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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: SUSTAINABLE AGRICULTURE AND SUSTAINABLE LAND MANAGEMENT PRACTICES

AUGUST 2022

Component of a 10-year Management Plan

FOCUS:

SUSTAINABLE AGRICULTURE AND SUSTAINABLE LAND MANAGEMENT PRACTICES

for the

North-East Tobago Man and the Biosphere Area

Draft

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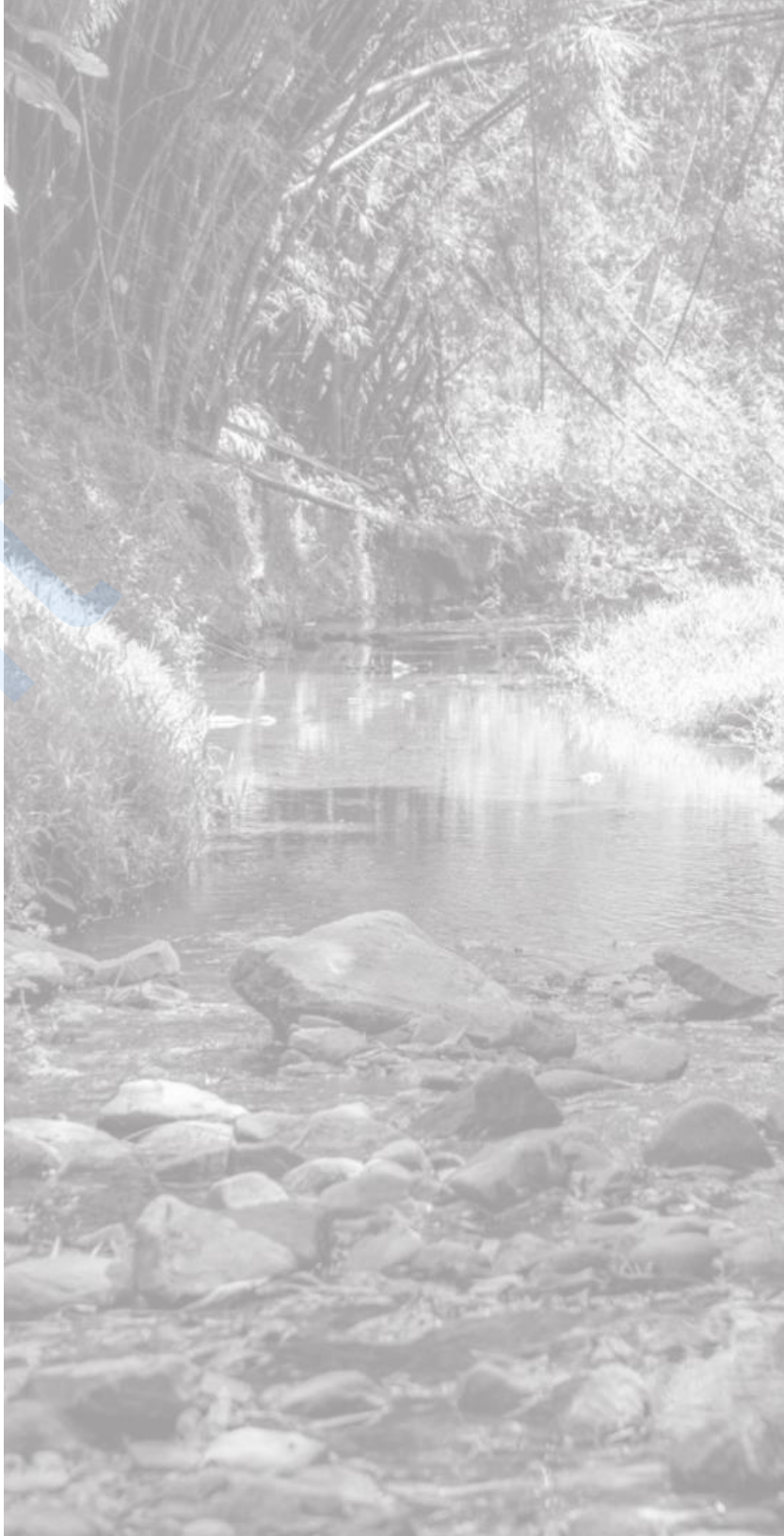


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1 EXECUTIVE SUMMARY

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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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.

