


PERIODIC REVIEW ON

KOMODO

BIOSPHERE RESERVE

2024




PERIODIC REVIEW
KOMODO BIOSPHERE RESERVE
YEAR 2024

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United Nations Educational, Scientific and Cultural Organization

Man and the Biosphere Programme

PERIODIC REVIEW
FOR KOMODO BIOSPHERE RESERVE

[SEPTEMBER, 2024]

INTRODUCTION

The UNESCO General Conference, at its 28th session, adopted Resolution 28 C/2.4 on the Statutory Framework of the World Network of Biosphere Reserves. This text defines in particular the criteria for an area to be qualified for designation as a biosphere reserve (Article 4). In addition, Article 9 foresees a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4 and forwarded to the secretariat by the State concerned. The text of the Statutory Framework is given in the third annex.

The form which follows is provided to help States to prepare their national reports in accordance with Article 9 and to update the data available to the Secretariat on the biosphere reserve concerned. This report should enable the International Coordinating Council (ICC) of the MAB Programme to review how each biosphere reserve is fulfilling the criteria of Article 4 of the Statutory Framework and in particular the three functions. It should be noted that it is requested, in the last part of the form (Criteria and Progress Made), to indicate how the biosphere reserve fulfills each of these criteria.

The information presented on this periodic review will be used in a number of ways by UNESCO:

(a) for examination of the biosphere reserve by the International Advisory Committee for Biosphere Reserves and by the Bureau of the MAB International Coordinating Council;

(b) for use in a world-wide accessible information system, notably for the UNESCO-MABnet and publications, facilitating communication and interaction amongst persons interested in biosphere reserves throughout the world.

Kindly indicate if any part of this report should remain confidential.

The form consists of three parts:

- Part one is a summary highlighting the main changes in the biosphere reserve during the reporting period.
- Part two is more descriptive and detailed, referring to the human, physical and biological characteristics as well as to the institutional aspects.
- Part three consists of two Annexes (A): the first Annex (A.1) will be used to update the directory of biosphere reserves on the MABnet. The second annex will be used to provide promotion and communication materials of the biosphere reserve (A.2).

The third annex comprises the Statutory Framework for the World Network of Biosphere Reserves.

Please provide as many quantitative data as possible as well as supporting documentation to complete the information provided, especially:

- Map(s) clearly showing the zonation (see in particular 2.3.1);

- The legal texts for the different zones.

The form should be completed in English, French or Spanish. Two copies should be sent to the Secretariat, as follows:

1. The original hard copy, with the original signatures, letters of endorsement, zonation map and supporting documents. This should be sent to the Secretariat through the Official UNESCO channels, i.e. via the National Commission for UNESCO and/or the Permanent Delegation to UNESCO.
2. An electronic version (on diskette, CD, etc.) of the periodic review form and of maps (especially the zonation map). This can be sent directly to the MAB Secretariat:

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FOREWORD

The Komodo Biosphere Reserve, recognized as one of Indonesia's most significant natural assets, represents a vital confluence of biodiversity, cultural heritage, and sustainable development. As a protected area under UNESCO's Man and the Biosphere Programme, it serves as a critical sanctuary for the iconic Komodo dragon (Varanus komodoensis) and numerous other unique species, both terrestrial and marine. This periodic review offers a comprehensive assessment of the management and conservation practices within the reserve, ensuring that it continues to thrive as a hub for scientific research, ecotourism, and community engagement.

Over the past few years, the reserve has faced dynamic challenges, including climate change impacts, increased tourism pressures, and socio-economic shifts in the local communities. These developments underscore the need for adaptive management strategies that balance ecological integrity with sustainable development goals. This report highlights these ongoing efforts and provides an evidence-based evaluation of the progress made toward fulfilling the core functions of conservation, sustainable development, and logistical support.

We extend our gratitude to the stakeholders, including local communities, governmental institutions, researchers, and conservation organizations, whose active participation and collaboration have been instrumental in maintaining the integrity of the Komodo Biosphere Reserve. Their dedication to protecting the rich biodiversity and fostering sustainable livelihoods has been key to the region's success.

As we look toward the future, this periodic review serves as both a reflection on past achievements and a roadmap for addressing future challenges. The insights gathered here aim to reinforce the commitment to safeguarding the Komodo Biosphere Reserve, ensuring that it remains a resilient, thriving ecosystem for generations to come.

Bogor, September 27, 2024

Chairman of the Indonesian MAB-UNESCO Committee

(2023-2025 Term)

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PART I: SUMMARY

a) Name of the biosphere reserve: Komodo Biosphere Reserve (KBR)
b) Country: Indonesia
c) Year of designation: 1977
d) Year(s) of periodic review(s): 2012 (previous), 2024 (current)
e) Previous recommendation(s) made by the International Co-ordinating Council (MAB ICC), if applicable:

Recommendations from the 2012 review included updating the zoning system, enhancing collaboration among stakeholders, and supporting the socio-economic welfare of local communities through sustainable development initiatives.

f) What follow-up actions are completed and if not completed/initiated, please provide justifications.

Follow-up actions include zoning updates, establishing a regional working team, collaboration between government authorities, local communities, and the private sector, and focusing on biodiversity conservation and socio-economic welfare. Many of the actions have been completed, and efforts to integrate sustainable development continue.

However, the management coordination between stakeholders has not been optimal, primarily due to leadership transitions and a lack of effective knowledge transfer and data regarding the Komodo Biosphere Reserve from the previous period to the current one. In addition, coordination with the Bima Regency government in West Nusa Tenggara (NTB), which is one of the key stakeholders in the transition area, has not yet been established.

g) Update on the implementation of measures to achieve the objectives of the biosphere reserve.

Measures have been successfully implemented to balance conservation with local community welfare. This includes conservation programs, sustainable development initiatives, and enhancing local economies through biosphere reserve product branding as well as the function of logictis through research and development activities.

h) Briefly describe the process by which the current periodic review has been conducted:

The current periodic review year 2024 involved consultations with local governments, environmental researchers, community leaders, and private sector actors. Data collection, workshops, and focus group discussions were held, and the process was coordinated by the Komodo Biosphere Reserve Working Team.

i) Area and spatial configuration:

Table 1. Summary of area and spatial configuration

Zonation	Previous report (PR Komodo 2012 (ha)	Proposed changes (if any) (ha)
Size of core area of KBR	**173,300.00 ha**	-
- Size of terrestrial Core Area(s)	57,613.00 ha.	
- If appropriate, size of marine Core Area(s)	115,687.00 ha	
Size of proposed Buffer Zone(s)	**288,353.00 ha**	
- Size of terrestrial Buffer Zone(s)	43,975.00 ha	
- If appropriate, size of marine Buffer Zone(s)	244,378.00 ha	-
Approx. size of terrestrial Transition Area(s) (if applicable)	**231,363.00 ha**	
If appropriate, approx. size of marine Transition Area(s)	**424,987.00 ha**	-
TOTAL	**1,118,003.00 ha**	**-**

j) Human population of the biosphere reserve:

Table 2. Summary of human population of the biosphere reserve

Zone	Previous report (Komodo Periodic Review 2012)	At present (2024)
Area of terrestrial and marine Core Area(s)	3,267 people	7.428 people
Area of terrestrial and marine Buffer Zone(s)	16,864 people	51.484 people
Area of terrestrial and Transition Area(s)	77,857 people	219.272 people (Manggarai Barat, East Nusa Tenggara) 553,702 people (Bima, West Nusa Tenggara)
TOTAL	97.988 people	831.886 people

Source of 2024 data: BPS Manggarai Barat https://manggaraibaratkab.bps.go.id/id) & BPS Bima (https://bimakab.bps.go.id/), 2024

k) Budget (main sources of funds, special capital funds) and international, regional or national relevant projects/initiatives carried out or planned.

Table 3. Summay of budget funding

Zone	Budget in the previous report (KOMODO PR 2012	Fund Resource	Current budget
Core Area (Komodo National Park)	> 11 billion IDR	Funded by State Revenue (Ministry of Environment and Forestry)	IDR 24.28 billion (2024)
Buffer & Transition Zone	N/A	Funded by local government, private partnerships, international grants	IDR 1.46 trillion (West Manggarai Regency)
	N/A	Badan Pelaksana Otorita Pariwisata Labuan Bajo-Flores3	IDR 33.285 billion (2024)

l) International, regional, multilateral or bilateral framework of cooperation. Describe, where applicable, the contribution of the biosphere reserve to achieve objectives and developing mechanisms that contribute to the implementation of international or regional bilateral or multilateral agreements, conventions, etc.

The Komodo Biosphere Reserve contributes to international and regional networks such as UNESCO's Man and the Biosphere (MAB) program, The UNESCO World Network of Biosphere Reserves (WNBR), The Southeast Asian Biosphere Reserves Network (SeaBRnet), and the World Network of Island and Coastal Biosphere Reserves as well as participating in joint research and conservation initiatives. It collaborates with global conservation organizations like WWF, UNDP, and universities, contributing to marine conservation, climate change adaptation, and eco-tourism research. International funding and knowledge exchange help enhance the reserve's sustainability and biodiversity conservation efforts.

PART II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE : KOMODO BIOSPHERE RESERVE

1.1. Year designated: 1977

1.2. Year of first periodic review and of any following periodic review(s) (when appropriate):

- 2012 (previous periodic review)
- 2024 (current review)

1.3. Follow-up actions taken in response to each recommendation from the previous periodic review(s) (if applicable), and if not completed/initiated, please provide justifications.

Several actions have been implemented, including updating the zoning of Komodo Biosphere Reserve, forming a regional working team for the biosphere reserve, enhancing capacity and collaboration with stakeholders, and supporting the socio-economic welfare of local communities through sustainable development. Follow-up actions have included strengthening collaboration between government authorities, local communities, and the private sector in managing the buffer and transition zones. Efforts have been focused on integrating sustainable development strategies and strengthening conservation programs for Komodo and Marine particularly. Additionally, there has been a focus on improving the economic welfare of local communities through sustainable development, including the development of local products with enhanced quality via a biosphere reserve product branding program, which supports local economies from the region.

1.4. Other observations or comments on the above.

The balance between environmental conservation and community welfare has improved over the past ten years. This periodic review was conducted through consultations with multiple stakeholders, including local government, research institutions, private sector actors, and local communities. Stakeholder collaboration, particularly through zoning updates and sustainable development programs, has significantly enhanced the management of natural resources and ecosystems. Workshops and focus group discussions (FGDs) were held to ensure inclusive and balanced participation from all parties. Continued conservation and sustainable development efforts have involved key stakeholders to ensure a balanced approach between nature conservation and economic activities. Further research and capacity-building programs for local communities have also been prioritized to maintain the integrity of the reserve.

1.5. Describe in detail the process by which the current periodic review has been conducted:

The current periodic review process began with a notification at the start of 2024 from the National MAB Committee of Indonesia to the provincial government of East Nusa Tenggara (NTT), the local government of Manggarai Barat, and the Komodo National Park Authority, informing them that the Komodo Biosphere Reserve was required to report on its management over the past 10 years through a periodic review report. However, there was a significant challenge during the transition of government administration and biosphere reserve management, which resulted in a missed opportunity for the smooth transfer of data and knowledge about the Komodo Biosphere Reserve.

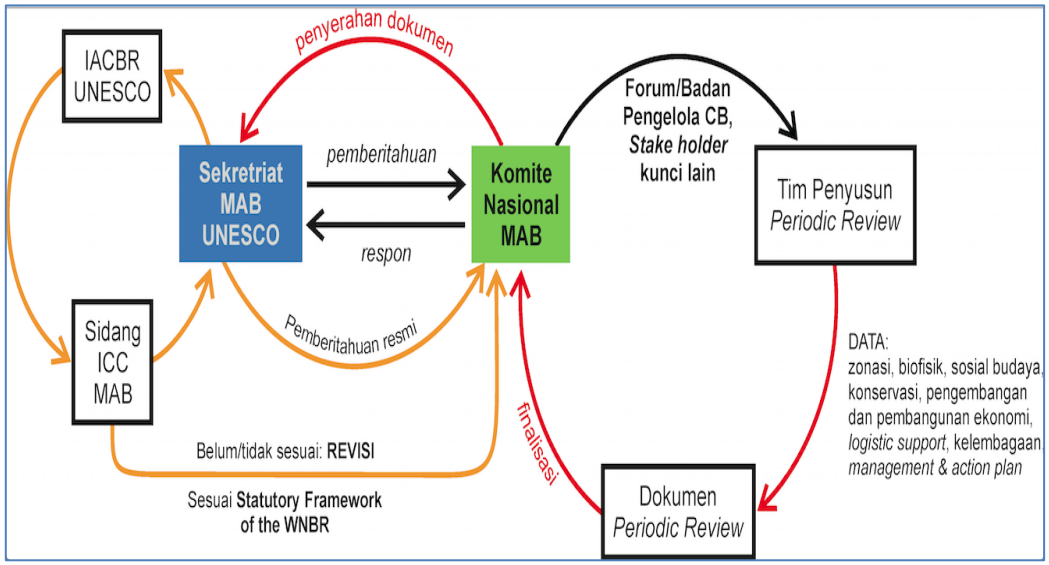


Figure 1Periodic review mechanism of Komodo Biosphere Reserve

In response to this, a regional working team was formed in West Manggarai to manage the Komodo Biosphere Reserve. The team then engaged in intensive coordination and communication to collect the necessary data, supported by the National MAB Committee of Indonesia. This collaborative effort culminated in the finalization of the periodic review draft document in Jakarta, after thorough consultations with local governments, environmental researchers, community leaders, and the private sector. Discussions and evaluations were carried out to assess conservation progress and development activities in alignment with the biosphere reserve's objectives. Data from previous studies and reports were also incorporated into the review process.

1.5.1. Which stakeholders were involved?

The preparation of the Periodic Review began with the establishment of **the Komodo Biosphere Reserve Working Team** through the Decree of the Regent of West Manggarai: 253/KEP/HK/2024.

The Secretary of the West Manggarai Regency serves as the Chair, with the Vice Chair being the Head of the Regional Development Planning Agency of West Manggarai Regency, and the Secretary is the Head of the Komodo National Park Office. The Regent and Vice Regent of West Manggarai Regency act as advisors.

There are three main divisions: the Conservation, Education, and Training Division; the Community Empowerment Division; and the Sustainable Development Division.

Conservation, Education, and Training Division
The Coordinator is the Head of the Regional Research and Innovation Agency of West Manggarai Regency. Its members include: the Head of the Environmental and Land Affairs Office of West Manggarai Regency; the Head of the Tourism, Creative Economy, and Culture Office of West Manggarai Regency; the Head of the Komodo National Park Office; the Head of the Natural Resources Conservation Office; the Head of the Food Security and Fisheries Office of West Manggarai Regency; and the Junior Expert Functional Planner in the Economic and Natural Resources Division.

Community Empowerment Division
The Coordinator is the Head of the Community Empowerment and Village Office of West Manggarai Regency, along with members including: the Head of the Animal Husbandry and Veterinary Services Office of West Manggarai Regency; the Head of the Food Crops, Horticulture, and Plantation Office of West Manggarai Regency; the Head of the Food Security and Fisheries Office of West Manggarai Regency; the Head of the Trade and Industry Office of West Manggarai Regency; the Head of the Labor, Transmigration, Cooperatives, and MSMEs Office of West Manggarai Regency; the Head of the Economic Section of the West Manggarai Regency Secretary Office; the Head of the Civil Registration and Population Office of West Manggarai Regency; and the Junior Expert Functional Planner in the Economic and Natural Resources Division.

Sustainable Development Division
The Coordinator is the Head of the Regional Development Planning Agency of West Manggarai Regency. Its members include: the Head of the Tourism, Creative Economy, and Culture Office of West Manggarai Regency; the Head

of the Public Works, Spatial Planning, Housing, and Settlement Office of West Manggarai Regency; the Head of the Economic and Natural Resources Division of the Regional Development Planning Agency of West Manggarai Regency; the Head of the Provincial Forestry UPTD of East Nusa Tenggara; the Chief Executive Officer of the Labuan Bajo-Flores Tourism Authority; and the Head of the Fisheries UPT of East Nusa Tenggara Province.

In addition, we also involved relevant stakeholders in the process of drafting this document, including among others:

- Local Government of West Nusa Tenggara Province and Manggarai Barat Regency
- National Park of Komodo, Ministry of Environment and Forestry (KLHK)
- National Committee of UNESCO Man and Biosphere Program (MAB) of Indonesia
- The Labuan Bajo-Flores Tourism Authority
- Research institutions and universities
- Environmental Grant Project : InFlores
- Local communities (including indigenous groups)
- Private sector engaged in sustainable tourism and local development

1.5.2. What methodology was used to involve stakeholders in the process (e.g., workshops, meetings, consultation with experts).

This periodic review was prepared as part of the interactive process with the members of the Komodo Biosphere Reserve Working Team, which consists of elements from the West Manggarai Regency Government, the Komodo National Park Office, NGOs as government development partners, and other stakeholders. The collected data and information were then analyzed to obtain achievements over the 10-year period under review.

The review process was coordinated and carried out by the Komodo Biosphere Reserve Working Team, starting with the preparation and analysis of activities and major changes over the past 10 years. The analysis of the development activities of the reserve over the 10-year period was aligned with the current context of the UNESCO MAB Program and is a result of the approval of the MAB Program Strategy and the Lima Action Plan. It also provided an opportunity to enhance the capacity of the technical staff involved in managing the Komodo Biosphere Reserve and to further develop the active role of the community in promoting the goals of the MAB Program and implementing the Biosphere Reserve concept. This process also allowed for the revision and/or updating of the Biosphere Reserve's Vision and Mission in the near future.

During the second phase, consultations were held with relevant local entities with the aim of developing supporting documents for presentations and public consultations. This resulted in contributions for the validation of the periodic assessment report and future programs for the Komodo Biosphere Reserve.

The timing of the Komodo Biosphere Reserve review process was used to strengthen relationships and cooperation among key stakeholders within the framework of the Komodo Biosphere Reserve Working Team. Key stakeholders accompanied and actively participated throughout the entire periodic review process.

In general, the intervention actions formulated in the original application file have been achieved, both in the context of direct actions by the West Manggarai Regency Government, the Komodo National Park, and other stakeholders. All actions taken were reviewed and contributed to the body of information, allowing for analysis of activities and partnerships. This demonstrates that the original objectives were fully achieved and even exceeded in terms of the number and diversity of actions and partners involved during the second 10-year period of the Komodo Biosphere Reserve

1.5.3. How many meetings, workshops, etc. occurred throughout the process of conducting this review?

Since 2019, several workshops and stakeholder meetings have been held to ensure ongoing discussion and input into the review process. These events included sessions focused on biodiversity conservation, sustainable tourism, and local development.

Intensive meetings for writing the document of Periodic Review for 2024 start from August 2024. The Regent of Manggarai Barat formed a Working Team to writing the document of Periodic Review. There are 4 big meetings including 3 meetings between Working Team and stakeholders in Manggarai Barat and 1 workshop for 2 days in Jakarta, beside some small meetings by the Working Team in Manggarai Barat.

Table 4. Summary of Intensive meetings for writing the document of Komodo Periodic Review for 2024

No	**Date**	**Location**	**Activity**
1	July 3, 2019	Labuan Bajo	FGD by the Ministry of Education and Culture on the Role of Education and Research in Honoring Komodo as a Biosphere Reserve and World Heritage Site
2	August 27, 2019	Labuan Bajo	First Forum Meeting for Komodo Biosphere Reserve Management
3	July 9, 2020	Labuan Bajo	Focus Group Discussion (FGD) on Branding the Komodo Biosphere Reserve
4	June 26, 2023	Labuan Bajo	Komodo Biosphere Reserve Workshop
5	August 6, 2024	Labuan Bajo	Focus Group Discussion (FGD) on the Komodo Biosphere Reserve
6	August 12, 2024	Labuan Bajo	Komodo Biosphere Reserve Working Team Meeting
7	August 19, 2024	Labuan Bajo	Komodo Biosphere Reserve Working Team Meeting
8	September 18-19, 2024	Jakarta	Consignment for the Finalization of the 2024 Periodic Review Document

Figure 2. Focus Group Discussion (FGD) by the Ministry of Education and Culture on the Role of Education and Research in Honoring Komodo as a Biosphere Reserve and World Heritage Site

Figure 3. Working Team meeting for the preparation of the periodic review document of the Komodo Biosphere Reserve

1.5.4. Were they well attended, with full and balanced representation? (Describe participation and stakeholders).

Yes, the meetings and workshops had full and balanced representation from key stakeholders, including government officials, scientists, community leaders, and private sector actors. All parties had equal opportunities to provide input into the periodic review.

The Komodo Biosphere Reserve is essentially a home for stakeholders within the KBR area. The designation of Komodo as a **Super Priority Tourism Destination** and **National Strategic Tourism Area (KSPN)** has also made a significant contribution to enhancing collaboration among the related stakeholders. The extensive development of various supporting facilities is an inseparable consequence of its designation as a National Strategic Tourism Area (KSPN). Through the Komodo Biosphere Reserve Working Team, all stakeholders, as mentioned in point 1.5.1, have actively participated and are committed to managing the Komodo Biosphere Reserve through various synergistic programs aimed at achieving the reserve's goals. However, the coordination of these programs must continue to be improved to ensure they run effectively and optimally. and also invited the involvement of Manggarai Regency, West Nusa Tenggara (not yet involved), in the biosphere reserve

management forum since the area is included in the Komodo biosphere reserve transition area. The large number of stakeholders involved presents a strong potential for program collaboration in carrying out the vision of the biosphere reserve, contributing to the provision of supporting data and the preparation of this periodic review.

