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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: RESEARCH

AUGUST 2022

Component of a 10-year Management Plan

FOCUS: RESEARCH

for the

North-East Tobago Man and the Biosphere Area

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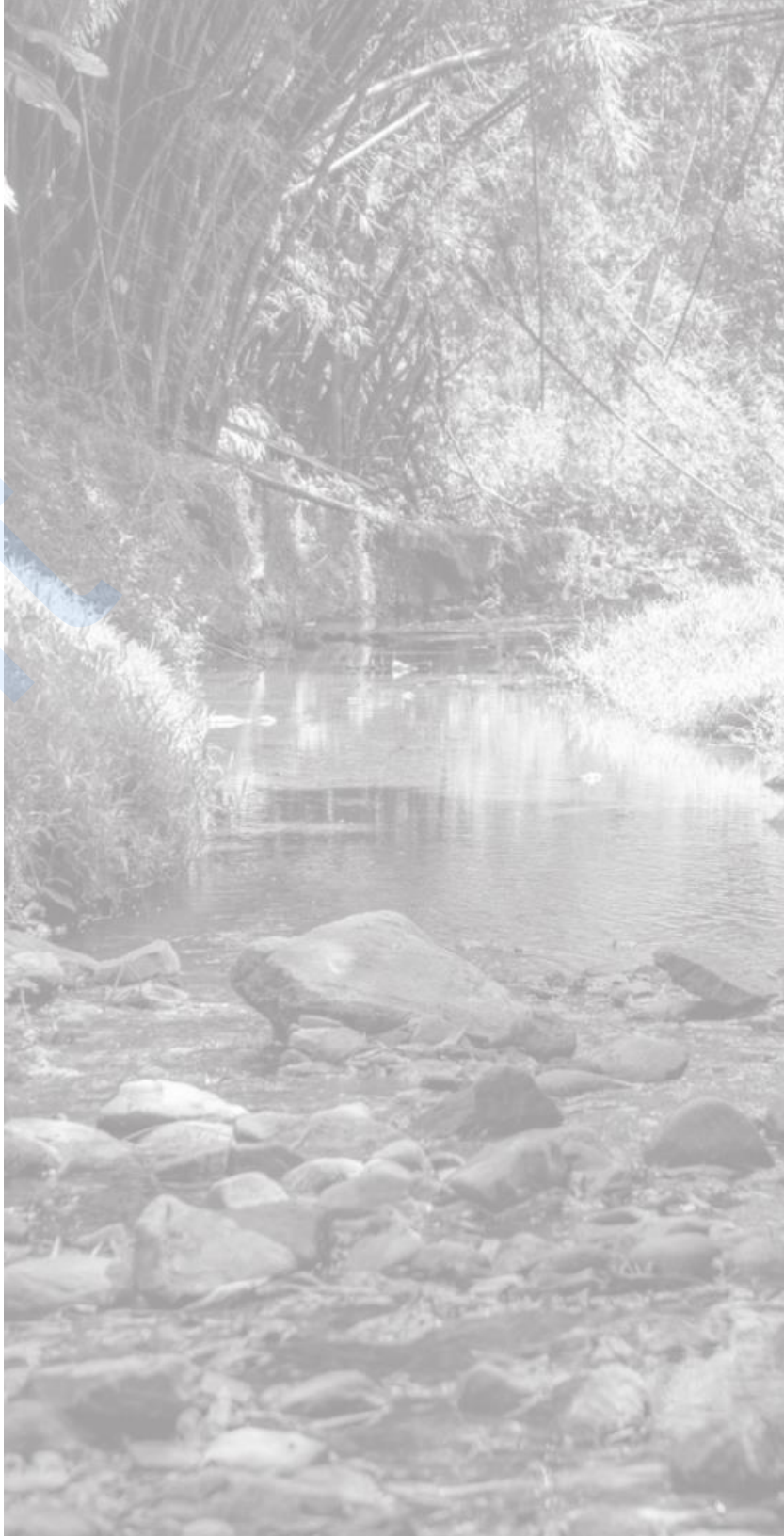


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1 EXECUTIVE SUMMARY

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
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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.