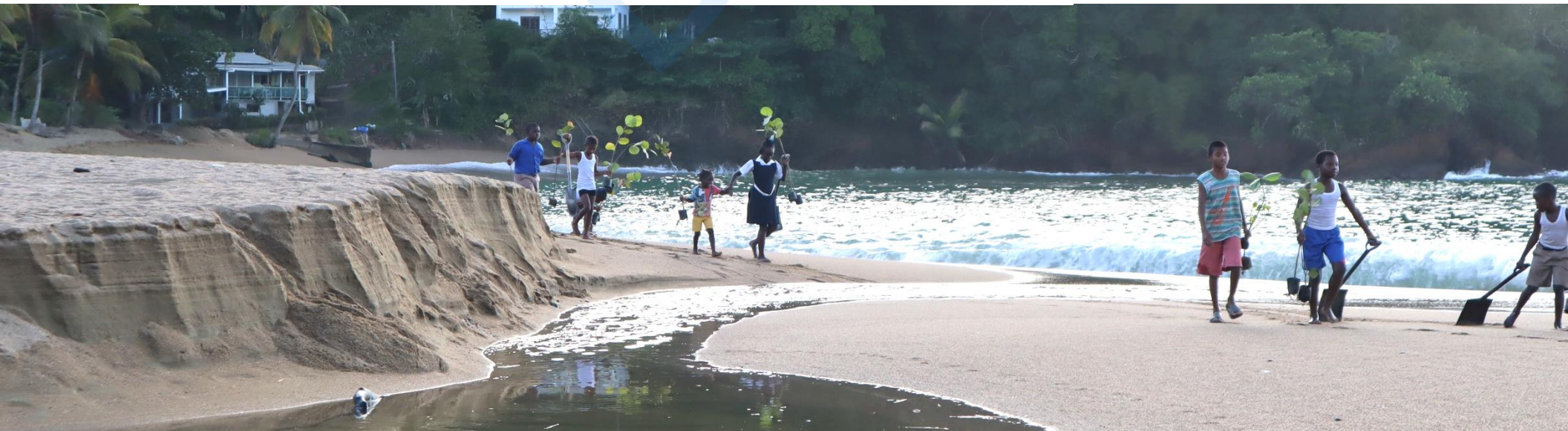
7 MISSION

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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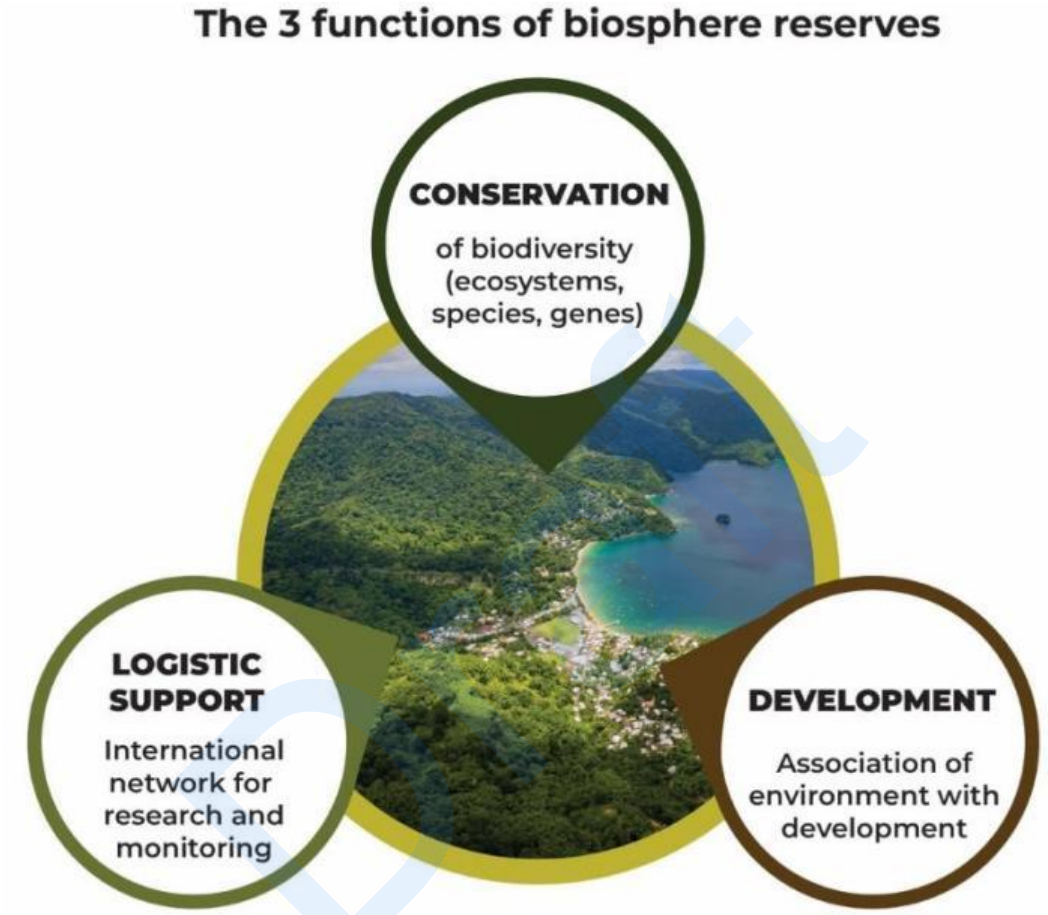


Figure 4. Schematic overview of 3 functions of biosphere reserves.

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.

