, Toco, Montevideo, Grande Riviere and Fishing Pond. These communities were selected based on their relation to the protected area and involvement with conservation activities and the dependence of economic activities on natural resource use, in order to contrast communities benefiting from protected areas versus others (Table 1). An additional aim was to compare livelihoods and natural resource use against the baseline of 2007.

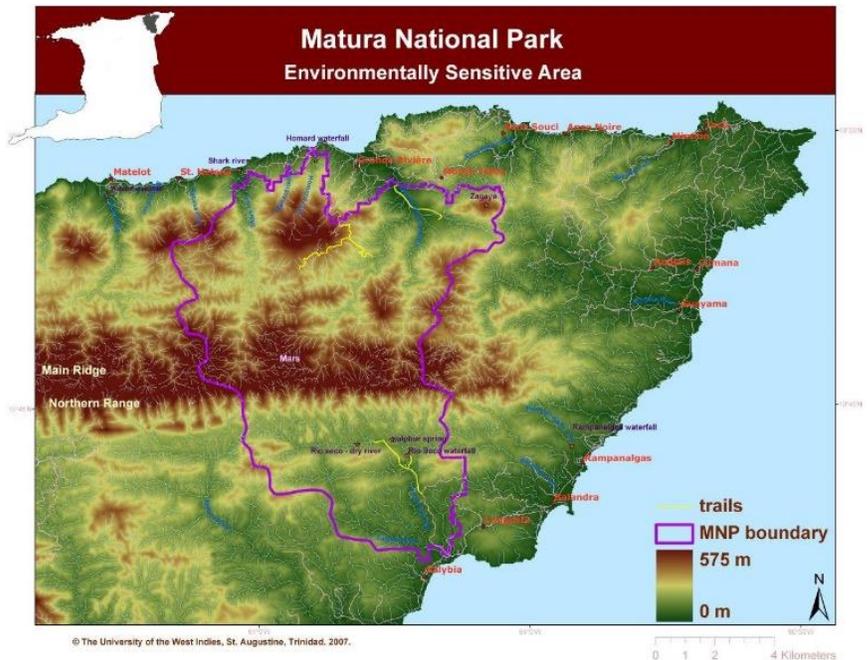


FIGURE 2. MATURA NATIONAL PARK ESA

**TABLE 1. CHARACTERISTICS OF COMMUNITIES IN NE TRINIDAD AND THE REASON TO SELECT THEM FOR STUDY, BASED ON CENSUS DATA (CSO 2000, CSO 2011) AND VAN DEN EYNDEN ET AL. (2007)**

Community	No. of Households	Male population		Female population		Total population		Main economic activity	Selection criteria for survey	
		2011	2000	2011	2000	2011	2000		2017	2007
Matura	548	927	674	846	623	1772	1297	Quarrying, turtle conservation, employment in Sangre Grande	Protected turtle beach, ecotourism hub, proactive environmental CBO, environmental conflicts (quarrying)	
Salybia	69	131	115	115	81	246	196	Hunting, tourism	Main entrance to MNP, beach unprotected, some tourism development, no environmental CBO	Main entrance to MNP, 10 households live within MNP
Balandra	39	66	74	56	74	122	148	Fishing, beach houses		
Rampanalgas	105	200	182	203	163	403	345	Fishing, beach houses		
Mahoe	23	48	43	32	27	80	70	Agriculture		
Tompire	40	63	82	52	59	115	141	Agriculture		
Anglais	106	196	162	183	167	379	329	Agriculture, hunting		Far from MNP
Cumana	375	587	566	530	494	1118	1060	Agriculture, hunting		
Toco	390	609	537	573	498	1182	1035	Fishing, agriculture, recreation	Far from MNP, no protected beaches, many recreational visitors, proactive local CBOs	Far from MNP
Mission	96	159	140	130	127	289	267	Fishing		
L'Anse Noir	114	179	186	168	152	347	338	Hunting, fishing		
Sans Souci	184	264	273	212	199	476	472	Agriculture		
Monte Video	59	83	75	65	65	148	140	Agriculture, hunting, government-related employment	Nearby MNP boundary, no tourism development, far from sea, dependency on natural resources	
Grand Riviere	154	212	162	180	136	392	298	(Eco)tourism, turtle conservation, reforestation program	Entrance road to MNP, protected turtle beach, ecotourism hub, proactive environmental CBO	Entrance road to MNP, ecotourism hub, much environmental
Matelot	197	316	275	237	211	553	486	Hunting, fishing, little regular employment		Remote, no tourism development
<b>Total</b>	<b>2499</b>	<b>4040</b>	<b>3546</b>	<b>3581</b>	<b>3076</b>	<b>7621</b>	<b>6622</b>			
Fishing Pond	884	1597		1460		3058		Some turtle conservation, employment in Sangre Grande, agriculture	Protected turtle beach, no ecotourism, budding environmental CBO	

### 3. Methodology

The methodology used was based on the Modified Sustainable Livelihoods Framework (Figure 3, Schreckenberg et al. 2010) that considers different assets as drivers for livelihood strategies. These assets can be measured with indicators at the level of households, the community or the protected area. Indicators were chosen to represent the sustainable use of natural resources and of the protected areas and the benefits that local communities can derive from these uses, taking inspiration from the indicators listed by Schreckenberg et al. (2010). These were discussed further during fieldwork team meetings. In addition, indicators already known from the 2007 baseline survey were also included to ensure comparability over time.

The livelihood assessment gathered information on human assets, social/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 (Figure 3). Data were gathered using the following tools:

- Household survey with 234 random households in the six communities to gather data on (1) forest, protected beach and natural resource use; (2) the current role of protected areas in livelihoods; (3) livelihood developments people want to pursue; and (4) key socio-economic indicators (survey questionnaire in Annex 1).
- Community meetings in each of the six communities to discuss (1) current livelihoods uses of protected areas and other natural areas in the surroundings of the community, identifying uses that are destructive and those that are sustainable, as well as community dependency upon those uses; (2) access, management, decision-making and community responsibility of protected areas; and (3) livelihood opportunities communities would like to develop based on the sustainable use of protected areas and natural resources, whereby livelihood opportunities can be developments of products and services at the level of an individual, a household or the entire community (discussion topics of meetings in Annex 2).
- Interviews with environmental community organisations Nature Seekers, Grande Riviere Nature Tour Guides Association and Fishing Pond Turtle Conservation Group to discuss (1) funding streams and their sustainability for local conservation activities and employment; (2) ecotourism status and trends; (3) local employment in the protected forest, in ecotourism, tour guiding, turtle conservation and reforestation programme; (4) training and capacity building of staff and wider communities; and (5) governance and decision-making of protected areas and local organisations (topics list of interviews in Annex 3).
- Excursions in the protected areas to observe livelihoods activities.



**FIGURE 3. MODIFIED SUSTAINABLE LIVELIHOODS FRAMEWORK (SCHRECKENBERG ET AL. 2010)**

This research was carried out in July-September 2017, in collaboration with six members from the CBOs Nature Seekers, Toco Foundation and GRNTGA acting as community assistants: Vera Edwards, Steve Ovin, Ralph Singh, Randall Alexis, Marcia Barker and Richard Phillips; and with input from Raynaldo Phillips of Forestry Division. The survey questions and discussion topics for community meetings were developed jointly during two initial meetings.

Household survey interviews were carried out by the consultant in collaboration with one or two community assistants, using paper questionnaire forms. In order to find people at home, interviews were mostly done between 2pm and 7pm on weekdays or during the weekend. On average 10 to 15 interviews could be done in a day. In order to ensure households were selected randomly, surveys would start at the end of a particular street in the community starting with the last house. From there on every third house was surveyed on either side of the road (in smaller communities every other house was surveyed). All streets were covered in this way. If nobody were home in a house, the next house would be selected. For each household, one adult respondent answered the questions on behalf of the entire household (so reporting forest use activities for all members of the household). Aim was to complete surveys with 40 households per community and to have equal ratios of male and female respondents. For the smaller communities of Salybia and Monte Video which count only 69 and 59 households respectively, less households were surveyed and additional surveys were done in the neighbouring (and similar) communities of Rampanalgas, St Helena and Matelot.

Responses for all completed questionnaires were entered into an Excel spreadsheet, then converted to SPSS to facilitate statistical analysis.

Community meetings took place on weekdays at 4.30pm (for a 5pm assured start) and lasted for 2-3 hours. All households surveyed were invited to the meetings (using paper invitations). In addition, community assistants contacted all existing organisations in the community to invite them too. During meetings, notes were taken and written out afterwards. The turnout of participants at the meetings was: Matura 0, Salybia 9, Toco 12, Monte Video 12, Grande Riviere 5 and Fishing Pond 2.

Further data were gathered from stakeholders as annual data for the period 2007-2017, for use as indicators for livelihoods assets and to provide trends over time information:

Forestry Division:

- annual harvested timber volumes documented by the Eastern Conservancy through timber logging licences
- minor forest produce licences documented by Eastern Conservancy
- hunting permit records and catch reporting recorded by Wildlife Section to investigate hunting levels and trends

Central Statistical Office:

- socio-economic characteristics at community level from the 2011 Census

Nature Seekers, GRNTGA and FPTCG:

- beach permits data
- visitor numbers
- number of tours with tour guide
- employment of staff in forest, protected area and ecotourism activities
- number of registered tour guides
- number of people trained in activities related to protected area and natural resource management

All data files and methods documentation has been published online (Van den Eynden 2017).

## 4. Description of livelihoods and their dependence on the protected areas and their natural resources

Matura NP in northeast Trinidad is surrounded by 15 coastal communities. The population in the Matura to Matelot area is 7621 inhabitants (Census 2011), an increase of 15% over the last ten years (6622 inhabitants in 2000), with 53% male and 47% female. The 234 survey respondents were 57% male and 43% female, with a representative distribution across the age groups. In terms of education, 47% of respondents have completed primary education, 39% secondary education and 14% tertiary education.

Main economic activities in the area are elementary occupations, craft and related occupations, service workers and agriculture (ISCO-88 categories), with on average 55% of people in work and very few people seeking work (< 5%). Government-provided employment, agriculture, fishing and service jobs form the main employment. Permanent jobs are valued higher than self-employment dependent on natural resource use (agriculture, fishing). Fifty-one percent of adults from the surveyed households have permanent employment. Natural resource activities typically complement income even for people working full-time. Many people combine a variety of economic activities to sustain their livelihoods. The focus of economic activities varies highly from community to community (Table 1). Overall, it is difficult for people to get credit and loans to develop new income-generating activities, as formal credit agencies require much paperwork and assets against which to loan. Nature Seekers as local employer actively assist their workers to sign up with a credit union

Natural resources and their use play an important role in the livelihoods of people in this area, both to provide income when needed, but also for recreational reasons and out of tradition. When asking people what they consider to be the

main uses or function the forests and beaches in the area, they score recreation the highest (31%), followed by environmental values (29%), providing income and employment (17%), as wildlife habitat (17%), for watershed protection (15%), for food provision (12%), for hunting (8%) and for tourism (7%).

During the household survey, people were asked to list up to four uses they make of the forest areas and beaches that surround the communities. This includes uses of natural areas and natural resources outside the protected forest and protected beaches. A total of 528 uses for forest and beach areas and their natural resources were recorded for the 234 households: an average of just over two uses per household. Only 22 households do not use the forest and protected beaches at all. Main uses are gardening, fishing, recreation and hunting (Table 2). For 35% of households at least one such use provides some income. The importance of natural resource use in the livelihoods of people can be deducted from the frequency with which they are practiced and whether they provide personal benefits or income. Amongst the uses practised on a daily basis or up to twice a week are employment related to protected areas and ecotourism, gardening, hunting and fishing. Those same uses typically provide (partial) income to up to 32 percent of households. Income generation from natural resources and/or protected areas is particularly high in Monte Video (due to employment, gardening, hunting and catching crayfish) and Grande Riviere (due to employment, gardening and fishing).

The uses recorded at household level in this survey have been compared with those recorded in 2007 (Table 2). The 2007 data may be underestimates of the total uses, as then respondents were asked to list their own uses as well as forest produce consumed that may be gathered by household members. These responses would include uses at the household level for extractive uses such as hunting, gathering fruits and provisions, but may not include all gardening. The level of hunting seems to have stayed the same. Gardening seems to be practiced less intensely nowadays compared to ten years ago. A remarkable difference is that currently in 13% of households someone has employment related to forest or beaches, which is much higher than in 2007. This is mainly employment through one of the local NGOs involved in turtle conservation, beach protection and reforestation work.