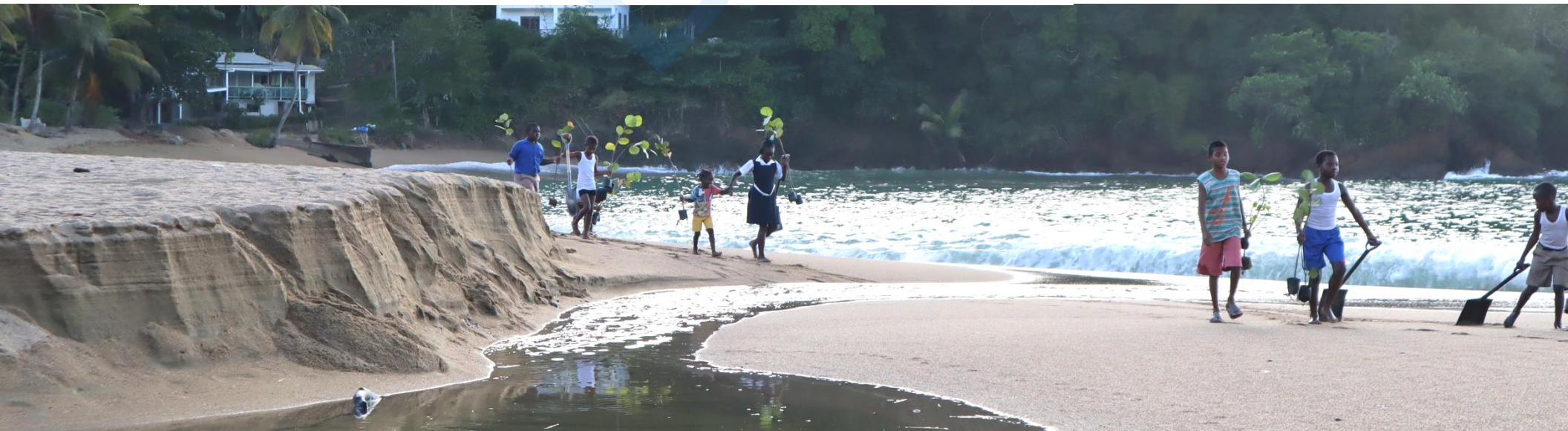
7 MISSION

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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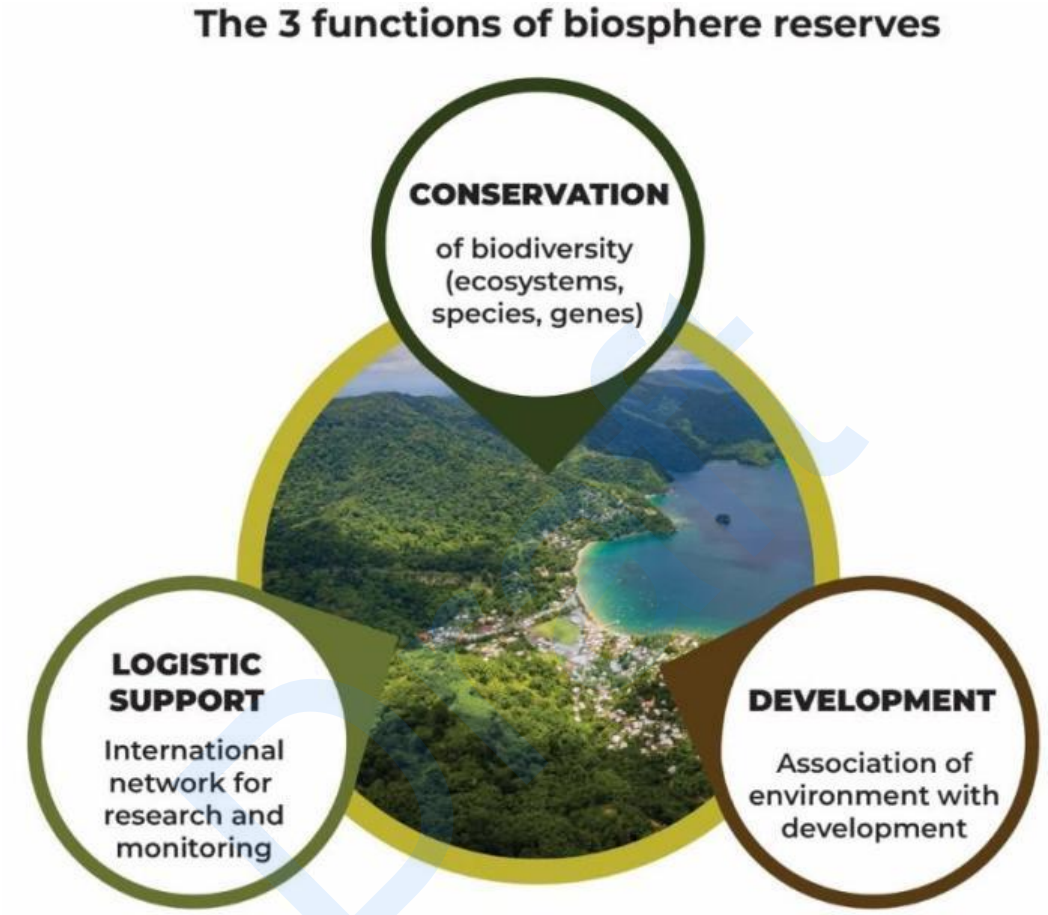


Figure 4. Schematic overview of 3 functions of biosphere reserves.

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.