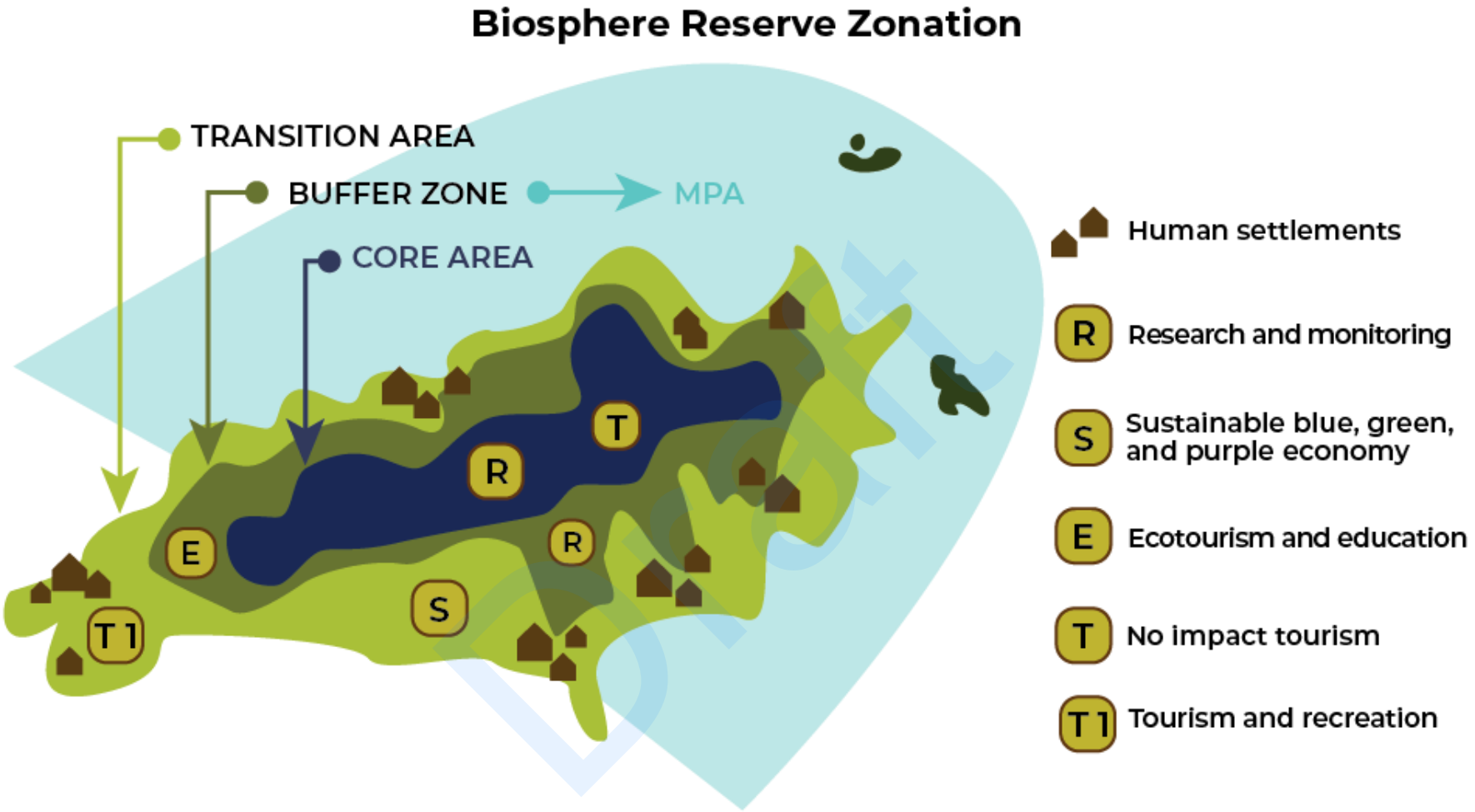


Figure 5. Schematic overview of NE Tobago Biosphere Reserve zonation (ERIC 2021).

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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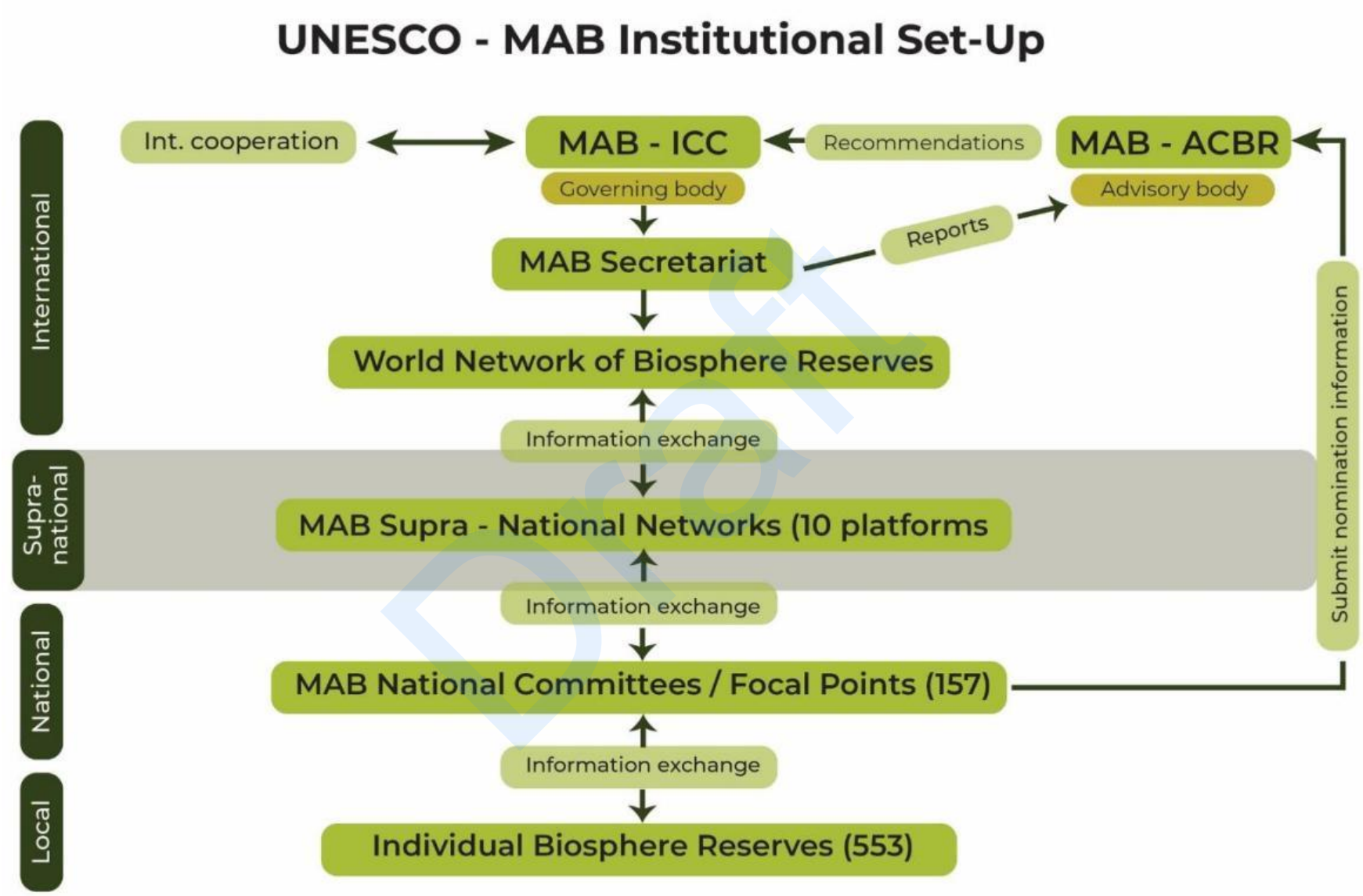


Figure 6. Diagram of the MAB institutional structure adapted from Schliep (24).