2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE PAST TEN YEARS:

2.1. Brief summary overview: Narrative account of important changes in the local economy, landscapes or habitat use, and other related issues. Note important changes in the institutional arrangements for governance of the biosphere reserve area, and changes (if any) in the coordinating arrangements (including the biosphere reserve organization/coordinator/manager) that provide direction for the biosphere reserve. Identify the role of biosphere reserve organization/coordinator/manager in initiating or responding to these changes.

In the past decade, the Komodo Biosphere Reserve has seen significant developments that have impacted the local economy, landscapes, habitat use, and institutional arrangements.

1. **Local Economy**:
   The designation of Labuan Bajo as a National Strategic Tourism Area (KSPN) in 2011 based on Government Regulation Number 11 of 2011 concerning the National Tourism Development Master Plan (RIPPARNAS), has dramatically influenced the development within the Komodo Biosphere Reserve (KBR). Infrastructure development and investment, primarily driven by the central government, have been implemented intensively across the core, buffer, and transition zones. This has brought substantial growth in tourism and related economic activities, leading to increased local and regional revenues. There has been a shift in people's livelihoods, from agriculture and fisheries to the tourism services sector
2. **Landscapes and Habitat Use**:
   The increase in tourism has also impacted land use within the reserve. Infrastructure projects have altered landscapes, especially in the transition zone, with the expansion of hotels, resorts, and other tourism facilities. Nevertheless, efforts have been made to balance development with conservation, particularly in the core and buffer zones. Conservation programs, such as ecosystem restoration and marine habitat rehabilitation, have been implemented to maintain ecological integrity.
3. **Institutional Arrangements**:
   Over the last decade, collaborative management efforts have been intensified, involving various stakeholders, including the local government, community groups, and international organizations. Institutional reforms have strengthened governance mechanisms in the biosphere reserve, ensuring more effective coordination between

different agencies and organizations through the establishment of The Komodo Biosphere Reserve Working Team.

In addition, since 2018 based on Presidential Decree Nomor 32 year 2018 the new eco-tourism coordinators have been appointed to help manage the growing tourism sector namely The Labuan Bajo-Flores Tourism Authority (*Badan Otorita Pariwisata Labuanbajo-Flores*) from the Ministry of Tourism and Creative Economy. This agency, often abbreviated as BOPLBF, is a government agency established to manage and develop tourism in the Labuan Bajo and Flores areas, especially as part of the Super Priority Tourism Destinations in Indonesia.

2.2. Updated background information about the Biosphere reverse

2.2.1. Updated coordinates (if applicable). If any changes in the biosphere reserve's standard geographical coordinates, please provide them here (all projected under WGS 84):

No significant changes in the geographical boundaries of the biosphere reserve have been recorded in the past ten years (Periodic Review 2012).

Geographically, the Komodo Biosphere Reserve (KBR) is located between Sumbawa Island and Flores Island, and between two seas: the Sulawesi Sea or Flores Sea to the north, and the Sumba Strait and the Indian Ocean to the south. The coordinates of the current core area are 119º20'95" to 119º49'20" East Longitude and 8º24'35" to 8º50'25" South Latitude. The boundary coordinates of the existing Komodo National Park (TNK) are based on a working map signed by the Head of the Forestry and Plantation Planning Agency on November 20, 1998. The source of this working map is a decree from the Indonesian Ministry of Forestry, Decree No. 306/KPTS-II/92 dated February 29, 1991, and Indonesian Marine Chart No. 295.

2.2.2. If necessary, provide an updated map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve Map(s) shall be provided in both paper and electronic copies. Shape files (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form.

The Komodo Biosphere Reserve (KBR) is situated in the Lesser Sunda region, comprising a collection of islands surrounded by marine areas. Located east of the Wallace Line, the reserve boasts a highly distinctive and unique landscape. The core zone of KBR is of immense significance due to its rich biological and cultural heritage. This area includes various ecosystems such as savannas, lowland forests, tropical rainforests on mountain peaks, coastal forests, mangrove ecosystems, marine waters, and mountain ranges. The climate is

mostly dry, influenced by monsoon winds, though more humid conditions are observed in certain landscapes like hills and mountains.

KBR experiences an arid climate, receiving little rainfall for most of the year, with significant precipitation only between December and March. The reserve's average annual rainfall ranges from 200 mm to 1,500 mm, with temperatures fluctuating between 17°C and 34°C. Humidity levels are typically low, except in higher-altitude areas like mountain ridges, where conditions can be more humid. Monsoon winds influence the region's climate, with strong westerly winds bringing large waves to the western shores of Komodo Island from November to March, while dry winds dominate between April and October.

The Komodo Biosphere Reserve was established as a conservation area long before the 1977 international recommendations for the biosphere reserve network. It was designated in 1981 as one of Indonesia's first-generation biosphere reserves, alongside Cibodas, Tanjung Puting, and Lore Lindu. The core area of KBR, governed by Komodo National Park's management plan, plays a vital role in preserving flora and fauna, balancing ecosystems, and mitigating climate change. It also supports local communities by providing hydrological benefits and serving as a source of genetic resources for scientific, educational, and ecotourism purposes.

The management of KBR adheres to Indonesian conservation laws, with a focus on protecting biodiversity while promoting sustainable use. Komodo National Park, which serves as the core zone of KBR, is divided into several zones, each with distinct purposes, including conservation, research, education, and ecotourism. These zones are designed to maintain the ecological integrity of the area while supporting the needs of local communities and promoting sustainable development.

The zonation of the Komodo Biosphere Reserve (KBR) as reported in the 2012 Periodic Review remains unchanged in the current proposal. The total area of the KBR stands at 1,118,003 hectares, with the core area covering 173,300 hectares, which includes 57,613 hectares of terrestrial core zones and 115,687 hectares of marine core zones. The buffer zone encompasses 288,353 hectares, divided into 43,975 hectares of terrestrial buffer zones and 244,378 hectares of marine buffer zones. Additionally, the transition area spans 231,363 hectares of terrestrial zones and 424,987 hectares of marine zones. These zonation areas are critical for maintaining the integrity of the reserve, facilitating conservation, and supporting sustainable development without compromising the natural ecosystems. No changes in these zonation areas have been proposed in the current review, indicating continuity in the management strategy for the biosphere reserve. Administratively, this region falls under the jurisdiction of

Manggarai Regency in West Flores, East Nusa Tenggara, and Bima District in Sumbawa, West Nusa Tenggara.

The Komodo Biosphere Reserve features a highly diverse ecosystem comprising both terrestrial and marine environments, each contributing to the region's unique biodiversity.

1. Terrestrial Ecosystem: The terrestrial ecosystems of Komodo are dominated by savannah grasslands, which cover approximately 70% of the land area. The grasslands are interspersed with lontar palms (*Borassus flabellifer*) and other species such as tamarind (*Tamarindus indica*) and bidara (*Zizyphus jujuba*). This savannah ecosystem supports several key species, including the famous Komodo dragon (*Varanus komodoensis*) and its prey, the Timor deer (*Cervus timorensis*), wild boar, and water buffalo. Additionally, there are tropical deciduous (monsoon) forests, which thrive at lower altitudes and consist of trees adapted to the seasonal dry conditions. The quasi-cloud forests, located on the higher elevations of Komodo's mountains, harbor unique plant species such as bamboo, rattan, and *Podocarpus neriifolia*.

2. Savannah and Woodland: The savannah grasslands in KBR are a critical component of the terrestrial landscape, providing a habitat for a range of wildlife. The vegetation in these areas includes a mix of grasses such as *Setaria adhaerens* and *Chloris barbata*. The grasslands are home to key herbivores like the Timor deer and wild horses, which serve as prey for the Komodo dragon. The interaction between predator and prey in these grasslands is vital for maintaining ecological balance.

3. Coastal and Mangrove Forests: The coastal areas of the Komodo islands are characterized by mangrove forests, which act as a buffer against soil erosion and serve as breeding grounds for various marine species. Dominant mangrove species include *Rhizophora mucronata*, *Sonneratia alba*, and *Avicennia spp.*, which thrive in sheltered coastal areas. These ecosystems also provide habitats for fish, crabs, and mollusks, supporting both biodiversity and the livelihoods of local fishing communities.

4. Marine Ecosystem: The marine areas of the Komodo Biosphere Reserve comprise about 67% of the park's total area. This vast marine environment includes diverse habitats such as coral reefs, seagrass beds, and seaweed beds. The coral reefs in Komodo are globally recognized for their biodiversity, hosting more than 250 species of reef-building corals and over 1,000 species of fish. These reefs provide essential habitat for marine life, including cetaceans such as dolphins and whales, which migrate through the region.

5. Coral Reefs: The coral reefs around Komodo, including fringing reefs and patch reefs, are particularly rich in species diversity. They support various marine organisms such as sponges, algae, and numerous species of coral. These reefs are vital to the local marine food web, serving as breeding grounds and shelter for fish, mollusks, and invertebrates. However, some areas of the reefs have been impacted by destructive fishing practices, making their conservation a priority.

6. Seagrass and Seaweed Beds: Seagrass beds are found in shallow waters between the shorelines and coral reefs. These beds play an important ecological role by providing habitat for juvenile fish and invertebrates and serving as food for species such as sea turtles and dugongs. Seaweed beds, which also flourish in these shallow waters, act as a sediment filter and contribute to the overall health of the marine ecosystem.

7. Geomorphology and Landscape Features: The terrestrial landscape of Komodo consists of rugged hills, mountains, and coastal cliffs. The highest peaks, such as Mount Satalibo (735 meters) and Mount Ara (808 meters), provide distinct microclimates that support different types of vegetation. The complex geology of the region, shaped by volcanic and tectonic activity, has created a dynamic landscape that continues to evolve. These geological processes also influence the soil composition, contributing to the unique characteristics of the terrestrial ecosystem.

8. Integrated Ecosystem Conservation: The combination of terrestrial and marine ecosystems within KBR highlights the importance of integrated conservation efforts. The interdependence between the savannah grasslands, coastal forests, and coral reefs underscores the need for coordinated management strategies that address both land and sea. The careful monitoring of biodiversity, along with sustainable resource management, ensures the long-term viability of these ecosystems, benefiting both wildlife and local communities.

ZONATION IN KOMODO BIOSPHERE RESERVE

Core Zone

The landscape of the core area is a combination of land and sea, both of which offer unique and interdependent features. The core area covering 173,300 hectares, which includes 57,613 hectares of terrestrial core zones and 115,687 hectares of marine core zones. The Komodo Biosphere Reserve includes Komodo Island, Rinca Island, Padar Island, Gilimotang Island, smaller surrounding islands, and nearby marine waters. Komodo Island is located to the east of Sumbawa Island, with the Sape Strait separating the two. The island has

a coastline that extends for 181 km, making it the largest island in the core area of KBR, covering approximately 336 km². The island stretches about 36 km from north to south, with elevations ranging from sea level to 735 meters. The northern part of the island is characterized by mountains and hills, forming a semi-circular shape around Loh Liang Bay. Notable peaks include Mount Satalibo (735 m), Mount Ara (808 m), Mount Todo Klea (560 m), and Poreng Hill. Meanwhile, the central area of the island is relatively flat, but the southern region features steep hills and plains, starting from Mount Komodo (500 m). The coastal areas vary, with some steep, rocky cliffs and others offering stunning white sandy beaches. The island's terrain also includes deep erosion channels that are dry and rocky, with narrow valleys or canyons that have higher moisture levels compared to the surrounding surface areas.

Padar Island, located between Komodo and Rinca, is much smaller in size, covering about 16 km² compared to Komodo's 336 km² and Rinca's 211 km². Padar has a coastline stretching 31 km, and its landscape includes hills rising up to 269 meters (Mount Piramide). Its northern coast features flat beaches with clean white sand, while the southern part is steep and rocky. The island is about 8 km in length, extending from the southwest to the northeast. Dry riverbeds and seasonal rivers are present in some of the steeper areas.

Rinca Island, located at the eastern end of the national park, is separated from the mainland of Flores by the Molo Strait. The island covers around 211 km² and has a total coastline of 172 km, with rugged topography to the south and gentler landscapes to the north. Its highest peak is Mount Doro Ora (667 meters), situated in the south, while Mount Pankarmea (542 meters) dominates the northeast. The central and northwest parts of the island feature stretches of flat white sandy beaches, while the southern coast is marked by steep cliffs and narrow beaches.

In addition to these main islands, the core area of KBR also includes several smaller islands, most of which are located to the northeast of the national park between Komodo and Flores or to the north of Rinca and Padar. These smaller islands, such as Tatawa Island, Siaba Besar, Menggiatan, Papagaran Besar, and Papagaran Kecil, offer varied coastal landscapes, from steep rocky beaches to flat sandy shores. Many of these smaller islands are dominated by savanna ecosystems with palm trees (Borassus flabellifer) and mangroves, including Rhizophora stylosa, Ceriops, and Avicennia species. Gili Motang, another small island in the core area, features steep hills and a rocky coastline, making it a popular spot for snorkeling and diving.

Herewith the zoning system In Komodo National Park:

1) **Core Zone**: 34,304.81 hectares. The most strictly protected area, allowing only scientific research and education. It protects pristine ecosystems and critical habitats.
2) **Wilderness Zone**: 22,192.28 hectares. Primarily for conservation, but allows limited, carefully managed tourism alongside research and education.
3) **Marine Protection Zone**: 36,308 hectares. Similar to the Wilderness Zone but for marine areas, emphasizing marine life protection with restricted tourism, such as diving and snorkeling.
4) **Utilization Zone**: 2,408.23 hectares. Accommodates tourism and park management, providing visitor facilities and housing park staff, while minimizing environmental impacts.
5) **Traditional Zone for Local Communities**: 18,172.59 hectares. Recognizes the rights of local communities, allowing sustainable resource use and cultural activities.
6) **Traditional Pelagic Zone**: 59,601 hectares. Permits traditional pelagic fishing by local communities, balancing sustainable fishing with marine conservation.
7) **Special Zone**: 313.09 hectares. Designated for essential infrastructure and settlements, including villages and facilities, managed to minimize their impact.

These definitions highlight a zoning system that prioritizes biodiversity conservation while addressing the needs of local communities and sustainable tourism. The document, Government Regulation No. 28 of 2011, defines various zones within Conservation Areas (KSA) and Nature Preservation Areas (KPA), designed primarily for the preservation and sustainable utilization of Indonesia's rich biodiversity.

Buffer Zone

The buffer zone typically surrounds or is directly adjacent to the core area, serving as a protective layer where activities are allowed but must be ecologically sustainable. Recommended uses for this area include activities that benefit the environment, such as environmental education, research facilities, recreation, agroforestry, ecotourism, and sustainable development projects. In the case of the Komodo Biosphere Reserve (KBR), mapping and identification have shown that the buffer zone encompasses 288,353 hectares, situated in West Manggarai Regency. The socio-economic and cultural profile of communities within this zone reveals a strong dependence on natural resources and the surrounding environment for their livelihoods.

Transition Area

The transition area of the Komodo Biosphere Reserve (KBR) includes marine zones to the south and north, with villages and towns located to the east and west. The transition area spans 231,363 hectares of terrestrial zones and 424,987 hectares of marine zones. The eastern portion, Labuan Bajo, has experienced rapid growth due to its designation as a **super priority national tourism destination**, making it a bustling hub for tourism development. The western portion, located in Bima, has seen urban development, with agricultural lands, residential areas, and other forms of land use. Within this transition area, environmental initiatives aim to strengthen the local community's capacity to manage their land and production activities effectively. It also serves as a space for socio-economic development, where research and experimental activities help to better understand ecosystem patterns and processes.

Aligned with the biosphere reserve concept, the transition area is meant to support sustainable economic growth. It provides a platform for promoting the responsible management of natural resources, ensuring that economic and social development occurs in an environmentally sustainable way. Legal agreements and regulations bind stakeholders to commit to this sustainability framework.

As a detailed description of the position of the Komodo Biosphere Reserve can be seen on the following map of the Komodo Biosphere Reserve :

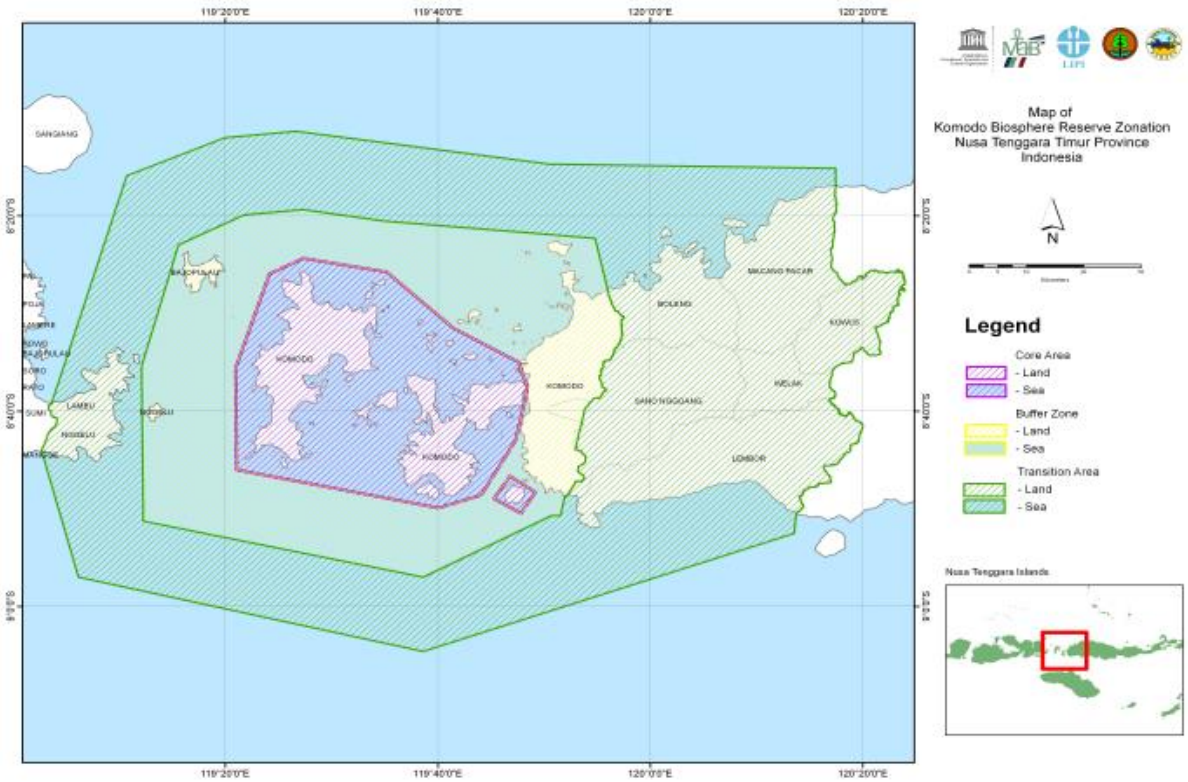


Figure 4. Komodo Biosphere Reserve Zonation

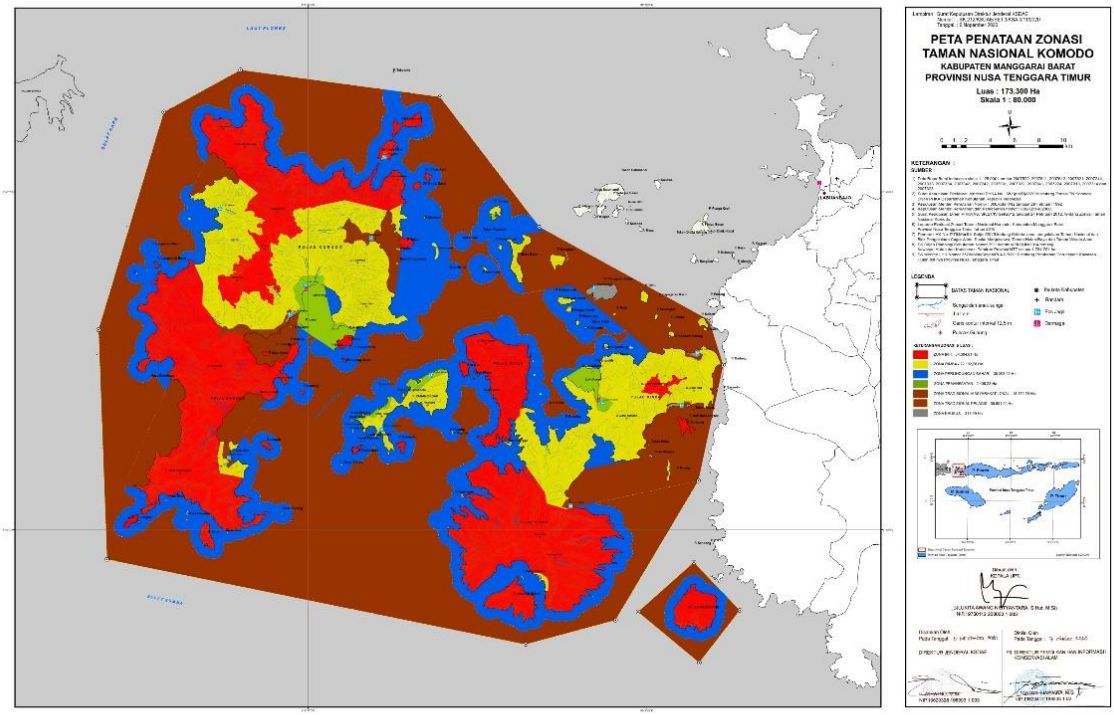


Figure 5. Zonation in Core Zone at Komodo National Park

2.2.3. Changes in the human population of the biosphere reserve.

The population growth in the Komodo Biosphere Reserve has shown an increasing trend over the past ten years. However, there was a decline in 2020 due to adjustments made based on the 2020 Population Census conducted by the Central Bureau of Statistics. The population resumed its growth after 2020, and by 2022, the population of West Manggarai Regency had reached 263,687 people. The average population growth rate before 2020 was recorded at 2.21 percent per year, while the growth rate after 2020 averaged 1.87 percent annually.