Natural resource use varies strongly from community to community (Figure 3, Annex 4).

**TABLE 2. DIRECT USES OF NATURAL RESOURCES OF FOREST AREAS AND BEACHES PRACTISED BY SURVEYED HOUSEHOLDS IN THE SELECTED COMMUNITIES; 2007 DATA BASED ON VAN DEN EYNDEN ET AL. (2007) ONLY REPRESENT FOREST USES**

Use	% households where use is practised		% households where use is practised daily to twice / week		% households for which this use provides income
	2017	2007	2017	2007	2017
Gardening	41	34	11	21	32
Fishing	39	–	4	–	7
Recreation	39	29	3	2	–
Hunting	27	25	6	5	9
Employment	13	2	10	2	13
Catch crabs	10	–			2
Pick orchids	6	8			
Food plants (provisions)	5	7			2
Fruits	5	3			–
Tour guiding	4	2			3
Medicinal plants	3	12			–
Catch birds	3	2			–
Craft materials	3	2			3
Materials	3	5			1
Crayfish	3	1			1

Residence	2	1			–
Timber	2	4			1
Honey	1				1

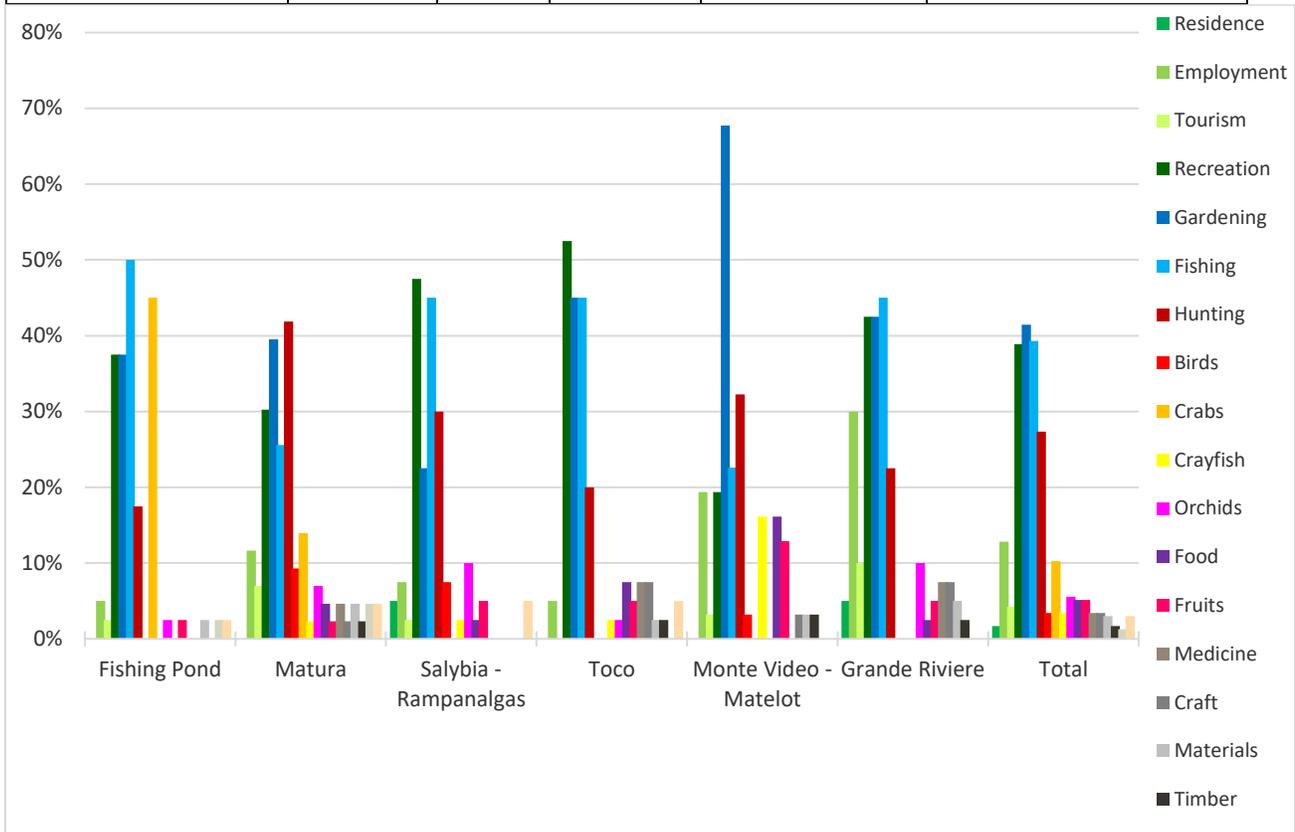


FIGURE 4. DIVERSITY OF NATURAL RESOURCE USE ACROSS THE STUDIED COMMUNITIES, EXPRESSED AS PERCENTAGE OF HOUSEHOLDS THAT PRACTICE A USE (N=234)

## 4.1. Employment

In 24% of surveyed households (55 households), at least one person has paid employment directly related to the protected forest, protected beaches and to (eco) tourism (Table 3). This employment is on average 18 days per month, but may be seasonal.

For 8.5% of households, a member is employed as a seasonal tour guide for nesting leatherback turtles and for 5% of households a member is employed in turtle protection. Tour guiding is coordinated through Nature Seekers in Matura and GRNTGA in Grande Riviere. No turtle viewing tour guiding takes place in Fishing Pond. Guides take groups of visitors on the beach at night to see nesting turtles and hatchlings. Tour guides may also take groups of visitors on daytime hikes to nearby visitor attractions such as waterfalls and rivers, although there is much less demand for such forest hikes than there is for beach tours. Visitor fees pay for tour guiding.

Turtle protection and conservation employment is also coordinated through these two organisation as well as through Fishing Pond Turtle Conservation Group and through Turtle Village Trust on non-protected beaches in NE Trinidad (Table 4). This employment is partially funded by Wildlife Section of Forestry Division, who fund fixed numbers of beach patrol personnel for each protected beach during the turtle-nesting season (April-August) to patrol the beach at night

to safeguard nesting turtles from dangers and disruption. They also tag turtles as part of international tagging schemas and gather essential data on the turtles, the position of nests, etc. Significant funding has been provided by the Turtle Village Trust project, funded by the T&T Green Fund, in the last 5 years, allowing community-based organisations to employ people to work in turtle tagging and monitoring for 6-7 months / year (May-August, pay TT\$180). This has also allowed employment of people in turtle tagging and monitoring activities in communities without protected beaches, i.e. Salybia, Toco, Sans Souci and Matelot. Beach patrol people are to some degree funded by income from visitors. Most turtle-related employment runs for 4-7 months per year (period March-September) during the turtle-nesting season.

For 7% of households, a member is employed in the Forestry Division Reforestation programme through Nature Seekers or GRNTGA. This employment runs all year around for 4 hrs/day (pay rate = TT\$120/day) and the project carries out forest conservation activities such as replanting of trees, watershed management, clearing of hiking trails and cleaning of protected beaches. This programme has been running since 2005 and is ending in 2017.

For 5% of households someone works in a hotel or has employment related to the hotel sector (e.g. transport to and from the hotel and tourism activities). For another 3% of households, employment relates to selling items on beaches, the Nature Seekers craft project or beekeeping in forest areas.

**TABLE 3. EMPLOYMENT DIRECTLY RELATED TO PROTECTED AREAS AND TOURISM (N=234)**

Community	Employment	% of households
Fishing Pond	Tour guiding, forestry, turtle protection	8
Matura	Tour guiding, reforestation, turtle protection, craft, beekeeping	23
Salybia - Rampanalgas	Tour guiding; reforestation, hotel employment	25
Toco	Tour guiding, turtle protection, hotel employment, beach work, CBO employment, research	25
Monte Video - Matelot	Tour guiding, reforestation, turtle protection, hotel employment	23
Grande Riviere	Tour guiding, reforestation, turtle protection, hotel employment, beach work, research	40
Total		24

**TABLE 4. EMPLOYMENT PROVIDED BY LOCAL ENVIRONMENTAL COMMUNITY-BASED ORGANISATIONS IN 2017**

Employment	Nature Seekers	FPTCG	GRNTGA	Turtle Village Trust
Turtle conservation: beach patrol, turtle tagging, turtle monitoring, data collection, education, etc.	24 (6-7 mths/yr)	12 (6 mths/yr)	9 (6-7 mths/yr) 7 all year	62 seasonal <sup>2</sup> (Salybia, Toco, Sans Souci, Matelot)
Reforestation programme	35		37	
Tour guides	24 (seasonal)		15 (seasonal)	
Office	8			
Crafts	4 (part-time)			
Salybia kayaking project	5 (part-time)			

Interviews with Nature Seekers, FPTCG and GRNTGA indicate that local environmental organisations employ 242 people in different roles (Table 4). This employment has increased significantly over the last 15 years and is largely

<sup>2</sup> This excludes employment they fund through the other 3 CBOs

funded by government agencies Wildlife Section, Forestry Division and the T&T Green Fund. Smaller amounts of funding have come from the United Nations development Programme (UNDP).

Current levels of funding for conservation employment in the area are ending in 2017 and are under threat. From 2018 onwards, it is still uncertain which level of employment will be maintained related to protected areas. Besides the main employments as tour guide for turtle visits, turtle conservation and monitoring and reforestation programme, Natura Seekers and GRNTGA also provide additional employment via a crafts programme (Matura), a kayaking project (Salybia) and a combined educational and conservation project for green and hawksbill turtles in Grande Riviere.

## 4.2. Tourism

The focus of tourism in Northeast Trinidad is related to the nesting of leatherback during the period April-September on the beaches. Visitors come to view female turtles coming on land at night to lay their eggs, and the hatchlings that emerge weeks later. Every year about 25,000 visitors take a turtle viewing tour in either Matura or Grande Riviere (Figure 5). Apart from a dip in visitor numbers in the period 2010-2012, visitor numbers have remained static over the last 10 years. National visitors account for 90-95% of these visitors in Matura and about 67% (estimate) in Grande Riviere. A quarter of visitors are children under the age of 12. This brings significant economic benefit to the area. National visitors pay TT\$20 for a tour, as well as TT\$5 for a permit to access the beach. The permit income goes to the state. Children have a free tour but pay TT\$2 for the permit. International visitors pay US\$20 for a tour. In Matura alone, this has provided an annual income of around TT\$300,000 in recent years. Up to 75% of this income comes from national visitors. No income details were obtained for Grande Riviere.

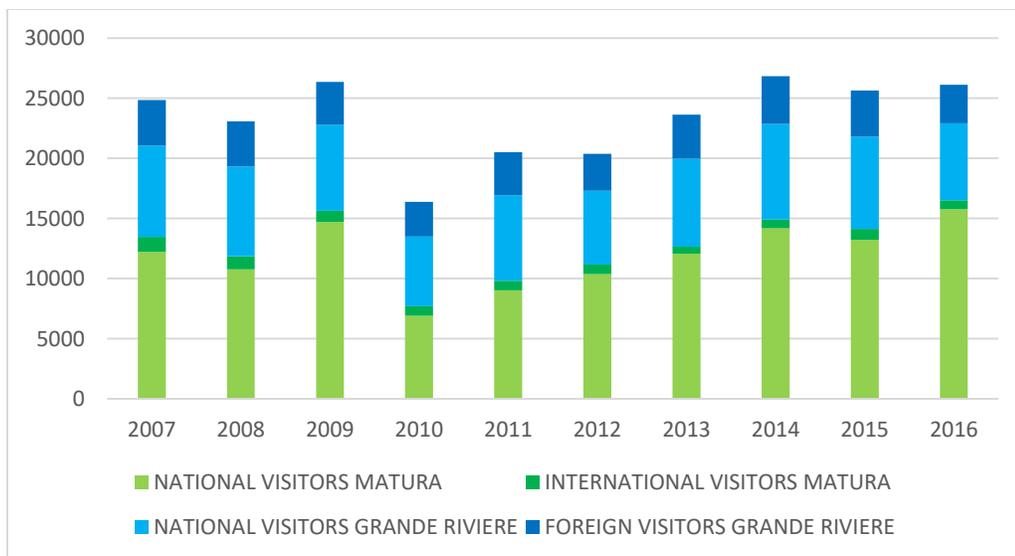


FIGURE 5 ANNUAL VISITORS NUMBER FOR TURTLE TOURS ON THE PROTECTED BEACHES OF MATURA AND GRANDE RIVIERE

Visitors either come on daytrips, or may stay 1-2 nights in the area. Often turtle viewing is combined with a beach visit to one of the local beaches or a hike to a waterfall or river area.

