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Component of a 10-year Management Plan

North-East Tobago
Man and the Biosphere Area

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Man and the Biosphere Programme

FOCUS: EDUCATION

AUGUST 2022

Component of a 10-year Management Plan

FOCUS: EDUCATION

for the

North-East Tobago Man and the Biosphere Area

Draft

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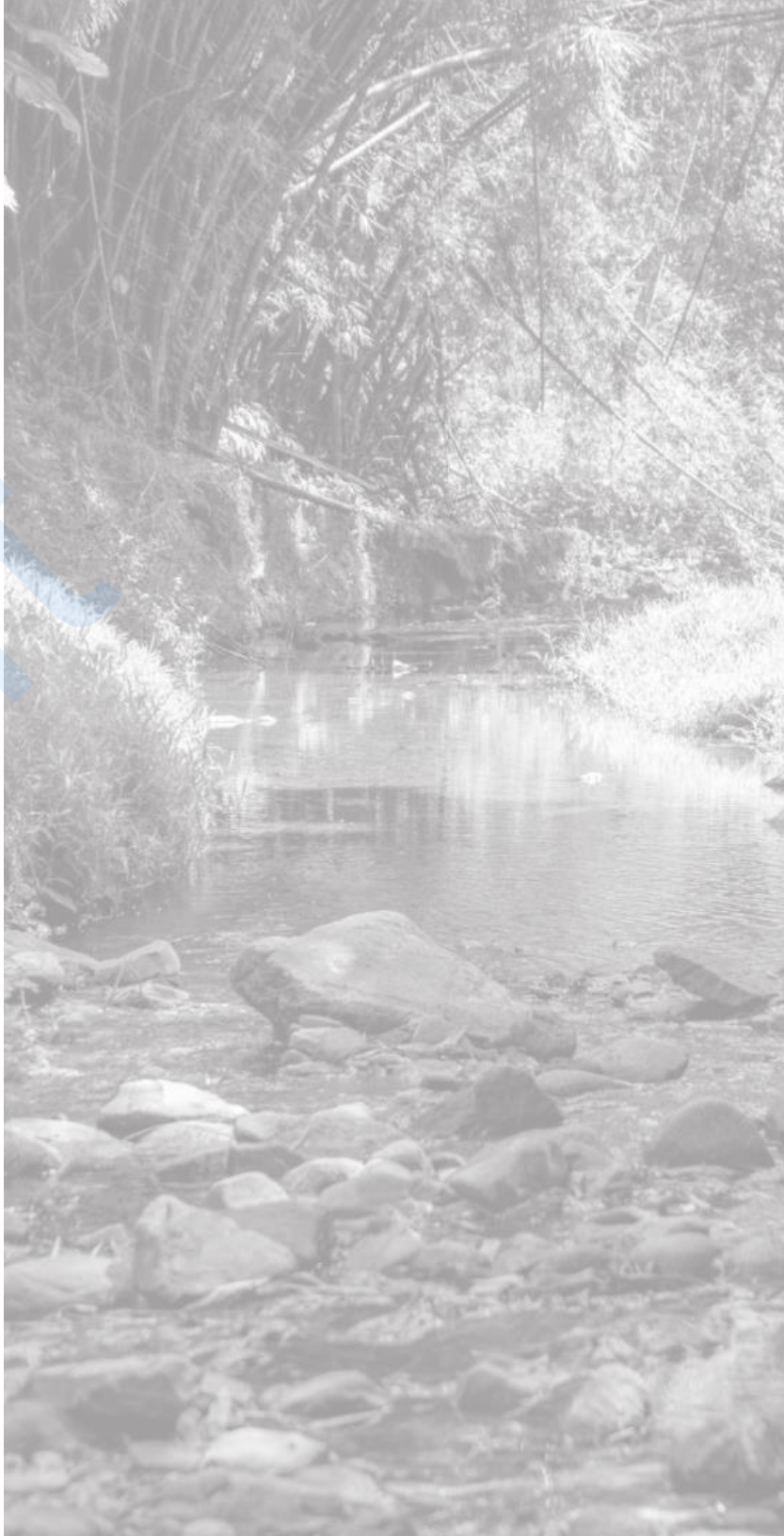


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1 EXECUTIVE SUMMARY

This document was developed as part of a project titled: *"Caribbean Small Island Developing States Trinidad Sub-Project Rehabilitation of Quarries"* (IWEco TT) with funding from the Global Environmental Facility, under approval of the United Nations Development Programme and via a contract with the Environmental Management Authority of Trinidad and Tobago. It is meant to be a guideline for the future management authority and staff of the North-East Tobago UNESCO Man and the Biosphere Reserve (NETMABR). While it will be open to all stakeholders, it is not meant to be an instrument for outreach activities; an outreach-friendly, intelligible version of the management plan will be developed in late-2022. The document represents the second component of the overall 10-year Management Plan for the NETMABR. The first, complementary component was finalised in December 2021 and a third and final one will be finalised under other interventions and consolidated in November 2022.

This draft plan was developed via review and analysis of primary and secondary literature as well as formal and informal stakeholder consultations between 2018 and 2022; major limitations were based on COVID-19 restrictions and significant primary data deficiencies. The draft plan at hand will be discussed with stakeholders between June and November 2022, revised and finalised accordingly.

This, second component of the Plan includes:

- Revision of previous Stakeholder and Communication Plans,
- Participatory Development of Vision, Mission, Objectives and Principles,
- Site Description,
- SWOT and PESTLE,
- Alignment with existing Legal and Regulatory Framework, Policies and International Conventions.

Furthermore, it includes situational analyses, high level goals, priorities, strategies and proposed actions for three management topics / components:

- Conservation Strategies, Programmes and Priority Projects
- Climate Change Resilience Strategies, Programmes and Proposed Actions
- Community-based, Green, Blue, Purple Economic Strategies, Programmes and Proposed Actions

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Next steps and two key recommendations are provided in the chapter below.

The ERIC team would like to thank the EMA Office, Trinidad and Tobago, specifically Alicia Aquing, GEF IWEco National Project Coordinator, and Mr Linford Beckles, Director, Department of the Environment, Tobago House of Assembly for facilitating this intervention and put trust in our technical capabilities.

North-East Tobago Man and the Biosphere Reserve Management Plan Components

SLM

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6. Alien Invasive Species
7. Sustainable Agriculture and Sustainable Land Management Practises
8. Sustainable Tourism
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SGP

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2 THE WAY FORWARD

The ERIC has successfully applied to the UNDP Small Grants Programme, Trinidad and Tobago, to fund the final components of the Management Plan and create a knowledge sharing platform for the Plan via a project titled: "*Drafting the Final Components of the Management Plan for the North-East Tobago UNESCO Man and the Biosphere Reserve and Intelligible Knowledge Management*". The proposal was endorsed by the Department of the Environment, Tobago House of Assembly, which is the Focal Point for the UNESCO MAB Programme in Trinidad and Tobago and by Division of Ecological and Earth Sciences, UNESCO, Paris, France. This final component was approved in May 2022.

This timing aligns perfectly with a contract between the Inter-American Development Bank and Syntegra Change Architects Limited (Trinidad) with the following key objectives:

1. to structure the corporate governance framework of the NETPAMPT under a research-driven and participatory approach;
2. to structure the institutional framework of the NETPAMT, using components of an environmental and social management systems and including the foundations for a fund-raising strategy; and
3. to provide training and dissemination of i) the corporate governance framework; and ii) E&S institutional framework to key stakeholders.

Having started in February 2022, this intervention, of which the NETPAMT, and by extension the Tobago House of Assembly, is the direct beneficiary, will allow the NETPAMT, as future management organisation of the UNESCO Man and the Biosphere Reserve in North-East Tobago, to revise, refine, and apply the finalised management plan.