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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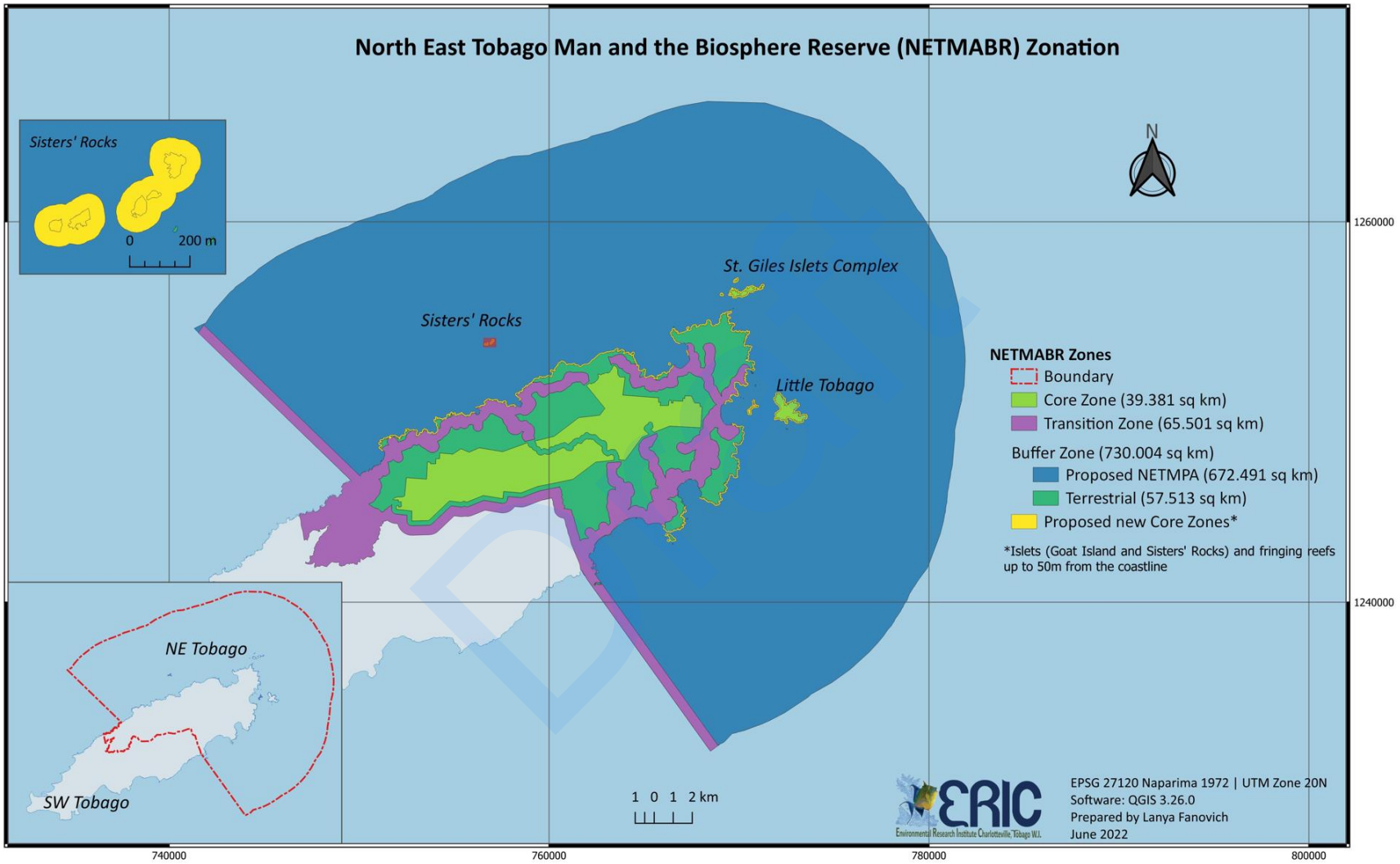


Figure 7. Zonation of the NE Tobago MAB Reserve (ERIC 2022)