The household survey shows that 76% of surveyed households have visited one of the protected beaches in the area at least one in their life, mainly for turtle viewing. Thirty-one percent have visited Matura National Park, mainly Rio Seco waterfall.

Talks with national and foreign visitors in both Matura and Grande Riviere indicate that visitors would welcome more attractions or activities in the area.

Tourism accommodation has increased in the area over the last 10 years, with additional hotels constructed as well as some bed and breakfast establishments and holiday houses for rent. TripAdvisor lists nine accommodation options in the area, AirBnB nine and Booking.com three.

### 4.3. Hunting

Hunting continues to be an important forest use in the area, and is the main use that has a detrimental effect on the protected areas. In 27% of surveyed households, at least one person hunts. For nine percent of households this provides income and for six percent of households hunting is a frequent activity during the hunting season. For most hunters, however, this is a recreational activity, practiced either alone or with friends. In addition, visiting hunters come and hunt in the area. Hunting is an importance natural resource use in Matura, Monte Video and Salybia and provides income in Matura, Monte Video and Salybia.

Compared to ten years ago (Van den Eynden et al 2007), there is a decline in the number of households where someone hunts in Salybia and Grande Riviere (decrease of 5% Salybia and 2% in Grande Riviere). In other communities, numbers have stayed the same or slightly increased.

The animals most commonly hunted are agouti (*Dasyprocta agouti*), lappe (*Agouti paca*), tattoo or armadillo (*Dasyopus novemcinctus*) and red brocket deer (*Mazama americana trinitatis*). To a lesser degree wild hog or quenk (*Tayassu tajacu*), manicoou or opossum (*Didelphis marsupialis insularis*) and the reptiles iguana (Iguana iguana) and matte (*Tupinambis nigropunctatus*) are hunted.

Hunters need to obtain an annual permit from Wildlife Section (Forestry Division) for each species they wish to hunt for, except for manicoou (a crop pest that can be hunted all year round on private land). Hunting is only allowed during the hunting season (October – March). At the end of the hunting season, catch figures need to be reported back to Wildlife Section, detailing the hunting location, the species and number of animals hunted, their weight and sex.

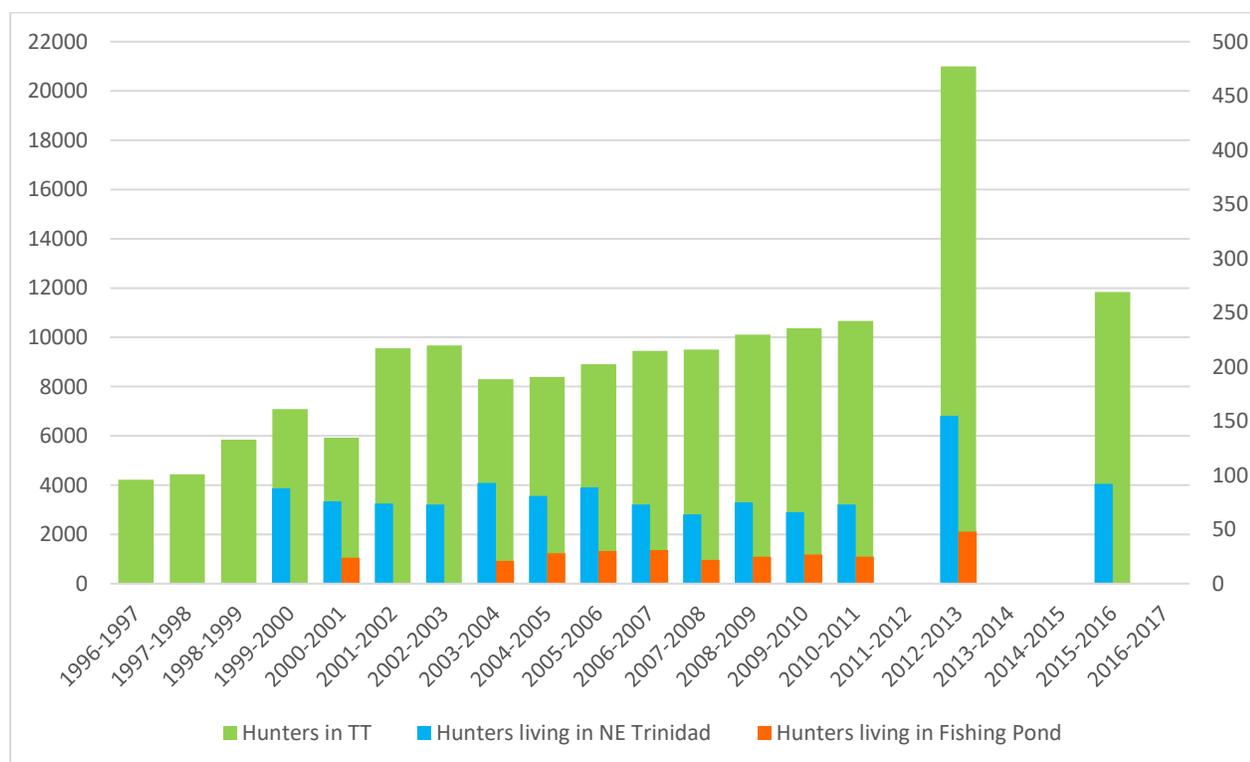
Annual data on the number of hunters that purchase permits obtained for the last 20 years from Wildlife Section show a steady increase in the number of registered hunters year after year, now totalling nearly 12,000 hunters (Figure 6). In the Matura to Matelot communities surrounding Matura National Park, the number of registered hunters remains more or less the same every year, with 70-90 registered hunters. Also in Fishing Pond, the number is static with around 25 registered hunters.

Hunting was banned in Trinidad for two years (2013-2015) to allow wildlife to recover. It is remarkable to see that the season prior to this, the number of registered hunters had doubled.

The number of registered hunters is, however, an underestimate of the real number of people hunting. Ten years ago, the survey indicated that up to 500 people were hunting in the Salybia to Matelot area. This survey points to similar numbers of hunters: 27% of 2500 households corresponds to 675 hunters in the Matura to Matelot area. The majority of local hunters therefore do not purchase a permit to hunt.

Whilst hunting provides extra income for nine percent of households, the sale of wildmeat is not transparent at all. Wildmeat is typically sold informally within the community or via certain shops. Sixteen percent of households indicate they occasionally buy wildmeat. Agouti currently sells for TT\$300-400 each, which is equivalent to 1-2 days of work.

Through this lack of transparency, it is difficult to estimate the actual economic contribution of hunting in livelihoods. It is clear, however, that hunting plays an important socio-cultural role in livelihoods.



**FIGURE 6. NUMBER OF HUNTERS IN TRINIDAD, IN NORTHEAST TRINIDAD AND IN FISHING POND, TT HUNTERS PLOTTED ON LEFT AXIS, NE AND FP HUNTERS PLOTTED ON RIGHT AXIS (NO HUNTING TOOK PLACE DURING SEASONS 2013-2014 AND 2014-2015; NO DATA AVAILABLE FOR SEASON 2011-2012)**

**TABLE 5. ANNUAL CATCH DATA FROM HUNTING IN TRINIDAD AT A NATIONAL LEVEL**

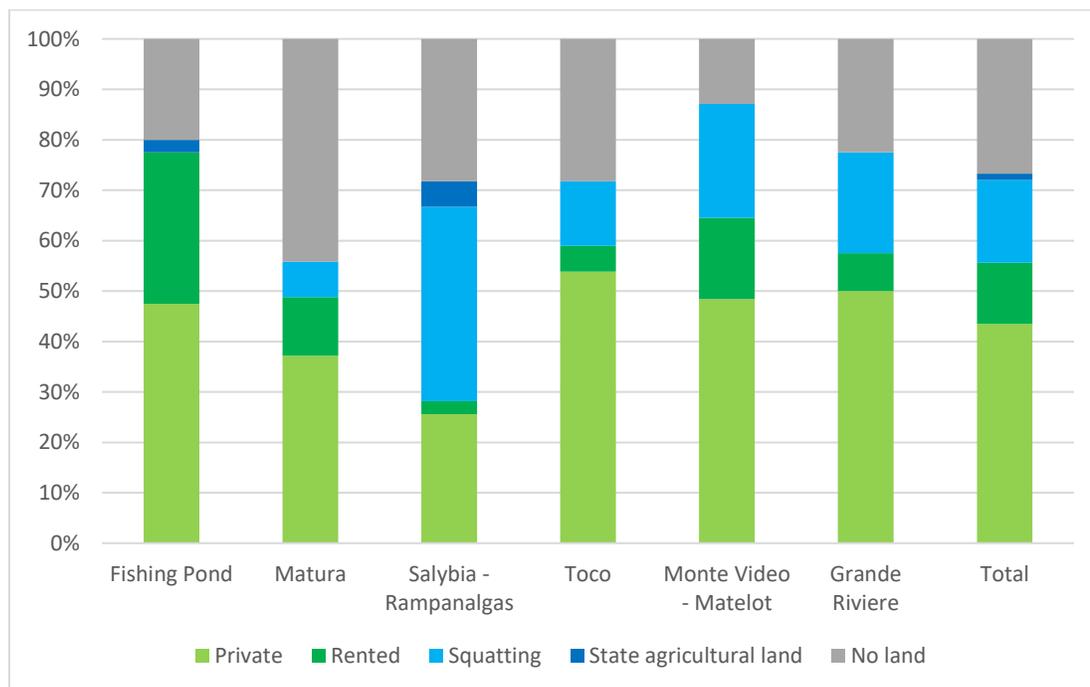
Hunting season	Agouti	Cage bird	Deer	Lappe	Alligator/ Lizard	Wild hog	Tattoo	Wildfowl
2007/2008	15,165	248	1785	2189	4522	592	3302	2920
2008/2009	-	-	-	-	-	-	-	-
2009/2010	-	-	-	-	-	-	-	-
2010/2011	22441	358	1939	3796	5656	348	4114	2741
2011-2012	18772	97	2115	2115	10891	162	3971	1525
2012-2013	23911	465	2331	4250	19221	387	5007	3944

Catch numbers are reported back to Wildlife Section on paper forms, including the location where hunting took place. A single return will typically report total catch during the season in various locations. Whilst such forms have been (partially) digitised into databases for certain years (Table 5), the generality of the locations and the fact that databases seem to contain many errors and gaps, meaningful analysis of catch in the northeast are impossible.

## 4.4. Gardening

Although agriculture has lost its overall importance as economic activity in Trinidad, it continues to be an important livelihood asset in the area around the Matura Protected Forest Area. Forty-one percent of households grow crops, either for their own use and /or to sell. Thirty-two percent of households derive have income from agriculture. For nine percent of households, agriculture provides the main employment. This corresponds to the census data showing that 9.6% of people in the region are employed in agriculture (CSO 2011). Most households have private land or rented land for agriculture, but 16% ‘squat’ on state land or abandoned private land (Figure 7). Access to land for agriculture is problematic in the area. New land for farming is hardly ever available for rent or sale. Many privately owned agricultural areas (estates) have been abandoned, but remain as private property. The owners may live abroad or be deceased. Often complex ownership exists if multiple people have inherited land. Twenty-six percent of households have no access to agricultural land.

Farming poses very little threat to the protected areas. Some agriculture takes place on privately owned land inside Matura National Park, along Matura-Salybia Trace. Marihuana is (illegally) grown in small forest clearings in forest areas, both in MNP and in other forest areas. During this survey, only one person openly discussed the growing of marihuana as a forest use they practice. The number of growers is certainly higher.