Based on these interventions, **the key recommendations** for advancing the sustainable development goals under the UNRESCO MAB Programme for NE Tobago are to:

1. **engage the Government of Trinidad and Tobago and the Tobago House of Assembly to provide the necessary budget allocations (2022-2024) for the operations of the NETPAMT until initial Green Fund funding and subsequent, self-financing is secured, and**
2. **facilitate stakeholder awareness and tangible benefits for communities in the NETMABR.**

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3 INTRODUCTORY REMARKS

This document was developed as part of a project titled: *"Caribbean Small Island Developing States Trinidad Sub-Project Rehabilitation of Quarries*" (IWEco TT) with funding from the Global Environmental Facility. It is meant to be a guideline for the future management authority and staff of the North-East Tobago UNESCO Man and the Biosphere Reserve (NETMABR).
The document represents a component of the overall 10-year Management Plan for the NETMABR. The additional, complementary components will be finalised under another intervention, and both consolidated in June 2022.
Amongst other guidelines, the Technical Guidelines for Biosphere Reserves (TGBR, UNESCO 2021) were taken into consideration for preparing this document.

The TGBR provides an indicative list of several main items a UNESCO Biosphere Reserve Management Plan should contain:

a. a recommendation for an organisational/governance structure responsible for implementation of the plan,
b. a situational analysis,
c. a vision,
d. medium-term goals,
e. management priorities,
f. proposed priority projects, and
g. monitoring indicators,

The document at hand covers, for the components under the contract with the EMA, items **b, c, d, e, and f**. Item **a** was covered under a previous assignment, item **g** will be covered under the above-mentioned complementary SGP project.
The components (topics) of the NETMABR Management Plan covered under this assignment included:

- Revision of previous Stakeholder and Communication Plans
- Participatory Development of Vision, Mission, Objectives and Principles
- Site Description, SWAT and PESTLE
- Alignment with existing Legal and Regulatory Framework, Policies and International Conventions
- Conservation Strategies, Programmes and Priority Projects
- Climate Change Resilience Strategies, Programmes and Proposed Actions

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- Community-based, Green, Blue, Purple Economic Strategies, Programmes and Proposed Actions
- Stakeholder Consultations, Local Capacity Building and Media Outreach

As discussed with the funding agency, stakeholder consultations were quite limited due to time- and COVID-19 restrictions. Furthermore, stakeholder consultations will be most efficient and effective when the full draft of the Management Plan will be available in 2022 and a more concise and intelligible version can be produced to meaningfully engage at all stakeholder levels. Once all documents will have been consolidated, the final layout will be polished using an advanced desktop publishing and page layout designing software application. Once funding permits, an intelligible and interactive website will be created to facilitate ease of access to and navigation through the Management Plan.



Figure 1. Fishermen in Castara Bay

4 METHODS

This draft document was developed via review and analysis of primary and secondary literature (see Annex 1) as well as formal and informal stakeholder consultations between 2018 and 2022. These consultations were conducted in relation to the drafting of the UNESCO Man and the Biosphere Nomination Form for NE Tobago, the drafting of the Dossiers for the Designation of NE Tobago's Main Ridge Forest Reserve, Islets and Reefs as Natural National Heritage Sites of Trinidad and Tobago and the drafting of a proposal to the Inter-American Development Bank titled: "Organisational Governance and Operational Strengthening of the North East Tobago Protected Area Management Trust (NETPAMT)".

It should be noted that this document applies the common writing style of UNESCO MAB Reserve Management Plans and, as such, does not claim to be or follow the writing style of a scientific research paper.

5 LIMITATIONS

The bulk of the document was prepared between November 2021 and June 2022 when restrictions regarding the COVID-19 pandemic prohibited workshops, group consultations and broader community involvement. Additionally, the extremely tight timeline for delivery of the draft and final document did not allow for the desired stakeholder participation. However, these limitations can be addressed in mid-2022, when the complementary components of the management plan will be finalised and a more intelligible version of the management plan can be developed, which will be more directed towards stakeholder engagement than programme management guidance (as it is the case for this document).

An additional, major limitation is the ubiquitous data deficiency for NE Tobago regarding all components of the management plan. Therefore, many statements in the situational analyses are based on recent, oral stakeholder reports and personal observations of the resident expert team. Hence the reason that baseline surveys, monitoring and evaluation interventions are essential to inform the future implementation organisation.

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6 VISION

MAB Vision: A world where people are conscious of their common future and their interactions with the planet, and act collectively and responsibly to build thriving societies in harmony within the biosphere.
To be based on stakeholder consultations.

7 MISSION

The MAB Mission 2015–2025 is to

- develop and strengthen models of sustainable development through the WNBR;
- communicate experiences and lessons learned, and facilitate the global diffusion and application of these models;
- support evaluation and high-quality management of biosphere reserves, strategies and policies for sustainable development and planning, and accountable and resilient institutions;
- help Member States and stakeholders to achieve the Sustainable Development Goals by sharing experiences and lessons learned related to exploring and testing policies, technologies, and innovations for the sustainable management of biodiversity and natural resources and mitigation and adaptation to climate change.

To be adapted on stakeholder consultations.

Figure 2. Children planting trees in Parlatuvier Bay (Janina Ewals)



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8 KEY OBJECTIVES

In order to address NE Tobago conservation and sustainable development challenges through strengthening the functions of a BR, the technical team proposes the following **Main Objective** for the management of the NETMABR:

To successfully consolidate and co-manage interventions related to sustainable and regenerative development, research, capacity building, education and networking on landscape, human- and eco-system levels for the benefit of NE Tobago's cultural and natural heritage, communities, and people.

Note: To be adapted based on stakeholder consultations

This key objective is designed to address the 12 key barriers that were identified by previous management plans for NE Tobago and IFPAM documents further as follows:

1. outdated legal and regulatory framework for establishing and managing natural and cultural resources,
2. unclear, fragmented roles responsibilities of stakeholders, especially managing authorities,
3. disempowered and under-resourced management authorities,
4. inadequate funding,
5. willingness to participate if interventions seem to be too restrictive,
6. stakeholder conflicts,
7. lack of broad, bipartisan political will,
8. lack of technical capacity to identify and address issues,
9. minimal capacity on the ground with respect to practical approaches to effective natural and cultural heritage management,
10. inadequate law enforcement,
11. minimal experience with income-generating opportunities, and last but by no means least,
12. a lack of transparency, accountability and compliance with regulation and legislation by the Tobago House of Assembly.

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While IFPAM and other programmes and projects were able to partially address these barriers, and while it can be stated that conservation status and efforts in NE Tobago have never been better, it remains a fact that all of the above barriers are still valid and need attention.
The Management Plan at hand is based on the methodical approach that most of the above-mentioned barriers can be addressed by implementing strategies aligned with the three MAB functions.

These, below-described key strategies, are mainly based on the results of the recent Improved Forest and Protected Area Management Project (IFPAM, 2015-2020) which applied a participatory approach in identifying objectives and potential solutions to overcome conservation barriers; additionally, the ongoing interaction between the technical team and key stakeholders was used to refine recommendations included into the Management Plan.
These strategies are reoccurring and supported by proposed activities in the various components of the Management Plan at hand.
It should be noted that, while IFPAM continuously considered socio-cultural aspects of NE Tobago as essential to successful management of natural resources, there was, unfortunately, not a matching project to similarly address the management of NE Tobago's cultural heritage.

Figure 3. Iguana Bay (Janina Ewals)



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9 WHAT IS THE UNESCO MAB PROGRAMME?

In 1971, United Nations Educational, Scientific and Cultural Organisation (UNESCO) launched the intergovernmental Man and the Biosphere programme (MAB) that aims to establish a basis for the improvement of relationships between people and their environments. It predicts the consequences of today's actions on tomorrow's world and thereby increases people's ability to efficiently manage natural resources for the well-being of both human populations and the environment (30).

The working unit of MAB is the Biosphere Reserve (BR), an international description of recognition from UNESCO for an area in the world, which is deemed to demonstrate a "balanced relationship between humans and the biosphere".

Biosphere Reserves are internationally recognised areas comprising terrestrial, marine and coastal ecosystems. Each reserve promotes solutions reconciling the conservation of biodiversity with its sustainable use by local communities. BRs are nominated by national governments and remain under the sovereign jurisdiction of the states where they are located.