Currently based on Manggrai Barat BPS-statistic Indonensia in August 2024, the human population in the biosphere reserve are:

- Core Area: Approximately 7.428 people reside in the core area, with population growth remaining stable.
- Buffer Zone: The buffer zone is home to 51.484 people, experiencing moderate population growth due to increased economic opportunities.
- Transition Area: The transition zone supports 219.272 people in Manggarai Barat and 553,702 people in Bima, West Nusa Tenggara, reflecting significant urbanization and tourism-related activities

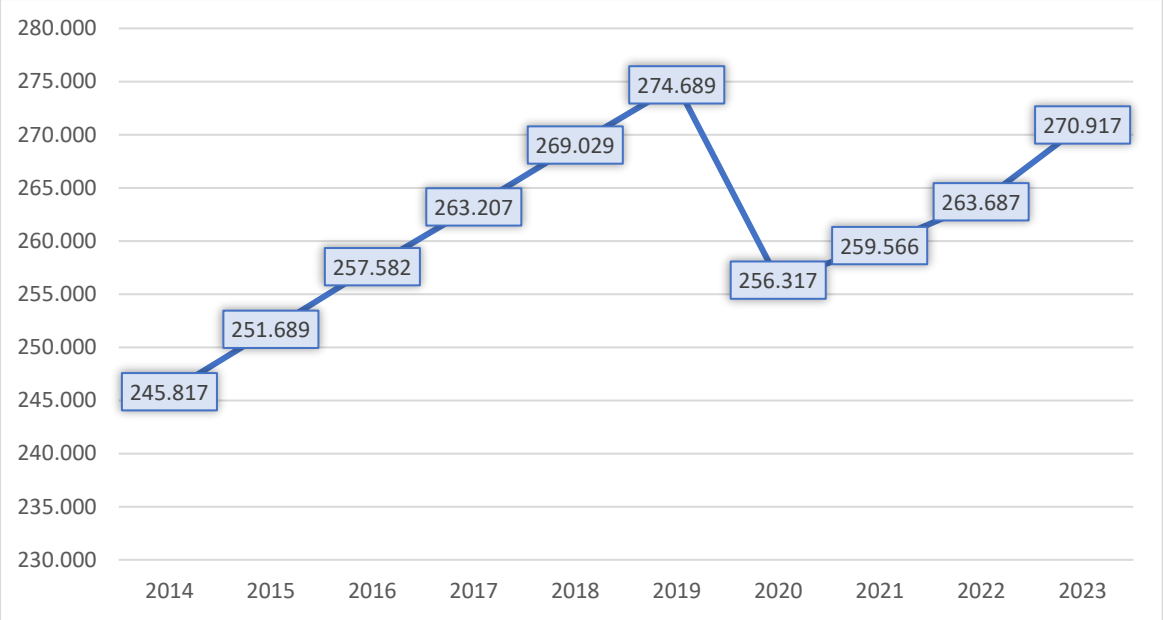


Figure 6. Population in Komodo Biosphere Reserve 2014-2023

2.2.4. Update on conservation function, including main changes since last report (Note briefly here and refer to 4 below).

Key conservation activities over the last decade include the restoration of ecosystems in both terrestrial and marine areas. Programs such as coral reef rehabilitation and mangrove forest restoration have yielded measurable improvements in biodiversity conservation. A primary focus has been on the conservation of the **Komodo dragon**, a key species in the biosphere, which remains central to conservation efforts. In addition to habitat restoration, significant efforts have been made to monitor and protect Komodo dragon populations. The reduction of illegal activities and the implementation of community-based conservation initiatives have further contributed to the long-term sustainability of the biosphere, ensuring that both ecosystems and key species like the Komodo dragon are preserved.

2.2.5. Update on the development function, including main changes since last report. *(Note briefly here and refer to 5 below).*

The economic growth associated with tourism has been significant, particularly in the transition zones. However, efforts have been made to ensure that development aligns with sustainability principles. Programs have been implemented to promote eco-friendly tourism practices, ensuring that development does not compromise the reserve's natural resources. There has also been a noticeable shift in livelihoods, with many local residents transitioning from farming and fishing to tourism-related services. This shift has led to rapid economic growth and improved well-being in the area.

However, despite this growth, there is still a significant gap in wealth distribution, with vulnerable groups remaining in extreme poverty in certain parts of the region.

2.2.6. Update on logistic support function, including main changes since last report. *(Note briefly here and refer to 6 below).*

Research and monitoring have been greatly enhanced, with numerous projects focused on biodiversity, climate change, and socio-economic development. Collaboration between local and international research institutions has expanded, leading to better data collection and analysis to support decision-making processes.

2.2.7. Update on governance management and coordination, including changes since last report (if any) in hierarchy of administrative divisions, coordination structure. (Note briefly here and refer to 7 below).

Since the last report, significant changes have been made to the governance and coordination structure of the Komodo Biosphere Reserve. A multi-stakeholder management body was established The Working Team of Komodo Biosphere Reserve, consisting of representatives from local government, conservation agencies, and community groups. This body, led by the Regency of Manggarai Barat, has improved coordination efforts for implementing sustainable development and conservation initiatives. Furthermore, the formation of specialized working teams focused on conservation, education, and sustainable development has strengthened the overall management of the reserve. These changes have ensured more effective collaboration between the local government, conservation authorities, and stakeholders. In addition, since 2018 the new eco-tourism coordinators have been appointed to help manage the growing tourism sector namely The Labuan Bajo-Flores Tourism Authority (*Badan Otorita Pariwisata Labuanbajo-Flores*) from the Ministry of Tourism and Creative Economy. This agency, often abbreviated as BOPLBF, is a government agency established to manage and develop tourism in the Labuan Bajo and Flores areas, especially as part of the Super Priority Tourism Destinations in Indonesia.

2.3. The authority/authorities in charge of coordinating/managing the biosphere reserve: (Comment on the following topics as much as is relevant).

2.3.1. Updates to cooperation/management policy/plan, including vision statement, goals and objectives, either current or for the next 5-10 years

The The management plan for the Komodo Biosphere Reserve (KBR) reflects a comprehensive and integrated approach to balancing conservation with sustainable development. The vision for the next 5-10 years centers on enhancing the conservation of biodiversity, promoting sustainable economic growth, and fostering community engagement, all while ensuring that the natural resources and cultural heritage of the region are preserved for future generations.

The primary goals of the management plan include ensuring the synergy of various programs and activities across government levels and stakeholders, addressing the challenges of biodiversity conservation, and enhancing sustainable development within the reserve. A key objective is to create a framework that fosters collaboration among local governments, communities, the private sector, and researchers, aligning their efforts with sustainable development goals.

The specific objectives outlined in the management plan include:

1. Preparing and implementing a Medium-Term Integrated Management Plan to serve as a reference for all stakeholders in the biosphere reserve.
2. Strengthening collaboration between local, regional, and national stakeholders to solve management challenges, ensuring coordinated efforts across all levels of government and institutions.
3. Promoting the sustainable use of natural resources in the buffer and transition zones to ensure that development activities do not compromise the ecological integrity of the core area.
4. Enhancing public awareness and capacity building among stakeholders, ensuring that conservation and development efforts benefit both environmental sustainability and local livelihoods.

This framework will guide the conservation efforts for the Komodo dragon, the restoration of ecosystems, and the development of eco-friendly tourism initiatives. Through this integrated management plan, the KBR aims to strike a balance between human development needs and ecological preservation, maintaining the reserve as a model for sustainable development and biodiversity conservation in Indonesia and globally.

2.3.2. Budget and staff support, including approximate average annual amounts (or range from year-to-year); main sources of funds (including financial partnerships established (private/public), innovative financial schemes); special capital funds (if applicable); number of full and/or part-time staff; in-kind contribution of staff; volunteer contributions of time or other support.

The Komodo Biosphere Reserve operates with a combination of government funding and support from private-sector partnerships. The annual budget ranges from approximately IDR 10 to 15 billion (USD 700,000 to 1 million), which is allocated primarily for conservation activities, infrastructure development, and staff salaries. Additional funding comes from tourism-related activities and international donors. The reserve employs around 150 full-time staff and relies on in-kind support from local communities and volunteers, particularly during peak tourism seasons.

1) Budget for Core Area (Komodo National Park)
The management of the core zone of the Komodo Biosphere Reserve, which in this case is Komodo National Park, is funded by the State Revenue and Expenditure Budget (APBN) through the Ministry of Environment and Forestry (KLHK), Directorate General of Natural Resources and Ecosystem Conservation (KSDAE). These funds are allocated through the Budget Implementation List (DIPA) for one fiscal year, supporting various management activities in Komodo National Park.

As of August 2024, the total number of employees at Komodo National Park is 95. With this workforce, the management of the national park is supported by a DIPA budget allocation amounting to IDR 24,285,719,000. This fund is used to finance various activities, which are broadly categorized into 6 aspects:

- ✓ Management Support and Other Technical Tasks of the Directorate General of KSDAE
- ✓ Conservation Area Planning
- ✓ Conservation Area Management
- ✓ Species and Genetic Biodiversity Conservation
- ✓ Utilization of Environmental Services in Conservation Areas
- ✓ Ecosystem Restoration

.

2) Budget for Buffer and Transition Zone (from Local Government)
The number of employees in the West Manggarai Regency Government in 2023 was 5,128 employees, with total regional expenditure realization for 2023 amounting to IDR 1,466,847,183,113.94 and additional budget through Badan Pelaksana Otorita Pariwisata Labuan Bajo-Flores3 about IDR 33.285 billion in 2024.

3) Grants

Grants from the authority body, including cooperation/grant funds or special investments, contribute to the additional financial support for activities related to conservation and sustainable development in Komodo Biosphere Reserve, both through Regional Government or Komodo National Park.

Several NGOs have partnered with the Regional Government in its development efforts, including InFlores (UNDP) with a contribution of IDR 20.486 billion, WWF with IDR 604 million, AIHSP IDR 500 million, and Yayasan 1000 HPK with IDR 366.989 million. Other partners include AIHSP, Yakines, Wahana Visi Indonesia, Bintari, Momentum, and USAID Erat.

In supporting the management of Biosphere Reserve through Komodo National Park (KNP), there are several financial aids sourced from grants, Corporate Social Responsibility (CSR), cooperation agreements, and other forms of support in accordance with the applicable regulations. These include in-kind support for activities such as area security, community empowerment, management support, capacity building and infrastructure development, nature tourism promotion, ecosystem restoration, and the conservation of flora and fauna. The foundation, institutions and/or government bodies that support the management are:

Table 5. Financial aids sourced from grants in Komodo Biosphere Reserve

Types of Grants	Foundation/Institution	Year	Estimated support (IDR)
CSR	East Ventures	2023	130.000.000
	Ayana Hotel	2023	52.400.000
	Bank BRI	2023	20.000.000
	Ministry of Public Works and Housing	2021	320.000.000
Collaboration	Yayasan Komodo Survival Program	2018-2023	2.350.000.000
		2023-2027	1.250.000.000
	World Wildlife Foundation Indonesia	2013-2018	391.000.000
	PT Telkomsel/Mitratel	2020	2.036.000.000
International Cooperation Grant	UNDP – Directorate of Biodiversity Conservation of Species and Genetics – Project Inflores	2024	4.117.630.000
	JICS – Directorate of Biodiversity Conservation of Species and Genetics – Komodo Visitor Center	2020	12.000.000.000
Transfer of State-Owned Goods	Ministry of Public Works and Housing – Directorate General of Human Settlements – Tourism Infrastructure Support	2020-2023	70.000.000.000

2.3.3. Communications strategy for the biosphere reserve including different approaches and tools geared towards the community and/or towards soliciting outside support.

A comprehensive communications strategy has been developed to raise awareness about the biosphere reserve's conservation efforts and to engage with both local communities and external supporters. Key tools include a dedicated website, social media platforms, and community outreach programs. Regular workshops and town hall meetings are held to ensure local stakeholders are informed and involved in decision-making. The strategy also includes targeted campaigns to attract international visitors and donors, promoting eco-friendly tourism as a source of revenue for conservation.

Komodo National Park and the West Manggarai Regency government collaborate synergistically and participatively to establish coordination and communication in implementing the Komodo Biosphere Reserve management program. Various communication strategies are used in the socialization of the biosphere reserve by holding direct meetings with stakeholders, utilizing social media by distributing leaflets, infographics, videos, television media, and others, as well as including the biosphere reserve logo in all biosphere reserve publications. The types of activities and communication programs include:

Branding

The branding of the Komodo Biosphere Reserve is currently in the initial introduction phase, with the official biosphere reserve logo created as an identity that reflects the conservation values of the area. However, its use on local products, such as food, crafts, and services, has not yet been implemented as it is still in the planning stage to be introduced more widely. It is hoped that with the introduction of this logo, the local community and businesses will start using it to increase the added value of their products, strengthen conservation identity, and promote the Komodo Biosphere Reserve globally.

Komodo Biosphere Reserve Logo

Philosophy of the Logo Elements

- **Lontar Palm**: The lontar palm is a type of flora found in the Komodo Biosphere Reserve. The three leaves in the logo symbolize the three zones of the Komodo Biosphere Reserve: the core zone, buffer zone, and transition zone.
- **Komodo**: The Komodo dragon (*Varanus komodoensis*) is the largest lizard in the world. The Komodo dragon is only found in the Komodo Biosphere Reserve and the northern coast of Flores. This species is an important part of the logo design of the Komodo Biosphere Reserve.

- **Manggarai Traditional House**: The triangular shape in the logo element is inspired by the Manggarai traditional house, which represents the cultural richness of the Komodo Biosphere Reserve. The three houses represent the harmony of the three tribes that live side by side in the Komodo Biosphere Reserve: the Bajo tribe, Bugis tribe, and Bima tribe.
- **Waves**: Inspired by the ever-moving waves, this element of the logo symbolizes the continuous movement of the Biosphere Reserve towards achieving its three main goals.
- **Sea**: In addition to representing biodiversity, the Komodo Biosphere Reserve, the dotted lines in this logo element give the impression of the sea's constant and progressive movement.

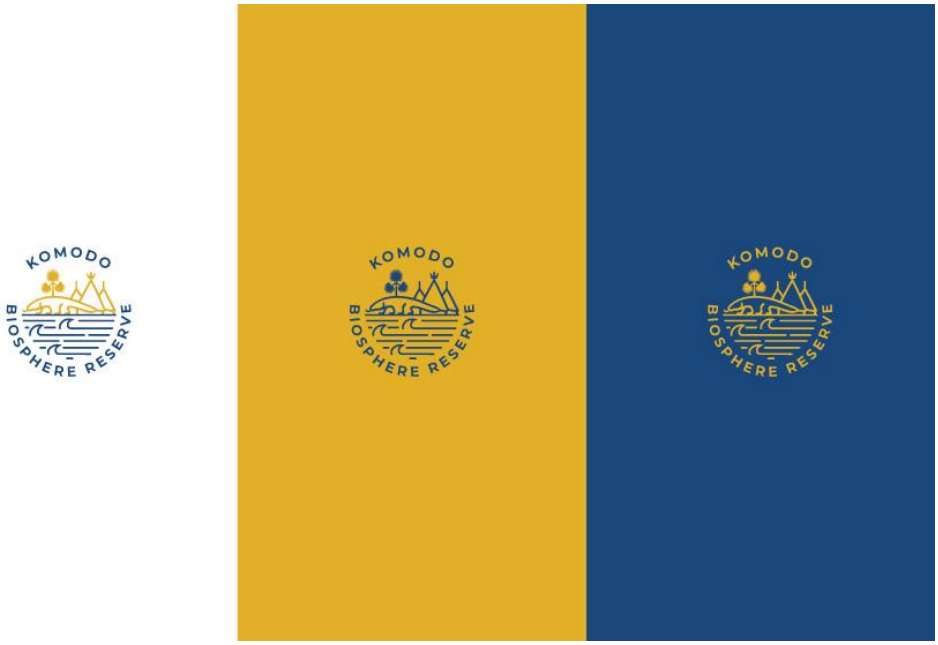


Figure 7. Komodo Biosphere Reserve Logo

Figure 8. Product example of Product Branding

2.3.4. Strategies for fostering networks of cooperation in the biosphere reserve that serve as connections ("bridging") among diverse groups in different sectors of the community (e.g., groups devoted to agricultural issues, local economic development, tourism, conservation of ecosystems, research and monitoring).

The reserve fosters networks of cooperation through the **Komodo Biosphere Working Team**, which brings together representatives from agriculture, tourism, conservation, and local government. Regular forums and discussions are held to align development activities with conservation goals. Partnerships with national and international research institutions have been strengthened to support monitoring efforts and scientific research.

2.3.5. Particular vision and approaches adopted for addressing the socio-cultural context and role of the biosphere reserve (e.g., promotion of local heritage resources, history, cultural and cross-cultural learning opportunities; cooperation with local population; reaching out to recent immigrant groups, indigenous people etc.).

The biosphere reserve places great emphasis on promoting the local culture and heritage. Special attention is given to the indigenous communities living within the buffer and transition zones, with initiatives to preserve traditional knowledge and cultural practices. The reserve also supports cultural tourism as part of its broader goal to improve local livelihoods. Programs such as handicraft production and cultural festivals are encouraged to showcase the region's heritage.

The integration of educational activities based on traditional knowledge is one of the most distinctive interventions of the Biosphere Reserve. The use of traditional wisdom and local knowledge in the management of the biosphere reserve is carried out through the identification and inventory of cultural values or community traditions in the sustainable use of natural resources. This wise cultural potential can also be utilized to support the sustainable management of natural resources and the environment. Furthermore, these wise cultural values can be developed and preserved as cultural tourism assets. The community's cultural values or traditions in the use of natural resources align with conservation principles, such as traditional practices.

The identification and inventory of the local cultural potential of the people in West Manggarai Regency are continuously developed and preserved as part of the area's tourism attractions. Cultural potential, such as traditional ceremonies, various types of dances, different culinary arts, and other cultural practices, are among the region's leading tourism attractions.

There are some local traditions and beliefs in the Komodo Biosphere Reserve:

1) **Prafu Belief**:
    - This belief centers around ancestor worship, where the local community believes that their ancestors continue to watch over and protect them. These ancestors are thought to have influence over natural elements and the prosperity of the community. To honor their ancestors, people perform sacred rituals, usually at designated sites considered holy, like large stones or specific natural landmarks.
    - During these rituals, offerings such as food, flowers, or symbolic items are given to maintain a positive relationship between the living and the spiritual world. This practice is deeply tied to the local understanding that the ancestors play a role in maintaining the harmony of both the community and the environment.

Figure 9. Community praying activities at the Prafu location in Loh Wau, Komodo Island

2) **Putri Naga Belief**:
    - The **Putri Naga (Dragon Princess)** is a legendary figure in the Komodo region. According to the legend, the princess gave birth to twins—one human and one Komodo dragon. The story suggests that humans and Komodo dragons are spiritually linked, and therefore, the people of the area feel a deep obligation to coexist peacefully with the Komodo dragons. The short legendary story of "Putri Naga Komodo" called "Sebae" *based on story retold by Ishaka Mansur, written by Rili Djohani (Erdmann, A.M. 2004)* below this:

      Once upon a time, a Princess lived on Komodo Island and was called The Dragon Princess by the locals. She married a man named Majo. They had twin children, a boy named Gerong and a dragon baby named Ora. Gerong grew up in the village, and Ora lived in the forest. They did not know each other. Years passed, and one day

Gerong hunted in the forest and killed a deer. When he was just about to take the dead deer, a big lizard came and intended to steal the deer. Gerong tried to chase the lizard away, but it didn't work. The lizard stood above the deer carcass and Gerong was ready to kill the lizard with his spear. Suddenly a beautiful woman appeared. It was The Dragon Princess, and she calmed them down and told Gerong: "Do not kill her, she is your sister, Ora. I am the one who gave birth to you two. Treat her just like a human because she and you are twin siblings."

- This belief underpins the community's efforts to protect the Komodo dragon, viewing the animal as both a spiritual sibling and a key figure in their cultural heritage. During local festivals, the legend of the Putri Naga is often retold through traditional performances such as dance and drama, emphasizing the close bond between humans and nature in the region.