**FIGURE 7. ACCESS TO LAND FOR AGRICULTURE (PERCENTAGE OF HOUSEHOLDS, N=234)**

Agricultural produce is taken to market or sold to vendors by 21% of households; 11% of households sell produce locally in the village or on a roadside stall.

Also problematic for agriculture is the neglected state of many access roads to farming areas, which are hardly maintained by the state.

The main crops grown in the area are long-term crops or provisions such as plantain (*Musa x paradisiaca*), banana (*Musa* spp.), dasheen (*Colocasia esculenta*), cassava (*Manihot esculenta*), yam (*Dioscorea* spp.) and tania (*Xanthosoma sagittifolium*); short-term crops such as sweet pepper (*Capsicum annum*), tomato (*Lycopersicon esculentum*), hot pepper (*Capsicum chinense*), pimento (*Capsicum annum*), bodi (*Vigna unguiculata* ssp. *sesquipedalis*), cucumber (*Cucumis sativus*), watermelon (*Citrullus lanatus*), etc. and tree crops such as nutmeg (*Myristica fragrans*), cocoa (*Theobroma cacao*), coffee (*Coffea* spp.), citrus fruits (*Citrus* spp.), mango (*Mangifera indica*), coconut (*Cocos nucifera*), breadfruit (*Artocarpus altilis*) and other fruit trees.

Agriculture is particularly important in certain communities where fewer other employment options exist, e.g. Monte Video, Sans Souci and Anglais.

Abandoned agricultural land, in particular previous cocoa, coffee, nutmeg, coconut and fruit tree estates are still used by local communities. Five percent of households gather provisions from abandoned estates and half of them sometimes sell this; another five percent gather cultivated or wild fruits like mango, coconut, nutmeg, balata, etc. from abandoned estates or forest areas.

## 4.5. Fishing

Fishing is practised by nearly as many people as agriculture in the area: 39 percent of households fish, although this is more a recreational activity than an economic activity. Only four percent of people fish daily or a few days per week by boat, and seven percent gain income from the sale of fish. Most people line fish or rockfish for recreation at weekends.

Besides fishing, crabs are caught in Fishing Pond and Matura (10 % of households) and crayfish is caught in inland rivers (3% of households), mainly in the rivers on the northern side of Matura national Park, e.g. in Monte Video and Matelot. In the southern parts, people indicate that crayfish has become very rare. Crabs and crayfish are caught for personal use, or for sale in the village or via village shops.

## 4.6. Recreation

Local people frequently use the protected forest and protected beaches, as well as other forest and beach areas in the northeast for recreation. Forty percent of households use forest or beach areas for recreation. This may be combined with fishing, catching crayfish or hunting. Beaches, waterfalls and rivers are popular places to visit on weekend daytrips, or even for camping during carnival holidays. Seventy-six percent of surveyed people have visited one of the protected beaches to view turtles and 31% have visited Matura National Park, mainly Rio Seco waterfall.

The area is also very popular for day-trippers from across Trinidad, with many people visiting beaches in Toco and Rio Seco waterfall.

Particular popular recreational places in Matura National Park are Rio Seco waterfall, Balandra waterfall and Shark River. Over the last ten years, tourist attractions in Matura National Park have not developed much. The trail to Rio Seco waterfall is well signposted and increased numbers of visitors seem to visit Rio Seco waterfall. Whilst a sign points to the Rio Seco sulphur spring, the trail is not marked all the way to the spring, so it is less easy to visit.

Whilst many people in the area have been trained as tour guides for forest excursions, not many visitors use a guide. Local hotels in Salybia and Grande Riviere do recruit tour guides via Natura Seekers and GRNTGA for hikes and forest excursions they promote.

Recreation also gives environmental concerns, as littering and pollution with human excrements on beaches and riversides is reported as an environmental concern by 12% of people surveyed.

## 4.7. Timber

Very few people (2%) report using timber from forest areas. Already ten years ago, timber logging had little importance in the area (Van den Eynden et al 2007). All timber logging, both on private and state land, is monitored and recorded by Forestry Division, as licences need to be obtained for any form of logging. Logging data obtained from Forestry Division for the last ten years shows logging of up to 1350m<sup>3</sup> in forest reserves (state land) in the Matura forest reserve (Figure 8). This is largely logging of planted pine plantations, although also small amounts of native species such as mora, olivier, mahoe, teak, cajuca, yellow mangue, tapana, laurier mattack, jereton, juniper, angelin and balata have been logged. No logging takes place in the northern St David forest reserve. On private land there has been a downward trend in logging over the last ten years (Fig 5) with annual volumes ranging from 300 to 1500 m<sup>3</sup>. Ten years ago the trend was upwards, which raised concerns at the time. Very little logging takes place on the northern side of Matura National Park (Toco reserve area). For most years, no logging has been recorded. When logging does occur this is less than 100m<sup>3</sup> for the entire area.

Although the Forestry Division data compiled at the level of individual forest reserve areas do not distinguish whether logging on private land may have been within the boundaries of Matura National Park (10 percent of the area is privately owned), no concerns over timber logging have been reported during the survey, nor by the collaborating environmental organisations.

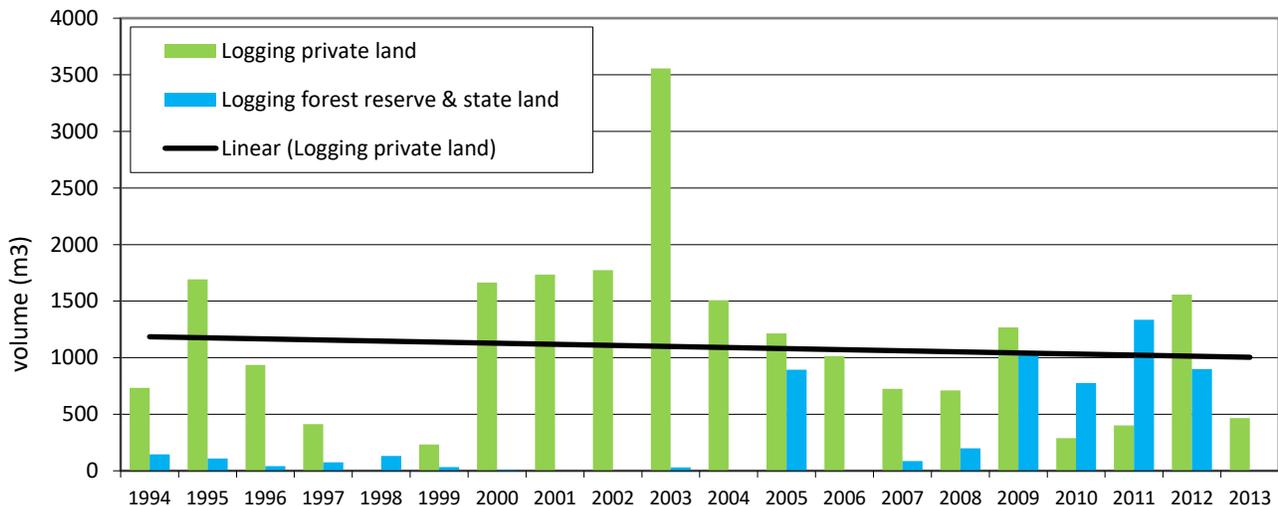


FIGURE 8. TIMBER LOGGING ON PRIVATE AND STATE LAND IN NORTHEAST TRINIDAD SINCE 1994

## 4.8. Other minor natural resource uses

Various other minor natural resource uses exist in the area, but provide little economic benefit and contribute little to livelihoods. Some people catch cage birds (3% of households), a few individuals keep bees in forest areas to produce honey (1%). Plants may be gathered for medicine (3%), as ornamental plant (orchids) (5.5%), as craft material (3%) or other materials (3%) or for firewood. Usually such products are gathered in the forest during hunting or hiking trips.

For the extraction of any plant material from state forest, a minor produce licence needs to be purchased from Forestry Division. Data obtained for Northeast Trinidad from Forestry Division for the period 2007-2010 show that only about TT\$1900 worth of minor products are extracted from forest reserves each year.

#### 4.9. Natural resource use for economic reasons

For 35% of households at least one natural resource use provides some form of income. Mostly this is selling agricultural produce, income from employment related to protected areas and tourism, income from hunting and fishing. About 13% of households derive income from activities that can have a negative impact on the protected areas: hunting (9%), catching crabs or crayfish and growing marihuana.

Income generation from natural resources and/or protected areas is particularly high in Monte Video (due to employment, gardening, hunting and catching crayfish) and Grande Riviere (due to employment, gardening and fishing).

### 5. How the protected areas are used locally

Whilst the Matura National Park protected area and the neighbouring protected beaches have been combined into a single area of focus for this project, there are very clear differences in how these different areas are currently used by local people and how they play a role in local livelihoods.

#### 5.1. Matura National Park

This protected forest area, managed by Forestry Division, is currently mainly used by local communities for hunting and other extractive uses (catch birds, crayfish, etc.), as well as for illegally growing marihuana in small inaccessible areas. The percentage of households that extract plant and animal resources intensely (up to three times per week) has decreased over the last ten years, except in Salybia.

Hunting and catching birds is allowed in the protected forest during the hunting season (November – February) and for hunters that have obtained a hunting permit from Forestry Division Wildlife Section. Although the extraction of timber and plant-based minor forest products (e.g. fruits, ornamental plants) is allowed in forest areas in Trinidad, subject to obtaining a permit from Forestry Division Conservancy, in practice North East Conservancy will not issue permits for any harvesting from Matura National Park. There were no reports during this study of any illegal harvesting taking place in the area. There exist no controls on the extraction of crayfish and freshwater fishes.

Whilst these resource use controls exist, there are very few actual controls on the ground carried out by Forestry Division staff to monitor for example whether no hunting takes place outside the hunting season. There are also no community-based social controls over illegal resource use in the park.

Some areas on the fringes are popular recreational sites: Rio Seco waterfall, Shark River and Zagaya hill. Otherwise, the forest area does not contribute significantly to livelihoods, provides currently little economic benefit and offers very few ecotourism opportunities. The forest area is, however, highly valued by local people for its beauty, as protection of watersheds and as habitat for wildlife. It is also seen as being able to provide a safeguard for sustenance for people without regular employment.

Part of the reason for the ‘minimal’ use of the forest is the difficult access into the forest. Three principal access routes exist: Matura-Salybia Trace on the southern side of the park (starting near Salybia beach), Monte Video – Zagaya Road on the northeast side (starting just beyond Monte Video village) and Sangre Grande Road on the northern side (starting from Grande Riviere. Via Matura-Salybia Trace, one can drive by car 5 km into the protected forest, where there is a car park, some benches, a map and signs. From here, a 45-minute signposted walk leads to Rio Seco waterfall, which is the most visited place in MNP. Beyond that, trails continue into the forest, but are not signposted and are mainly used by hunters. Via Monte Video – Zagaya Road, a walking trail leads up towards Zagaya hill for a few km, through estates, without any signposting. From Grande Riviere, an agriculture access trail (Sangre Grande Road) leads 7 km into MNP but is only accessible on foot. Whilst this access route was easily accessible 10 years ago, and maintained every year by the Grande Riviere reforestation team, it is now impassable beyond km 3 since many trees have fallen across the trail during a major storm in late 2015. Due to uncertainty about future funding, the reforestation team have not cleared the trail since.

Any hiking inside the forest therefore requires a tour guide. The terrain is difficult due to steep slopes, mud and frequent rain. Currently most visitors that do hike in the forest remain on the outskirts. Whilst there is potential for ecotourism development in the forest for its natural beauty and high biodiversity value (plants, mammals, birds), not much has been developed so far.

The difficult access into the forest does mean that its biodiversity is fairly well protected and that, apart from hunting, there is little destructive pressure on the forest.

There currently is no community-based organisation involved in direct activities or management of Matura National Park, apart from trail maintenance and watershed management being carried out as part of reforestation programmes in Matura and Grande Riviere. These activities are funded and managed by Forestry Division, with input from the community groups. Signs, benches and bins were installed 10 years ago, but have not been maintained. The bins at the Salybia car park have not been emptied for many months.

In the period 2005-2007, a Matura ESA stakeholder management committee existed, coordinated by the Environmental Management Authority, but this has ceased to exist.