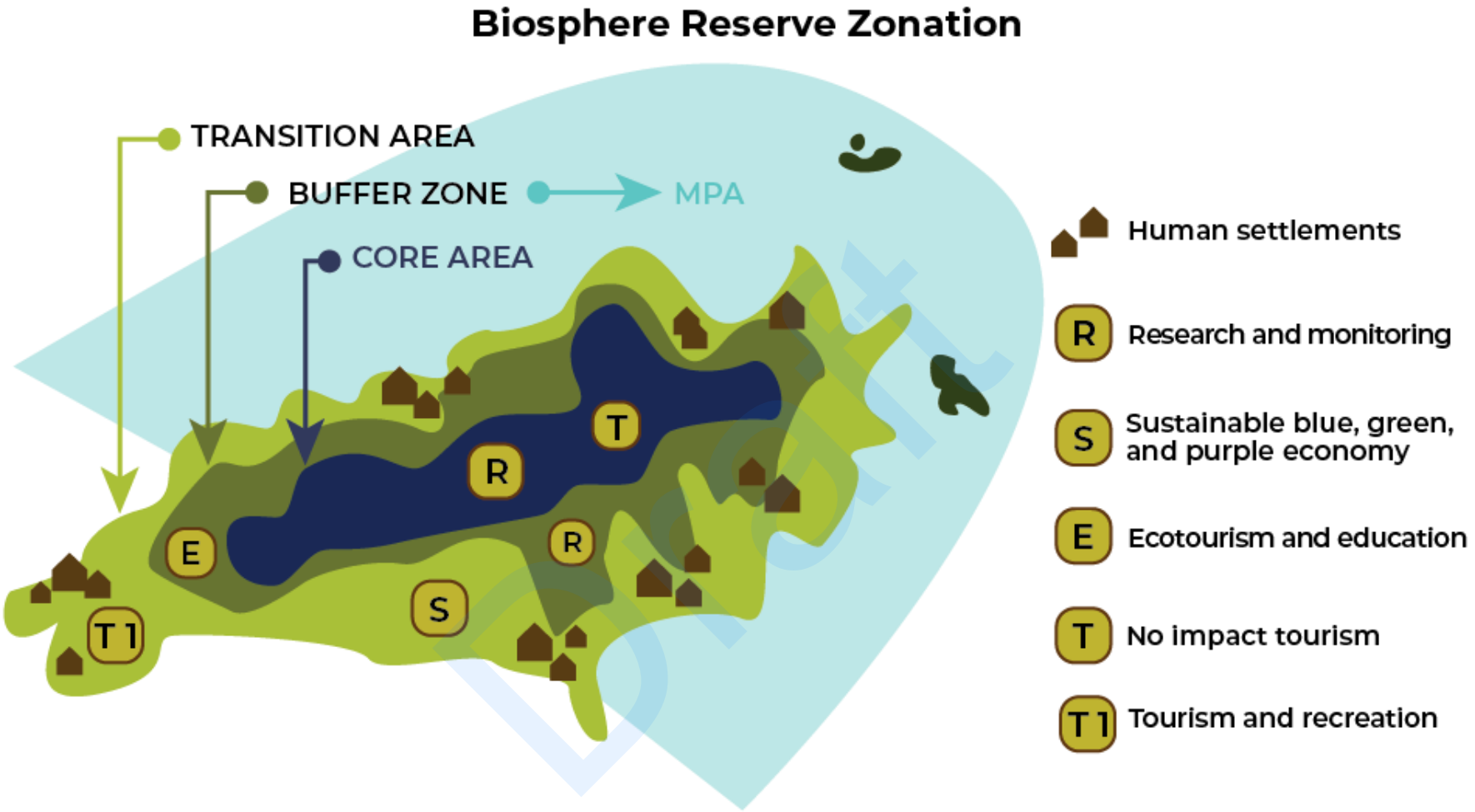


Figure 5. Schematic overview of NE Tobago Biosphere Reserve zonation (ERIC 2021).