Figure 10. The story of the Komodo dragon princess which was made into a legend

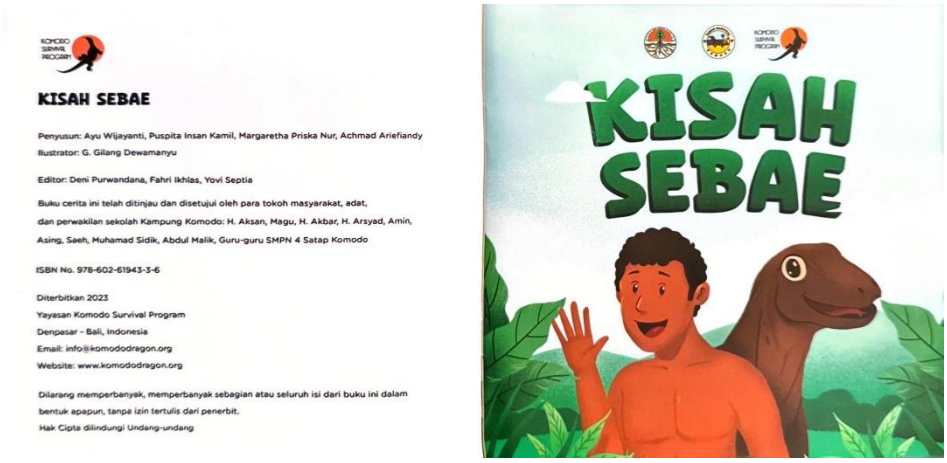


Figure 11. A children's story book about the story of Sebae

3) **Beliefs Related to the Sea and Savanna**:

People of Nusa Tenggara Timur (NTT) have various beliefs related to the sea and savanna. These beliefs are rooted in the close relationship between the community and nature, especially since the sea and savanna play a significant role in their daily lives, both economically and spiritually. Here are some examples of beliefs related to the sea and savanna in the NTT community:

a) Beliefs Related to the Sea

- **The Sea as a Source of Spiritual Life**: For coastal communities in NTT, the sea is not only a source of livelihood but also believed to be the dwelling place of ancestral spirits and supernatural beings. They believe that the sea must be respected, and therefore, special rituals are performed before sailing or fishing, such as prayers or offerings to seek safety and blessings.
- **Ritual of Larung**: In some coastal areas, the community often performs the larung ritual, in which offerings are sent to the sea to ask for protection from the sea spirits and to avoid natural disasters like storms or big waves. These offerings can include food, betel leaves, or specific items believed to calm the sea spirits.

b) Beliefs Related to the Savanna

- **Spirits Guarding the Savanna**: In inland areas such as Flores, local communities believe that the savanna is inhabited by guardian spirits who must be respected. When the community wishes to carry out activities in the savanna, such as hunting or herding livestock,

they will perform traditional rituals to ask permission from the spirits believed to guard the area.

- **Respect for Nature**: People in NTT, especially those living near the savanna, also believe that harming the savanna without permission or engaging in activities that go against nature's will, can bring disaster. They believe that nature must be well-maintained and respected to ensure the balance of the ecosystem is preserved.

c) New Year Rituals for the Sea and Savanna

In some parts of NTT, there is also an annual ritual where the community gathers to honor the sea and the land (including the savanna). During this ritual, people offer prayers and make offerings as an expression of gratitude for the bounty of the land and sea they have received throughout the year. This ritual usually involves the entire community and serves as a moment to strengthen their spiritual connection with nature.

These beliefs highlight the importance of nature in the spiritual and cultural life of the people in NTT. These traditions not only show respect for nature but also reflect the local community's efforts to preserve the surrounding environment.

These traditions showcase the deep connection between the local communities, their culture, and the natural environment. They not only help preserve cultural identity but also encourage conservation of the environment, including protecting the unique Komodo dragons.

2.3.6. Use of traditional and local knowledge in the management of the biosphere reserve.

Traditional knowledge plays an integral role in managing the reserve, especially in the areas of natural resource management and biodiversity conservation. Local community leaders, including traditional custodians, are consulted during decision-making processes. Indigenous techniques for sustainable farming and resource use are actively incorporated into the management plan to ensure the continuation of these practices.

Within the Komodo National Park (KNP) area, the most dominant and indigenous ethnic groups are the Ata Modo and Bajo tribes. The Ata Modo tribe holds two primary beliefs: the belief that Komodo dragons are the twin siblings of the Ata Modo people, and the "Prafu" belief. Additionally, the descendants of the Bajo tribe believe in the importance of fishing wisely using traditional tools, typically done by diving and spearfishing.

These beliefs form part of the local wisdom that greatly aids in conservation efforts for both marine and terrestrial wildlife. The story of Sebae indirectly emphasizes the need to protect and preserve Komodo dragons, while the Pra'fu ritual educates the importance of safeguarding nature and its contents. Similarly, the practice of spearfishing by diving teaches the importance of protecting the aquatic environment. The presence of such local wisdom contributes significantly to the conservation efforts in Komodo National Park, ensuring the survival of Komodo dragons and the ecosystems that support them.

Figure 12. Local wisdom activities of prafu and fish archery (traditional fishing)

2.3.7. Community cultural development initiatives. Programmes and actions to promote community language, and, both tangible and intangible cultural heritage. Are spiritual and cultural values and customary practices promoted and transmitted?

Cultural development initiatives within the reserve include programs to promote local languages, as well as efforts to protect both tangible and intangible cultural heritage. Customary practices and spiritual values are actively promoted through community-driven projects, such as storytelling festivals and the revival of traditional ceremonies. These activities are supported by both local government and NGOs, ensuring their transmission to future generations.

In East Nusa Tenggara (NTT) and the Komodo Biosphere Reserve, various community cultural development initiatives are actively working to promote and preserve both tangible and intangible cultural heritage. These programs aim to protect local languages, traditions, spiritual values, and the unique customs of the communities living in the area. Some of the key initiatives include:

1) **Promotion of Community Language**:
    - **Language Revitalization Programs**: Local languages, such as Manggarai and other indigenous dialects, are promoted through education and cultural events. Schools and community centers often organize language classes, storytelling events, and local-language performances to ensure that younger generations continue to speak and preserve their native tongues.
    - **Documentation and Preservation**: Efforts are being made to document oral histories, traditional stories, and local wisdom in both written and digital forms to protect the linguistic heritage from disappearing. Local cultural organizations collaborate with educational institutions to create dictionaries and teaching materials in local languages.
2) **Preservation of Intangible Cultural Heritage**:
    - **Traditional Music, Dance, and Folklore**: Festivals such as the Golo Koe Festival and Ata Modo Festival are platforms where traditional dances like the Caci war dance, music performances, and folklore are showcased. These cultural festivals provide opportunities for both locals and visitors to experience and learn about the rich traditions of NTT communities.
    - **Spiritual Rituals and Customs**: Spiritual practices such as the Prafu (ancestor worship) and other nature-based rituals are still actively practiced and passed down through generations. These rituals emphasize the community's relationship with their ancestors and nature, promoting the idea that natural elements like the sea, mountains, and savanna are sacred and must be respected. The Putri Naga legend, which links the local people spiritually to Komodo dragons, is also a vital cultural narrative that is preserved through storytelling and performances.
3) **Tangible Cultural Heritage**:
    - **Traditional Craftsmanship and Handicrafts**: Weaving, especially the creation of *tenun ikat* (woven textiles), is a highly respected craft in NTT. Community development programs provide training and support to weavers, helping them maintain their skills while creating economic opportunities through the sale of traditional products.
    - **Cultural and Natural Sites**: Several sacred sites, including traditional village architecture and natural landmarks, are preserved as part of the community's tangible heritage. These sites serve as important locations for spiritual and cultural ceremonies, ensuring that local traditions remain vibrant.
4) **Spiritual and Cultural Values Transmission**:
    - **Intergenerational Knowledge Transfer**: Cultural transmission is a priority in NTT, where elders are seen as key holders of knowledge.

Through mentorship and participation in rituals and cultural events, younger generations are taught about their heritage, including the deep respect for nature, community values, and traditional laws that guide life in NTT.

- **Cultural Schools and Workshops**: Cultural schools and workshops are set up to teach children and youth about traditional music, dances, crafts, and rituals. These schools also emphasize the spiritual meaning behind cultural practices, reinforcing the community's worldview and their harmonious relationship with the environment.

These programs aim to ensure that cultural and spiritual values, as well as customary practices, are not only promoted but also deeply ingrained in daily life. The integration of heritage into community development in the Komodo Biosphere Reserve and NTT as a whole emphasizes sustainability, education, and cultural pride.

Festivals and Events:

a) **Golo Koe Festival**: This cultural festival showcases the rich traditions of the Manggarai people, featuring performances of traditional music and dances such as the Caci dance. The festival is centered around the local culture, including storytelling and rituals honoring ancestors and local beliefs, promoting both tangible and intangible heritage.

Figure 13. Golo Koe Festival in Komodo Biosphere Reserve

b) **Sail Komodo**: Sail Komodo is an international maritime event where yachts from around the world sail to the Komodo region. The event promotes sustainable tourism and highlights the region's unique marine biodiversity.

It also includes cultural performances, exhibitions, and initiatives focusing on marine conservation and local community empowerment.

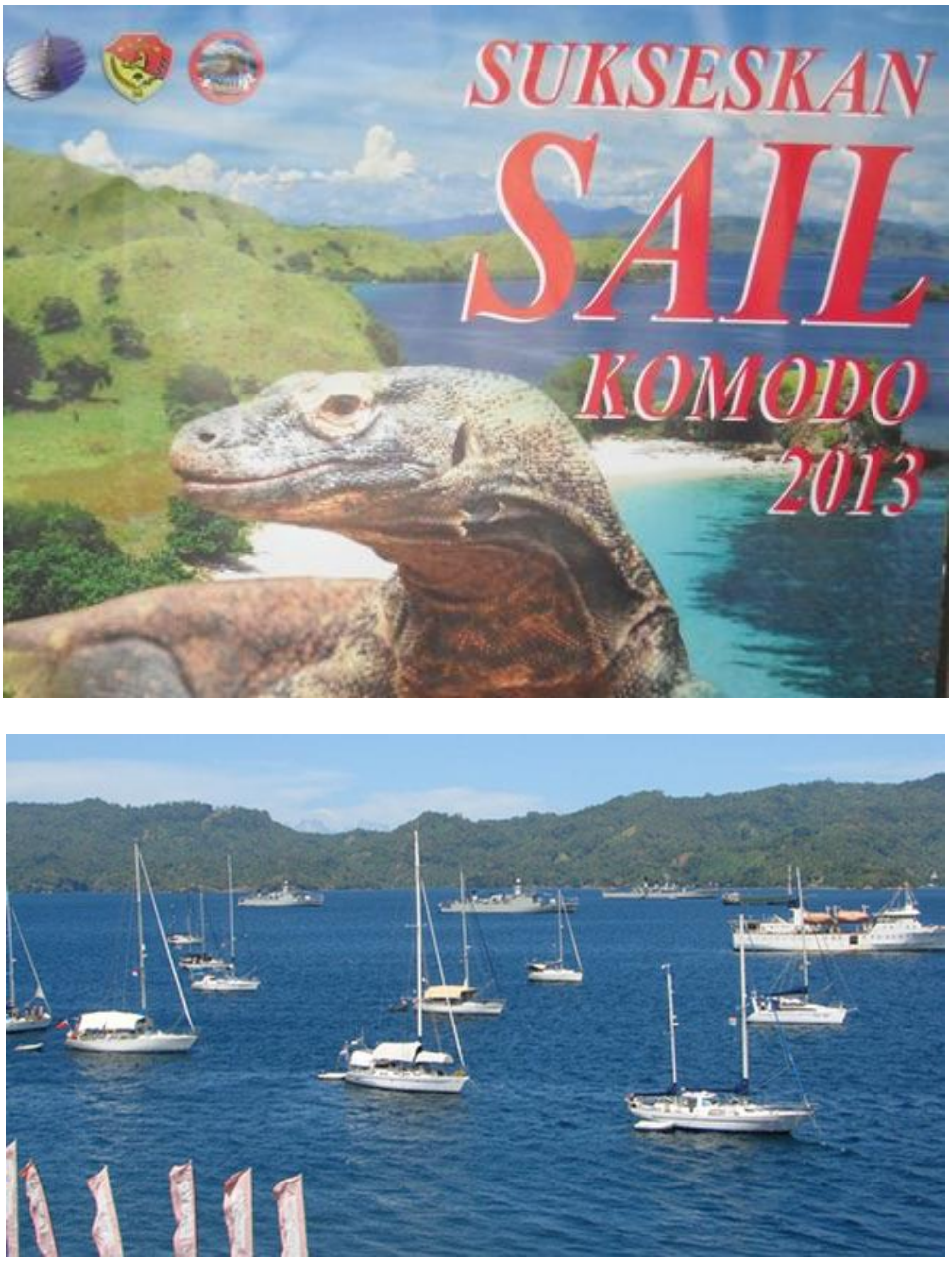


Figure 14. Sail Komodo

c) **Tour de Flores**: Tour de Flores is a multi-stage cycling race through the beautiful landscapes of Flores, promoting eco-tourism and showcasing the island's natural beauty and culture. Cyclists pass through various villages, experiencing the hospitality of local communities while raising awareness about the environment and the need to protect natural heritage.

Figure 15. Tour de Flores

d) **Side Events of the G20**: During the G20 Summit, side events are held to discuss important issues such as sustainability, green energy, and inclusive economic growth. In NTT, these events often emphasize sustainable tourism and the preservation of natural and cultural heritage, with exhibitions and discussions involving global leaders, local stakeholders, and NGOs.

Figure 16. Side Events of the G20 2023

e) **ASEAN Summit**: The ASEAN Summit brings together leaders from Southeast Asia to discuss regional security, economic cooperation, and cultural exchange. When hosted in NTT, the summit integrates local culture into the diplomatic setting, offering opportunities for leaders to experience the region's traditions and cultural diversity.

Figure 17. ASEAN Summit 2023

f) **IFG Forum (Indonesia Financial Group)**: The IFG Forum, held alongside major international events, focuses on investment, infrastructure development, and financial cooperation. In the context of NTT, it highlights opportunities for investment in sustainable tourism and the protection of cultural and environmental assets.

Figure 18. The IFG Forum Labuan Bajo Marathon 2022

g) **Ata Modo Festival**: This festival celebrates the traditions of the Ata Modo people, the indigenous inhabitants of Komodo Island. It includes performances of traditional rituals, storytelling, and ceremonies that promote the community's spiritual connection with nature, particularly with the Komodo dragons, who are seen as spiritual ancestors.

Figure 19. Ata Modo Festival

2.3.8. Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve. Has there been a change in the number of spoken and written languages? Has there been a revitalization programme for endangered languages?

Language and Cultural Diversity

In the Komodo Biosphere Reserve and the broader region of East Nusa Tenggara (NTT), there are a significant number of languages spoken and written, encompassing ethnic, minority, and endangered languages. The communities residing in the biosphere reserve include the Bajo, Bugis, and local communities (Komodo, Bima, and Manggarai). Generally, the migrant communities (Bajo and Bugis) make their living as fishermen, while the local population are farmers.

The majority of the population around the Komodo Biosphere Reserve are fishermen originating from Bima (Sumbawa), Manggarai, South Flores, and South Sulawesi. Those from South Sulawesi belong to the Bajau or Bugis ethnic groups. The Bajau were originally nomadic, moving across Sulawesi, Nusa Tenggara, and Maluku in search of livelihood. Descendants of the original Komodo people, the Ata Modo, still live on Komodo Island, though no full-

blooded individuals remain, and their culture and language have slowly integrated with that of newcomers.

Little is known about the early history of Komodo Island's inhabitants. They were subjects of the Sultanate of Bima, although the island's remote location meant that Bima's affairs were likely not heavily influenced by the island, except for the collection of tribute. Until 1982, it was believed that the inhabitants of Komodo Island were Bima people who settled there for trade or were exiled. However, recent research suggests that the language and social organization of the Komodo people were distinct from those of Sumbawa, so the island's inhabitants can be considered a separate ethnic group, the Ata Komodo. This indigenous group is now estimated to make up only 18% of the island's population, with the remainder consisting of other groups such as the Bajo and Bugis.

1) Key Languages in the Region

There are two main languages spoken within the Komodo Biosphere Reserve: Manggarai and Bahasa Indonesia. Most of the population within and around the core zone (Komodo National Park) can speak Indonesian. The Bajo language is commonly used for everyday communication in much of the community. In addition, there are several dialects unique to the indigenous communities. While no significant changes in the number of languages have occurred in the past decade, efforts have been made to revitalize endangered dialects through educational programs in local schools. In the Komodo Biosphere Reserve and the broader region of East Nusa Tenggara (NTT), there are a significant number of languages spoken and written, encompassing ethnic, minority, and endangered languages.

East Nusa Tenggara is home to 72-80 languages. This figure includes indigenous languages, ethnic languages, and a few endangered ones. The Komodo Biosphere Reserve is primarily inhabited by the Manggarai, Bima, and Komodo ethnic groups, with languages like Manggarai, Bima, and Komodo (a variation of Manggarai) spoken in the region.

These languages belong to the Austronesian language family, but the region also exhibits significant linguistic diversity, with dialectal variations.

- **Manggarai Language**: Spoken primarily in the western part of Flores Island, including parts of the Komodo Biosphere Reserve, the Manggarai language has several dialects. Though it remains actively spoken, younger generations are increasingly shifting to Indonesian, especially in urban areas. The language's vitality depends on continued use in rural communities.

- **Bima Language**: Spoken by the Bima ethnic group in parts of Komodo, this language has also seen a decline in daily use, particularly in formal settings, due to the dominance of Indonesian.
- **Komodo Language** (a dialect of Manggarai): A lesser-known language spoken by the Komodo people. It has few fluent speakers and is at risk of becoming endangered as Indonesian becomes more dominant in education and media.

2) Changes in Language Usage (2014-2023)

- **Dominance of Indonesian**: Over the past decade, Bahasa Indonesia has become increasingly dominant, especially in formal sectors such as education, government, and media. This trend has contributed to the erosion of fluency in indigenous languages, particularly among younger generations.
  - **Urban vs. Rural Divide**: In rural areas, local languages are still used in everyday communication, but in urban centers, the use of Indonesian is much more prevalent. This has led to a generational language gap, where older generations are fluent in local languages while younger people predominantly speak Indonesian.
- **Cultural Shifts**: Globalization and increased connectivity with other parts of Indonesia have contributed to cultural shifts, where local customs and languages are sometimes seen as less "useful" compared to Indonesian, which offers better opportunities for mobility and education.

3) Revitalization Efforts

Despite the decline in language use, there are ongoing efforts to revitalize endangered languages in the region. These efforts focus on both cultural promotion and education.

- **Language Documentation Projects**:
  - Local NGOs and researchers from institutions like **Universitas Nusa Cendana** (UNDANA) in Kupang and international universities have collaborated with communities to document local languages. This involves recording oral traditions, collecting vocabulary, and compiling dictionaries to **preserve linguistic data** for future generations.
  - **Storytelling Projects**: Traditional stories, myths (such as the **Putri Naga** legend), and oral histories are recorded in indigenous languages and translated into Indonesian to make them accessible to wider audiences while preserving the original language.

- **Education Programs**:
  - **Cultural Schools and Workshops**: Community-led schools and workshops are teaching children and youth traditional arts, crafts, and languages. In these settings, indigenous languages are used alongside Indonesian to maintain bilingual fluency.
  - **Integration into School Curriculums**: In some areas, local governments have supported programs that integrate **local languages into school curriculums** at the elementary level. These classes focus on reading, writing, and speaking in local languages, as well as teaching local cultural heritage through language.
  - **Digital Tools for Language Learning**: In collaboration with international NGOs, some communities have developed **digital platforms** and apps to teach endangered languages, providing access to younger generations through modern technology.

- **Cultural Festivals and Events**:
  - **Golo Koe Festival**: This festival includes performances in local languages, such as traditional Manggarai dances and songs, promoting the use of local languages in a public setting. It helps raise awareness of the cultural significance of these languages.
  - **Ata Modo Festival**: Focused on the traditions of the Komodo people, this festival integrates **storytelling, rituals, and traditional songs** in the local Komodo language, helping to reinforce the cultural identity of the community and the importance of preserving their linguistic heritage.
  - **Traditional Storytelling Competitions**: These competitions, often held during festivals, encourage young participants to retell myths and folklore in their indigenous language, promoting its use in a celebratory and competitive context.

- **Collaborations with Linguists and Researchers**:
  - Academic collaborations with universities from outside Indonesia have provided **research grants** and technical support for language preservation efforts. Researchers often work directly with local communities to record endangered languages and dialects, ensuring that these linguistic treasures are not lost.

Specific Revitalization Examples:

1. **Manggarai Language Project**: Focuses on recording oral traditions and creating teaching materials for use in local schools, particularly in remote areas where Manggarai is still the dominant language.
2. **Endangered Dialects Revitalization**: Efforts have been made to revitalize endangered dialects within the Manggarai and Komodo languages, especially in communities where only older generations are fluent. This involves creating language camps where children spend time learning from elders through storytelling and hands-on activities in their native language.

The number of indigenous languages in NTT has faced challenges due to the increasing dominance of Indonesian, particularly in urban areas. However, through a combination of documentation, education, cultural events, and collaborations with researchers, there are ongoing revitalization efforts aimed at preserving the linguistic heritage of the region. These programs are crucial for keeping endangered languages alive and ensuring that younger generations remain connected to their cultural roots.