## 5.2. Protected turtle beaches

The three protected beaches in the area each have a slightly different protection regime and play a different role in local livelihoods. The beaches are prohibited areas during part of the year, whereby access is only allowed subject to a permit obtained from Forestry Division Wildlife section. Common across the three beaches is that proactive conservation and sea turtle monitoring is carried out by a local CBO in each of the communities, and that thriving ecotourism activities have developed in Matura and Grande Riviere based on sea turtle conservation. Local CBO staff, funded by Wildlife section, also patrol the beaches to ensure no people without permit enter the beach and to ensure that no turtles are killed or hurt.

### 5.2.1. Fishing Pond

Fishing Pond beach, a long linear beach of 10km stretching from Oropouche River to Manzanilla Point, is protected 24 hrs/day during the period March – August. Inhabitants of the community receive a free season permit that allows them to visit the beach, e.g. for fishing. Other visitors need to purchase a permit from Wildlife section to be allowed to visit the beach during this time.

With financial support from Wildlife Section and the Turtle Village Trust, twelve local people are employed through the Fishing Pond Turtle Conservation Group to patrol the beach each night (6pm-6am), tag and monitor female turtles,

protect nests until hatchlings emerge, protect hatchlings during their route into sea and generally keep the beach clean. Annual research takes place in collaboration with the University of Glasgow student expeditions.

The beach is used by local people to catch crabs during the months September-November and for recreation and fishing. Access to the beach is difficult and only on foot via a nature trail through the adjacent swamp forest, a walk of about 45 minutes. A previously constructed boardwalk that allowed easy walking access to the beach has rotted away and no longer exists. This means that nowadays very few people visit the beach for recreation. Whilst in the past tourists did visit the beach to watch turtles, this has largely stopped, as the trail is difficult to walk in the dark. This leaves the beach unpolluted by light and other intrusions.

### 5.2.2. Matura

Matura and Rincon beach are a linear stretch of 8km of beach, north of Fishing Pond beach (separated by the Oropouche River). Matura beach is accessible by road from the village of Matura. A road of about 5km takes visitors from Matura village to the beach, where there is a car park and visitor centre. The beach is protected 24 hrs/day during the period March-August. Each night (6pm-6am) 12 to 28 people patrol the beach, combining protection, gathering of data and tagging of turtles, with observing spots where tour guides can take visitors that night. Matura beach is a popular destination for local visitors and tourists to view leatherback turtles nest, and to see hatchlings emerge. Visitors are a combination of day-trippers (Matura is easily accessible from all over Trinidad) and people staying overnight in the area.

Nature Seekers has been actively involved since 1990 in the protection of the beach and turtles, a wide range of research, monitoring and educational activities, as well as the development of a thriving ecotourism activity.

Outside the turtle nesting season the beach is used for fishing, to pick coconuts and for recreation, although it is not a popular beach for recreation due to the currents and steep shoreline. Nearby beaches in Salybia are more popular destinations, and easier accessible.

### 5.2.3. Grande Riviere

Grande Riviere is a small beach of about 1 km long in the village of Grande Riviere. The community intensively uses it. Houses and hotels are built immediately adjacent to and on the beach. Some craft stalls are on the beach. The beach is used daily for recreation and fishing.

The beach is protected during night time only (7pm-6am) during the period March-August. Of the three protected beaches, it is the smallest one, yet the one where most turtles nest each season (Table 6, TVT 2016). It is actually also the beach with the highest nesting density on the world. Both the Big River and the smaller Ferdinand River cross the beach.

Grande Riviere Nature Tour Guide Association has been actively engaged in turtle conservation, monitoring, tagging, research and educational activities since the early 90s. Together with the development of hotel facilities in the village since 1993, this has resulted in the village becoming a popular ecotourism destination for tourists, with 10,000 visitors per year, a third of which are foreign visitors. Due to the distance, most visitors overnight in the village.

In this small community, turtle conservation and ecotourism provide a high level of employment. In addition, people from neighbouring communities (Matelot, Monte Video and Sans Souci) are employed in these activities. As a result, destructive natural resource uses (e.g. hunting) in Grande Riviere are relatively low.

**TABLE 6. SEA TURTLE NESTING EVENTS PER SEASON MONITORED (MARCH-AUGUST) ON PROTECTED BEACHES IN TRINIDAD (TVT 2016)**

	2013	2014	2015	2016
Grande Riviere	3987	4919	5507	6113

Matura	1766	1217	469	1491
Fishing Pond	1427	3779	1793	1613
Sans Souci	138	156	290	53

## 6. Livelihoods assets and indicators

Based on the information gathered during the survey, interviews with CBOs, community meetings and from external resources, 36 livelihoods indicators were calculated at the community-level for the six assets categories (Annex 5). These indicators allow comparison between communities. They will also allow comparison over time and comparison with other protected areas where similar livelihood assessments will be carried out.

Each indicator was expressed as a ratio or percentage with a range from 0 to 100, to ensure comparability between the indicators. Where the range of values was lower, a multiplication factor was applied (e.g. scale score with range 0 to 5 where multiplied by 20).

Some indicators are more important than others are. This has been reflected by assigning weights to the indicators. The prioritisation of indicators was done during a meeting with the IFPAM-TT project steering committee and key implementing agencies on 9 November 2017, whereby the eight attendees were asked to identify their three key indicators for each of the six assets categories. After summing the priority scores given, indicators were given a weight of 2 for 7-8 scores, weight 1.75 for 5-6 scores; weight 1.50 for 3-4 scores, weight 1.25 for 1-2 scores and weights 1 for no scores.

The set of indicators per assets category was expressed on a scale of 0 to 100, by summing and averaging the indicators.

The weighted livelihoods assets have been visualised via a radar diagram (Figure 9). This clearly shows the higher assets base for Matura and Grande Riviere, thanks to the effective beach protection, the turtle-based conservation activities, the strength of the CBOs in bringing benefits to these communities, and the employment and income brought by conservation and ecotourism. Communities such as Monte Video and Salybia have a particularly low assets base, in part through the lack of community organisations that can help bring benefits from protected areas to the community. Overall, human, socio-cultural and financial assets are variable between communities. Physical and natural assets are equally high everywhere. Financial assets (i.e. financial benefits derived from sustainable use of natural resources) are lower compared to other assets categories and political-legal assets are currently particularly.

Vulnerabilities need to be taken into consideration when considering the current livelihoods assets. Much of the assets related to activities in protected area are vulnerable due to the seasonality of employment related to protected areas (e.g. turtle conservation employment during nesting season only), the uncertainty of funding related to conservation activities (e.g. employment by local CBOs dependent on grant funding) and the dependency on visitors (e.g. income derived from visitors to protected beaches to view nesting turtles).

### 6.1. 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

## 6.2. 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 beach important for recreation people do in protected areas: percentage households that have visited protected beach x percentage households that visit at least weekly x 100
9. Protected forest important for recreation people do in protected areas: percentage households that have visited protected forest x percentage households that visit at least weekly x 100
10. Protected area important for tourism: annual number of visitors for turtle tours, hikes, etc., over last 3 years (2014-2016) calculated as proportion of Matura beach visitor numbers (as highest in the area)
11. Protected area supported by CBO: Yes, No
12. How people feel represented by local environmental CBOs to handle environmental concerns: mean of scale score
13. Relative level of environmental concerns in the community: low, high

## 6.3. Physical assets

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

## 6.4. Natural assets

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

## 6.5. Financial assets

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

## 6.6. 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

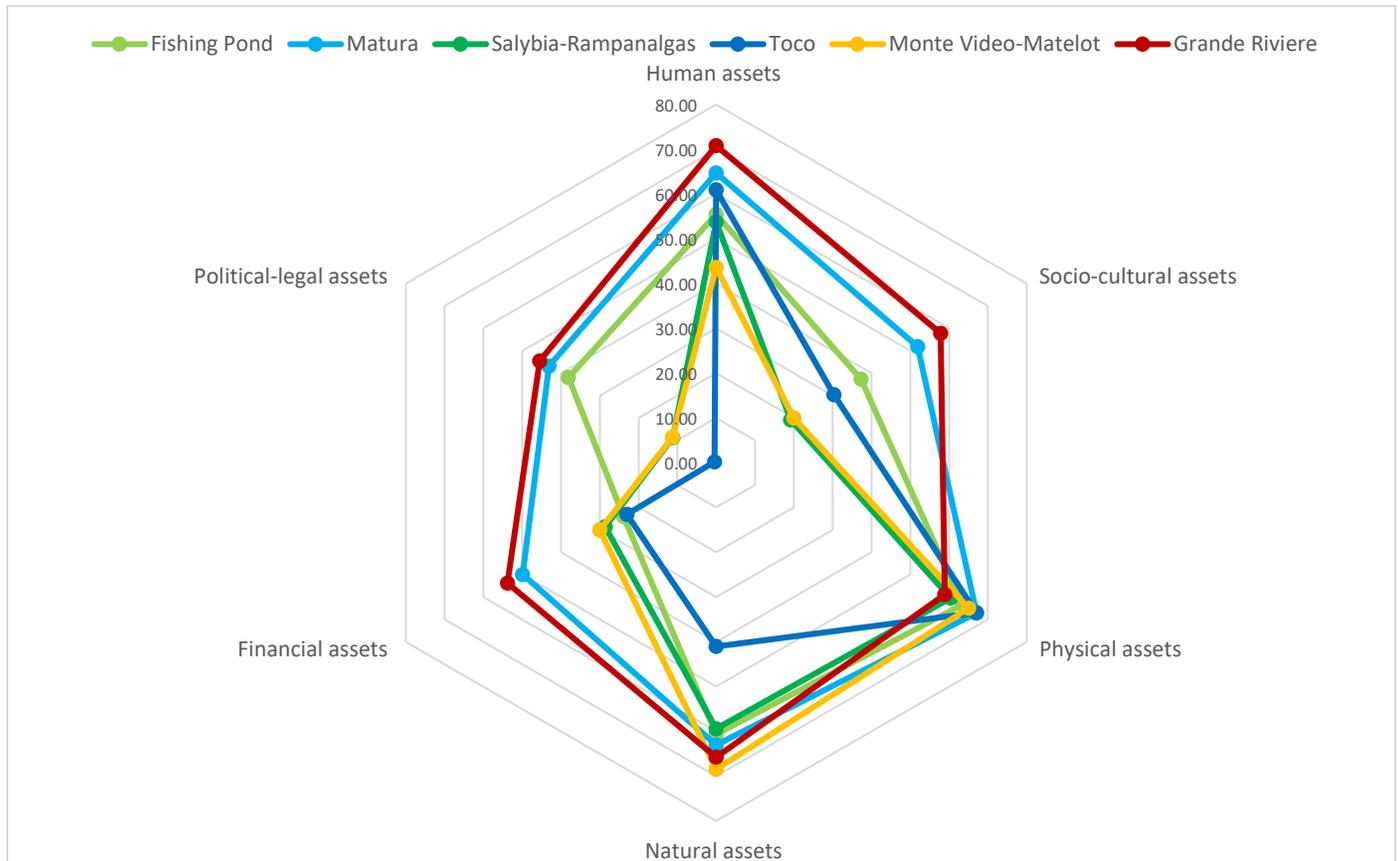


FIGURE 9. LIVELIHOOD ASSETS OF COMMUNITIES (WEIGHTED)

## 7. Environmental concerns

People were asked about environmental concerns they have about their local environment, the protected areas and natural resources in general.

Some concerns were raised across the different communities, in particular concern over hunting outside of the hunting season and the feeling that too much hunting, too much extraction of crayfish and crabs has resulted in reduced wildlife populations.

In the communities from Matura to Toco concern was raised over the planned highway development to Toco, in particular the fact that no firm plans or proposal are available in a transparent way and many rumours exist over where this highway may run and how it would affect watershed, the protected forest area, and communities in general.

Other concerns are very community-specific.

In Fishing Pond, concerns exist over the high level of crabs being harvested and the problematic beach access.

In Matura, concerns exist over the illegal quarrying taking place in Orosco Road and the forest destruction, noise and high levels of heavy trucks passing through the village that this causes. In addition, there is concern over litter on beaches and by rivers.

In Salybia, concern exists over the perceived abandoned status of the beach facility that was constructed only a few years ago, the uncontrolled clearing of land for agriculture and housing on the north side of the village encroaching into forest areas (squatting), litter on the beaches and the fact that turtles are not protected on the beaches. There is also concern over litter on the Rio Seco trail, with bins at the car park not being emptied.