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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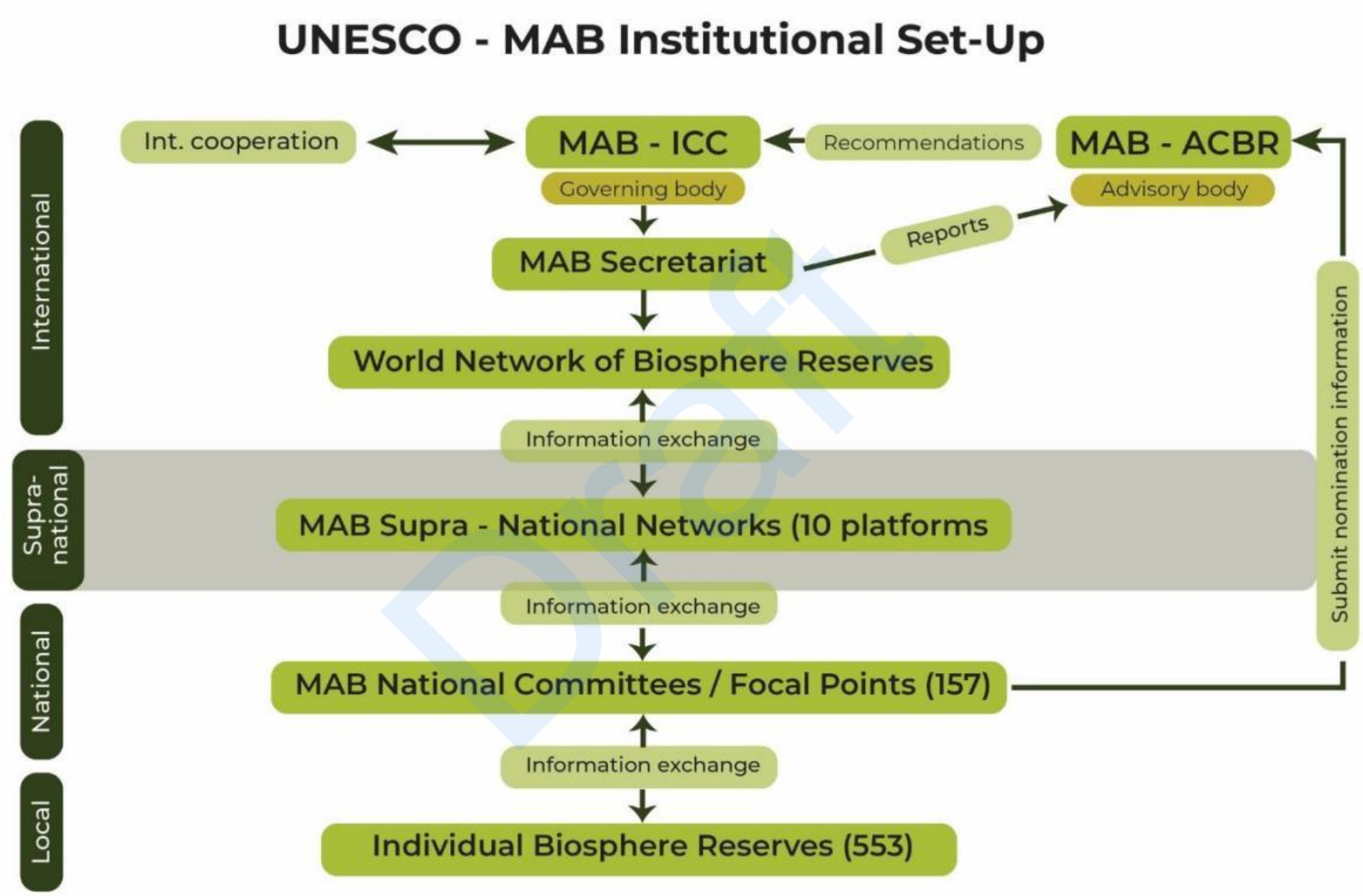


Figure 6. Diagram of the MAB institutional structure adapted from Schliep (24).