BRs are intended to be model regions for demonstrating successful approaches to protection and sustainable development at a regional level. MAB sites are established with the goal to:

- harmonise conservation of biological and cultural diversity with economic and social development, and
- make a tangible contribution to the transition to green societies and support national governments' efforts to attain the Sustainable Development Goals (SDGs).

Biosphere Reserves have **three inter–connected functions**:

- **Conservation**: protecting cultural diversity and biodiversity, including genetic variation, species, ecosystems, landscapes, and securing services provided by such diversity.
- **Development**: fostering economic and human development that is environmentally and socially sustainable and culturally appropriate; and
- **Logistic Support**: facilitating demonstration projects, environmental education and sustainable development education and training, research and monitoring.

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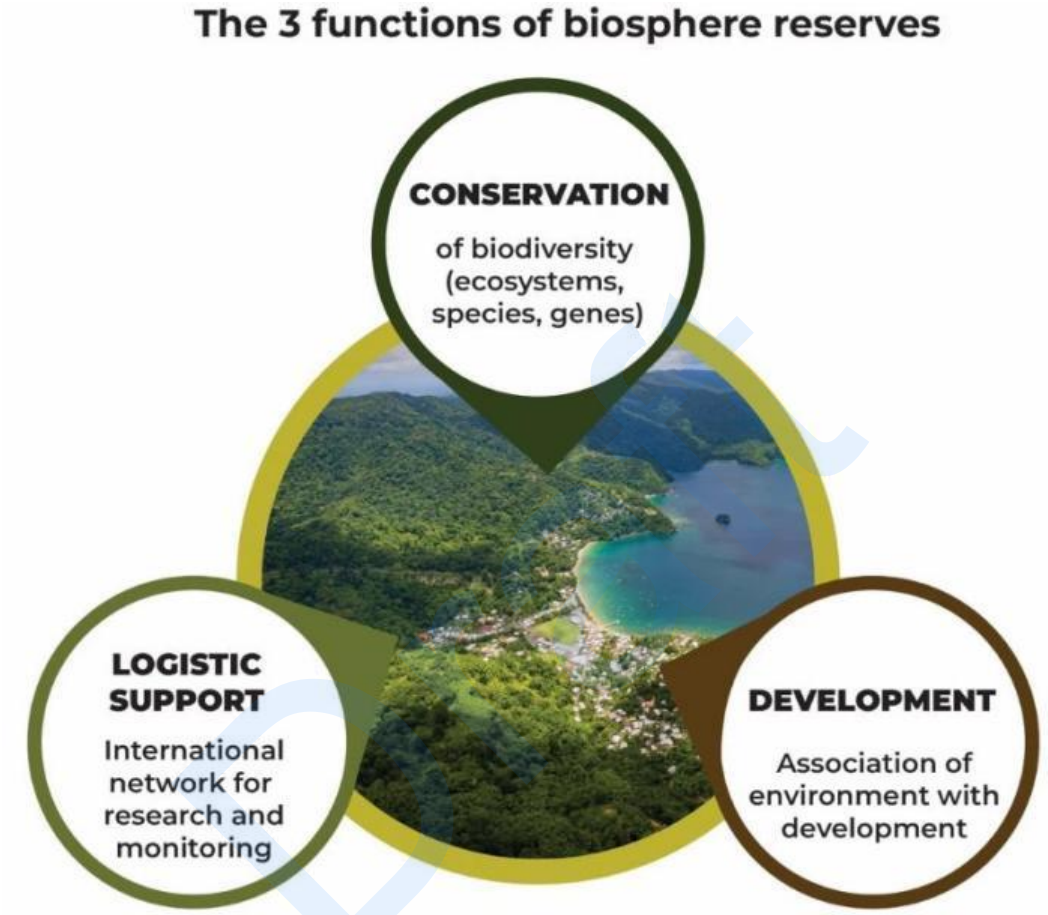


Figure 4. Schematic overview of 3 functions of biosphere reserves.

A BR consists of **three areas or zones – The core, buffer, and transition zones**.

The core zone is usually a legally protected area in which human activity is strictly limited and where monitoring of conservation priorities take place.

The buffer zone allows for appropriate activities such as research and scientific study, ecotourism, education and training.

The transition zone contains human settlements, agricultural and other commercial activities synonymous with human settlement.

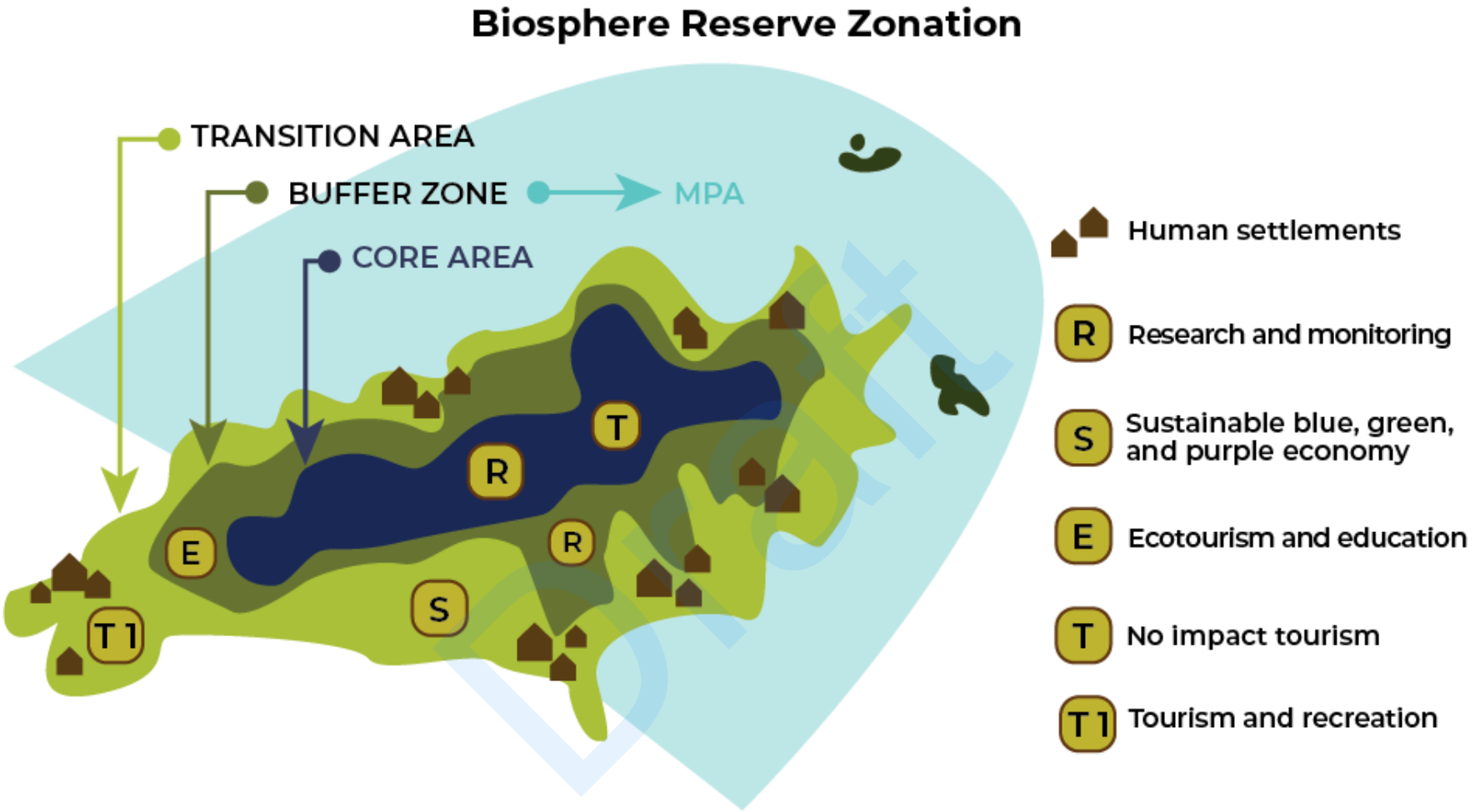


Figure 5. Schematic overview of NE Tobago Biosphere Reserve zonation (ERIC 2021).