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

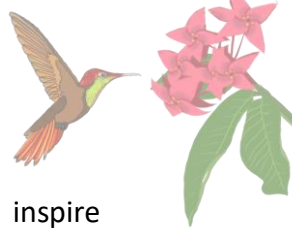
Fragmented management and use of land and waters also occurs in ***non-government sectors***. The absence of a national land use planning framework combined with outdated regulations and limited enforcement means that private land management and use is largely unrestricted. There is a concomitant lack 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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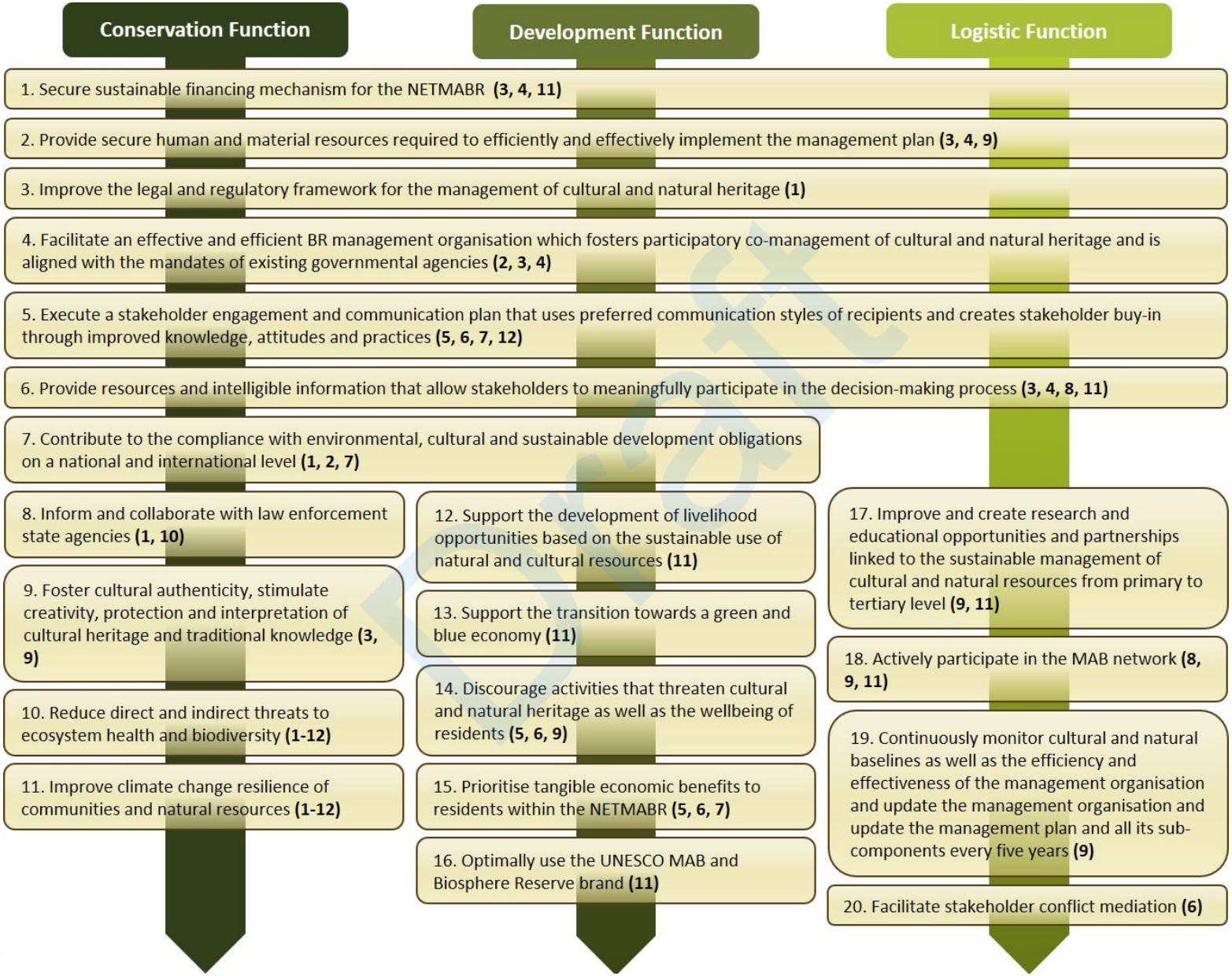


Figure 9. Proposed Main Strategies for the BR Management Plan, Addressed Key-Barriers in (brackets)

11 SUSTAINABLE AGRICULTURE AND SUSTAINABLE LAND MANAGEMENT PRACTISES

The overall objective of Sustainable Land Management (SLM) and Land Degradation Neutrality (LDN) is to reduce land degradation and improve land productivity in NE Tobago's watersheds and NETMABR zones. This can be achieved via an improvement in agricultural and land-management practises, both of which are addressed in the chapter below.

SITUATIONAL ANALYSIS

The terrestrial part of the NETMABR has historically been used extensively for sugar, cotton, coconut, and cocoa-based agriculture, which is indicated by many colonial ruins and, in the case of cocoa, still within living memory. In fact, the need for an ecosystem service, namely consistent and sufficient water supply, for the sugar industry was the main reason for the declaration of the MRFR in 1776. In 1963, hurricane Flora caused massive forest devastation and the subsequent change from an agricultural-based to a hydrocarbon-based economy in the early 1970s led to an almost total decline in agriculture and the abandonment of vast areas with larger estates and smaller farms. Today, the MRFR, the mainland NETMABR Core Zone, where agricultural activities are not permitted, is ecologically intact and the surrounding private and public properties (Buffer and Transition Zone), are barely agriculturally used.

The low agricultural production within the NETMABR is mainly due to lack of market, high competition from imports, lack of capacity to apply innovative agricultural practises, the deterioration of agricultural access roads and predominant steep slopes which are making the area difficult to access and mechanisation impractical.

Detailed baseline data regarding agricultural activities are unfortunately not available.

However, it can be stated that agricultural activities in the NETMABR are on a very small scale, almost exclusively situated within the Transition Zone, and can be described as follows:

- the two largest farms (at Louis D'or and Kendall) are state farms, operated by the Department of Agriculture, each covering between 15 to 20ha;
- there is one operational, 100% organic certified (by the US Department of Agriculture), cocoa estate in Roxborough with approximately 10ha under crop;

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- small holdings between 0.5 to 5ha cover a total of 25 – 40ha spread throughout the area; however, are only to a small percentage under crop;
- 400 to 500 sheep and goats are reared in groups of 5 – 10 by single owners, mainly tied in the open at the side of roads as fencing is a challenge;
- 75 – 100 cattle are reared in small groups, mainly tied in the open in the vicinity of roads;
- many individual households rear chicken for personal use;
- there are between 10 – 15 small pig farms with 5 – 10 pigs each;
- less than five small bee – keepers;
- the main short crops are corn, starchy root tubers, tomatoes, aubergine, ochro, peas, pak choi;
- extraction of timber, which is on a very small scale and largely informal and unregulated,
- long term and tree crops include various types of bananas, citrus, mango, avocado, breadfruit and plums are planted in residential areas or home gardens for private use and rarely on the market.