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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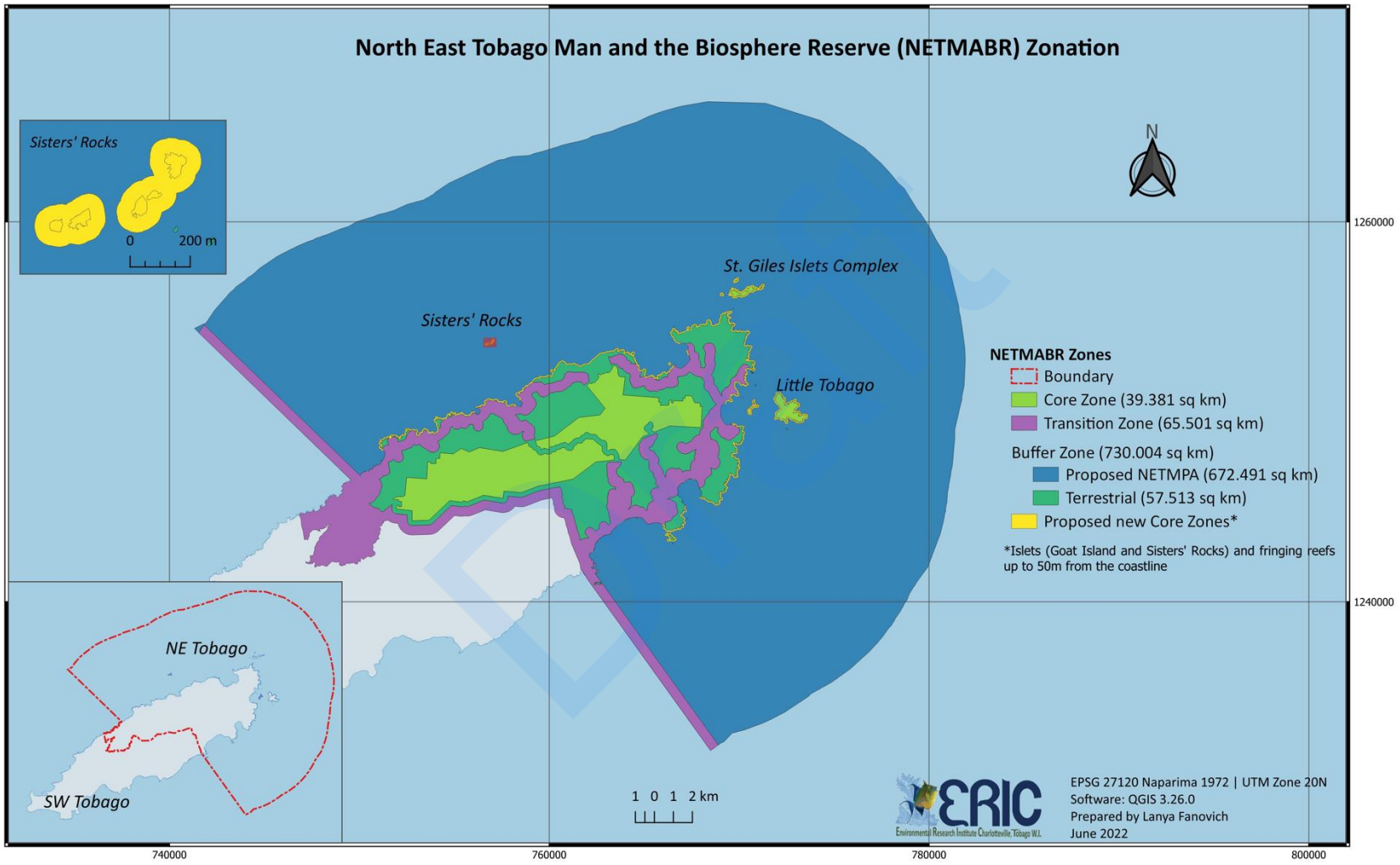


Figure 7. Zonation of the NE Tobago MAB Reserve (ERIC 2022)

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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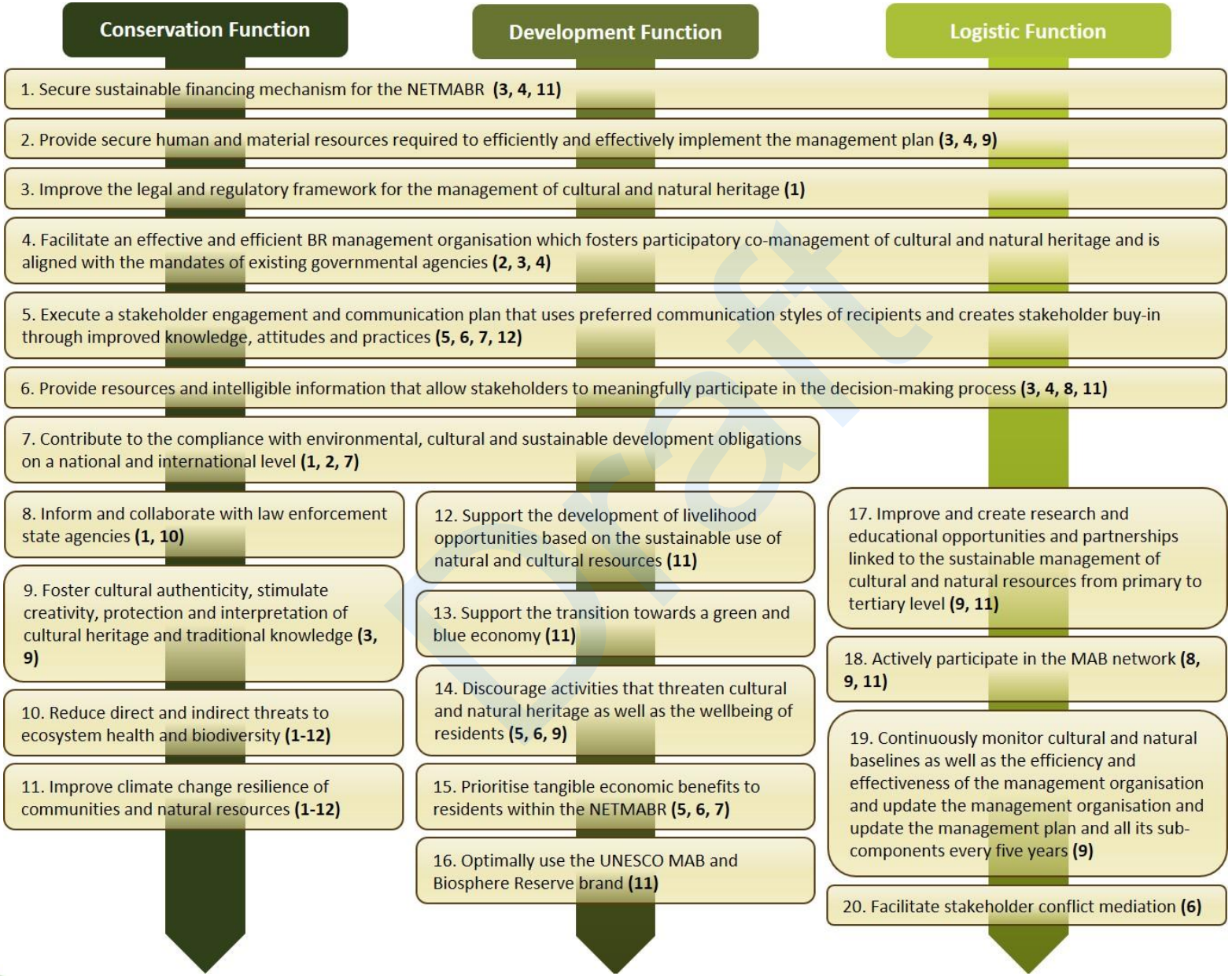