The MAB Programme has a significant World Network of Biosphere Reserves (WNBR) which serves as a management tool for various municipal regions to improve strategies for sustainable development. As the pressures upon ecosystems increase with growing populations and climate change, the need for upgraded relationships between people and their natural surroundings only increases.

The **MAB Programme Mission** for the period 2015-2025 (31) is to:

- develop and strengthen models for sustainable development in the WNBR;
- communicate the experiences and lessons learned, facilitating the global diffusion and application of these models;
- support evaluation and high-quality management, strategies and policies for sustainable development and planning, as well as accountable and resilient institutions; and
- help member states and stakeholders to urgently meet the Sustainable Development Goals through experiences from the WNBR, particularly through exploring and testing policies, technologies and innovations for the sustainable management of biodiversity and natural resources and mitigation and adaptation to climate change. (MAB Strategy 2015-2025 & Lima Action Plan)

9.1 Administration

The international MAB Programme

The MAB programme is organised under an international agreement through UNESCO; state parties undertake actions within the MAB programme voluntarily and sites remain under national jurisdiction. At the global level, the MAB Programme is governed by its International Coordinating Council (ICC), under the overall authority of the UNESCO General Conference and its Executive Board.

The next level of governance is represented by regional and thematic networks. Governance at the national level is ideally through MAB National Committees.

The MAB institutional structure is outlined in Figure 6.

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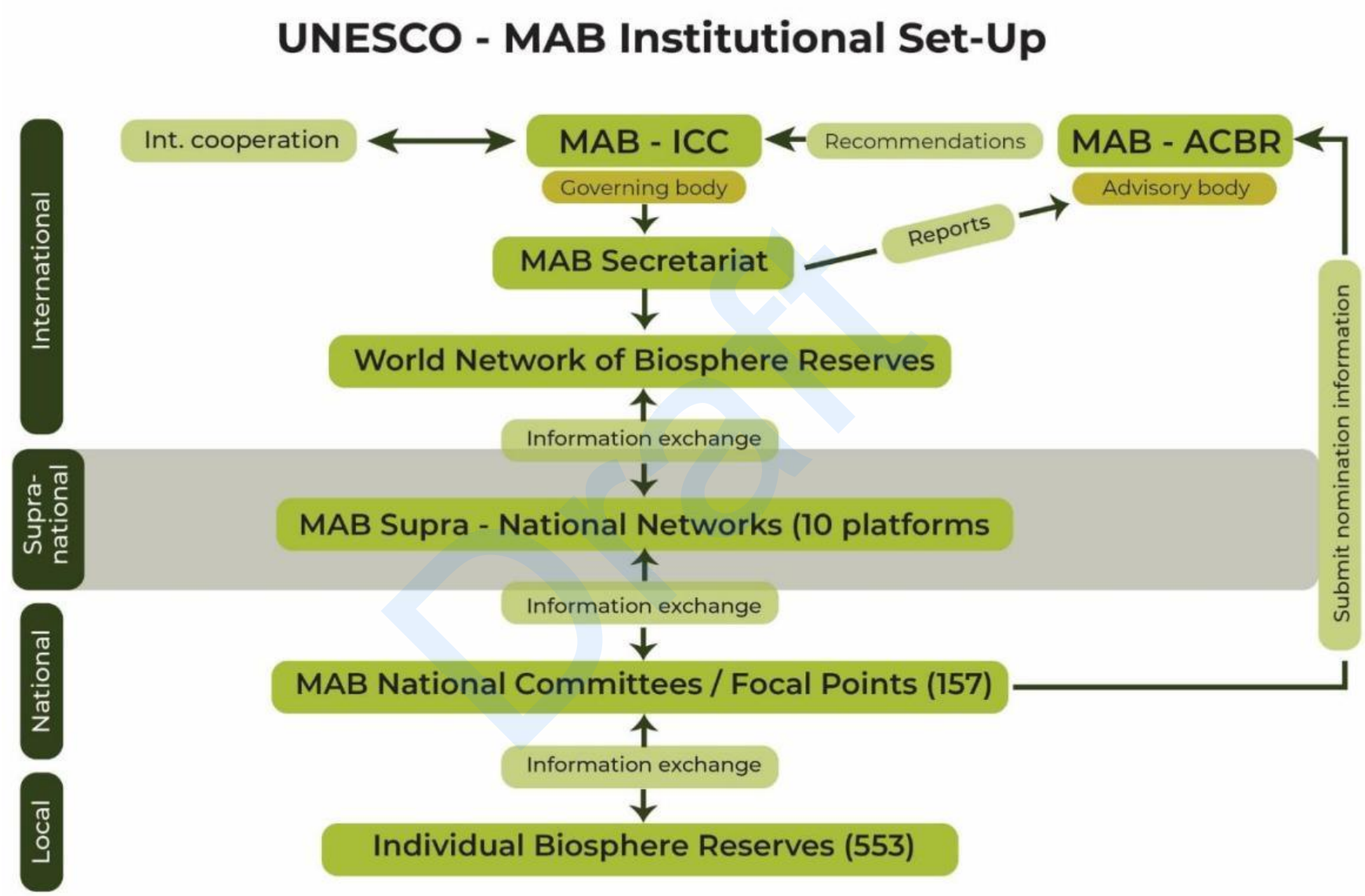


Figure 6. Diagram of the MAB institutional structure adapted from Schliep (24).

The MAB International Coordinating Council (ICC) is the governing body that meets biannually and consists of 34 Member States elected by UNESCO's General Conference. The ICC elects a chair and five vice-chairpersons from each of UNESCO's geopolitical regions that constitute the MAB Bureau which undertakes the responsibilities of the ICC between its biannual meetings. The MAB International Advisory Committee for Biosphere Reserves is the primary scientific and technical Committee body advising the ICC. The MAB Secretariat is the administrative centre for MAB based at UNESCO's Division of Ecological and Earth Sciences in Paris, the Secretariat work closely with the different field offices and Supranational Networks (e.g., IberoMAB – Iberian Peninsula and Latin America/ Caribbean region) around the world to coordinate the work of the MAB programme at the regional, national and individual Biosphere Reserve levels.

MAB is funded through the regular budget of UNESCO and mobilises funds-in-trust granted by Member States, bilateral and multilateral sources and extra-budgetary funds provided by countries, the private sector and private institutions.

UNESCO's intergovernmental structure provides MAB with a framework to help national governments support the planning and implementation of research and training programmes with technical assistance and scientific advice.

MAB-related activities are nationally financed however the programme can grant seed funding to assist countries in developing projects and/or to secure appropriate partnership contributions.

MAB offers fellowship opportunities co-sponsored by a number member states to assist the technical development of individuals seeking to build a profession within the field of the UNESCO programme priorities. These opportunities would be available to local staff to apply for.

Importantly, designation as a MAB Reserve does not necessarily require the formation of new laws.

9.2 Designation of NE Tobago

In September 2019, the Government of Trinidad and Tobago successfully submitted a Nomination Form to UNESCO with the request to consider NE Tobago as a Man and the Biosphere Reserve.

The eligibility criteria taken from the Biosphere Reserve Nomination Form are shown in Table 1.

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Table 1. The eligibility criteria taken from the Biosphere Reserve Nomination Form (2018).