In Toco, concern exists over the potential port development and the uncertainty of not knowing which plans the government may have. In addition, there are many concerns over uncontrolled development of recreational activities on Salibay beach and the large amounts of litter on the beach due to weekend recreation from many visitors.

In Monte Video, concern exists over landslides during the rainy season and the resulting frequently broken and interrupted electricity supply (as trees fall on and break lines). There is also concern over overhunting and the growing of marihuana in nearby forest areas.

In Grande Riviere, concern exists over seasonal landslides and sea erosion, as well as some litter on the beach.

## 8. Livelihoods in each studied community

Based on the livelihoods indicators and the descriptive livelihoods information gathered during survey and community meetings, the livelihoods situation of each community can be characterised and compared against averages across the six communities.

### 8.1. Fishing Pond

- High educational level
- Some employment in protected beach
- Much employment outside village
- Percentage adults in regular employment below average; low level of women in employment
- High level of access to farming land and private land
- Easy access to markets to sell produce
- Only few local organisations: FPTCG not well known in community and not felt to represent community; village council exists but not representing entire community: FPTCG supported by limited funding sources
- No ecotourism
- People want to see the boardwalk restored, so visitors can again come to the beach and bring ecotourism income
- Crab catching and fishing are important
- Low level of hunting and no hunting for income
- Natural resource uses provide very little income, so little dependency

### 8.2. Matura

- Good employment in protected beach and other environmental projects (Nature seekers)

- Employment outside the village
- Percentage in regular employment highest in area
- Low level of access to farming land
- Quarrying (illegal) provides employment, but also causes many environmental concerns people have: environmental damage, noise, trucks
- Low level of secondary / tertiary education
- Strong, long-standing CBO involved in numerous conservation, employment and educational activities, with range of funding source
- Other community organisations
- Much skills training provided to community through Nature Seekers
- More hunting and bird catching than average, also for income, but this is mostly outside MNP
- Average level of natural resource use for income
- Important ecotourism activities, with high level of income provided

### 8.3. Salybia

- Average educational level
- High level of adults in regular employment
- Average level of access to farming land; low level of private land ownership
- No environmental CBO
- Hunting, bird catching, fishing and orchid extraction are above average, also for income, and likely affect MNP
- Tourism developments in village (accommodation), but community derives very little benefit from this; hotel residents visiting protected areas do this via Nature Seekers (Matura).
- Main entrance route into Matura national Park, but community benefits little from this protected area

### 8.4. Toco

- High level of education
- High level of regular employment, both in the village and outside
- Average level of access to farming land; high level of private land ownership
- Three well-established CBOs: Stedo, SAD for Toco, Toco Foundation
- Much skills training provided to community through these organisations
- No protected beaches and far from MNP forest
- Desire to have also protected beaches in Toco
- Recreation on beaches, especially from visitors is very important, but also gives much concern over litter, pollution and noise. No community-based group handles these concerns.
- Fishing is important
- Low level of natural resource use and low level of this providing income

### 8.5. Monte Video

- Low educational level
- Low level of regular employment, this mostly government-provided (Regional Corporation)
- No environmental CBO and no village council
- Village next to MNO boundary
- High level of access to farming land and average level of private land ownership
- Agriculture important
- Good access to markets vendors to sell produce

- Many extractive natural resource uses from forest extraction: hunting, crayfish, birds, gathering food and fruits that are likely to affect MNP; these provide livelihood for people without regular employment, or as a back-up strategy when other employment is reduced
- Estimated 20% families depend (partially) on MNP for their livelihood: hunting (e.g. for Xmas money), sale and resale of wildmeat (shops, vendors), crayfish (less nowadays), forest fruits (personal use), nutmeg and coconut from abandoned estates
- Keen interest to develop forest-related ecotourism activities
- No access to sea/beach

## 8.6. Grande Riviere

- High educational level
- High level of regular employment; high level of women in employment
- Much employment related to protected beach and ecotourism (including crafts); little other employment: beach provides employment for 40-45 people (30-40% of all employment in GR), seasonal employment may well exceed 60%
- Much skills training provided to community through GRNTGA
- Strong, long-standing CBO involved in numerous conservation, employment and educational activities, with range of funding sources
- High level of access to farming land; private land ownership low
- Non-extractive natural resource use (fishing, gardening) still important to provide additional income to often-seasonal conservation and tourism work
- Hunting below average and very little hunting for income
- Entrance route into MNP, with some ecotourism activities (hiking, sightseeing) taking place

This comparison of communities shows that there is a wide variability across the northeast in terms of employment opportunities, land ownership, natural resource uses and benefits that protected areas provide to local communities. Each of the communities studied has a different set-up. However, each can teach us something about how livelihood opportunities can develop.

It is clear that increased employment opportunities means people have to rely less on the natural resources of forest and beaches to make their living. These resources may still be used for socio-cultural reasons and as recreational opportunities (e.g. hunt and fish as recreation), but are then less needed to provide income and are less intensely practised.

Existing regular employment opportunities vary across the area. For some communities regular employment is mainly outside the community (e.g. in Sangre Grande). For others this is government-related employment. In the more remote communities, less regular employment is available. Whilst protected area related employment clearly provides benefits to communities and reduces dependency on extractive natural resource uses (e.g. Grande Riviere), this employment is not necessarily secure in the long term as it depends on (often short-term) project funding and tourism trends.

Smaller and more remote communities such as Monte Video and Matelot would benefit from increased development of employment opportunities related to conservation and ecotourism.

## 9. Livelihood opportunities

The livelihoods opportunities based on the sustainable use of natural resources that communities want to develop were discussed at length during community meeting discussions. Also during surveys and interviews with CBOs were suggestions made, that were then discussed further during community meetings. The various opportunities discussed have been grouped into themes, and can be taken as recommendations for developments to take forward.

### 9.1. Communities first

It became clear during the household survey that people's primary concern is for their community and the facilities and services that could be developed there. During the survey, more suggestions were made for community developments than for developments of products or services based on natural resources.

In most communities, people do not feel represented by their village council or the village council is non-existent or not functioning. People want to see developments of more sports and other activities, in particular for young people. They also want to see more local employment opportunities, again in particular for young people. In addition, improvements to roads, drains alongside roads and access roads to farming areas are frequent suggestions.

### 9.2. Waiting for and working with the government

There is an overall attitude in communities that people expect government departments and government stakeholders to take the lead in developments such as (eco)tourism developments, community developments, protected area developments, etc. When no initiatives are taken, communities are disappointed and blame the government for lack of developments.

At the same time, there are clear examples of successful tourism and conservation developments in Grande Riviere and Matura that have been driven by CBOs and local businesses, with the support of individuals within government departments. The drive of the CBOs has made a success of these developments. Mostly, key individuals in the CBOs, in businesses and in government departments have driven such developments.

Currently no similar developments exist for the protected forest area MNP, but should be encouraged.

Whilst communities may lack the capacity to develop initiatives without government support, government agencies also often lack the knowledge and expertise on how to work with community groups in a meaningful way. Yet there is a clear willingness to work with community groups and for community groups to lead initiatives.

Therefore, meaningful collaboration between community groups and key government agencies such as the Department of Tourism, Forestry Division and the Regional Corporation need to be developed, so both sides can work together more effectively. This can be achieved through joint events, including training. Community groups could for example train government agency staff on how to engage with communities. There is capacity in communities to share such expertise, e.g. Toco Foundation, Natura Seekers.

It is also essential for government stakeholders, in particular Forestry Division, EMA, FAO-TT, to be present in the area. People in communities see it as a proof of interest when FD staff participate in events and meetings. The role of FD is not only to monitor and police what happens in forests and protected areas, it is also to engage with the communities as 'guardians' of those natural resources. This allows issues to be discussed both in a formal and informal way and to build a good relationship between forest users and forest managers.

### 9.3. Develop existing and additional tourism highlights

There is certainly potential for further ecotourism developments. Visitors that currently visit the area to watch turtles indicate an interest in seeing more things or visiting more places in the area, and for more and better information to be available on what the area has to offer.

Communities could benefit (financially) more from the high annual number of turtle visitors (25,000/yr) and the weekend beach visitors by offering and promoting more activities. Also the quality of the tours provided could be enhanced year after year, for example by sharing information and interesting facts from the monitoring and research that takes place in the area. In addition, the diversity of other activities undertaken by the CBOs can be showcased and promoted during tours.

Suggestions made for further ecotourism developments include:

- Heritage museum
- Small businesses or visitor centre promoting local natural resources and products made from them, such as nutmeg and mace, mango, seaweed, coconut, bush medicine, cocoa
- Ecotourism developments that highlight the local biodiversity and beauty e.g. pawi, birds, forest plant richness; there is scope to develop this in e.g. Zagaya (MV), Toco, Fishing Pond.
- In a no-hunting forest area it would even be feasible to showcase the local mammals in situ (not cages), e.g. attracted to feeders; this would be feasible on the northern side of MNP if local hunting can be reduced
- Development of hiking trails that are easily accessible
- Development of lodging inside MNP, e.g. in the Zagaya area

#### 9.4. Do not reinvent

Most successful livelihood developments whereby financial, social and environmental benefits can be created result from expanding, modifying and diversifying existing livelihood strategies rather than develop entirely new activities.

During focus groups, various successful activities from the past were mentioned such as Toco season, fish fair,.....

Also, learning from what other communities do helps.

Local organisations can learn from what other communities do to address environmental concerns and to develop future opportunities. For example, much concern exists over litter problems on beaches. Could communities manage beach areas themselves and address litter problems? Good examples where this is done already is in Grande Riviere (where thanks to turtle conservation the beach is maintained well and litter is not a problem) and in Shark River, where the local St Helena and Matelot Farmers Groups manage the area at weekends, charging a small fee for cars to park and have access to the riverside. In return, they keep the area clean. Similarly, in Matura a private company has develop the riverside into a recreational area, River Lime, charging people for access to the area. Can other community groups operate similar schemes to monitor and manage beach use?

#### 9.5. Strengthen protected areas

In Toco, there is a desire for more beaches to be declared protected beaches, in particular in the Toco area or for the entire coastline of northeast Trinidad to be protected. This to counteract activities that the community currently perceives to be destructive: sand extraction for construction, squatting on Salibay beach, littering, fires and sewage pollution from recreational visitors, occasional slaughtering of turtles, e.g. green turtle, uncontrolled private development on private land (Patience Bay).

#### 9.6. Develop natural resource use

Develop small-scale organic agriculture, based on traditional and niche crops, e.g. mango, breadfruit.

## 9.7. Education, awareness and research

For MNP, there is a need to raise public awareness (as has also been highlighted in the recent KAP survey), for more signs and information to be in place, for the 3D model of MNP to be on public display in the area (or a smaller model to be constructed that can be on display).

A fair amount of research takes place in the area, on forest diversity in MNP (vegetation, mammals, and birds) and on turtles and beaches. Local communities are proud of this. For example, in the course of the survey many people talked about the mammal research with cameras that had taken place in MNP. Local people may be hired to be part of such activities as local guides or porters, but there is not always continuity of engagement in research projects, reporting back of results or sharing of reports with communities. The information gathered has also value in being able to contribute to raising awareness for conservation, enhancing people's knowledge of the protected area and contributing to training and education of people. Researchers can share their knowledge and expertise in a more meaningful way.

CBOs should:

- be the first point of contact for research in the area
- ensure that the benefits of such collaborations are shared equally across different communities
- encourage researchers to provide training
- hold and provide access to the 'library' of all existing knowledge about the protected areas, their biodiversity, etc. that results from local research

Researchers should:

- liaise with CBOs for collaborations
- share their expertise back, e.g. series of talks in the area, especially for tour guides, but should also be open to anyone
- share their knowledge about the biodiversity, resources, species, wildlife and ecosystems in the area with communities
- consider options for public participation in research activities.

## 9.8. Strengthen community organisations

Existing CBOs in the area have been very successful so far to develop conservation initiatives and employment opportunities, albeit that funding is project-related and typically lasts for a few years. At the same time, funding streams change and it continues to be a challenge to seek funding. For newer and less experienced CBOs, seeking funding is even more challenging. CBOs can benefit from support in helping to develop more projects proposals for funding from a variety of funding sources (Green Fund, UNDP, EU) and to seek new sources of funding.