Figure 9. Proposed Main Strategies for the BR Management Plan, Addressed Key-Barriers in (brackets)

11 RESEARCH

SUMMARY SITUATIONAL ANALYSIS

Since the 1960s, NE Tobago has been frequently and repeatedly visited by researchers not only from The University of the West Indies (UWI), the University of Trinidad and Tobago (UTT), and Trinidad and Tobago's Institute of Marine Affairs (IMA), but also from an increasing number of international institutions, see Table . This has led to the area's reputation as a science-tourism hotspot.



Figure 10. MSc field work session, collecting data from a red-billed tropicbird (*Phaethon aethereus*) (Ryan S. Mohammed)

Past and present research programmes address herpetofauna, avifauna, coral reefs, tropical forest biodiversity, climate change as well as studies related to research methods, sustainable tourism, MABR design, resource use, policy planning, ecosystem services evaluation, archaeological sites, as well as cultural expressions.

The relatively high intactness, variety, accessibility and size of the Core and Buffer Zone make this area an ideal location for research, environmental education and demonstration projects without the risk of overcrowding or unsustainable levels of usage. Current research activities go far beyond the biological realm, reaching into the Transition Zone and include social, cultural and economic topics, most of them with a connection to applied sustainable development.

Increasingly, local stakeholders insist, understandably, on their right to be involved in research and be informed about results. While there is still much work to be done, a significant change happened in this regard over the past years. Especially, the IFPAM project involved and informed numerous key civil society stakeholders on its local steering committee.

Table 5. Overview of research related activities in the NETMABR.

	Time Frame	Title	Main Implementer	Description
	1995 - ongoing	Cardiff University Tropical Marine Ecology field course and research projects	Cardiff University	Undergraduate training in coral reef ecology and survey methods and postgraduate research on cleaner fishes and artificial reef structures.
Natural Heritage Related	June to August 2012-2019	Distribution Surveys of Endemic Frog Species	Glasgow University	Surveying 7 sites around northeast Tobago for frog calls and observations
	2012 - ongoing	Turtle Conservation	NEST	Turtle tagging, capacity building, technical training
	2013 - ongoing	Sea Turtle Egg Development Research	Glasgow University	Taking egg temperature of turtles using infrared laser thermometer
	2014-2019	National Sea Turtle Conservation Project	NEST	Recording turtle nest temperatures, satellite tracking
	June (Annually)	Beach Clean Up	Castara Youth Centre	Cleaning community and beach area

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	Time Frame	Title	Main Implementer	Description
	June (Annually)	I tour, I learn	Belle Garden Police Youth Club	Learning about the MRFR
	May (Annually)	Speyside Beach Clean Up	SEMPR	Cleaning community and beach area
	June (Annually)	Beach Clean Up	Moriah Police Youth Club	Cleaning community and beach area
	September (Annually)	Beach Clean Up	Belle Garden Police Youth Club	Cleaning community and beach area
	2015 - ongoing	Reef Check NE Tobago	ERIC	Rapid reef health assessments in 12 sites across NE Tobago and contributing to a global assessment.
	2004 - ongoing	Clean School Programme	Environment Tobago (ET)	Annual Tobago wide school competition related to waste management and change of behaviours.
	2014-2015	MPA Co-Management Capacity Building in NE Tobago	ERIC	Capacity-building of selected community members to contribute to MPA co-management.
	2015	MPA Monitoring and Co-management Capacity Building	ERIC	Continued training of community members in Reef Check
	2015	Bioblitz	Trinidad and Tobago Field Naturalists' Club and The UWI Zoological Museum	Collection and identification of species (972) in NE Tobago within 24h
	2016 - 2019	Establishment of a Network of Community Climate Change Champions	ERIC	Creating the NE Tobago Climate Change Champions Network to advocate for climate change adaptation and action
	2016 – ongoing	MSc. Biodiversity Conservation and	The UWI	Training in field sampling techniques in preparation for thesis, with reports generated for the DNRF and publication.