2.3.9. Management effectiveness. Obstacles encountered in the management/coordination of the biosphere reserve or challenges to its effective functioning.

The management of the Komodo Biosphere Reserve faces several key challenges:

1. **Coordination across multiple stakeholders**: One of the primary challenges is ensuring effective coordination between local government, conservation agencies, tourism authorities, and the communities involved. While efforts have been made to strengthen governance through collaborative mechanisms, the diverse range of stakeholders often leads to delays in decision-making and implementation.
2. **Resource limitations**: Limited financial resources and staff shortages remain significant barriers to achieving long-term sustainability goals. Although partnerships with the private sector and international donors provide some support, funding is still insufficient to fully meet the needs of conservation, community development, and tourism management.
3. **Infrastructure constraints**: The remote location and challenging terrain of the biosphere reserve present logistical difficulties. Infrastructure development, especially in transportation and communication, is needed to improve accessibility and the capacity for monitoring and managing the reserve's core, buffer, and transition zones effectively.

4. **Lack of public awareness**: Increasing public understanding of the biosphere reserve's mission and objectives remains a hurdle. Despite educational programs, many community members are not fully aware of the importance of sustainable resource management or the long-term benefits of conservation .
5. **Environmental pressures**: Climate change and human activities, such as illegal fishing and land use, put pressure on ecosystems within the biosphere reserve. The impacts of rising sea levels, coral bleaching, and habitat degradation require more adaptive management strategies, but the availability of timely and accurate environmental data is still limited.

The effectiveness of biosphere reserve management is assessed using the Management Effectiveness Tracking Tool (METT)

a. **Management effectiveness assessment** is an evaluation conducted to determine the extent to which management has been carried out in order to achieve the established goals. The assessment of the management effectiveness of the core zone of the Komodo Biosphere Reserve is a crucial step expected to provide input for improvements needed in the future. The area effectiveness assessment uses the METT (Management Effectiveness Tracking Tool) method, conducted periodically every two years. The management effectiveness evaluation method for conservation areas used refers to the guidelines for monitoring or evaluating the effectiveness of conservation area management set by the Director General of Natural Resources and Ecosystem Conservation through Regulation No. 5/KSDAE-SET/2015 on Guidelines for the Assessment of Conservation Area Management Effectiveness in Indonesia.

   The METT method is used with a scorecard. The purpose of this scorecard is to help conservation area managers identify where they have been successful and which sectors need improvement. The scorecard method can evaluate and report the management performance that has been implemented in the conservation area. This assessment method has been adapted or developed to provide a brief overview of the initial conditions, management efforts, and progress made over a certain period to improve the effectiveness of conservation area management. The results of the management effectiveness assessment of the Komodo National Park area are based on this approach.

   1. **The METT assessment** is conducted on key elements that play an important role in the management cycle. The assessment aspects are grouped into six main categories:

2. **Understanding the context of the conservation area**, including its significant values, the threats it faces, available opportunities, involved stakeholders, and the legal status of the area.
3. **Planning the management of the area**, covering aspects like design (shape, size, and location), formulation of vision, goals, and targets to preserve significant values and reduce pressures.
4. **Resource allocation (inputs)**, including personnel, budget allocation, and management support equipment.
5. **Management activities**, carried out in accordance with acceptable standards (**process**).
6. **Products and services (outputs)** produced as planned, impact or outcomes achieved, adjusted to the management objectives.

These six management elements form part of an interconnected management cycle. The METT evaluation method follows the general assessment framework provided by the World Commission on Protected Areas (WCPA) as a global guide for assessing effectiveness. The six assessment elements, in line with the WCPA framework, are evaluated based on measurable criteria and indicators.

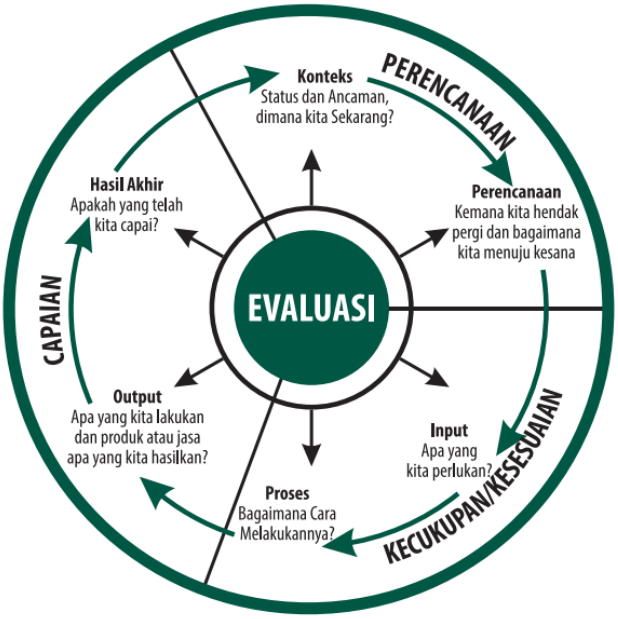


Figure 20. The effectiveness assessment framework

2.4. Comment on the following matters of special interest in regard to this biosphere reserve: *(Refer to other sections below where appropriate).*

2.4.1. Is the biosphere reserve addressed specifically in any local, regional or/and national development plan? If so, what plan(s)? Briefly describe such plans that have been completed or revised in the past 10 years.

Yes, the Komodo Biosphere Reserve is included in several local and national development plans. It is part of the West Manggarai Regency Medium-Term Development Plan (RPJMD) and the Komodo National Park Management Plan, both of which emphasize the need for balancing conservation efforts with sustainable economic development. These plans focus on managing the core, buffer, and transition zones effectively while promoting eco-friendly tourism. They also aim to ensure the sustainable use of natural resources within the reserve by aligning with the national Sustainable Development Goals (SDGs).

1) **The Medium-Term Regional Development Plan (RPJMD) of West Manggarai Regency for 2013-2017 and 2018-2023**
In these documents, the environmental development programs are designed to achieve the mission of accelerating growth and equitable development based on sustainable spatial planning. This is done by enhancing regional connectivity and organizing areas while considering the balance of environmental carrying capacity and sustainability, along with the preservation of protective and conservation functions for the benefit of community life.

The Komodo Biosphere Reserve is identified as one of the thematic regional development priorities, with key development focuses including agroforestry, tourism, manufacturing, fisheries, trade, services, mining, agribusiness, and agro-tourism. Development in this region is also directed towards the rehabilitation and revitalization of protected areas, supported by tourism development initiatives.

The Komodo Biosphere Reserve is integrated into other policies including:

Table 6. Implementation of the Komodo Biosphere Reserve in management policies

Management	Policy Implementation
National	➢ In 2022, The Revised of strategic plan for Natural Resources and ecosystem management 2020 - 2024 ➢ In 2020, The strategic plan for Natural Resources and ecosystem management 2020 - 2024 ➢ In 2020 , the National Park Strategic Plan 2020- 2024 ➢ In 2020, Rencana Strategis Direktorat Jenderal Konservasi Sumber Daya Alam Dan Ekosistem Tahun 2020-2024 ➢ 2016, Indonesian Biodiversity Strategy and Action Plan 2015-2020
Komodo National Park	➢ Komodo National Park Long-term Management Plan 2015-2025 ➢ Strategic Plan Komodo National Park 2015-2019 ➢ Strategic Plan Komodo National Park 2020-2024 ➢ Performance agreement of the head of the Komodo National Park Center 2016 ➢ Performance agreement of the head of the Komodo National Park Center 2018 ➢ Performance agreement of the head of the Komodo National Park Center 2019 ➢ Performance agreement of the head of the Komodo National Park Center 2020 ➢ Performance agreement of the head of the Komodo National Park Center 2021 ➢ Performance agreement of the head of the Komodo National Park Center 2022 ➢ Performance agreement of the head of the Komodo National Park Center 2023
Government of Manggarai Barat	➢ 2020, Forum Koordinasi dan Komunikasi Pengelolaan cagar Biosfer Komodo ➢ Renstra ➢ Renstra Perubahan ➢ RPJMD ➢ RPJMD Perubahan ➢ RTRW ➢ 2024 Tim Kerja Cagar Biosfer Komodo ➢ Tim Kerja Pariwisata Berkelanjtan ➢ 2004, Rencana Pembangunan Jangka Panjang Daerah Kabupaten Manggarai Barat Tahun 2005 - 2025

2) **Long-Term Management Plan of Komodo National Park for 2016-2025**

The Long-Term Management Plan of Komodo National Park for the 2016-2025 period has been developed as a foundation for various stakeholders to create development programs within the Komodo National Park area, in accordance with their respective authorities, roles, interests, and responsibilities in a synergistic and harmonious manner. Based on an analysis of issues and strategic challenges conducted by the Komodo National Park Authority in collaboration with multiple stakeholders, the key management challenges have been categorized as follows Insufficient area stability, Rapid population growth in villages directly adjacent to Komodo National Park, Degradation of natural resources and the environment, Weak coordination among stakeholders, Poor management of data and information for decision-making, Suboptimal nature tourism management, Weak enforcement of environmental and forestry laws, Differing perceptions among stakeholders regarding the role and function of Komodo National Park. This plan aims to address these challenges through a coordinated approach involving all relevant parties.

To address the challenges faced, the vision of Komodo National Park is "To Become a World-Class Ecotourism Destination and National Pride, Leading in the Management of Conservation Areas." Based on this vision, the management objectives of Komodo National Park are as follows:

- Preserving the biodiversity and unique ecosystems of Nusa Tenggara within the Komodo National Park.
- Protecting and maintaining the continuity of ecological processes that support life systems, particularly in marine and fisheries development programs surrounding Komodo National Park.
- Supporting educational and research activities to study natural behaviors, identify natural phenomena, and develop techniques to anticipate such behaviors.
- Ensuring the sustainable utilization of natural resources in and around Komodo National Park, especially for the benefit of local communities without compromising conservation.
- Developing the natural beauty, biodiversity, and unique social and cultural practices of the local communities, not only to enhance tourism success in the area but also to provide alternative income sources for the local population.

The Komodo National Park Management Plan serves as a guideline and general framework for management implementation, which remains macro and indicative. Given the nature and scope of this plan, further elaboration is required into more operational plans with shorter planning

periods. The success of the activities outlined in the 2016-2025 Komodo National Park Management Plan will largely depend on the capacity and performance quality of the human resources involved within the Komodo National Park Authority. To measure the success of these activities, regular monitoring, evaluation, oversight, and control will be carried out and documented in reports.

2.4.2. Outcomes of management/cooperation plans of government agencies and other organizations in the biosphere reserve.

The management and cooperation plans implemented West Manggarai Regency, Komodo National Park and other organizations as part of the Komodo Biosphere Reserve have led to tangible outcomes, including:

- The establishment of multi-stakeholder coordination forums, which include local communities, government bodies, NGOs, and private sector representatives. These forums have significantly improved governance within the biosphere reserve.
- Successful ecosystem restoration programs such as coral reef rehabilitation and mangrove planting, which have contributed to biodiversity conservation in the core and buffer zones.
- Enhanced research collaborations with universities and international organizations, leading to better monitoring and data collection on the health of ecosystems.
- Tourism Connectivity Sector: The designation of Komodo Airport as an international airport and the commencement of international flights.
- Implementation of International Events held in the Komodo Biosphere Reserve: ASEAN Summit (2023), G20 Side Event (2022), International Women's Police Conference (2021).
- Improving the Quality of Human Resources through: Growth of the Human Development Index in 2023 at 103.8%, surpassing the growth rate of the NTT Provincial HDI. Stunting prevalence has reached a single digit, and the development of specialized services at Komodo Regional Hospital has made it the best referral hospital for the Flores Island region, along with the integration of primary services
- Developing Local Economic Competitiveness Based on Local Potential through: Construction of the Joint Bamboo Processing Production House (2023), Establishment of the Integrated Business Service Center (2022), Optimization of the Vocational Training Center, Work Apprenticeship Programs, and Protection for Vulnerable Workers;
- Economic Growth: The economic growth rate in West Manggarai Regency for 2022 and 2023 was the highest in NTT;
- Poverty Rate: The poverty rate saw a decreasing trend from 17.15% in 2022 to 16.82% in 2023. This strong commitment was demonstrated

through the drafting of the Regional Poverty Alleviation Plan, which serves as the grand design for reducing poverty in West Manggarai Regency;

- Per Capita Income: There was a positive trend in per capita income, from IDR 13.91 million in 2021, IDR 14.72 million in 2022, and IDR 15.70 million in 2023;
- Improving the Quality and Equity of Environmentally Sustainable Infrastructure Development** through: Road/irrigation/sanitation infrastructure development, construction of strategic road sections, enhancement of surface irrigation networks, rehabilitation of surface irrigation networks, development of clean water access, sanitation development, and the construction of a Sludge Treatment Plant (IPLT) in 2024;
- Regional Financial Management: Achievement of the Unqualified Opinion (WTP) for six consecutive years up to 2023, Award for the Regional Acceleration and Expansion of Digitalization Team, and the Regional Financial Management Index; West Manggarai Regency was recognized as the best in NTT for Regional Financial Management;
- Implementation of E-Government: West Manggarai Regency has become the best regency in NTT for the implementation of e-government, measured by the Electronic-Based Government System Index (SPBE).
- The Komodo National Park Authority has received several awards for its performance, including:
    - Best Budget Execution Unit for Fiscal Year 2016 by KPPN Ruteng,
    - Third Best Compliance in Contract Submission for Fiscal Year 2018 by KPPN Ruteng,
    - Third Best Digital Treasury Service Implementation for 2022 by KPPN Ruteng,
    - First Place for Highest Non-Tax State Revenue (PNBP) in the Utilization of Environmental Services in Conservation Areas for 2022 by the Director General of Natural Resource and Ecosystem Conservation, Ministry of Environment and Forestry,
    - First Place for Highest Non-Tax State Revenue in Other Categories within the Ministry of Environment and Forestry for 2023, covering the Bali and Nusa Tenggara region, by the Finance Bureau of the Ministry of Environment and Forestry.

2.4.3. Continued involvement of local people in the work of the biosphere reserve. Which communities, groups, etc. How are they involved?

Local communities, including indigenous groups and fishermen, are actively involved in the management of the Komodo Biosphere Reserve. They

participate through village-level consultations and are represented in the Management Coordination Forum. Communities contribute to conservation activities like patrols, eco-tourism services, and environmental education programs. In addition, they are involved in sustainable livelihood projects, such as handicrafts and sustainable fishing practices, which help improve their economic well-being while supporting conservation goals.

One of local communities who active involved in Komodo Biosphere Reserve is Anak Labuan Bajo. Anak Labuan Bajo, which means “Child of Labuan Bajo” in Indonesian language, is a term commonly used to refer to the young generation of Labuan Bajo. ALB was established in 2015 by a group of individuals who saw the need to address issues such as education, health, and economic opportunities in the area. The organization primarily focuses on providing educational support to Anak Labuan Bajo, which includes scholarship programs, tutoring, and mentoring sessions. They also work with local schools and teachers to enhance the quality of education for the children. ALB also supports community-based activities that promote sustainable livelihoods such as eco-tourism, agroforestry, and fisheries. Through their efforts, ALB hopes to create a brighter future for the children and communities in Labuan Bajo

The Komodo National Park Authority has conducted conservation activities involving the younger generation within the park and its buffer zones. They have established a "Conservation Cadre" program, which involves youth representatives from villages both inside and surrounding the park. In addition to the Conservation Cadre, the Komodo National Park Authority has also implemented a conservation dissemination program called "Junior Park Ranger," where vocational high school students participate in hands-on training within Komodo National Park. A similar program under the Ministry of Environment and Forestry is the Green Youth Movement, which targets high school and vocational school students across Indonesia, particularly in areas adjacent to conservation zones. This program aims to engage young people in conservation efforts and environmental awareness, fostering a new generation of environmental stewards throughout the country.

These programs have had a positive long-term impact on the management of Komodo National Park by educating the youth in the Biosphere Reserve area about conservation. Furthermore, the Komodo National Park Authority has pursued community-based management efforts through the creation of Fire Prevention Community Groups and Forest Police Partner Community Groups. These community groups assist the park in preserving the area through joint patrols and monitoring activities.

Figure 21. The Junior Park Ranger and Conservation Cadre program in Komodo National Park

2.4.4. Women's roles. Do women participate in community organizations and decisionmaking processes? Are their interests and needs given equal consideration within the biosphere reserve? What incentives or programmes are in place to encourage their representation and participation? (e.g. was a "gender impact assessment" carried out?) Are there any studies that examine a) whether men and women have different access to and control over sources of income and b) which sources of income do women control? If so, provide reference of these studies and/or a paper copy in an annex

Yes, women in the Komodo Biosphere Reserve actively participate in community organizations and decision-making processes. They are represented in local management groups and are involved in eco-friendly business initiatives, such as handicraft production and sustainable tourism services. Programs to promote gender equality have been implemented to ensure that women's interests are considered in biosphere reserve management. However, there is still a need for more structured gender impact assessments to fully understand the role of women in resource management and income generation.

As an example, WKRI (Wanita Katolik Republik Indonesia) Manggarai Barat: The Indonesian Catholic Women's Association is a faith-based women's group (Catholic) that not only participates in religious activities but also in various partnership programs with the Regional Government. This organization is actively involved in the Urban Future program, which focuses on issues such as food security and climate change in collaboration with the BERNAS consortium. Their main focus includes handicrafts and processing local food products. In West Manggarai Regency, there are also many women's groups contributing to organic farming, joint savings and loan ventures (UBSP), spring conservation, organic vegetable development, and local food production, including groups like Cempe Saep, Flamboyan, Kawe Mose, Rengka Momang,

Weri Poong, Gejur Sama, Wae Ara, Pande Mose, Latung Mesak, Nisang Nai, and Lembu Nai.

In Komodo National Park, gender equality has been implemented, with women taking on and excelling in various fields. For example, women serve as Forest Rangers, Forest Ecosystem Controllers, and Forestry Extension Officers, each playing a crucial role in shaping policy and management within the park. Women also hold leadership roles in key activities such as Marine Patrols, integrated patrols, and leading various community outreach initiatives. Additionally, several strategic positions within the park's management are now led by women, reflecting their significant contributions to the conservation and sustainable management of Komodo National Park.

Figure 22. The role of women in Komodo National Park

2.4.5. Are there any changes in the main protection regime of the core area(s) and of the buffer zone(s)?

No significant changes in the legal protection regime for the core and buffer zones have been reported in the past 10 years. However, the implementation of stricter regulations on tourism activities within the buffer zones has been a priority to reduce environmental degradation. These regulations are intended to

limit the impact of tourism on sensitive ecosystems while promoting sustainable tourism development

2.4.6. What research and monitoring activities have been undertaken in the biosphere reserve by local universities, government agencies, stakeholders and/or linked with national and international programs?

Numerous research and monitoring activities have been carried out within the Komodo Biosphere Reserve, focusing on biodiversity, marine ecosystems, and the socio-economic impacts of tourism. Local universities, such as Bogor Agricultural University, Gajah Mada University, National Hotel Institute, Brawijaya University, Diponegoro University, Nusa Cendana University, and Politeknik El-Bajo have collaborated with international partners and government agencies to conduct studies on coral reef health, endangered species, and the effectiveness of conservation strategies. Monitoring of marine and terrestrial biodiversity has been expanded through the use of new technologies like satellite imaging. In addition, there are foundations that collaborate and work together in conducting research that supports the conservation of biodiversity in Komodo National Park. These partnerships play a crucial role in preserving various species within the park, contributing to the overall conservation efforts in the area.

2.4.7. How have collective capacities for the overall governance of the biosphere reserve (e.g. organization of new networks of cooperation, partnerships) been strengthened?

Over the last decade, the Komodo Biosphere Reserve has strengthened its governance through the formation of the Komodo Biosphere Management Coordination Forum, which involves stakeholders from local governments, conservation agencies, community groups, and the private sector. This forum provides a structured space for dialogue and cooperation among the key actors in biosphere management. The stakeholder partnerships established have enhanced the coordination of conservation and development activities across the reserve, including efforts to synchronize local and national policies

2.4.8. Please provide some additional information about the interaction between the three zones.

The Komodo Biosphere Reserve (KBR) consists of three interconnected zones: the core area, the buffer zone, and the transition area. These zones are designed to serve different functions, but they are interdependent, contributing collectively to the sustainable management of the reserve. The interaction

between these zones is crucial for maintaining the balance between conservation, sustainable use of resources, and socio-economic development.

1. **Core Area**
   The core area, primarily consisting of the Komodo National Park, is strictly protected and dedicated to the conservation of biodiversity, particularly the habitat of the Komodo dragon and various marine species. Activities in this zone are limited to scientific research, environmental monitoring, and education. The integrity of this area is essential for maintaining the ecological health of the reserve, and it relies on the protection provided by the surrounding buffer zone. The core zone also benefits from the sustainable practices and development in the transition area, which reduces pressure on the protected ecosystems.
2. **Buffer Zone**
   The buffer zone surrounds the core area and acts as a protective shield, preventing harmful activities from directly affecting the core zone. This area allows for limited sustainable activities, such as eco-tourism, environmental education, and controlled resource use. These activities are designed to be compatible with conservation goals and support the livelihoods of local communities. The buffer zone serves as a space for research and pilot projects that aim to reduce the ecological footprint and support sustainable practices. The sustainable activities here not only protect the core area but also provide economic benefits to the surrounding communities, linking the core and transition areas through shared objectives of sustainability.
3. **Transition Area**
   The transition area is the outermost zone, where communities engage in a broader range of activities, including agriculture, fisheries, tourism, and urban development, particularly in areas like Labuan Bajo. The transition zone plays a key role in socio-economic development while integrating environmental conservation. Programs here focus on strengthening the capacity of local communities to manage natural resources sustainably, mitigating the impact of human activities on the environment, and reducing reliance on the core and buffer zones for resource extraction. The transition area also acts as a space for innovation, where stakeholders can experiment with sustainable development models that can later be applied to the buffer zone or even inform core area management strategies.