	MAB Eligibility Criteria	NE Tobago
1	**Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions**	✓
2	**Be of significance for biological diversity conservation**	✓
3	**Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale**	✓
4	**Have an appropriate size to serve the three functions of biosphere reserves**	✓
5	**A legally constituted core area/s devoted to long term protection of sufficient size to meet long term conservation objectives**.	✓
6	**Buffer zone/s clearly identified & surrounding or contiguous to the core area/s, where only activities compatible with the conservation objectives can take place**".	✓
7	**Outer transition area where sustainable resource management practices are promoted and developed**	✓
8	**Organisational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve**".	Ongoing
9	**Able to describe arrangements in place or foreseen**	✓
10	**Mechanisms to manage human use and activities in the buffer zone or zones**	✓
11	**Management policy or plan for the area as a biosphere reserve**	Currently developed
12	**Designated authority or mechanism to implement this policy or plan**	Department of the Environment, NETMAPT
13	**Programmes for research, monitoring, education and training**	✓

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In the Nomination Form, NE Tobago' values were described as follows:

"Covering over 835km^2, the proposed area encompasses three protected areas, one of which is the oldest protected tropical forest reserve in the world, a large planned Marine Protected Area (MPA) and 15 communities which are home to approximately 10,000 residents with a rich historical and cultural heritage. The area's rare and largely intact Caribbean Island Ridge-to-Ocean eco- and human-systems are well equipped to fulfil the three functions of a UNESCO Biosphere Reserve (BR): its biodiversity, range of ecosystems, and special-interest species are important on a regional and global scale (Conservation); the cultural heritage is a living example for the region's deeply rooted, historical, socio-economic and spiritual relationship between communities and natural resources (Development); and decades of regionally outstanding educational, research and networking activities (Logistic Support).

The close linkage between ecosystem services and natural resource use, active community groups, successful sustainable development projects, governmental initiatives and its closeness to Trinidad's resources provide the area with the prerequisites to successfully implement a BR and share lessons learnt with its Caribbean neighbours while serving as a regional role model. Being a hotspot for conservation related research for decades and having a track record of environmental education, capacity building and monitoring are well established cornerstones for providing and further increasing logistical support.

The legal, policy and institutional framework to manage a MAB area exist; current projects and programmes as well as those in the national and local development pipeline, and improved collaboration between government, civil society and private sector are demonstrably supportive of this BR nomination initiative. On varying levels, NE Tobago is already close to meeting the key conservation objectives of a successful BR as mentioned in the Seville MAB Strategy.

Coordinating future sustainable development efforts under a MAB umbrella and the inclusion of all relevant sectors of the society will significantly improve conservation and livelihoods through responsible use of our natural and cultural heritage which is the central goal of Tobago's guideline policy document, the Comprehensive Economic Development Plan."

On 28 October 2020, NE Tobago was officially declared a UNESCO MAB Reserve.

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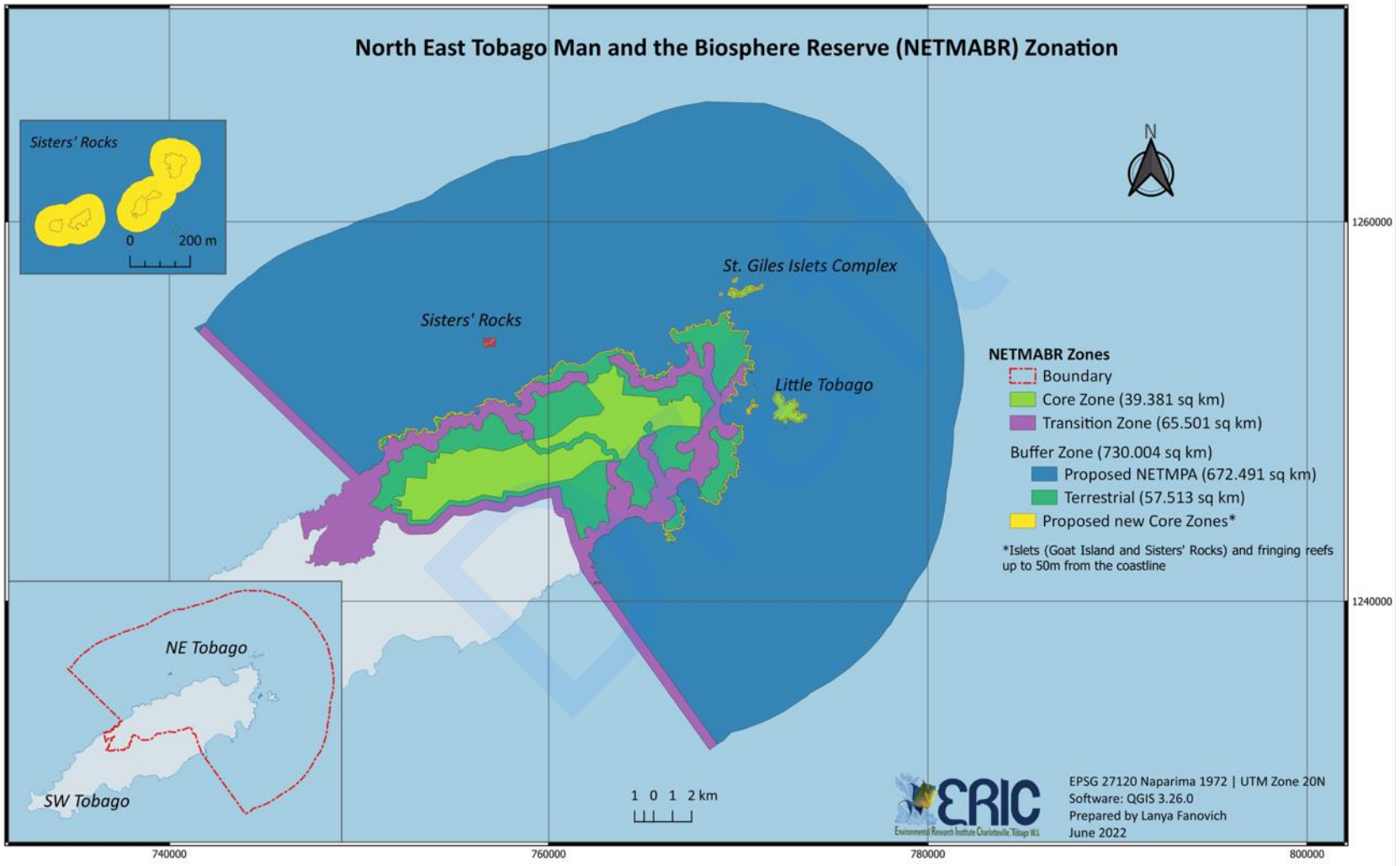


Figure 7. Zonation of the NE Tobago MAB Reserve (ERIC 2022)

The **Core Zone** of the NETMABR consists of three legally protected areas: the MRFR, Little Tobago and the St Giles Islet Complex, all of which are terrestrial.

It should be noted that, at the moment, the Core Zone does not include any marine areas, due to lack of protective legislation and regulations; however, work has started to designate high conservation value, coastal fringe reefs as Natural National Heritage Sites (which is the fastest way of to achieve legal protection) in 2021, and the National Protected Area Systems Plan was approved by Cabinet, which hopefully will result in the designation of the overall NE Tobago Marine Protected Area with some special, IUCN 1a category areas. Once these marine areas receive legal protection, they can, later on, switch from Buffer to Core Zone status within the BR.

The **Buffer Zone** for NETMABR was defined as:

- all lands between the Transition Zone and the MRFR Core Zone,
- a 125m belt on both sides of roads within the Core Zone (combining to a width of 250m)
- a 250m belt along the boundary between the Core Zone and the south-western area outside of the NETMABR,
- coastal areas between the boundaries of the NETMPA and the Transition Zone, and
- the entire marine realm of the proposed NETMPA.

As mentioned in the section above, some marine Buffer Zones might change to Core Zone as soon as legal protection can be provided. Therefore, the terrestrial, coastal Buffer Zones are crucial to protect sensitive marine ecosystems.

The **Transition Zone** was defined as all lands that are located within a 250m belt on both sides of all roads within the overall boundaries of the NETMABR; this includes all communities, and economic activities in the NETMABR (except for some micro-scale subsistence farming and hunting in the Buffer Zone). The result of this definition is a Transition Zone band, sandwiched between the terrestrial and marine Buffer Zones on which it has significant influence.

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10 MANAGEMENT PLAN COMPONENTS

The following chapters are subdivided into situational analysis, goals, strategies, and proposed activities. It is important to understand that the chapters are at different results framework levels therefore the subheadings are not necessarily on similar logic levels as well. This is the result of the High-Level Goal of each Component starting on a different logic level.