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	Time Frame	Title	Main Implementer	Description
		Sustainable Development Field Practicum		
	2016 - 2018	The Global FinPrint Project	ERIC	Survey of reef elasmobranchs abundance and diversity in NE Tobago
	2018 – 2019	White-tailed Sabrewing Hummingbird Presence and Distribution for the IFPAMTT Project	DNRF	Assessing the populations of the sabre-wing hummingbird in the MRFR, to inform the development of the "Management Plan for the MRFR National Park".
	2017 - 2019	Supporting NE Tobago Natural Resource Management: Eco- and Human System Mapping, Livelihood Benefits and Meaningful Participation	ERIC	Creating coastal resource use and environmental threats maps in NE Tobago
	2019	Drafting Sustainable Shark and Ray Management Regulations	ERIC	Drafting of management regulations to conserve NE Tobago's elasmobranch populations, supported by continued monitoring in NE Tobago using BRUVs and shark ID training for fisheries' data collectors and fisher folk.
	2016 - ongoing	Diver Observations of Elasmobranchs in Tobago	ERIC	Established database of elasmobranch sightings during recreational or spear diving and preliminary assessment of data.
	2017	Baseline Biological Survey of the MRFR and the proposed North East Tobago MPA for the IFPAMTT Project	The UWI	Assessment of the presence and status of proposed indicator species and recommendations for monitoring.

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	Time Frame	Title	Main Implementer	Description
	2017 / 2019	Sea Turtle Offshore Monitoring Project - Dive Component	ERIC	Underwater assessment of marine turtles' diversity, abundance and behaviour during the nesting season at 8 reefs.
	2016-2019	Charlotteville Coral Garden - Development of a Community-based Conservation, Education and Eco-Tourism Programme as a Mitigation Tool Against Climate Change	ERIC	Design and implementation of a pilot coral garden in Man O War Bay for assessment of feasibility as a long-term project for coral reef restoration and science-tourism.
	2017 - ongoing	Forest Check Tobago	ERIC	Community-science based assessment of climate change in the MRFR, using indicator species during forest tours.
Cultural Heritage Related	April (Annually)	I tour, I learn	Belle Garden Police Youth Club	Learning the history of Forts in Tobago
	April (Annually)	Easter Summer Camp	Castara Youth Centre	Teaching programs to encourage sustainable livelihoods and learn culture
	May (Annually)	Changing the Game for Sustainable Living and Environment Awareness	LEVE Foundation	Art competition on the beach for secondary school students using discarded items found on the beach
	June (Annually)	Heritage: Tobago Ole Time Weddings	THA	Perform traditional dances and re-enact the weddings from long ago
	July (Annually)	Heritage: Tobago Ole Time Harvest	THA	Re-enact traditions of Tobago Culture
	July (Annually)	Heritage: National Treasure Day	THA	Re-enact traditions of Tobago Culture. Cocoa dancing, baking in dirt oven, squeezing cane
	July (Annually)	Heritage: Bele Dance Festival	THA	Re-enact traditions of Tobago Culture. Traditional dances

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	Time Frame	Title	Main Implementer	Description
	August (Annually)	Summer Youth Awareness	Division of Tourism and Transportation	Learning about ecosystems, history and culture of Tobago
	2017 - ongoing	Documentation of Historical Sites	Tobago Heritage Conservation Society and National Trust of Trinidad and Tobago (NTTT) and Private Citizens	Documenting forgotten historical sites and buildings

Please note that most of the previously regular activities were interrupted by COVID-19 restrictions**.**

In April 2014, the Environmental Research Institute Charlotteville (ERIC), an ENGO, established the first permanent research facility, including resident scientists, in the NETMABR and conducts ongoing ecological monitoring, facilitates international researchers and student groups from almost all of the above-mentioned institutions, implements projects related to climate change and linking community livelihoods to conservation. Staff and directors of the ERIC have published and co-authored in national, regional and international publications on research conducted in NE Tobago. The ERIC has a demonstrable working relationship with the relevant natural resource management authorities for the area, namely the Department of the Environment (DoE), the Department of Marine Resources and Fisheries (DMRF), and the Department of Natural Resources and Forestry (DNRF).

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Figure 11. ERIC's sustainability scientists collecting Reef Check data (Max Smith, 2018)

The Tobago Heritage Conservation Society (THCS) is operational since 2018 but formally registered in 2020 as a civil society organisation responsible for the preservation of Tobago's archaeological and historical built assets. Over the past years the THCS has made outstanding progress in documenting and rediscovering archaeological sites in the NETMABR and established an international network of expert supporters.