CBOs can also benefit from support to develop a wider range of activities in their community. CBOs typically strongly rely on the input of a few individuals to lead the various activities they engage in. Other members of the CBO may not have that same drive and lack the capacity to lead and innovate.

Currently no CBOs dedicated to conservation and ecotourism activities in MNP exist. Some MNP activities have been initiated by the turtles conservation groups GRNTGA and Nature Seekers. It is worth considering establishing a dedicated organisation for MNP activities. Communities such as Salybia and Monte Video could be key communities for this, due to their proximity to MNP, their intense use and knowledge of the forest through hunting and the fact that they are not involved in turtle conservation initiatives and therefore could make MNP their main focus.

## 9.9. Effective co-management and decision-making

Currently CBOs have no direct decision-making power on how protected areas are managed and how financial decisions are taken, although they are involved through dialogue and consultation in management decisions for protected beaches. Community groups see this as a positive co-management arrangement. Still, it is not the same as direct decision-making. Should community groups have more say in decision-making for management and funding of protected areas? There is also no visibility of how the government spends income from selling permits providing access to protected areas (beaches) and allowing use of natural resources (hunting permits, minor products permits). Should such income be spent on conservation?

## 10. Correspondence with Regional Development Plan

Several livelihood opportunities correspond to programmes and projects proposed in the Sangre Grande Regional Development Plan (2010-2020) (SGRC 2010, pp144-150) and therefore lend themselves to be taken forward in collaboration with the Regional Corporation and its plan. These are:

15. Facilitating community-led ecotourism initiatives
17. Development of tourism facilities
19. Research tourism initiative in Matura National Park
20. Municipal agriculture rehabilitation programme
21. Development of a farm and agricultural resource management centre
22. Establishment of eco-Sangre Grande Foods programme
23. Development of agro-processing facilities
27. Road maintenance programmes
35. Municipal flood mitigation and integrated watershed management project
36. Coastal defence works programme
56. Establishment of working committees for implementation of SG Regional Development Plan

## 11. Discussion

The methodology used enabled a detailed assessment of the livelihoods in the communities surrounding the protected forest and beaches, within a short period. The fieldwork lasted 2 months, whereby each community was studied in the span of one week. The assistance provided by six community members helped to provide essential background information when developing the methodology and topics to be included in survey and community meetings. Their input also helped with practicalities of carrying out the surveys in an efficient way and organising the meetings by inviting people throughout the communities. By joining in the household surveys, group meetings and various team meetings, community assistants play a key role in ensuring that expertise gained on how to carry out such assessment remains within the communities and can be applied in future activities. It also means that the information obtained can be shared back with their environmental CBOs.

The combination of household survey and community meetings is ideal for this kind of assessment, even if community meetings are sometimes difficult to organise and may not always attract many participants. In this case, four meetings were well attended and two had a poor turnout. The household survey provides information that is unbiased and representative for the entire population in the area and therefore shows how livelihoods on average depend on and benefit from the protected area. The community meetings are ideal to discuss ideas for future opportunities and developments, as it brings multiple ideas and points of view together.

The same methodology can be applied again in future, to assess livelihoods trends over time. Already now, some comparisons could be made with a baseline survey carried out in the area ten years earlier. This methodology can also be applied in other protected areas in Trinidad and Tobago to provide comparable information.

Whilst many indicators could have been chosen to measure the livelihoods assets, those chosen in this study were considered to be most suitable for the socio-economic setup of rural communities in Trinidad and Tobago, how protected areas are currently used and managed, and the information that could be captured from existing data sources and through the surveys, interviews and meetings.

A comprehensive overview of the findings and recommendations for future developments is given in the executive summary.

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## Annex 1. Survey questionnaire

Community:	Date:	Interview Number:
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### Matura Livelihoods Assessment - Household Questionnaire

*(Comments in italics are notes for the interviewer, not necessarily to be asked to the person you are interviewing)*

Information to be read to respondent:

Your answers will not be released to anyone and will remain anonymous. Your name will not be written on the questionnaire or be kept in any other records. Your participation is voluntary and you may choose to stop the interview at any time or choose not to respond to certain questions. Thank you in advance for your assistance.

#### Questions on forest and natural resource use

##### 1. In which way is the natural environment (forest, beach) of interest to you? *(free text)*

##### 2. Do people in your household use the forest and protected beaches around where you live in any way? If so, for what?

*These can be practical uses, for example hunting, collecting certain plants; or can be for gardening, for hiking, for enjoyment, employment.....You may need to help the person think about certain uses. Write as many uses as the person mentions, but maximum four.*

Use 1	Use 2	Use 3	Use 4
<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally	<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally	<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally	<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally
<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago	<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago	<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago	<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago
<b>Place/area:</b> <input type="checkbox"/> Personal use <input type="checkbox"/> Selling			
<b>Marketed at:</b> <input type="checkbox"/> Roadside <input type="checkbox"/> In village <input type="checkbox"/> Market	<b>Marketed at:</b> <input type="checkbox"/> Roadside <input type="checkbox"/> In village <input type="checkbox"/> Market	<b>Marketed at:</b> <input type="checkbox"/> Roadside <input type="checkbox"/> In village <input type="checkbox"/> Market	<b>Marketed at:</b> <input type="checkbox"/> Roadside <input type="checkbox"/> In village <input type="checkbox"/> Market
<b>Quantity:</b>	<b>Quantity:</b>	<b>Quantity:</b>	<b>Quantity:</b>

**3. Do you use or consume forest products or products from the protected beaches that you do not collect yourself (for example things that you buy or are given)**

Product1	Product2	Product3
<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally	<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally	<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally
<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago	<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago	<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago
<b>How you get it</b> <input type="checkbox"/> Given <input type="checkbox"/> Buy	<b>How you get it</b> <input type="checkbox"/> Given <input type="checkbox"/> Buy	<b>How you get it</b> <input type="checkbox"/> Given <input type="checkbox"/> Buy

**4. Do you have access to land for gardening / agriculture?**

- Private
  Rented
  Squatting
  No

**5. What are the most important uses or functions of the natural environment (forest, beach) according to you? (Tick maximum three; these can be derived from responses to question 1)**

- Habitat for wildlife
  Protecting watershed
  Income and employment  
 Hunting
  Recreation
  Other: \_\_\_\_\_

**6. How much does your household benefit from the natural resources (forests, estates, rivers) in and around this area? (Mark on the scale 1 to 5 line according to the level of benefit)**

- 1=No benefit at all                        5=Depend 100% on resources

**7. Does any member of your household work as:**

- Tour guide
  Reforestation project (Forestry Division)
  Turtle protection  
 Employee in hotel
  Other employment in protected area: \_\_\_\_\_

And how many days per month:

\_\_\_\_\_

## Questions on Matura National Park and protected beaches

### 8. Have you ever visited:

<b>Matura National Park?</b>	<b>The protected beaches in this area?</b>
<input type="checkbox"/> Yes   <input type="checkbox"/> No	<input type="checkbox"/> Yes   <input type="checkbox"/> No
<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally	<b>Frequency:</b> <input type="checkbox"/> Daily <input type="checkbox"/> Weekly <input type="checkbox"/> Monthly <input type="checkbox"/> Occasionally
<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago	<b>Last time was:</b> <input type="checkbox"/> Today <input type="checkbox"/> This week <input type="checkbox"/> Month ago <input type="checkbox"/> Longer ago
<b>Place/area:</b>	<b>Place/area:</b>

## Questions on environmental activities and livelihoods

### 9. Which environmental concerns do you have about the local environment, its protected areas and its natural resources? *(free text)*

### 10. Do you feel represented by the environmental NGOs and CBOs in the area to help you with these concerns?

1=Not at all                                    5=Yes, fully

### 11. Can members of your household participate in paid-for activities with local environmental NGOs and CBOs?

1=Not at all                                    5=Yes, easily

## Questions on livelihoods opportunities

### 12. How do YOU want to improve your livelihood and well-being ? *(free text)*

## Personal Information

Level of education <input type="checkbox"/> Secondary <input type="checkbox"/> Tertiary	Age group <input type="checkbox"/> <15 <input type="checkbox"/> 15-25 <input type="checkbox"/> 25-35 <input type="checkbox"/> 35-45 <input type="checkbox"/> 45-55 <input type="checkbox"/> 55-65 <input type="checkbox"/> >65	
Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	Number of years living here	Place of birth
Number of adults in household:	Number of children in household:	Number of people in household in regular employment:
Main employment or source of income of head of household:		
House ownership <input type="checkbox"/> Private <input type="checkbox"/> Rented <input type="checkbox"/> Squatting	Are there agencies in the areas that will lend you money when you need it? <input type="checkbox"/> Formal <input type="checkbox"/> Informal <input type="checkbox"/> No	
Land ownership <input type="checkbox"/> Private <input type="checkbox"/> Rented <input type="checkbox"/> Squatting		

## Annex 2: Discussion topics of 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

### Discussion topics

1. Identify and rank which uses are the most important for each of the following natural areas for the “livelihood” of people in the community: protected forest, non-protected forest, estates, abandoned estates, farming land (gardening), protected beaches, non-protected beaches, sea  
Eliminate any natural areas that are not relevant here, or add any extra  
Rank the uses in order of importance: 1, 2, 3, 4, 5, ..... (leave any that are not relevant 0)
2. There are 2 types of protected areas: protected beaches and the protected forest Matura National Park Environmentally Sensitive Area. For each of the area, which current uses are destructive (do damage or destroy the environment) and which are sustainable (do no harm or no damage)?
  - a. Protected beaches:
    - i. Destructive uses:
    - ii. Sustainable uses:
  - b. Protected forest:
    - 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
  - a. Protected beaches:
  - b. Protected forest:
4. For these protected areas, who can access the area, who takes decisions about the management of these areas and which responsibility do people of the community have?
  - a. Protected beaches:
  - b. Protected forest:
5. Which livelihood opportunities can be developed from these protected areas 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 areas themselves
  - b. Communities
  - c. Individuals and households
6. (Optional: When all these ideas have been listed, each person can indicate their three priorities with stickers.)

## Annex 3. Questions for CBO interviews

### Funding:

- Sources of income:
  - External: FD, TVT, Green Fund
  - Visitors, beach permits, guesthouse, craft, sale in shop/visitor centre, other
- Sustainability / vulnerability of each funding source
- Seasonality of each funding source
- % funding from different sources
- Does external funding come with conditions
- NGO has say in how external funding is applied?
- Can visitors funding sustain conservation activities?

### Employment:

- Employment level in different activities: beach patrol, tour guiding, craft, guesthouse, office
- Trends over time
- Sustainability
- Seasonality

### Activities:

- Different conservation activities: beach, forest, river, craft, litter
- Have there been changes in strategies in past? And why?

### Capacity building / training:

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

### Collaboration / conflicts:

- Collaborations with other NGOs? Or 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 (beach permits, reforestation programme)?
- Do they have say in expenditure in PA activities?

### Governance of local NGO:

- Governance of NGO and various components / activities
- Legal structure

- Who takes decisions for:
  - Planning
  - Management
  - Finances

**Promotion:**

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

**Community:**

- Other socio-cultural organisations in their community?

**Future plans / wishes:**

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

## Annex 4. Natural resource uses per community

Direct uses of natural resources of forest areas and beaches practised by surveyed households in the selected communities, expressed as percentage of households that practice a use.