Interaction Between the Zones:

The three zones interact through a **multi-level management approach** that integrates conservation efforts in the core area with sustainable development initiatives in the buffer and transition areas. The buffer zone serves as an intermediary, mitigating the impact of human activities in the transition area on the core zone. Meanwhile, the transition area provides opportunities for local

economic development that align with the goals of the reserve. The successful management of the Komodo Biosphere Reserve depends on this symbiotic relationship, where conservation and development reinforce each other, ensuring that economic growth does not come at the expense of environmental degradation. This integrated approach ensures that the Komodo Biosphere Reserve continues to serve its purpose as a model for balancing biodiversity conservation with sustainable human development

2.4.9. Participation of young people. How were young people involved in the organizations and community decision-making processes? How were their interests and needs considered within the biosphere reserve? What are the incentives or programs in place to encourage their participation?

Youth participation in the Komodo Biosphere Reserve has been encouraged through a variety of programs aimed at environmental education and engagement. Young people have been involved in **eco-tourism initiatives**, serving as guides for tourists, and have participated in **conservation activities**, such as mangrove planting and beach clean-up campaigns. Educational programs in local schools emphasize the importance of conservation, while partnerships with youth organizations provide training in eco-friendly practices. Incentives for youth participation include vocational training and opportunities to work in the growing eco-tourism sector.

For example one of local communities who active involved in Komodo Biosphere Reserve is Anak Labuan Bajo. Anak Labuan Bajo, which means “Child of Labuan Bajo” in Indonesian language, is a term commonly used to refer to the young generation of Labuan Bajo. ALB was established in 2015 by a group of individuals who saw the need to address issues such as education, health, and economic opportunities in the area. The organization primarily focuses on providing educational support to Anak Labuan Bajo, which includes scholarship programs, tutoring, and mentoring sessions. They also work with local schools and teachers to enhance the quality of education for the children. ALB also supports community-based activities that promote sustainable livelihoods such as eco-tourism, agroforestry, and fisheries. Through their efforts, ALB hopes to create a brighter future for the children and communities in Labuan Bajo

3. ECOSYSTEM SERVICES:

3.1. If possible, provide an update in the ecosystem services provided by each ecosystem of the biosphere reserve and the beneficiaries of these services.

The Komodo Biosphere Reserve provides a wide array of ecosystem services, benefiting both local communities and external stakeholders, particularly the tourism sector and environmental conservation efforts.

- **Provisioning Services**:
  - **Marine Resources**: The coastal and marine ecosystems, particularly coral reefs, provide substantial provisioning services, especially for fisheries. Over 70% of the local communities in the buffer and transition zones depend on small-scale fishing for their livelihoods. These fisheries are an essential source of food, income, and employment.
  - **Tourism**: The Komodo Biosphere Reserve is a world-renowned tourism destination, especially for its natural beauty and biodiversity. The Komodo dragon (Varanus komodoensis), an endemic species, is a significant attraction, bringing international tourists. The provisioning services associated with tourism include local handicrafts, food, and accommodation services, all of which rely on the natural environment for their existence and success.
  - **Agriculture and Forest Products**: Communities in the buffer and transition zones benefit from agriculture and agroforestry products. Key agricultural products include rice, maize, and cassava, while forest products such as honey and medicinal plants are gathered sustainably from the reserve's forests.

- **Regulating Services**:
  - **Climate Regulation**: The forests in the buffer and transition zones act as carbon sinks, absorbing carbon dioxide and helping mitigate the effects of climate change. Mangroves and coastal wetlands provide climate regulation by storing carbon in their biomass and soils.
  - **Coastal Protection**: Mangroves and coral reefs serve as natural barriers, protecting coastlines from storm surges, tidal erosion, and rising sea levels. These ecosystems play a crucial role in reducing the vulnerability of coastal communities to natural disasters.
  - **Water Regulation and Purification**: Wetlands, particularly mangroves and other coastal ecosystems, filter water, removing pollutants and improving water quality. The natural vegetation of the reserve helps maintain groundwater levels and regulates the flow of freshwater into the marine environment, ensuring balanced ecosystems in both terrestrial and marine areas.

- **Supporting Services**:
  - **Nutrient Cycling**: The coral reefs, mangrove forests, and terrestrial ecosystems of the Komodo Biosphere Reserve contribute to nutrient cycling. For example, mangroves provide nursery habitats for marine species, cycling nutrients that benefit fisheries. Terrestrial ecosystems also facilitate the decomposition of organic matter, maintaining soil fertility essential for agriculture and forest ecosystems.
  - **Habitat Provision**: The reserve's ecosystems provide critical habitats for a wide variety of species, including several endangered species like the Komodo dragon. Coral reefs support marine biodiversity, while forests provide habitat for terrestrial wildlife, including the endangered Timor deer (Cervus timorensis), which is a key prey species for the Komodo dragon.

- **Cultural Services**:
  - **Tourism and Recreation**: Cultural ecosystem services are vital for the local economy, with eco-tourism being a primary income source for communities. The natural beauty of the islands, the rich marine biodiversity, and the unique presence of the Komodo dragon draw thousands of visitors annually. The cultural importance of conservation, especially around the Komodo dragon, contributes to environmental awareness and education initiatives.
  - **Spiritual and Religious Values**: Several indigenous communities in the transition zone consider certain natural features sacred, and these spiritual values are deeply integrated into their cultural identity. Conservation of these culturally significant areas is aligned with preserving both the environment and local traditions

3.2. Specify if there are any changes regarding the indicators of ecosystem services that are being used to evaluate the three functions (conservation, development and logistic) of the biosphere reserve. If yes, which ones and give details and update.

Landscape ecosystem management involves various perspectives from stakeholders—government, private sector, and communities—aimed at better balancing ecological, social, and economic aspects in the Komodo Biosphere Reserve. Culture and traditional wisdom play an important role in preserving biodiversity and landscapes. Communities have a strong connection to the landscape as a place to live and a source of livelihood. Forests serve as a source of food, provide clean water, medicinal plants, timber, and essential habitats for plants and wildlife. Land use needs can be balanced so that agricultural activities can be carried out on suitable land with environmentally friendly agricultural practices. Ecosystems are protected because communities can earn a livelihood without damaging forest cover, and they are given incentives and compensation to protect forests. Land boundaries are clarified and recognized through the protection of assets that serve as sources of

livelihood. The establishment of the Biosphere Reserve coincides with the creation and promotion of various land management instruments that have strengthened natural resource conservation and values for sustainable land use management.

Yes, there have been updates in the indicators used to evaluate ecosystem services, particularly those tied to conservation, sustainable development, and logistics:

- **Biodiversity Monitoring**: New biodiversity indicators have been introduced to measure the health of coral reefs, mangrove ecosystems, and terrestrial wildlife. Annual assessments now include the population status of endangered species like the Komodo dragon, as well as coral reef coverage and marine species diversity.
- **Tourism Impact**: Economic indicators related to tourism have become more sophisticated, now including measurements of the carrying capacity of popular tourist sites. These indicators help monitor the impact of tourism on the environment and local communities, ensuring that tourism remains sustainable.
- **Climate Adaptation Indicators**: Given the increased focus on climate change, indicators related to the resilience of ecosystems (such as coral reef recovery rates and mangrove growth) are now being monitored. These indicators help assess the capacity of ecosystems to adapt to rising sea levels and other climate-related pressures.

3.3. Update description on biodiversity involved in the provision of ecosystems services in the biosphere reserve (e.g., species or groups of species involved).

The biodiversity of the Komodo Biosphere Reserve is central to its ecosystem services, providing both direct and indirect benefits:

- **Marine Biodiversity**: Coral reefs host over 1,000 species of fish and 260 species of reef-building corals. These marine ecosystems are crucial for local fisheries, sustaining species like groupers and snappers, which are economically valuable for both local consumption and the tourism industry.
- **Komodo Dragon**: As the largest living species of lizard, the Komodo dragon is the most iconic species of the reserve. It is a major draw for tourists and a symbol of the region's biodiversity. The survival of the Komodo dragon depends on the health of its prey species, like the Timor deer, which in turn relies on the health of the terrestrial ecosystem.
- **Mangroves and Coastal Flora**: Mangrove forests provide critical nursery habitats for juvenile fish species that contribute to both commercial and subsistence fishing. These forests also play a vital role in maintaining coastal ecosystems and supporting biodiversity in the transition between land and sea.

3.4. Specify whether any recent/updated ecosystem services assessment has been done for the biosphere reserve since its nomination/last report. If yes, please specify and indicate if and how this is being used in the management plan.

An updated ecosystem services assessment was conducted in 2020. Key findings from the assessment include:

- The growing economic importance of **tourism-related ecosystem services**, especially those linked to coral reefs and the Komodo dragon. The assessment emphasized the need for stricter management of tourism activities to prevent ecosystem degradation.
- **Mangrove ecosystems** were found to be under pressure from both natural and human activities, particularly in areas adjacent to urban development in Labuan Bajo. The updated management plan now incorporates enhanced mangrove protection measures, including community-based restoration projects and stricter enforcement against illegal logging.
- The assessment identified climate change as a major threat, with increased emphasis on the resilience of coral reefs and mangroves. Recommendations included the expansion of marine protected areas to enhance ecosystem recovery and the introduction of climate adaptation strategies.

4. THE CONSERVATION FUNCTION:

[This refers to programmes that seek to protect biodiversity at landscape and site levels and/or ecological functions that provide ecosystem goods and services in the biosphere reserve. While actions to address this function might be focused on core area(s) and buffer zone(s), ecosystem dynamics occur across a range of spatial and temporal scales throughout the biosphere reserve and beyond.]

4.1. Significant changes (if any) in the main habitat types, ecosystems, species or varieties of traditional or economic importance identified for the biosphere reserve, including natural processes or events, main human impacts, and/or relevant management practices (since the last report).

The importance of conservation and maintaining natural values is fundamental to the sustainability of the area, with the goal of ecological balance and biophysical resilience. Recognizing the landscape as a unified entity in terms of scenery, visual appeal, and ecology is crucial, given its importance in determining the quality of life and local and regional identity, becoming one of the foundations for the integrated and balanced management of this area. The establishment of the Biosphere Reserve coincided with the creation and promotion of various land management instruments that have strengthened natural resource conservation and values, as well as encouraged sustainable land use management regimes.

Not much has changed in terms of traditional land use, with land or islands being used for settlements, and extensive agricultural production activities continuing in non-conserved areas (cultivation and settlement areas). It is important to remember that spatial or area planning must consider the bio-physical structure aspects, including areas with sensitivity and ecological value or those open and vulnerable to natural risks. General use restrictions limit land control, use, and conversion to activities in line with the biosphere reserve's development objectives.

Over the past decade, several significant changes have been observed in the Komodo Biosphere Reserve's ecosystems, primarily due to human activities and natural processes:

- **Ecosystem Restoration**: Ecosystem restoration efforts have been key in addressing the degradation of both terrestrial and marine ecosystems in the reserve. Specifically, coral transplantation using the Mars Assisted Reef Restoration System (MARRS) was conducted at Pulau Pempe and Pantai Merah. Mooring buoys were installed at 20 locations to prevent anchor damage caused by tourism activities. In 2019, land rehabilitation was initiated at Resort Papagarang and Loh Buaya targeting 300 hectares.

- **Wildlife and Komodo Dragon Habitat**: The management of Komodo dragon habitats, particularly in Gili Motang, has been adjusted to ensure prey availability and habitat monitoring. The estimated population of Komodo dragons in 2023 was 3,396 ± 359 individuals, showing a slight increase over the past years.
- **Natural Events**: Climate change poses an increasing threat, with rising sea levels and coral bleaching observed as a result of warming ocean temperatures. Additionally, volcanic eruptions and earthquakes in the region have impacted terrestrial habitats and biodiversity.
- **Human Impacts and Management Responses:** The rise in tourism has necessitated ecosystem management responses such as coral restoration and the protection of coral reefs from anchor damage. The Komodo National Park's management installed infrastructure to support sustainable tourism and prevent further degradation of critical habitats.
- **Species Impact**: Poaching of the Timor deer (the primary prey for the Komodo dragon) has negatively impacted the population dynamics of the Komodo dragon. Meanwhile, the introduction of non-native species such as dogs, cats, and goats has disrupted local ecosystems by preying on or competing with native species.

4.2. Describe the main conservation programmes that have been conducted in the biosphere reserve over the past ten years as well as current on-going ones. Note their main goals and the scope of activities, e.g., biotic inventories, species-at-risk, landscape analyses, conservation stewardship actions. Cross reference to other sections below where appropriate.

Enhancing the sustainability of natural resources and ecosystems/environment

In terms of biodiversity conservation, a number of programs and activities have been developed by various stakeholders that have yielded significant results. The improvement of the sustainability of natural resources and ecosystems/environment can be observed through several indicators, including:

1) **Ecosystem Restoration (Coral Reef and Mangrove Restoration)**
   Efforts to rehabilitate coral reefs and mangrove ecosystems have been key components of the conservation strategy. These programs involve the replanting of mangroves and the construction of artificial coral structures to promote reef recovery. The goal is to enhance coastal protection and biodiversity resilience.

   Ecosystem restoration activities in conservation areas are crucial steps that have been carried out on both land and sea. The Komodo National Park has also undertaken ecosystem restoration activities in marine areas. One restoration effort in response to the disruption of coral reef ecosystems due to ecotourism activities in the Komodo National Park waters was coral reef ecosystem restoration through coral transplantation and the maintenance of mooring buoys. The coral transplantation aimed to restore degraded coral conditions.

   Based on performance reports from the Komodo National Park Office, various ecosystem restoration activities have been carried out from 2018 to 2023. In 2018, no specific ecosystem restoration activities were recorded, but plans were made for land rehabilitation at Resort Papagarang in 2019. In 2019, land rehabilitation efforts were initiated at Resort Papagarang and Loh Buaya, targeting 300 hectares with flora that offers social and economic benefits, such as kedondong and mangrove. In 2020, land rehabilitation continued, covering 85 hectares, and coral transplantation using the Mars Assisted Reef Restoration System (MARRS) was conducted at Pulau Pempe and Pantai Merah. In 2021, coral transplantation expanded to three locations, and habitat management in Gili Motang was undertaken to improve Komodo dragon prey

availability. In 2022, activities focused more on community empowerment and biodiversity monitoring, with no specific ecosystem restoration reported.

In 2023, the Komodo National Park Office maintained mooring buoys at 20 locations to protect coral reefs from anchor damage and conducted ecosystem restoration for seagrass and coral reefs through coral transplantation at Pulau Mangiatan, involving local communities. Additionally, surveys and coral transplantation were performed in response to vessel grounding incidents to restore damaged coral ecosystems. Maintenance of coral transplants was also conducted at Pulau Pempe to ensure optimal coral growth. Overall, the Komodo National Park Office has actively engaged in various ecosystem restoration efforts, particularly focusing on coral reefs and wildlife habitats, while involving local communities and partners, demonstrating a strong commitment to preserving the park's biodiversity and ecosystem integrity.

Figure 23. The coral transplantation activity using CMMR method

2) Biodiversity conservation of species and genetics

a) **Inventory of Flora and Fauna species**

Manggarai Barat Regency also has significant biodiversity, with 1,000 species of fish, including rare ones such as dugongs, blue whales, sperm whales, dwarf sperm whales, melon-headed whales, false killer whales, killer whales, Cuvier's beaked whales, pygmy killer whales, short-finned pilot whales, gray dolphins, Fraser's dolphins, spotted dolphins, long-beaked dolphins, common dolphins, rough-toothed dolphins, and bottlenose dolphins. All these fish species are protected. Additionally, there are species of turtles like the green turtle, hawksbill turtle, Napoleon wrasse, giant clams, triton trumpet, and hollow nautilus. In the Komodo Sea, which spans over 2,500 square kilometers, there are 250 types of coral, including 111 coral species such as black corals, hard corals, fire corals, and lace corals, 8 species of seaweed, 43 species of seagrass, and 24 species of mangroves.

The Komodo Biosphere Reserve's core area has high biodiversity, including key species such as the Komodo dragon (Varanus komodoensis) and the Yellow-crested Cockatoo (Cacatua sulphurea occidentalis). Based on data from 2021 to 2023, the Resort Based Management (RBM) initiative recorded a total of 744 patrol activities across 13 resorts in the Komodo National Park. These activities managed to document 41,095 observations, consisting of flora and fauna, and other findings that support the management of the area. Out of the 29,726 observations recorded in the Smart RBM system, 70.28% were wildlife sightings. The following table provides an inventory of fauna recorded in the RBM activities in Komodo National Park:

Table 7. Inventory of fauna in Komodo Biosphere Reserve

No	Clasification	Indonesia Name	Scientific Name
1	Aquatic Mammals	Lumba lumba	*Delphinidae*
2	Aves	Alap Alap	*Falconidae*
3	Aves	Ayam Hutan	*Gallus varius*
4	Aves	Bubut alangalang	*Centropus bengalensis*
5	Aves	Burung	*Aves*
6	Aves	Burung Hantu / Celepuk	*Otus spp*
7	Aves	Burung madu kelapa	*Anthreptes malecaensis*
8	Aves	Burung madu matari	*Nectarina solaris*
9	Aves	Burung madu riganti	*Nectarinia jugularis*
10	Aves	Cangak Laut	*Ardea sumatrana*
11	Aves	Cekakak	*Kingfisher*
12	Aves	Cekakak Sungai / Raja Udang	*Todiramphus chloris*
13	Aves	Cikukua abu	*Philemon kisserensis*
14	Aves	Cikukua tanduk / Kuakiau	*Philemon buceroides*
15	Aves	Decu belang	*Saxicola caprata*
16	Aves	Dederuk jawa	*Streptopelia bitorquata*
17	Aves	Delimukan zamrud	*Chalcophaps indica*
18	Aves	Elang Bondol	*Haliastur indus*
19	Aves	Elang Flores	*Nisaetus floris*
20	Aves	Elang Tiram	*Pandion haliaetus*
21	Aves	Elanglaut Perut Putih	*Haliaeetus leucogaster*
22	Aves	Gagak kampung	*Corvus macrorhynchos*
23	Aves	Gosong kakimerah	*Megapodius reinwardt*
24	Aves	Isapmadu	*Lichmera sp*
25	Aves	Kacamata Wallacea	*Zosterops wallacei*
26	Aves	Kakatua kecil jambul kuning	*Cacatua sulphurea occidentalis*

27	Aves	Kancilan emas	*Pachycephala pectoralis*
28	Aves	Kehicap ranting	*Hypothymis azurea*
29	Aves	Kekep babi	*Artamus leucorhynchus*
30	Aves	Kepodang kuduk hitam	*Oriolus chinensis*
31	Aves	Kirik kirik	*Merops sp*
32	Aves	Kokoan Laut	*Butarides striatus*
33	Aves	Kuntul Karang	*Egretta sacra*
34	Aves	Pergam Hijau	*Ducula aenea*
35	Aves	Perkutut loreng	*Geopelia maugei*
36	Aves	Pipit zebra	*Taeniopygia guttata*
37	Aves	Srigunting Wallacea	*Dicrurus densus*
38	Aves	Tekukur biasa	*Streptopelia chinensis*
39	Aves	Tuwur asia	*Eudynamis scolopacea*
40	Aves	Walik kembang	*Ptilinopus melanospila*
41	Aves	Wili wili besar	*Esacus neglectus*
42	Mamalia	Anjing	*Canis sp*
43	Mamalia	Babi Hutan	*Sus scrofa*
44	Mamalia	Kerbau Liar	*Bubalus bubalis*
45	Mamalia	Musang	*Paradoxurus hermaphroditus*
46	Mamalia	Rusa Timor	*Rusa timorensis*
47	Primate	Monyet Ekor Panjang	*Macaca fascicularis*
48	Reptile	Biawak Air	*Varanus salvator*
49	Reptile	Biawak Komodo	*Varanus komodoensis*
50	Reptile	Penyu Hijau	*Chelonia mydas*
51	Reptile	Penyu Sisik	*Eretmochelys imbricata*
52	Reptile	Tokek	*Gekko gecko*
53	Reptile	Cicak Batu	*Cyrtodactylus darmandvillei*
54	Reptile	Cicak Gula	*Behyra mutilata*
55	Reptile	Cicak Kayu	*Hemidactylus frenatus*
56	Reptile	Ular Tikus Sunda	*Coelognathus subradiatus*
57	Reptile	Tokek Duka	*Lepidodactylus lugubris*
58	Reptile	Kadal Mata Ular Burden	*Cryptoblepharus burdeni*
59	Reptile	Kadal Pantai Dun	*Emoia similis*
60	Reptile	Kadal Ekor Biru	*Cryptoblepharus renschi*
61	Reptile	Kadal Tanah	*Eutropis multifasciata*
62	Reptile	Kadal Hutan	*Spenomorphus schlegeli*
63	Reptile	Kadal Sunda Leher Hitam	*Sphenomorphus melanopogon*
64	Reptile	Kadal Belang Flores	*Sphenomorphus striolatus*
65	Reptile	Cekiber	*Draco boschmai*
66	Reptile	Ular Karung	*Acrochordus granulatur*
67	Reptile	Ular Tambak	*Cerberus schneidei*
68	Reptile	Ular Kucing Sunda	*Boiga houseli*
69	Reptile	Ular Tali	*Dendrelaphis inornatus*