Traditional agriculture is perceived by many persons as an unattractive, hard labour occupation and is not able to attract youth on a larger scale. The image of a farmer is seen as unattractive, a “dirty collar” job, especially for younger people. The disinterest of young people and the general high age of current farmers poses a serious problem. Without younger folks interested in learning the task, traditional knowledge and skills of older generations will get lost.

All of the above contributes to the situation, that the few remaining farmers are mostly male and above 50 years of age.

Farmers associations do not have a demonstrable history of success and are in dire need of organisational and operational support.

Local food supply is mostly provided by imports from Trinidad, other Caribbean islands and home gardening (which got increasingly popular during the COVID-19 pandemic). Some “communal trees” such as mango, breadfruit, chennet, pommerac pomme cythere, add significantly to the supply of healthy nutrition; however, most of the heritage fruit trees are not cultivated by farmers. Unfortunately, many buyers prefer internationally imported fruits of questionable quality such as apples, grapes, and pears.

Farming is often a matter of scale, which applies also in NE Tobago where most farms are less than an acre, mostly operated by part-time farmers and generally not large enough to be worked with big machinery to minimise labour intensity. The costs, effort and labour intensity of working a relatively small area are disproportionate to the economic benefits.

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Rivers are the main sources of freshwater for agriculture, but are becoming an increasingly unreliable water supply source in the face of climate change.

Livestock farming, although represented throughout NE Tobago, is small and few and mostly consists of people owning a small amount of cattle, goats, sheep, pigs, chickens or ducks, whose meat is sold to Trinidad. Households often rear caged or free ranging chickens for subsistence.
There are not enough animals to introduce managed grazing practises which could provide ecosystem benefits since access to larger portions of land is not available and there are not enough animals to start herding.

Market accessibility is difficult as very few bulk or even retail buyers purchase fresh produce in NE Tobago. Farmers, in lack of a NE Tobago farmers' market (which might not even attract enough buyers), are dependent on the demand in the south of the island. The few crops produced by NE Tobago farmers are sold in some small, local road-side parlours or on the market in Scarborough.

The Tobago Roadmap to Recovery (THA, 2020) (26) states that the island produces less than 20% of the food it consumes. Tobago is therefore directly affected by both regional supply shortages and interruptions in the operations of the local sea-bridge. The same document illustrates several existing and ongoing projects and activities determined to increase production and productivity of the agricultural sector. Projects include the "Eat Local Initiative" designed to raise awareness on the importance of growing and eating local produce, a "Tobago Eco-Foods Brand" that will help open export markets, the restructuring of the agribusiness marketing department, and the creation of the Tobago Agribusiness Development Company (TADCO).
Reopening of agricultural access roads is undertaken, but of questionable economic value as the costs for road construction far outweigh the economic benefits. Additionally, access road construction is often linked to serious soil degradation and erosion, negatively impacting on riverine and marine ecosystems in the area and further invites squatting and illegal lumbering on abandoned estates or state property. Some of the newly established roads are poorly engineered and not maintained, resulting in rapid decline of banks and road surfaces.

Even though the agricultural sector significantly declined over the last 50 years, the Transition Zone and the Buffer Zone, (vastly consisting of abandoned private and public properties) harbour opportunities for sustainable agriculture and agroforestry practices. Low impact, sustainable and regenerative agriculture have the potential to be significantly expanded, contribute to local livelihoods, export potential,

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ensure food and nutrition security and improve sustainable land management throughout the NETMABR. A noteworthy opportunity is the significant amount of old cocoa trees that could be rehabilitated.

The expected start of the, FAO led and GEF funded, BIOREACH Project could play a significant role in supporting sustainable agricultural practises in NE Tobago. BIOREACH (Biodiversity Conservation and Agroecological Land Restoration in Productive Landscapes of Trinidad and Tobago), seeks to promote biodiversity conservation, restore degraded lands, and improve the livelihoods of rural communities in targeted productive landscapes (agriculture, forestry and other land uses).

The relatively small impact of agricultural activities on sustainable land management and land degradation neutrality in NE Tobago is outweighed by, the above-mentioned, development of roads, expansion of residential housing, mismanagement of wetlands, illegal sand and gravel mining at rivers and beaches, larger scale construction activities and grey water run-off from communities which often also contains mineral oils and other chemicals used in small commercial activities. Fortunately, these impacts are mostly confined to the lower and flatter reaches and is fairly local in its distribution. Capacity building for the responsible Departments of the THA is urgently needed to improve the understanding of the importance of sustainable land management and apply its principles in their daily routine. At the same time existing laws require enforcement supported by unhindered collaboration between the Police Force, the THA and the civil society sector. Notably, the GEF CReW+ which aims to implement innovative, technical small-scale solutions regarding water and wastewater management, is currently implementing a demonstration project in Charlotteville, which hopefully will provide some applicable and replicable solutions for small rural communities in the NETMABR.

HIGH LEVEL GOALS

SLM, LDN

Natural land resources within the NETMABR are sustainably managed to ensure regeneration and long-term availability of ecosystem services at their fullest potential.