The key factors for an enabling environment supporting demonstration projects, environmental education and training, research and monitoring in NE Tobago were identified in the Nomination Form as follows:

- rich biodiversity, ecosystem diversity and connectivity as well as cultural and archaeological heritage in a relatively small area allow for reaching all points of interest within short distance and time;
- most communities have been exposed to visiting researchers, students and environmental / cultural education and training and are commonly welcoming such activities (once results are shared);
- governmental bodies, schools (two secondary and 12 primary), and CSO's have a demonstrable track record of (co-) implementing demonstration projects, environmental education and training, as well as research and monitoring;
- private and public landowners as well as management authorities are generally well-disposed of collaborating on demonstration projects and potentially grant access to implementation sites;
- funding and technical support: the connection to its sister isle Trinidad allows for relatively easy access to:
  - national academic and research institutions such as the UWI, UTT and IMA;
  - national environmental training and educational programmes;
  - national incentives and grants (e.g., Green Fund see above);
  - a strong private sector (especially the hydrocarbon extracting companies) with well-developed corporate social responsibility programmes and a long-standing track record of supporting demonstration projects, environmental education and training, research and monitoring;
  - multilateral agencies (e.g., UN-agencies, the Inter-American Institute for Collaboration on Agriculture (IICA), the Inter-American Development Bank (IDB), as well as national and regional diplomatic missions that can provide networking, PR support and access to funding;

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- NE Tobago is easily accessible: (pre-COVID-19) there were weekly direct connections to the USA, Germany and England; the short airbridge to Trinidad allows for daily international travel to the region, middle America, Northern America and Europe. The NETMABR is 1-hour drive from the Tobago international airport on well developed country roads;
- researchers and student groups can easily find affordable long term and short-term accommodation;
- NE Tobago can be considered a safe and secure environment for visitors;
- publicly accessible community centres, school classrooms and CSO facilities for educational and training programmes; and
- required equipment and materials are relatively easily available due to proximity to Trinidad with its international airport and seaports.

In summary, governmental agencies, CSOs, national and international academic and research institutions have a demonstrable track record of implementing projects and programmes related to:

- biological and ecological baseline monitoring,
- collecting and analysing data related to fisheries and tourism,
- climate change monitoring,
- capacity building, environmental, cultural and natural heritage education, and



Figure 12. The ruins of the fortification at the promontory of Rocky Point, Parish St. Patrick's, Tobago (THCS, 2021)

- socio-cultural and economic activities related to sustainable development.

Many of these activities address issues shared with the region (e.g., turtle conservation, archaeological research) and globally (e.g., climate change, shark population monitoring; reef health monitoring).

Unfortunately, some of these activities are conducted in silos, information is unreliably stored and complicated to access. Therefore, it will be an important mandate of the future NETMABR management organisation to consolidate activities, define future research, outreach and implementation agendas, stimulate cooperation between stakeholders, and provide link-ups with other BRs to support research exchanges (e.g., through IberoMAB or the Island and Coastal BR Network).



Figure 13. Caribbean hermit crab (*Coenobita clypeatus*) research on Little Tobago (Ryan S. Mohammed, 2021)

HIGH LEVEL GOAL

Research directly supports the implementation of the NETMABR management plan, intelligibly informs and involves residents, creates tangible benefits for local stakeholders, and contributes to knowledge exchange.

PRIORITIES

- Research activities in the BR are coordinated and aligned with the NETMABR management plan.
- Research results are easily accessible for all stakeholders.
- Research results are applicable, derive tangible benefits for residents, inform sustainable economic development, and assist in meeting the 17 SDGs.

STRATEGIES

- facilitate the drafting of a 5-year research and monitoring programme for the NETMABR in collaboration with stakeholders, including clear guidelines for researchers;
- establish a research repository, housed within the NETPAMT and accessible to stakeholders (online and in-person);
- establish long-term research linkages with local and international academic institutions on all subject matters related to the BR programme;
- encourage community-based science, especially the involvement of secondary school children in monitoring programmes; and
- formalise research regulations to facilitate knowledge sharing, protect against research-piracy, and ensure that a percentage of any royalties derived from research in NE Tobago is used to support the implementation of the Management Plan.

PROPOSED ACTIVITIES

- formalise research activities with UWI, UTT, and IMA;
- agree on a heritage research and documentation programme with the Tobago Heritage Conservation Society and the National Trust of Trinidad and Tobago;
- facilitate the coordinated and continuous monitoring of:
  - biodiversity,
  - ecosystem health,

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- climate change impacts,
- species of specific interest,
- economic development (especially in the agricultural, tourism, fisheries, and cultural sectors), and
- welfare and happiness

through a collaborative effort of governmental, non-governmental and private sector actors, especially including community-based science approaches,

- support the continued documentation of tangible and intangible authentic art, traditions and cultural heritage sites;
- promote the NETMABR as a site for international research regarding conservation, culture, archaeology, innovative technologies, food production, climate change resilience, benefits of the MAB programme etc.

Figure 14. Participants at the Trinidad and Tobago Field Naturalists' Club Bioblitz, hosted in Charlotteville in 2015