Table 2. Management plan component levels

Component level	Definition
Summary Situational Analysis	The current state of the BR respectively to the chapter subject, descriptively identifying strengths, weaknesses, opportunities and threats
High-Level Goal	The desired status achieved by the management plan
Priorities	Interventions that either significantly contribute to achieving the goal, or significantly reduce existing threats to the goal
Strategies	Long-term plans of action designed to achieve the goal
Proposed Activities	Programmes, projects, and other interventions that are aligned to the strategies and should be revised once the situational analysis significantly changes.

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10.1 Addressing Barriers to Sustainable Management

The NETMABR is subject to a series of interconnected, indirect threats to successful implementation of the MAB programme. Local residents and stakeholders are not commonly inspired to undertake conservation-relevant practices. This is partly because intelligible, adequate and continuous environmental education still requires improvement. While knowledge often exists, it is not successfully translated into a positive attitude and actual practise. This in turn is partially due to perceived and actual lack of ownership and empowerment on the part of residents in NE Tobago. On the other hand, and in certain cases, the sense of ownership is very well developed and strongly articulated; however, ownership rarely translates into stewardship.

Similarly, residents facing environmental challenges are often not informed enough to take appropriate actions against those perpetrating the violations (e.g., seek assistance from the Environmental Police and/or the Environmental Commission of Trinidad and Tobago).

Additionally, the lack of coherent and consistent conservation co-management and co-operation often undermines good efforts in some areas by neglect in others. For example, efforts of CSOs to protect nesting sea turtles are undermined by a lack of law-enforcement regarding the use of turtle nets and turtle meat consumption.

The principal barrier to addressing direct threats to the ecosystems of NE Tobago is fragmented management and use. The National Protected Areas Policy, the National Protected Area Systems Plan (7), the IFPAM Project (6) and ERIC's stakeholder assessments have all identified and prioritised this barrier for NE Tobago. Regulations and roles are unclear and consequently there is limited "enforcement / implementation of regulations concerning natural resource use" as stated in the NE Tobago Management Plan (2003). Fragmented, formal and informal, public and private, land management and use create an environment where it is nearly impossible for a single stakeholder to meaningfully influence the direct threats that are degrading NE Tobago's ecosystems.

This barrier has two components.

Government Sector

The ***government component*** involves the formal management of public lands and waters. This barrier includes outdated legislation and policy, a labyrinthine institutional structure and limited government capacity and resources. Repeated government initiatives since the 1970's have failed to address this issue; a case in point is the National Protected Areas Policy (2011) that called for a wide range of actions to be undertaken by 2016. These include the "*revision, development and declaration of supporting legal instruments [to] enact an enabling legislative framework*", the establishment of a centralised authority "*to administer the coordination and*

implementation of the National Protected Areas Policy for Trinidad and Tobago", and the establishment of protected areas under the new policy. Unfortunately, all efforts to declare the North East Tobago Marine Protected Area have failed since over half a decade.

Non-Government Sector

Fragmented management and use of land and waters also occurs in ***non-government sectors***. The absence of a national land use planning framework combined with outdated regulations and limited enforcement means that private land management and use is largely unrestricted. There is a concomitant lack of mechanisms and incentives for private land owners to engage in or benefit from conservation. The current, forested state of most private land in NE Tobago is therefore not a result of public policies or priorities, but an artefact of the priorities and preferences of individual owners. Although this speaks to the conservation commitment of some land owners, it is a highly vulnerable state for long-term conservation. Land owners may choose to develop their land with infrastructure or unsustainable agriculture that compromises the NETMABR.

Informal management and use of the land- and sea-scape, including public and private areas, is likewise unrestricted. As explained in the THA Comprehensive Economic Development Plan 2.0 (20), Tobago hosts "*longstanding insecure land tenure arrangements with as much as 83 percent of the lands of Tobago allegedly in informal tenure (the majority being family lands)*". Informal but long-standing family lands, squatting, small agricultural plots, unregulated dumping, hunting, harvesting of timber and other forest products, and harvesting of fish from the marine environment all represent often legitimate uses of public and private lands that can none the less contribute to fragmentation and degradation of ecosystems.

The implementation of the UNESCO MAB programme, including the operationalisation of the NE Tobago Protected Area Management Trust, offers a significant opportunity to de-fragment and consolidate the management of natural and cultural resources under one, overarching programme.

Although fragmented management is the principal barrier to conservation in NE Tobago, another critical barrier is a lack of monitoring and communication. This issue captures two hindrances to biodiversity conservation regionally as identified by the Caribbean Islands Biodiversity Hotspot assessment: limited technical and scientific knowledge and poor availability of information needed for effective decision-making, and lack of awareness of importance of biodiversity and ecosystem services. This similarly applies to the socio-cultural and economic development aspects of the NETMABR. Limited information and communication mean that it is difficult to:

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quantify threats, foster informed discussions, prioritise management actions, measure the success of interventions, and inspire stakeholders to take action. This barrier will be specifically targeted by strengthening the logistic function of the NETMABR.

In order to address the described challenges through strengthening the functions of a BR, the technical team proposes the following **Main Objective** for the management of the NETMABR:

To successfully consolidate and co-manage interventions related to sustainable and regenerative development, research, capacity building, education and networking on landscape, human- and eco-system levels for the benefit of NE Tobago's cultural and natural heritage and people.

In order to go into more depth, previous management plans for NE Tobago and IFPAM documents further detailed 12 key barriers to successful natural resource management in NE Tobago as follows:

1. outdated legal and regulatory framework for establishing and managing natural and cultural resources,
2. unclear, fragmented roles responsibilities of stakeholders, especially managing authorities,
3. disempowered and under-resourced management authorities,
4. inadequate funding,
5. willingness to participate if interventions seem to be too restrictive,
6. stakeholder conflicts,
7. lack of broad, bipartisan political will,
8. lack of technical capacity to identify and address issues,
9. minimal capacity on the ground with respect to practical approaches to effective natural and cultural heritage management,
10. inadequate law enforcement,
11. minimal experience with income-generating opportunities, and last but by no means least,
12. a lack of transparency, accountability and compliance with regulation and legislation by the Tobago House of Assembly.

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While IFPAM and other programmes and projects were able to partially address these barriers, and while it can be stated that conservation status and efforts in NE Tobago have never been better, it remains a fact that all of the above barriers are still valid and need attention.
The Management Plan at hand is based on the methodical approach that most of those barriers can be addressed by implementing strategies aligned with the three MAB functions.

These, below-described key strategies, are mainly based on the results of the recent Improved Forest and Protected Area Management Project (IFPAM, 2015-2020) which applied a participatory approach in identifying objectives and potential solutions to overcome conservation barriers; additionally, the ongoing interaction between the technical team and key stakeholders was used to refine recommendations included into the Management Plan.
These strategies are reoccurring and supported by proposed activities in the various components of the Management Plan at hand.

It should be noted that, while IFPAM continuously considered socio-cultural aspects of NE Tobago as essential to successful management of natural resources, there was, unfortunately, not a matching project to similarly address the management of NE Tobago's cultural heritage.