Agriculture

Sustainable and regenerative agricultural practises ensure healthy and stable soils, crop diversity, food security, healthy and nutritious agricultural products and farmers' welfare while protecting NE Tobago's cultural and natural heritage.

Figure 10. Old cocoa house in Roxborough (Jacob Bock)



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The figure below shows the key elements of a regenerative integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems incorporated. Since it is based on the co-creation of knowledge, combining science with the traditional, practical, and local knowledge of producers, it does not require certification or incur any additional cost to production.

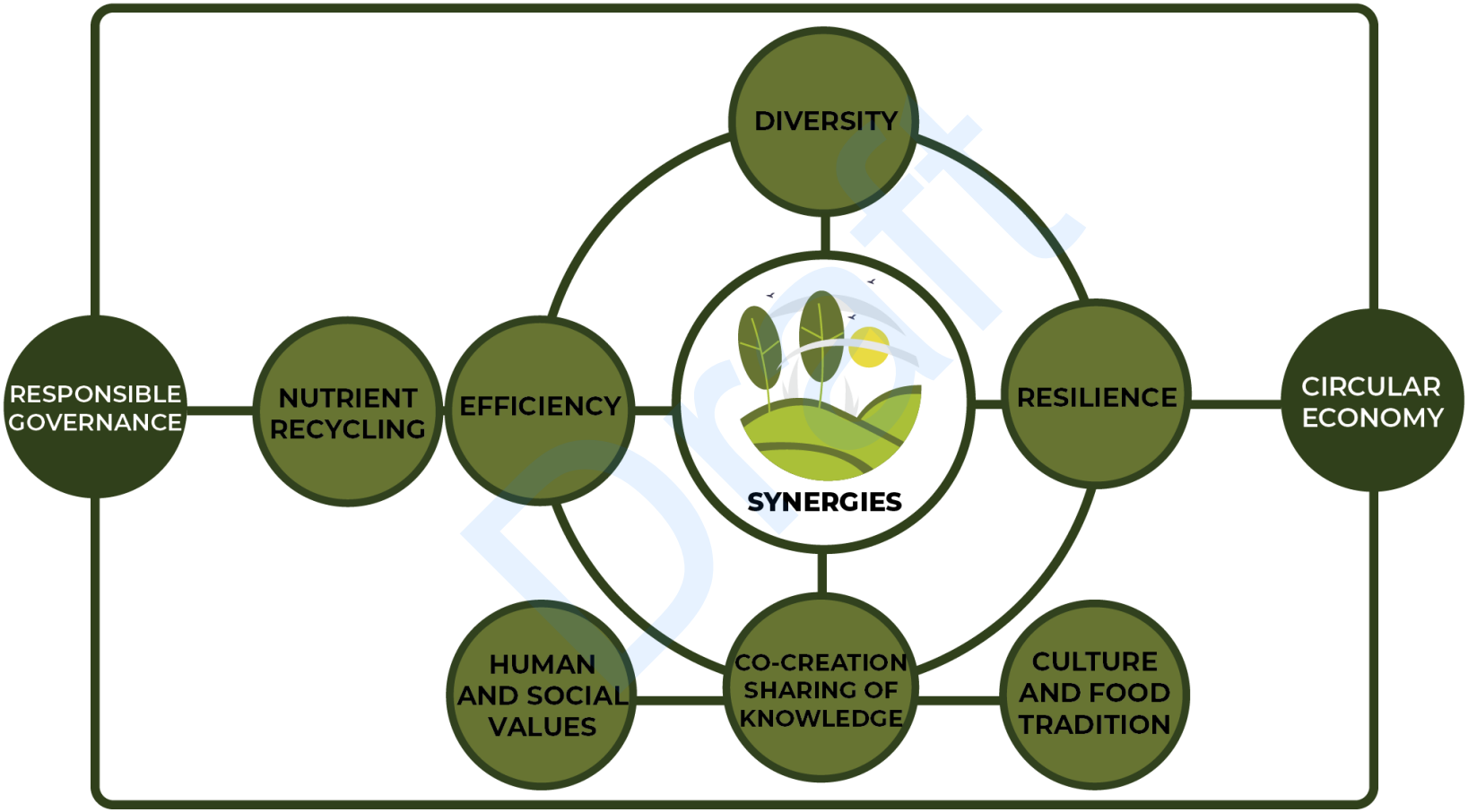


Figure 11. Elements of a regenerative integrated approach of food and agricultural systems.

PRIORITIES

- Demonstrate lucrative economic viability of sustainable and regenerative agriculture and at the same time destigmatise agricultural entrepreneurship, to prioritise tangible economic benefits to residents within the NETMABR (see main strategy 15).
- Produce sufficient, healthy, and nutritious agricultural products to supply residents, while the sector's environmental impact is minimised.
- Support the improvement of livelihoods based on sustainable use of natural land resources in a way that promotes ecosystem health (see main strategy 12).
- Reduce non-agriculture related land degradation and improve soil stability in all watersheds.
- Facilitate agricultural research, innovation, knowledge exchange and capacity building.

STRATEGIES

- Identify the most lucrative, locally adequate agricultural products and conduct local and export market research to support the development of livelihood opportunities (see main strategy 12).
- Facilitate applied research and knowledge exchange on sustainable, regenerative, circular, and climate smart agricultural ecopreneur-ship best suitable to Tobago's circumstances, including community science and traditional knowledge to support transition towards a green economy (see main strategy 13).
- Application of One Health principles which emphasise on using and integrated, unifying approach to balance and optimise the health of people, animals and the environment.
- Facilitate institutional strengthening and individual capacity development to build sustainable and regenerative agricultural skills and knowledge in all agricultural systems via training and demonstrations sites (Kendall, Louis D'or) and knowledgeable extension services.
- Facilitate the application of lucrative, innovative and scale-able agricultural methods and technologies.
- Provide easy access to sustainable farm inputs and machinery through empowered THA farm schools.
- Collaborate with farmers to establish agricultural ecopreneur demonstration farms for regenerative and sustainable agriculture.
- Communicate agricultural business success stories and drive an anti-stigmatisation campaign, using preferred communication styles of recipients to create stakeholder buy-in through improved knowledge, attitudes and practices (see main strategy 5).