70	Reptile	Ular Cecak	*Lycodon capucinus*
71	Reptile	Ular Beludak Palsu	*Psammodynastes pulvererulentes*
72	Reptile	Ular kobra	*Naja sputatric*
73	Reptile	Ular Bandotan Puspa	*Doboia siamensis*
74	Reptile	Sanca Timur	*Malayphyton timorensis*
75	Reptile	Ular Bungka Laut	*Trimeresurus insularis*
76	Reptile	Ular Kepala Dua	*Cylindrophis opisthorhodus*
77	Amphibi	Katak Sawah	*Fejervaya cancrivora*
78	Amphibi	Belentung Kembang	*Kaloula pulchra*
79	Amphibi	Kodok Jam Pasir Komodo	*Oreophryne jeffersniana*

Table 8. Inventory of flora in Komodo Biosphere Reserve

No	Indonesia Name	Scientific Name
1	Akasia	Acacia spp
2	Api-api balah	Lumnitzera racemosa
3	Api-api hitam	Avicennia alba
4	Api-api putih	Avicennia marina
5	Asam jawa	Tamarindus indica
6	Bakau	Rhizophora spp
7	Bakau	Rhizophora spp/Bruguiera spp
8	Bakau	Rhizophora stylosa
9	Bambu Hutan	
10	Bidara	Ziziphus jujuba
11	Bungur	Lagerstroemia speciosa
12	Cemara laut	Casuarina equisetifolia
13	Dadap laut	Clerodendrum inermae
14	Eboni	Diospyros spp
15	Gebang	Corypha utan
16	Jangkang bugis	Rhizophora mucronata
17	Jangkang pisang	Rhizophora apiculata
18	Jarak Merah	Jatropha gossypifolia
19	Kaktus	Opuntia engelmannii
20	Kecubung hutan	Brugmansia suaveolens
21	Kedondong Hutan	Spondias spp
22	Kelumpang	Sterculia spp
23	Kemuning	Murraya paniculata
24	Ketapang	Terminalia spp
25	Kukun	Schoutenia ovata
26	Mengkudu	Morinda citrifolia
27	Nyamplung	Calophyllum inophyllum
28	Nyireh	Xylocarpus granatum
29	Pandan	Pandanus tectorius
30	Perepat	Sonneratia alba
31	Pidada Putih	Sonneratia alba
32	Pohon Ara	Ficus spp

33	Pulai	Alstonia spp
34	Putat laut	Barringtonia asiatica
35	Sawo Kecik	Manilkara spp
36	Sentigi	Phemphis acidula
37	Sonokembang	Pterocarpus indicus
38	Srikaya	Annona squamosa
39	Teruntum merah	Lumnitzera littorea
40	Tingi	Ceriops tagal
42	Waru laut	Hibiscus tiliaceus
43	Waru laut	Thespesia populnea

b) **Wildlife population management and habitat development**

Wildlife population management within the core zone of the Komodo Biosphere Reserve is routinely carried out each year through wildlife monitoring activities. These are conducted to track the conditions of key species populations and other important animals.

- **Monitoring Komodo Dragons**

  The population management of Komodo dragons is conducted by the Komodo National Park, ensuring the availability of food and the necessary space for these animals. Monitoring of the Komodo dragon population using camera traps is regularly held annually by the Komodo National Park in collaboration with the Komodo Survival Program (KSP). This monitoring aims to provide data on population dynamics at 11 observation locations, which are regularly surveyed every year. The data collected is used to analyze the availability of annual population data for Komodo dragons. Additionally, population data from Loh Buaya and Loh Liang will enrich the knowledge for tourists visiting these two locations, which are known as key tourist destinations.

  The monitoring is carried out in parallel with other population monitoring activities using capture-mark-recapture (CMRR) methods at specific locations annually to enhance the information on the development and growth of Komodo dragons. The expected outcome of these activities is updated data on the estimated population size of Komodo dragons in 2023, with an estimated abundance of around 3,000 individuals (3,396 ± 359), as shown in the accompanying image. This information will complement the continuity of annual data and information on the Komodo dragon population, which has shown fluctuations over the past five years, with a tendency toward population growth. The population size

estimates are made using a site occupancy analysis approach (Mac Kenzie et al., 2018) and the PRESENCE software.

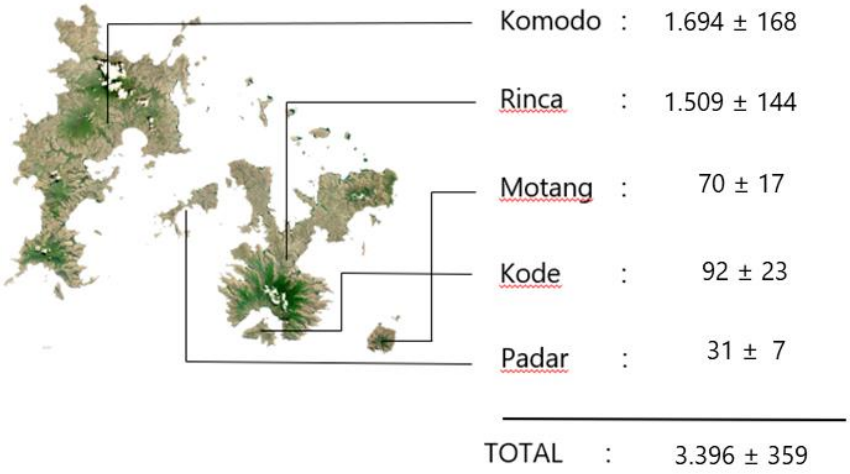


Figure 24. Estimation of Species Komodo di Komodo Biosphere Reserve in 2023

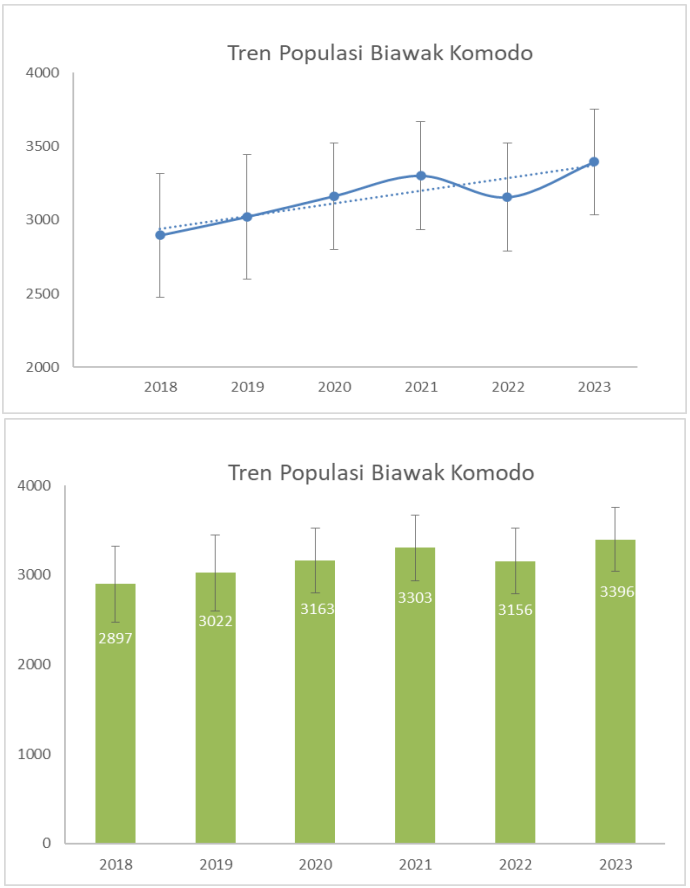
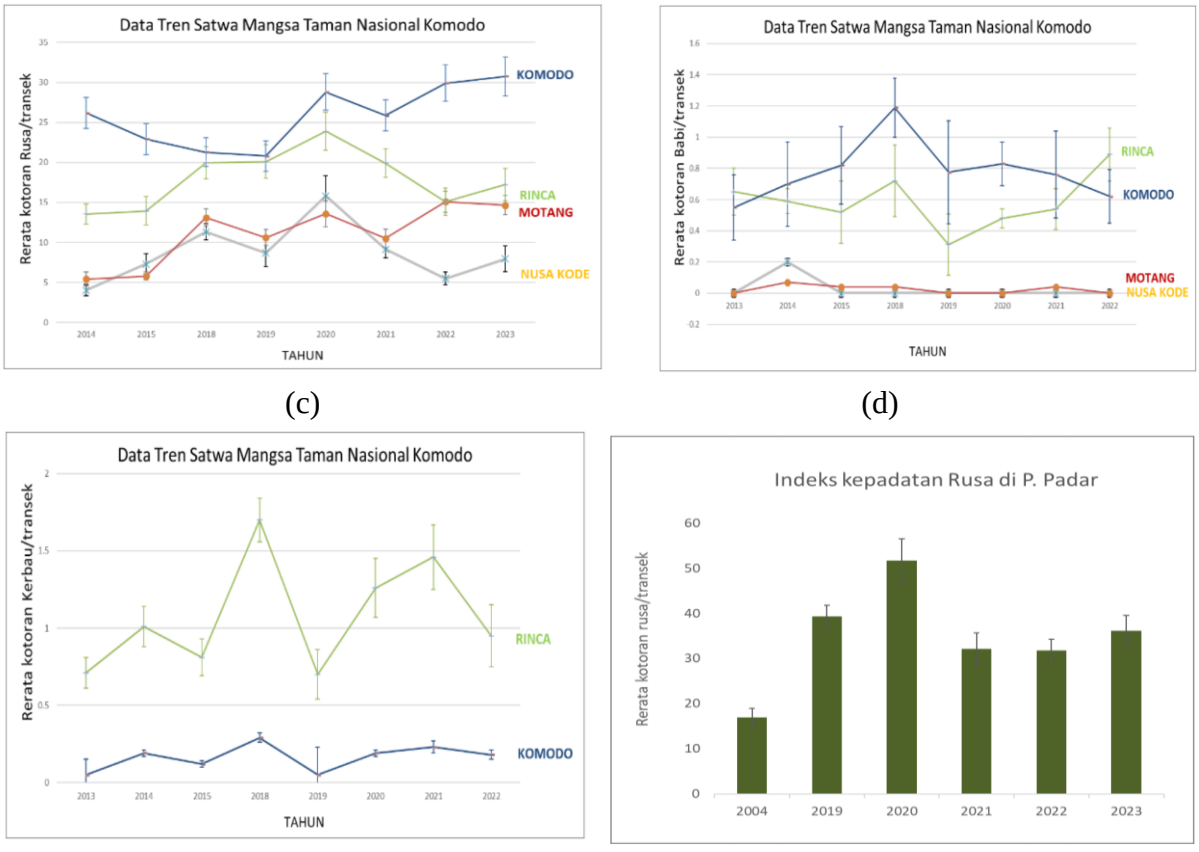


Figure 25. Trend of Komodo Dragon Population in 2018-2023

- **Monitoring Komodo Dragon Prey Species**: This activity is conducted at 11 monitoring locations across five islands, specifically in the same locations where Komodo dragon population monitoring is also carried out. The purpose of establishing these locations is to measure the relationship between the Komodo dragon population and its prey. The activity involves visiting the aforementioned locations and counting the populations of Komodo dragon prey, primarily deer, wild boar, and buffalo, along several 150-meter transects. The prey populations of the Komodo dragon have generally fluctuated since 2014. The Timor deer, which is the primary prey of the Komodo dragon, has shown a relatively stable population size (index). However, the deer population on Komodo Island has shown an increase since 2022, as indicated by the graph.

(a) (b)



(c) (d)

Figure 26. The Trend of Komodo Dragon Prey Species (a) deer dung/transect; (b) pig manure/transect; (c) buffalo dung/transect; (d) Deer density index on Padar Island.

Figure 27. Komodo monitoring activities using camera traps

- **Coral Reef and Mangrove Restoration**: Efforts to rehabilitate coral reefs and mangrove ecosystems have been key components of the conservation strategy. These programs involve the replanting of mangroves and the construction of artificial coral structures to promote reef recovery. The goal is to enhance coastal protection and biodiversity resilience.

- **Species Monitoring and Conservation**: Conservation of the Komodo dragon has been a priority, with regular monitoring of its population and habitat health. Conservation actions also include anti-poaching patrols and habitat protection efforts for endangered species such as sea turtles, dolphins, and the Timor deer.

- **Ecosystem Restoration**: Programs aimed at restoring degraded ecosystems include reforestation in areas affected by illegal logging and the promotion of sustainable farming practices in the buffer zones. Community-based initiatives encourage local participation in ecosystem stewardship

4.3. In what ways are conservation activities linked to, or integrated with, sustainable development issues (e.g., stewardship for conservation on private lands used for other purposes)?

Conservation efforts in the Komodo Biosphere Reserve are closely integrated with sustainable development programs:

- **Eco-Tourism**: Sustainable tourism has been promoted as a key economic activity that supports conservation. Local communities are trained as eco-

tourism guides and service providers, benefiting from the tourism economy while reducing pressure on natural resources.

- **Sustainable Fishing Practices**: Programs aimed at reducing destructive fishing practices, such as blast fishing, have been implemented. These programs involve local fishermen and promote sustainable fishing methods that protect marine biodiversity while supporting local livelihoods.

- **Agricultural Stewardship**: Agroforestry and sustainable agricultural practices are encouraged in the buffer and transition zones to reduce deforestation and habitat loss. These practices provide alternative sources of income for local farmers while preserving ecosystems

4.4. How do you assess the effectiveness of actions or strategies applied?

The conservation strategies applied within the Komodo Biosphere Reserve have been effective in some areas, but challenges remain:

- Positive Outcomes: Coral reef and mangrove restoration efforts have shown measurable improvements in biodiversity and coastal protection. Conservation of the Komodo dragon and other endangered species has been strengthened through regular monitoring and anti-poaching efforts.
- Challenges: However, illegal activities such as poaching and destructive fishing continue to pose significant challenges. The rapid growth of tourism also threatens the ecological balance if not managed sustainably

4.5. What are the main factors that influenced (positively or negatively) the successes of conservation efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective for conservation for sustainable development?

- Positive Factors: Community engagement and participation have played a critical role in the success of conservation efforts, particularly through eco-tourism and sustainable resource management programs. International partnerships and funding from conservation organizations have also contributed to the success of restoration projects.
- Negative Factors: Population growth and the expansion of infrastructure in buffer and transition zones have negatively impacted ecosystems, leading to habitat fragmentation and pollution. Illegal activities such as poaching and destructive fishing remain significant obstacles.
- Future Strategies: Moving forward, the focus should be on enhancing regulatory frameworks for tourism and resource extraction, increasing community-based conservation initiatives, and expanding climate change

adaptation strategies to protect vulnerable ecosystems from rising sea levels and warming temperatures

4.6. Other comments/observations from a biosphere reserve perspective.

The Komodo Biosphere Reserve has made significant progress in aligning conservation efforts with sustainable development, particularly through eco-tourism and community engagement. However, continued investment in education, stricter enforcement of environmental regulations, and enhanced international cooperation will be crucial for long-term success.

5. THE DEVELOPMENT FUNCTION:

[This refers to programmes that address sustainability issues at the individual livelihood and community levels, including economic trends in different sectors that drive the need to innovate and/or adapt, the main adaptive strategies being implemented within the biosphere reserve, and initiatives to develop certain sectors such as tourism to complement and/or compensate for losses in other markets, employment, and community well-being over the past ten years]

5.1 Briefly describe the prevailing trends over the past decade in each main sector of the economic base of the biosphere reserve (e.g. agriculture and forest activities, renewable resources, non-renewable resources, manufacturing and construction, tourism and other service industries).

Designation of Labuan Bajo as a National Tourism Strategic Area (KSPN) in 2011, based on Government Regulation No. 11 of 2011 concerning the National Tourism Development Master Plan (RIPPARNAS), has had a very significant impact on the development of the Komodo Biosphere Reserve (KBR), both in the Core Zone, Buffer Zone, and Transition Zone. The construction of supporting infrastructure for the KSPN was carried out massively and systematically, organized by the Central Government. The presence of the KBR as the main object in the development of the KSPN indicates the serious attention given by the government, both the Central Government, the Provincial Government of East Nusa Tenggara (NTT), and the West Manggarai Regency Government.

Collaboration among various parties in the management of the Komodo Biosphere Reserve has had a positive impact on both the community and the conservation of biodiversity resources in various zones through the programs implemented by all stakeholders. Over the past ten years, the Komodo Biosphere Reserve has provided benefits such as improving community welfare, increasing regional and national income, enhancing the sustainability of natural resources and ecosystems/environment, and applying the concept of sustainable development. In

detail, the positive changes resulting from the designation of the Komodo Biosphere Reserve over the past ten years are as follows:

Economic Development

Over the past 10 years, the basis for economic development management has been participatory and collaborative management between communities and stakeholders in the Komodo Biosphere Reserve. The main goal is to improve the welfare of the community by utilizing natural resources sustainably. The economic development efforts include:

1) **Improvement of Community Welfare**

The success indicators for improving community welfare can be seen through economic growth rates, reductions in poverty rates, the Human Development Index (HDI), and Gross Regional Domestic Product (GRDP), which are explained as follows:

a) **Economic Growth Rate (EGR):** The Economic Growth Rate (EGR) is a macroeconomic indicator that reflects the extent to which a region's development succeeds within a certain period. This indicator can also be used to determine the direction of future development policies. The comparison of EGR for West Manggarai Regency, East Nusa Tenggara Province (NTT), and Indonesia from 2011-2023 can be seen in the following graph.

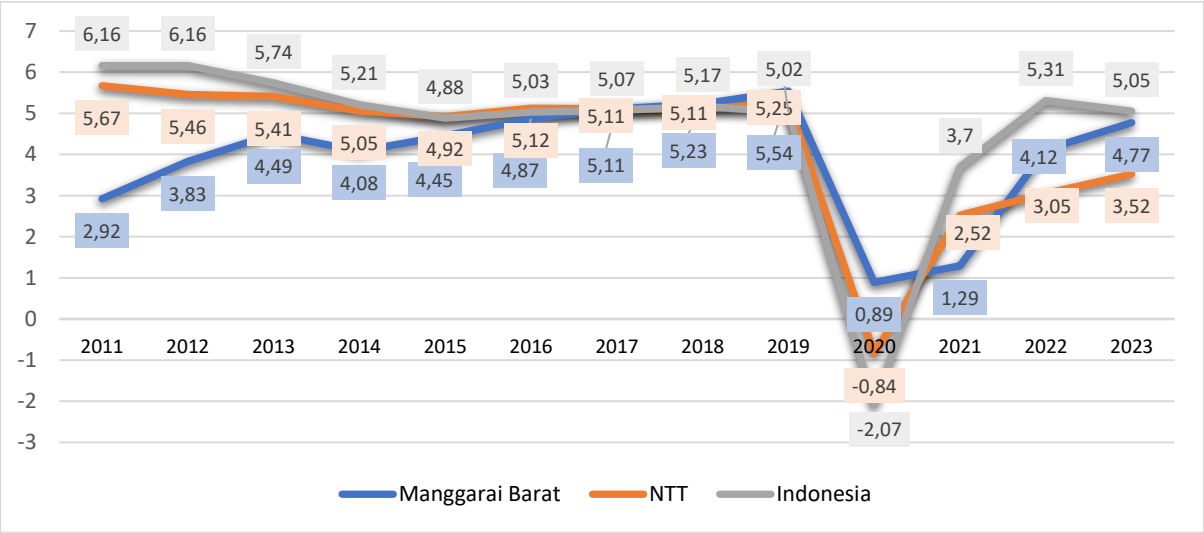


Figure 28. EGR for West Manggarai Regency (2011-2023)

Source: *BPS and BPS West Manggarai Regency, 2024*

West Manggarai Regency's EGR experienced a fluctuating trend, generally declining, with an average growth rate of 22.26% during 2011-2023. This trend mirrors that of NTT and Indonesia, where the EGR also fluctuated downward. NTT's average growth was 9.43%, while Indonesia's was -3.61% over the same period. The economic growth of West Manggarai experienced a significant contraction of -83.94% between 2019-2020, though this was still better than the contractions seen in NTT (-116.00%) and Indonesia (-41.24%) in the same year. This decline was likely caused by the COVID-19 pandemic, which slowed economic activities both nationally and regionally. Nevertheless, West Manggarai's economy recovered, achieving a 44.94% increase in 2020-2021. The EGR continued to improve in subsequent periods, rising from 1.29% in 2021 to 4.12% in 2022, marking an increase of 219.38%. The economy grew significantly by 93.37% from 2021-2023.