	Fishing Pond	Matura	Salybia - Rampanalgas	Toco	Monte Video - Matelot	Grande Riviere	Total
Residence	0.0%	0.0%	5.0%	0.0%	0.0%	5.0%	1.7%
Employment	5.0%	11.6%	7.5%	5.0%	19.4%	30.0%	12.8%
Tourism	2.5%	7.0%	2.5%	0.0%	3.2%	10.0%	4.3%
Recreation	37.5%	30.2%	47.5%	52.5%	19.4%	42.5%	38.9%
Gardening	37.5%	39.5%	22.5%	45.0%	67.7%	42.5%	41.5%
Fishing	50.0%	25.6%	45.0%	45.0%	22.6%	45.0%	39.3%
Hunting	17.5%	41.9%	30.0%	20.0%	32.3%	22.5%	27.4%
Birds	0.0%	9.3%	7.5%	0.0%	3.2%	0.0%	3.4%
Crabs	45.0%	14.0%	0.0%	0.0%	0.0%	0.0%	10.3%
Crayfish	0.0%	2.3%	2.5%	2.5%	16.1%	0.0%	3.4%
Orchids	2.5%	7.0%	10.0%	2.5%	0.0%	10.0%	5.6%
Food	0.0%	4.7%	2.5%	7.5%	16.1%	2.5%	5.1%
Fruits	2.5%	2.3%	5.0%	5.0%	12.9%	5.0%	5.1%
Medicine	0.0%	4.7%	0.0%	7.5%	0.0%	7.5%	3.4%
Craft	0.0%	2.3%	0.0%	7.5%	3.2%	7.5%	3.4%
Materials	2.5%	4.7%	0.0%	2.5%	3.2%	5.0%	3.0%
Timber	0.0%	2.3%	0.0%	2.5%	3.2%	2.5%	1.7%
Honey	2.5%	4.7%	0.0%	0.0%	0.0%	0.0%	1.3%
Environmental	2.5%	4.7%	5.0%	5.0%	0.0%	0.0%	3.0%

## Annex 5. Livelihoods assets indicators

Assets	Weight	Fishing Pond	Fishing Pond weighted	Matura	Matura weighted	Salybia-Rampanalgas	Salybia-Rampanalgas weighted	Toco	Toco weighted	Monte Video - Matelot	Monte Video-Matelot weighted	Grande Riviere	Grande Riviere weighted	TOTAL AVERAGE
<b>Human assets</b>														
1. Education: percentage people with secondary or tertiary education	1.5	62.10	93.15	35.90	53.85	52.60	78.90	67.50	101.25	37.90	56.85	57.50	86.25	52.7
2. Health: percentage people without chronic illness	1	80.65	80.65	82.54	82.54	77.78	77.78	84.32	84.32	91.41	91.41	79.59	79.59	
3. Percentage women in employment	1.25	39.61	49.51	46.11	57.64	42.19	52.74	49.19	61.49	42.55	53.19	60.36	75.45	46.83
4. Percentage adults in regular employment	1.75	44.90	78.58	59.00	103.25	46.20	80.85	53.60	93.80	46.20	80.85	56.50	98.88	51.2
5. Training in protected area related activities: 0=low, 50=medium, 100=high	2	50.00	100.00	100.00	200.00	50.00	100.00	50.00	100.00	0.00	0.00	100.00	200.00	
<b>Human assets total</b>	<b>7.5</b>	<b>55.45</b>	<b>53.59</b>	<b>64.71</b>	<b>66.30</b>	<b>53.75</b>	<b>52.04</b>	<b>60.92</b>	<b>58.78</b>	<b>43.61</b>	<b>37.64</b>	<b>70.79</b>	<b>72.02</b>	
<b>Socio-cultural assets</b>														
6. Number of social organisations in the community (x 20)	1	40.00	40.00	100.00	100.00	0.00	0.00	100.00	100.00	0.00	0.00	60.00	60.00	
7. Socio-cultural value of protected area: percentage households that score recreation in PA as an important use	1.5	27.50	41.25	12.50	18.75	47.50	71.25	37.50	56.25	20.00	30.00	40.00	60.00	30.8
8. Protected beach important for recreation: percentage households that have visited protected beach x percentage households that visit at least weekly x 100	1.25	10.90	13.63	5.50	6.88	1.40	1.75	0.00	0.00	11.60	14.50	29.90	37.38	

Assets	Weight	Fishing Pond	Fishing Pond weighted	Matura	Matura weighted	Salybia-Rampanalgas	Salybia-Rampanalgas weighted	Toco	Toco weighted	Monte Video - Matelot	Monte Video-Matelot weighted	Grande Riviere	Grande Riviere weighted	TOTAL AVERAGE
9. Protected forest important for recreation: percentage households that have visited protected forest x percentage households that visit at least weekly x 100	1.25	0.00	0.00	0.00	0.00	1.10	1.38	0.00	0.00	3.40	4.25	0.80	1.00	
10. Protected area important for tourism: annual number of visitors for turtle tours, hikes, etc., over last 3 years (2014-2016) calculated as proportion of Matura beach visitor numbers (as highest in the area)	1.75	3.00	5.25	100.00	175.00	12.00	21.00	0.00	0.00	0.00	0.00	72.00	126.00	
11. Protected area supported by CBO: Yes = 100, No = 0	1.5	100.00	150.00	100.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	150.00	
12. How people feel represented by local environmental CBOs to handle environmental concerns: calculate mean of scale 1 to 5 (x 20)	1	42.00	42.00	72.00	72.00	41.60	41.60	55.00	55.00	50.00	50.00	84.60	84.60	58.6
13. Relative level of environmental concerns in a community (compared to other communities): low=value 100; high=value 0	1.5	75.00	112.50	25.00	37.50	50.00	75.00	50.00	75.00	75.00	112.50	75.00	112.50	
<b>Socio-cultural assets total</b>	<b>10.75</b>	<b>37.30</b>	<b>37.64</b>	<b>51.88</b>	<b>52.10</b>	<b>19.20</b>	<b>19.72</b>	<b>30.31</b>	<b>26.63</b>	<b>20.00</b>	<b>19.65</b>	<b>57.79</b>	<b>58.74</b>	
<b>Physical assets</b>														
14. Percentage households with private house ownership	1.75	95.00	166.25	92.50	161.88	94.60	165.55	92.30	161.53	100.00	175.00	97.50	170.63	95.2

Assets	Weight	Fishing Pond	Fishing Pond weighted	Matura	Matura weighted	Salybia-Rampanalgas	Salybia-Rampanalgas weighted	Toco	Toco weighted	Monte Video - Matelot	Monte Video-Matelot weighted	Grande Riviere	Grande Riviere weighted	TOTAL AVERAGE
15. Percentage households with private land ownership	2	45.00	90.00	45.00	90.00	25.00	50.00	53.80	107.60	41.90	83.80	31.60	63.20	40.6
16. Average number of people (adults + children) per house (values range 0-10, then multiply with 10)	1.5	41.00	61.50	43.30	64.95	39.50	59.25	39.50	59.25	28.10	42.15	26.50	39.75	36.7
17. Percentage households that did not mention to have concerns over roads	1.75	72.50	126.88	87.50	153.13	82.50	144.38	82.50	144.38	90.00	157.50	80.00	140.00	
<b>Physical assets total</b>	<b>7</b>	<b>63.38</b>	<b>63.52</b>	<b>67.08</b>	<b>67.14</b>	<b>60.40</b>	<b>59.88</b>	<b>67.03</b>	<b>67.54</b>	<b>65.00</b>	<b>65.49</b>	<b>58.90</b>	<b>59.08</b>	
<b>Natural assets</b>														
18. Perceived benefit from natural resources: calculate mean of scale score 1 to 5 (x 20)	2	53.40	106.80	58.80	117.60	47.00	94.00	61.00	122.00	65.40	130.80	69.40	138.80	58.8
19. Percentage households with access to farming land	1.25	80.00	100.00	55.80	69.75	71.80	89.75	71.80	89.75	87.10	108.88	77.50	96.88	73.3
20. Percentage households where someone hunts	1.75	17.50	30.63	41.90	73.33	30.00	52.50	20.00	35.00	32.30	56.53	22.50	39.38	27.4
21. Average number of natural resource uses per household (values range 0-4, therefore x 25)	1.5	52.50	78.75	58.75	88.13	48.25	72.38	52.50	78.75	57.50	86.25	59.50	89.25	53.75
22. Value of protected area to local community: high when protected beach or forest near community (value 100), low if no protected area nearby (value 0)	1.75	100.00	175.00	100.00	175.00	100.00	175.00	0.00	0.00	100.00	175.00	100.00	175.00	
<b>Natural assets total</b>	<b>8.25</b>	<b>60.68</b>	<b>59.54</b>	<b>63.05</b>	<b>63.49</b>	<b>59.41</b>	<b>58.62</b>	<b>41.06</b>	<b>39.45</b>	<b>68.46</b>	<b>67.57</b>	<b>65.78</b>	<b>65.37</b>	
<b>Financial assets</b>														

Assets	Weight	Fishing Pond	Fishing Pond weighted	Matura	Matura weighted	Salybia-Rampanalgas	Salybia-Rampanalgas weighted	Toco	Toco weighted	Monte Video - Matelot	Monte Video-Matelot weighted	Grande Riviere	Grande Riviere weighted	TOTAL AVERAGE
23. Percentage of households with income from hunting	1.25	0.00	0.00	12.50	15.63	15.00	18.75	0.00	0.00	20.00	25.00	5.00	6.25	8
24. Average number of commercial uses per household: values range 0 to 4 (x 25)	1	12.00	12.00	18.50	18.50	19.25	19.25	15.50	15.50	33.00	33.00	22.50	22.50	19.75
25. Ease of access to employment/income with environmental CBOs: calculate mean of scale score 1 to 5 (x 20)	1.25	95.60	119.50	91.00	113.75	84.00	105.00	90.80	113.50	74.20	92.75	91.80	114.75	88.4
26. Average number of days per month people are employed in protected area / natural resources: values range 0 to 21, so calculate as ratio of 21	1.5	66.70	100.05	71.40	107.10	74.10	111.15	65.90	98.85	79.60	119.40	100.00	150.00	18.18
27. Percentage of households where someone in the household works in protected area or tourism	1.75	8.00	14.00	23.00	40.25	25.00	43.75	25.00	43.75	23.00	40.25	40.00	70.00	24
28. Percentage households with access to markets or vendors to sell natural produce (gardening, hunting,...)	1	30.00	30.00	17.50	17.50	17.50	17.50	10.00	10.00	33.30	33.30	22.50	22.50	20.9
29. Percentage households that use plant and animal resources in protected areas intensely (daily to 3 times/week)	1.75	2.50	4.38	15.00	26.25	12.50	21.88	0.00	0.00	6.70	11.73	2.50	4.38	
30. Tourist expenditure in protected area: high = 100, medium = 50, low = 0	1.25	0.00	0.00	100.00	125.00	10.00	12.50	0.00	0.00	0.00	0.00	100.00	125.00	

Assets	Weight	Fishing Pond	Fishing Pond weighted	Matura	Matura weighted	Salybia-Rampanalgas	Salybia-Rampanalgas weighted	Toco	Toco weighted	Monte Video - Matelot	Monte Video-Matelot weighted	Grande Riviere	Grande Riviere weighted	TOTAL AVERAGE
31. Share of tourism revenue going to community: yes = 100, no = 0	1.5	0.00	0.00	100.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	150.00	
<b>Financial assets total</b>	<b>12.25</b>	<b>23.87</b>	<b>22.85</b>	<b>49.88</b>	<b>50.12</b>	<b>28.59</b>	<b>28.55</b>	<b>23.02</b>	<b>22.99</b>	<b>29.98</b>	<b>29.01</b>	<b>53.81</b>	<b>54.32</b>	
<b>Political-legal assets</b>														
32. Equal access to benefits from protected areas through employment with CBOs: number of people employed by CBO as percentage of total population	2	0.40	0.80	5.60	11.20	0.80	1.60	2.20	4.40	1.40	2.80	17.30	34.60	
33. Presence of controls over natural resource use in the protected area: level of controls through legislation	1	90.00	90.00	90.00	90.00	50.00	50.00	0.00	0.00	50.00	50.00	90.00	90.00	
34. Presence of controls on the ground (patrols) to monitor adherence to prohibited resource use	1	80.00	80.00	100.00	100.00	5.00	5.00	5.00	5.00	5.00	5.00	100.00	100.00	
35. Local involvement in planning and managing protected area: estimate score	2	20.00	40.00	20.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	20.00	40.00	
36. Local involvement in determining expenditure from protected area activities	1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Political-legal assets total</b>	<b>7.5</b>	<b>38.08</b>	<b>28.11</b>	<b>43.12</b>	<b>32.16</b>	<b>11.16</b>	<b>7.55</b>	<b>1.44</b>	<b>1.25</b>	<b>11.28</b>	<b>7.71</b>	<b>45.46</b>	<b>35.28</b>	