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- Optimally use the UNESCO MAB and BR brand for agricultural products (see main strategy 16).
- Facilitate the regularisation of / tenure security for small farmers and agreements between farmers and estate owners linked to the use of sustainable and regenerative agriculture to minimise stakeholder conflicts (see main strategy 20).
- Encourage home gardening and the planting of heritage fruit trees.
- Inform about the ecological and economic impacts of soil degradation and erosion to discourage activities that threaten cultural and natural heritage and the wellbeing of residents (see main strategy 14).
- Lobby for commitment of all THA departments to apply integrated SLM and LDN policies and practises on public lands, especially the Core and Buffer Zones.
- Lobby for establishment of an environmental law enforcement task force via collaboration between NETPAMT, the Department of the Environment, the Environmental Management Authority and the Police Force to regulate and if necessary, stop illegal land management practises that negatively impact on ecosystems in the NETMABR (see main strategy 8).

Figure 12. Louis D'or government farm in the NETMABR (Jacob Bock)



PROPOSED ACTIVITIES

SLM, LDN (non-agricultural)

Facilitate the implementation of activities and practices that reduce direct and indirect threats to ecosystem health and biodiversity (see main strategy 10) and discourage activities that threaten cultural and natural heritage as well as the wellbeing of residents (see main strategy 14), including:

- re-establishment of the re-forestation programme, committing contractors and employees to participate in a SLM/LDN training course and demonstrably apply such practises. This may include replacement of invasive bamboo, fire tracing, bank and beach stabilisation (e.g., usage of vetiver);
- revision of THA practises regarding the clearing of rivers, river mouths and draining of wetlands (esp. in the wider Roxborough area) based on SLM/LDN best practise;
- a commitment of all (especially THA) contractors and employees involved in road and other larger scale construction activities to undergo training in applicable SLM/LDN practices and demonstrably apply those; and
- enforcement of sand and gravel mining regulations; at the same time make sand and gravel available in smaller and more affordable amounts.

Capacity Building

Facilitate the improvement and generation of research and educational opportunities and partnerships linked to SLM/ LDN (see main strategy 17, including:

- capacity building within the Division of Food Production, Forestry and Fisheries to implement best SLM/LDN practises;
- the reorientation of agricultural extension services towards sustainable and regenerative agriculture;
- availability of sustainable regenerative farming education and training programmes (e.g. healthy livestock farming, animal welfare standards (especially stress reduction to improve meat quality), no tillage soil preparation, cover crops, companion planting, in-farm fertility, no synthetic pesticides or fertilisers, ecosystem-based pest control, and multiple crop rotations, vertical wall gardening (especially beneficial for older generations);
- access to free, online ECIAF Diploma in Agriculture
- the establishment of a URP Programme for farmer training;

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- the remodelling of the Louis D'or and Kendall agricultural stations (THTI is another possibility) as sustainable, regenerative agricultural training centres with a Caribbean reach;
- the establishment of public private partnerships for sustainable agricultural demonstration projects;
- capacity building of farmers associations through mentoring regarding governance, transparency, and entrepreneurship;
- applicable research, international networking and knowledge exchange regarding sustainable, regenerative and climate-smart agriculture.

Home Gardening

- Encourage and support homeowners (possibly via church outreach) to take up home gardening (basic, climate-smart crops, plant fruit trees in the yard, and use vertical wall gardening (especially for the elderly)

Inputs (from Kendall and Louis D'or Agricultural Stations)

Facilitate:

- production of farm inputs such as organic fertilisers and pesticides and sell at cost price;
- Establishment of an agricultural tool rental;
- Production of selected seedling varieties according to sustainable agricultural practises and sell at cost price.

Branding and Marketing

Facilitate:

- brand development for NETMABR agricultural products using the UNESCO MAB and BR brand (see main strategy 16);
- online presence of NETMABR agricultural products;
- a feasibility assessment of a delivery and sales truck for NETMABR products (possibly reaching Trinidad);
- linkages between NETMABR farmers and school- and hospital feeding arrangements;
- a feasibility assessment of a weekly NETMABR farmers' market;
- the usage of export facilitating agencies and grants to access markets in the Caribbean, North America and Europe, specifically for value added, low volume, high-priced niche market and BR-branded products; and

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- collaboration with fair-trade organisations, and alliances where customers expect to pay more for sustainable high-quality products;
- sustainable / organic agricultural certifications

Other

- Identify support for farmers to bridge the teething period when transitioning to sustainable and regenerative agriculture.
- Facilitate negotiations to regularise agricultural squatters in exchange for adherence to SLM practices.
- Initiate the establishment of an environmental law enforcement task force.
- Integrate the benefits and success stories of SLM/LDN into the NETMABR communication strategy.

Potential NETMABR Agricultural Products

Facilitate research into (including their processed, value-added product):

- cocoa,
- tea additives,
- herbs and spices,
- sea moss,
- honey,
- heritage fruits,
- ornamental flowers,
- mushrooms,
- hemp (pharmaceutical, fabric and plastic alternatives),
- timber and fibre from invasive bamboo.

Figure 10. Government farm in NE Tobago



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