Figure 8. View from Speyside onto Little Tobago and Goat Island (Janina Ewals)



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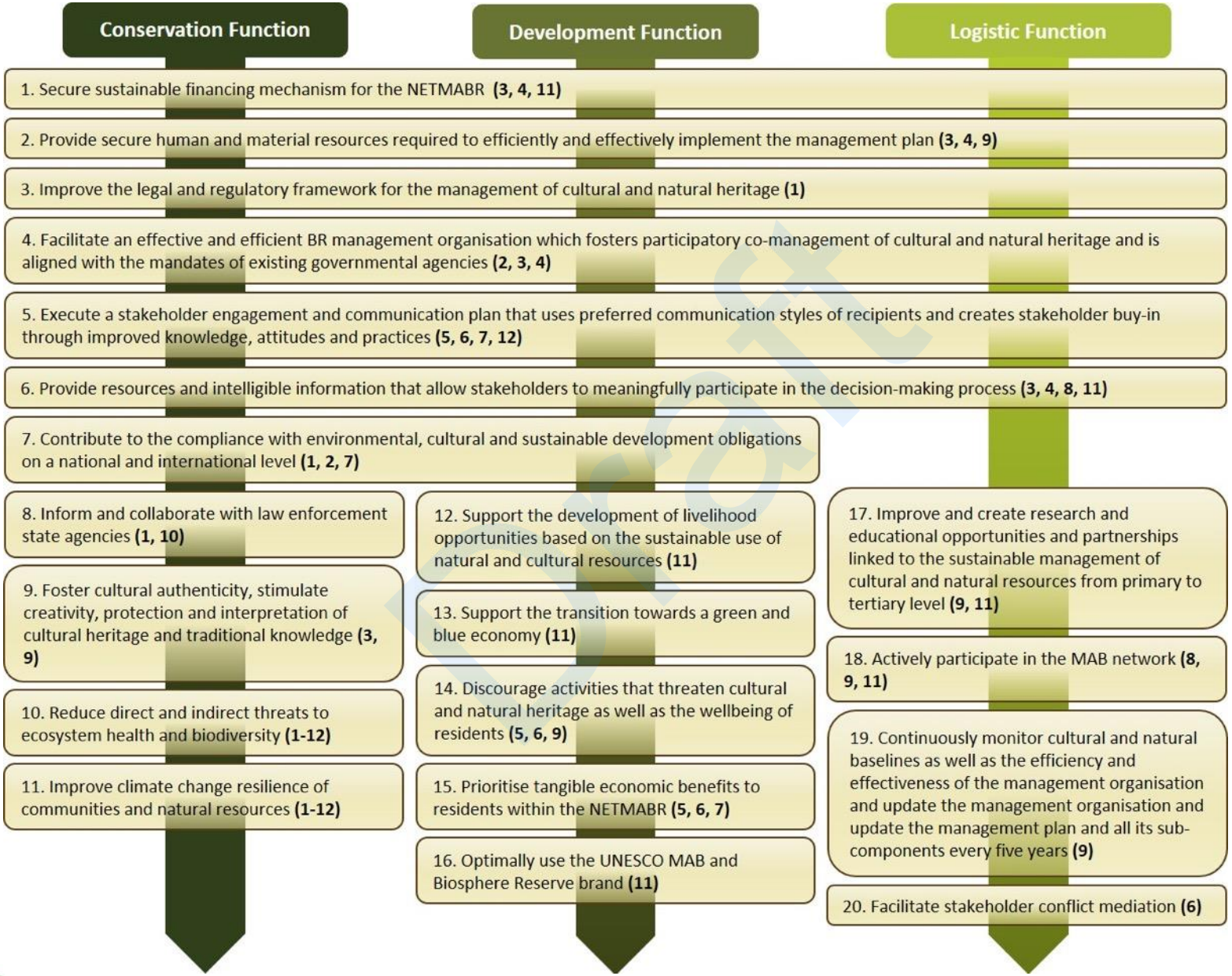


Figure 9. Proposed Main Strategies for the BR Management Plan, Addressed Key-Barriers in (brackets)

11 EDUCATION

SUMMARY SITUATIONAL ANALYSIS

Pre-School

Early Childhood Care and Education (ECCE) facilities in NE Tobago have to be registered with the Ministry of Education and are either operated by the Nursery Association of Trinidad and Tobago or privately.
Unfortunately, placements in kindergartens that are considered "good" are few and hard to access.
The pre-school curricula hardly involve pedagogic elements that deal with the experience of nature; cultural aspects are a somewhat better represented. However, the required teaching materials are often insufficient and the care takers do not receive early child care training that would involve such aspects.
Additionally, the fear of legal liability, perceived medical risks for the kids, and the additional effort when exposing children to a more natural environment is a deterrent for care takers to conduct regular and frequent field trips.

Primary and Secondary

There are 12 primaries (totalling on average 800 students and 50 teachers and 2 secondary (totalling on average 1,000 students) schools within the BR site (2018).

Table 3. List of primary and secondary schools in NE Tobago

Primary	1	SDA Charlotteville Primary School
	2	Charlotteville Methodist Primary School
	3	L'Anse Fourmi Methodist Primary School
	5	Belle Garden Anglican Primary School
	6	Roxborough Anglican Primary School
	7	Delaford Anglican Primary School
	8	Speyside Anglican Primary School
	9	Parlatuvier Anglican Primary School
	10	Castara Government Primary School

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	11	Moriah Government Primary School
	12	Ebenezer Methodist Primary School, Betsy's Hope
Secondary	1	Roxborough Secondary School
	2	Speyside High School

Funded through the Division of Education, Innovation and Energy (DEIE) or privately, all schools are relatively well equipped and staffed.

The DEIE is mandated to provide access to educational institutions and programmes in Tobago, including quality early childhood, primary and secondary education, to achieve the holistic development of the child. The Division is also responsible for providing efficient service and support systems for Tobago's youth, through social education and holistic development so as to empower and maximise potential. The provision and maintenance of sporting facilities, as well as the development of sporting programmes and support to sporting organisations is also under the remit of the Division.

Formal and informal education programmes exist at all secondary and primary schools across the island. These are facilitated in the first instance through the written/formal curriculum. At the primary level environmental issues of resource management and sustainability are integrated into the Social Studies, Agricultural Science and Health & Family Life Education (H.F.L.E) curricula. Specific indicators of the implementation are based on both formative and summative assessment of student learning outcomes.

At the secondary level, there is explicit attention to fundamental ecological principles, human population and the environment, sustainable use of natural resources, agriculture, energy, and pollution. These are covered at the lower secondary level in the Social Sciences curriculum and at the upper secondary level in the Social Studies, Geography and Environmental Science curricula.

Assessment of students' learning outcomes in these instances, are assessed through standardised tests. At the lower secondary level, there is the National Certificate of Secondary Education (N.C.S.E) assessment. At the upper secondary level, the Caribbean Examination Council (CXC) is the formal examining body which assesses students' proficiency. Caribbean Secondary Education Certificate (CSEC) examinations are normally written by candidates who have completed two years of the syllabus at the secondary level. Caribbean Advanced Proficiency Examination (CAPE) examinations are normally written by candidates who have completed one or two years of post-secondary level education usually within the formal context of our secondary schools.

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Additionally, primary and secondary schools have implemented educational topics related to natural and cultural heritage as well as vocational subjects such as art, wood and metal work, technical drawing, and home economics into their curricula.

Further to the above-mentioned governmental activities there are environmental clubs facilitated by the Social Science Department in several of the secondary schools across the island. Students are encouraged and supported in applying the concepts highlighted in the formal curriculum to solving problems in their schools and communities. Students engage in activities such as tree planting, beach clean-ups and recycling.



Figure 10. Students at Charlotteville Seven Day Adventist Primary School (ERIC, 2018)

In addition to cultural and natural education programmes at schools, CSOs are delivering environmental and cultural awareness, training and education programmes to students and adults on a regular basis. These are delivered partly on a voluntary basis, partly funded by a multitude of donor organisations or the private sector.
Unfortunately, these programmes were significantly interrupted by restrictions during the COVID-19 pandemic and there is a need to revive these activities once the situation will have eased up.

Table 4. List of conservation related activities that include school students (compiled 2018)

Time Frame	Title	Main Implementer	Description	# of "Teachers" est.	# of "Students" est.
2012-2017	Turtle Conservation	NEST	School outreach	2	100
June (Annually)	I tour, I learn	Belle Garden Police Youth Club	Learning about the Main Ridge Forest Reserve	5	60
May (Annually)	Speyside Beach Clean Up and Education	SEMPR	Cleaning community and beach area	2	20
June (Annually)	Beach Clean Up and Education	Moriah Police Youth Club	Cleaning community and beach area	4	50
2017 - ongoing	Beach Clean Up	Belle Garden Police Youth Club	Cleaning community and beach area	5	60
2016 - ongoing	Environmental School Outreach	ERIC	Shark, coral and turtle conservation presentations	1	50
2004 - 2021	Clean School Programme	ET	Annual Tobago wide school competition related to waste management and change of behaviours.	2	1600

	Time Frame	Title	Main Implementer	Description	# of "Teachers" est.	# of "Students" est.
	2014-2015	MPA Co-Management Capacity Building in NE Tobago	ERIC	Capacity-building of selected community members to contribute to MPA co-management.	2	6
	2015	MPA Monitoring and Co-management Capacity Building	ERIC	Continued training of community members in Reef Check	2	6
	2016 - 2019	Establishment of a Network of Community Climate Change Champions	ERIC	Capacity Building and Creating the NE Tobago Climate Change Champions Network to advocate for climate change adaptation and action	1	14
Cultural Heritage Related	April (Annually)	I tour, I learn	Belle Garden Police Youth Club	Learning the history of Forts in Tobago	5	60
	April (Annually)	Easter Summer Camp	Castara Youth Centre	Teaching programs to encourage sustainable livelihoods and learn culture	2	25
	August (Annually)	Summer Youth Awareness	Division of Tourism and Transportation	Learning about ecosystems, history and culture of Tobago	4	100

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Figure 11. Roxborough Secondary High School (ERIC)

Tertiary

There are no tertiary educational facilities in NE Tobago. Nevertheless, the BR is used since decades for educational field trips, bachelor-, master and PhD field studies by local and international universities, colleges and other educational organisations.

Table 5. Academic and research institutions conducting research or education programmes in NE Tobago (compiled 2018).

From	To	Academic Institution	Country	Research	Education
1960s	ongoing	UWI	Trinidad and Tobago	x	x
1960s	2004	Smithsonian Institution	USA	x	
1980s	ongoing	IMA	Trinidad and Tobago	x	
1995	ongoing	Cardiff University	UK	x	x
2005	ongoing	Pacific Lutheran University	USA		x
2005	2005	Kleve Tourism School	Germany	x	
2007	ongoing	Hogeschool Van Hall Larenstein	Netherlands	x	x
2014	ongoing	University of Glasgow	UK	x	x
2014	ongoing	Adam Mickiewicz University	Poland	x	
2015	ongoing	UTT	Trinidad and Tobago	x	x
2016	ongoing	Austin College	USA		x
2016	ongoing	Florida International University	USA	x	
2017	ongoing	Trinity College	USA		x
2018	ongoing	Texas A&M University	USA		x

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From	To	Academic Institution	Country	Research	Education
2018	ongoing	Northwood College	USA		x
2019	ongoing	Ohio State University	USA		x
2019	ongoing	The City University of New York	USA		x
2019	ongoing	The Sprout Experience	USA		x
2018	ongoing	International Master of Science in Marine Biological Resources (joint programme of 11 European universities	Europe	x	x
2021	ongoing	Arizona State University	USA		x
2022	ongoing	Eckerd College	USA		x
2022	ongoing	Middlebury College	USA	x	

It is important that, while some of these field visits are focusing on specific educational subjects, all aspects of the MAB programme in NE Tobago should be included at least in an introductory lecture, experienced through participating in at least one cultural event and supported by creating tangible conservation and community benefits. Additionally, any field trip, be it from local or international institutions, should include interaction with students in NE Tobago schools.

Vocational

The CSEC and CXC levels offer vocational training at secondary schools (see above)

However, there are no regular vocational training institutions located within the NETMABR.

Institutions and programmes in SW Tobago include:

- Tobago Hospitality and Tourism Institute, Mt St. George; culinary arts, hospitality administration, tour guiding, entrepreneurial skills, event management, customer service.
- Civilian Conservation Corps, Scarborough: career guidance, social skills, occupational health, mentoring.
- Youth Training and Employment Partnership Programme, Canaan: small business management, culinary arts, child care, plumbing, music production, desktop publishing and graphic design, vegetable production, agro-processing, welding, dress making and design.

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- MIC, Institute of Technology, Tobago Technology Centre, Canaan: agriculture, automotive, construction, craft and garment, marketing, event management, manufacturing, music, industrial maintenance, health and safety.
- National Energy Skills Centre, Goldsborough: automotive, drilling, electrical, heavy equipment, refrigeration, IT.
- College of Science, Technology and Applied Arts of Trinidad and Tobago, Scarborough: computer application, liberal arts, nursing, health and environmental sciences, business and information technology;
- National Training Agency, Canaan: electrical, cosmetology, masonry, plumbing, welding, nursing, construction.

Extracurricular

Overall, extracurricular educational and recreational activities are very scare and intermittent for NE Tobago's youth; additionally, public transportation to reach events are often difficult. This results in a serious "brain-drain" situation caused by young adults seeking education and entertainment in south-west Tobago, Trinidad and, if affordable, outside of the country. For those having received higher education, finding employment opportunities in the NETMABR can be challenging and accordingly there is little incentive to return home and contribute to sustainable development. Currently young people engage mainly in police Youth Clubs, sports, church related activities, and arts (mostly dancing).

HIGH LEVEL GOAL

Residents, especially the youth, of NE Tobago are aware of the principles and benefits of the UNESCO MAB programme and have the knowledge and skills to use those to their and common benefit while contributing to the achievement of the 17 United Nations Sustainable Development Goals in NE Tobago and beyond.

PRIORITIES

- By providing teacher education and support, the relevant aspects of the MAB programme are included into curricula at all educational levels in an intelligible way that is welcomed by educators and does not add to their workload.
- Young persons are actively participating in all aspects of the implementation of the planned NETMABR via extracurricular activities and representation on advisory councils to the NETPAMT.
- The MAB programme in NE Tobago creates sustainable employment and entrepreneurial opportunities for residents, especially the youth in the NETMABR.

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- Sustainable and regenerative practises are included in all vocational training courses on subject that related to the use of ecosystem services (see section on Sustainable Agriculture and Land Management).

STRATEGIES

- collaborate with the Division of Education, Innovation and Energy, the Nursery Association, teachers' organisations, individual schools and educational institutions in Tobago to include education on relevant aspects of the MAB programme on all educational levels in Tobago;
- collaborate with CSOs, educational institutions and governmental agencies to consolidate the environmental and cultural educational programmes in the NETMABR in order to avoid duplications;
- support CSOs to access funding to conduct outreach activities which are complimentary to the schools' curricula;
- facilitate youth communication and exchange programmes within the IBERO MAB Network and the World Network of Island and Coastal Biosphere Reserves,
- create a unit in the NETPAMT that serves as a point of contact and guidance for persons that are seeking job opportunities (job centre) and would like to explore ecopreneural green-, blue-, and purple economic activities;
- align the On-the-Job-Training Programme with NETMABR ecopreneural initiatives;
- explore twinning of the planned NETMABR with another BR preferably in Europe or North America facilitating youth communication and exchange programmes related to sports, culture/arts, religion, education etc. (long-term strategy); and
- explore possibilities of establishing a campus for sustainable development and natural resource management in SIDS in collaboration with an accredited international university (long-term strategy).

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Figure 13. UWI MSc students during a field work session (2021).

PROPOSED ACTIVITIES

- make contact with IBERO MAB Network and the World Network of Island and Coastal Biosphere Reserves and explore existing educational exchange opportunities;
- encourage all visiting educational organisations to include in their itinerary:
  - MAB related introductory lectures,
  - participation in cultural events,
  - creation of tangible conservation and community benefits, and
  - interaction with students in NE Tobago schools.

- budget for and implement a NETMABR job- and ecopreneural centre;
- once the NETMABR is able to demonstrate a certain level of success, establish contact
  - with other BRs to explore educational twinning opportunities (after year 5)
  - with accredited international universities to discuss the establishment of a campus in the NETMABR or the collaboration with a Tobago-based educational institution;
- facilitate the upgrading of educational curricula in collaboration with stakeholders (especially THTI), revise on a regular basis;
- facilitate an annual meeting between CSOs, educational institutions and governmental agencies to align and seek support for curricular and extra-curricular activities in relation to the natural and cultural heritage of NE Tobago.

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