b) Poverty

One approach to measuring poverty is the basic needs approach, which assesses the economic inability to meet food and non-food basic needs. Individuals are considered poor if their average per capita monthly expenditure falls below the poverty line. A comparison of poverty rates in West Manggarai Regency, NTT Province, and Indonesia for 2015-2023 can be seen in the following graph:

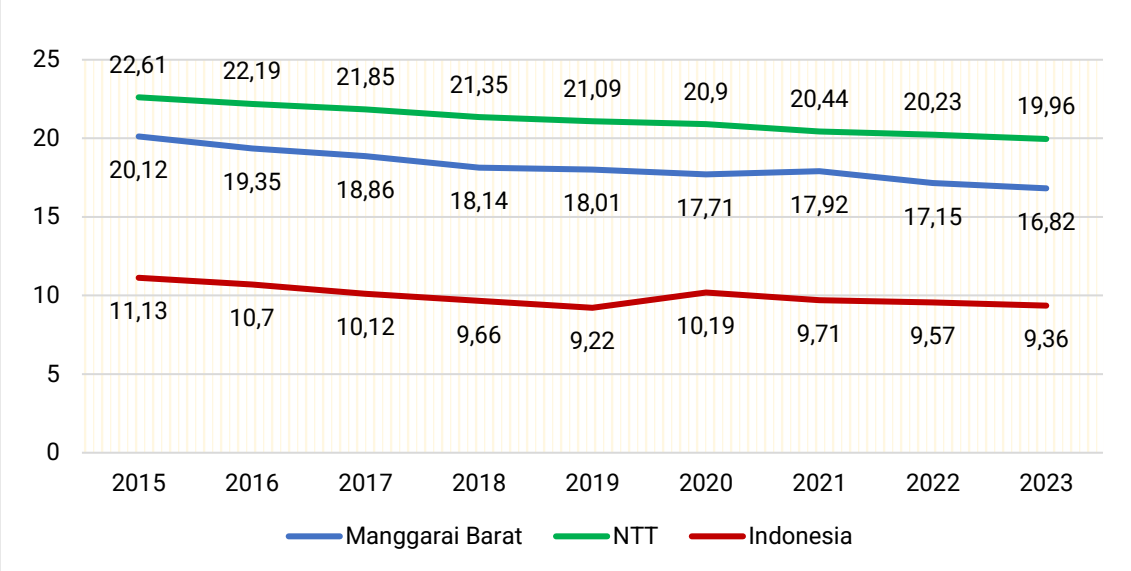


Figure 29. Poverty Rates in West Manggarai, NTT, and Indonesia (2015-2023)
Source: BPS and BPS West Manggarai Regency, 2024

West Manggarai's poverty rate trended downward from 2015-2023, with an average decrease of -2.20%. Both NTT and Indonesia experienced similar trends during this period. Compared to NTT, West Manggarai's poverty rate was consistently lower. However, it remained higher than Indonesia's

average, with a difference of 8.27% annually from 2015-2023. This indicates that poverty reduction efforts in West Manggarai have not been fully optimized.

c) Human Development Index (HDI)

The Human Development Index (HDI) is a macroeconomic indicator used to assess human development achievements in a region. This indicator aims to measure how well the population can access the results of government-led development, particularly in three dimensions: education, health, and the economy. Conceptually, the HDI is formed based on calculations from three fundamental parameters: longevity and healthy living, the length of education, and a decent standard of living. Therefore, the HDI can be used to assess the success of a region in carrying out human development. Below are the HDI achievements of West Manggarai Regency from 2004 to 2023.

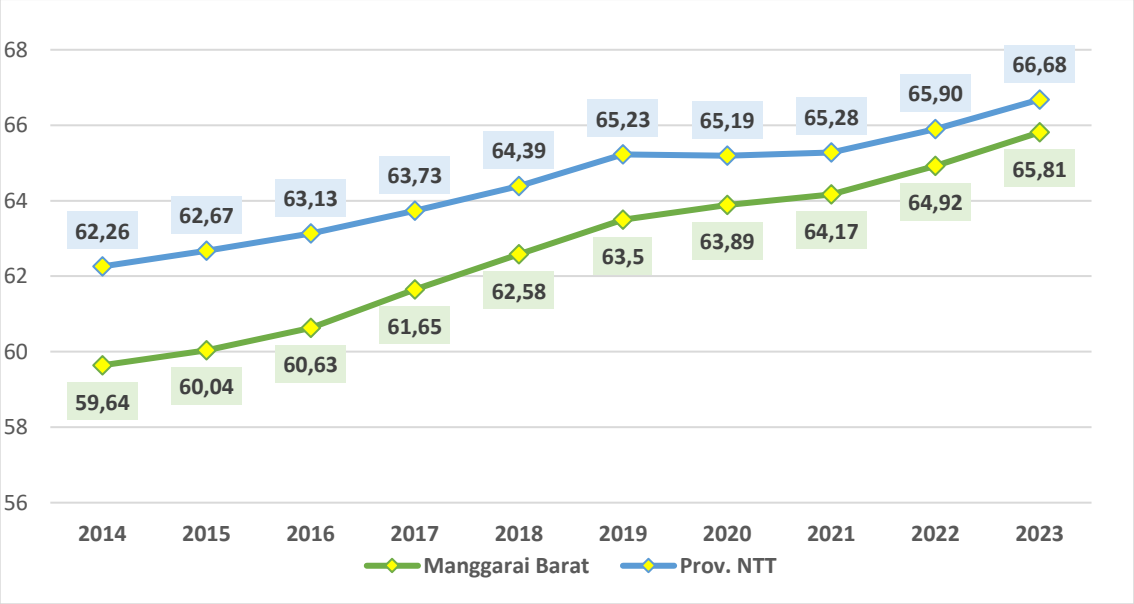


Figure 30. HDI in West Manggarai (2014-2023)

Source: *BPS West Manggarai, 2024*

The increase in the Human Development Index (HDI) in West Manggarai Regency during the 2014-2023 period, with a rise of 6.17 points, can be attributed to several key factors within the three main dimensions of human development:

a) Education: Improved access to education and the quality of education. This may include a higher number of people completing primary and secondary education, an increase in school participation rates, and

improved education infrastructure such as better school facilities and the availability of qualified teachers.

b) Health: Advances in healthcare services, including better access to health facilities and a reduction in infant mortality rates, alongside an increase in life expectancy. Health programs focused on disease prevention, improved sanitation, and access to clean water also played a role.

c) Economy: An increase in the standard of living, reflected in economic growth and rising per capita income. This could be driven by infrastructure development programs, the growth of the tourism sector, and other sectors that boost household income.

Overall, improvements in education, healthcare, and economic opportunities indicate the success of the government and local community in implementing integrated development policies. The combination of these factors has led to an improved quality of life and better access to basic services, contributing to the positive trend in HDI.

d) Gross Regional Domestic Product (GRDP)

One of the indicators to assess the economic condition of a region during a specific period is the Gross Regional Domestic Product (GRDP) data, calculated both at current prices and constant prices. GRDP at Current Prices (ADHB) reflects the added value of goods and services calculated using the prices that prevail in each year, while GRDP at Constant Prices (ADHK) shows the added value of those goods and services calculated using the prices from a particular base year.

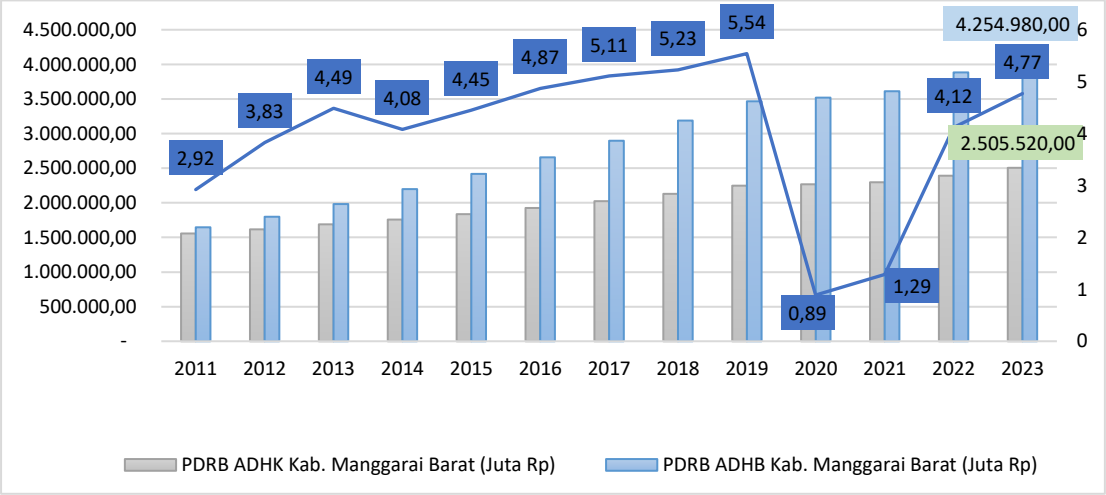


Figure 31. GRDP at Current Prices (ADHB), GRDP at Constant Prices (ADHK), and Economic Growth Rate (LPE) of West Manggarai Regency for the Years 2011-2023

Source: BPS West Manggarai Regency, 2024

GRDP reflects the added value of goods and services produced in a region. The GRDP at current prices (ADHB) and constant prices (ADHK) for West

Manggarai has increased steadily between 2011 and 2023, with average growth of 3.86%. In 2023, ADHK reached Rp2.5 trillion, and ADHB reached Rp4.2 trillion. Economic growth was strongest in 2019 at 5.54% but slowed during the pandemic in 2020-2021. By 2023, growth had rebounded to 4.77%.

e) GRDP Per Capita

GRDP per capita is the average income of the population, calculated by dividing the GRDP by the population in a certain region during a specific year. GRDP per capita is often used as an indicator of a region's prosperity. The higher the per capita income, the more prosperous the region is considered to be. A comparison of the GRDP per capita of West Manggarai Regency, East Nusa Tenggara Province (NTT), and Indonesia from 2016 to 2023 can be seen in the following graph:

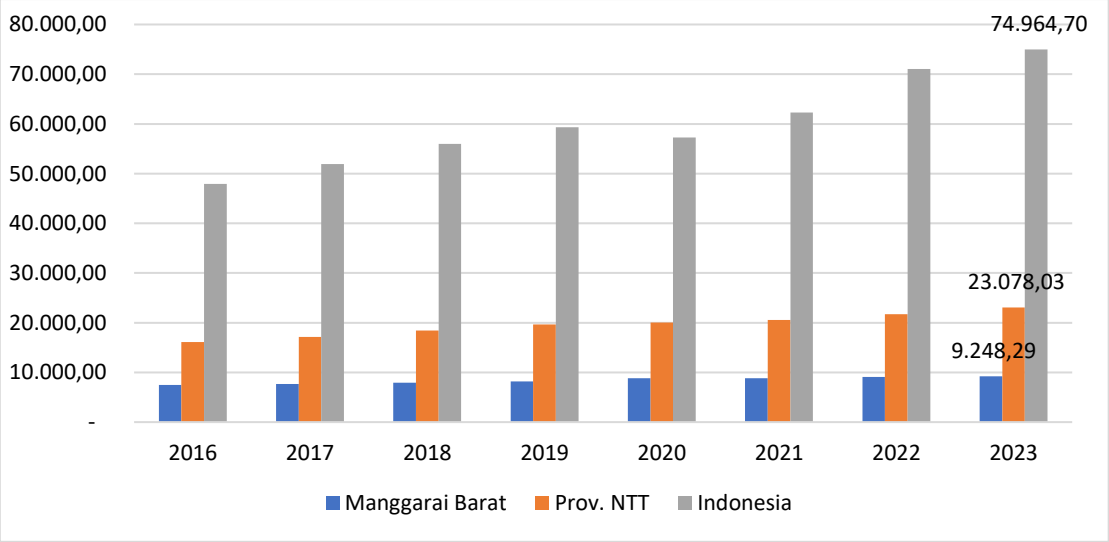


Figure 32. Comparison of GRDP per Capita (Thousand Rupiah) for West Manggarai Regency, NTT Province, and Indonesia for the Years 2016-2023
Source: BPS West Manggarai, 2024

The GRDP per capita at constant prices (ADHK) in West Manggarai Regency has shown an increasing trend during the 2016-2023 period. However, the GRDP per capita in West Manggarai Regency remains lower than that of East Nusa Tenggara Province (NTT) and lags significantly behind the national GDP per capita during the same period. The GRDP per capita at constant prices in West Manggarai Regency was Rp9.25 million, nearly 60% lower compared to NTT's GRDP per capita at constant prices, which reached Rp23.08 million in 2023. Furthermore, West Manggarai's GRDP per capita is eight times lower than Indonesia's GDP per capita, which reached Rp74.96 million in 2022. This indicates that the added value

produced by each resident in West Manggarai is lower compared to the average added value generated by residents in NTT and across Indonesia.

2) Increased Regional/National Income

The economic activities in the Komodo Biosphere Reserve (KBR) also contributed to increasing regional and national income from various sectors.

Table 9. Income of West Manggarai Regency

Year	Total Pendapatan Kabupaten Manggarai Barat
2016	Rp. 882.145.842.702,22
2017	Rp. 1.014.699.926.731,51
2018	Rp. 1.052.883.489.639,64
2019	Rp. 1.163.705.988.098,19
2020	Rp. 1.116.059.651.268,17
2021	Rp. 1.089.504.348.684,77
2022	Rp. 1.255.652.663.532,58
2023	Rp. 1.466.847.183.113,94

The table shows a general increase in regional income, except in 2020 due to the COVID-19 pandemic.

3) Population

The population serves as both the object and subject of the development and progress that will take place within the Komodo Biosphere Reserve. Therefore, the development plans must consider the demographic conditions of the population in the region. Development planning that takes into account demographic aspects aims to create contextually relevant plans that meet the needs of the community, in accordance with the existing demographic conditions. This section will elaborate on the demographic aspects of West Manggarai Regency, which will be divided into subsections that address the population size, population structure, and population distribution.

a) Population Size

The population growth in the Komodo Biosphere Reserve has shown an upward trend over the past ten years. However, there was a decline in 2020, which was due to data adjustments based on the 2020 Population Census conducted by the Central Statistics Agency (BPS). Since 2020, the population has resumed its growth, and the population of West Manggarai Regency reached 263,687 people in 2022. The average population growth rate before 2020 was recorded at 2.21 percent per year, while the average growth rate after 2020 has been 1.87 percent per year.

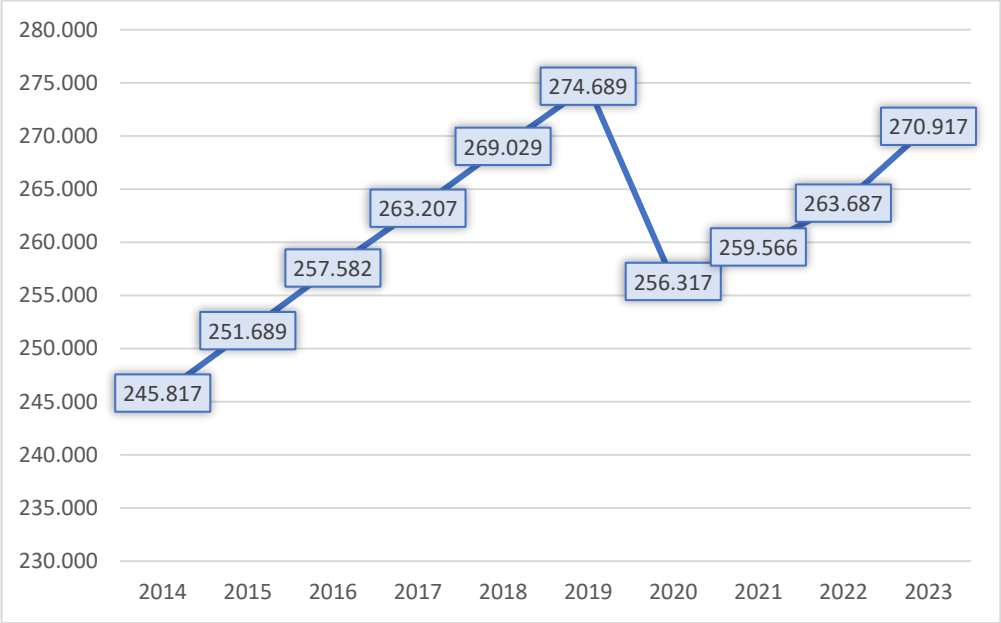


Figure 33. Population in the Komodo Biosphere Reserve (2014-2023)

b) Population Structure

Population structure refers to the composition of the population based on certain criteria established to classify total population data. In this document, the population structure described is based on gender and age groups. The structure based on gender will result in an analysis of the sex ratio, which illustrates the composition of male and female populations, while the structure based on age groups will produce an analysis of the population pyramid, showing the distribution of the population by age group. Generally, the purpose of analyzing population structure is to understand the composition of the population at a given time. This population composition will serve as the foundation for formulating future regional development plans. Below is the population structure based on gender in West Manggarai Regency.

Table 10. Population by Gender in West Manggarai (2014-2023)

Tahun	Laki-laki	Perempuan	Total	*Sex Ratio*
2014	121.596	124.221	245.817	97,89
2015	124.620	127.069	251.689	98,07
2016	127.409	130.173	257.582	97,88
2017	130.199	133.008	263.207	97,89
2018	133.003	136.026	269.029	97,78
2019	135.690	138.999	274.689	97,62
2020	129.267	127.050	256.317	101,74
2021	130.874	128.692	259.566	101,70
2022	132.921	130.766	263.687	101,65
2023	136.188	134.729	270.917	101,08

Source: BPS, West Manggarai Regency in Figures 2014-2024; BPS, One Data West Manggarai Regency

The population by gender in West Manggarai Regency over the past ten years shows a shift in population composition. Before 2020, the population in West Manggarai Regency was dominated by females, whereas after 2020, the population became dominated by males. The change in the data base during the 2020 Population Census was one of the significant factors causing this shift in the population composition of West Manggarai Regency. However, the sex ratio indicates that the female population is growing compared to the male population. This condition should serve as a basis for the government to provide inclusive services and facilities accessible to all groups. To better understand the population structure in West Manggarai Regency, the following is a population pyramid that illustrates the distribution of the population by age. The population pyramid illustrates a youthful demographic, with a significant proportion of the population in the 0-4 age group.

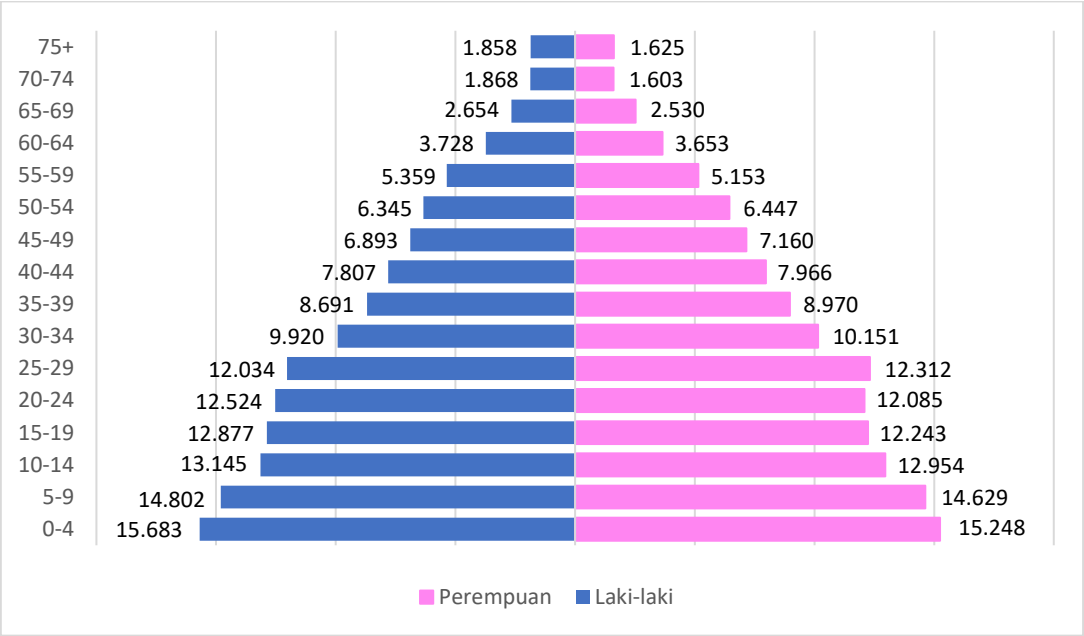


Figure 34. Population Pyramid of West Manggarai (2023)

The population pyramid of West Manggarai Regency in 2023 shows that the population is predominantly young. The population composition of West Manggarai Regency can be classified into the productive age population, which includes those aged 15-64 years, and the non-productive age population, which consists of individuals aged 0-14 years and those 65 years and older. In terms of composition, the productive age population still dominates the total population in West Manggarai Regency, accounting for 63.61 percent of the total population, while the non-productive age population makes up 36.39 percent, consisting of 31.91 percent in the young age group (0-14 years) and 4.48 percent in the elderly group (65 years and older).

By age group, the toddler group (0-4 years) has the largest population, with 15,683 males and 15,248 females. This is important for the government to consider when planning facilities and infrastructure to support the growth of the toddler population in the future, especially as this young population will enter the productive age group within the next 20 years. The elderly population, particularly those aged 75 and above, is the smallest group among the population, with 1,858 males and 1,625 females. However, there is a significant number of people aged 40 and above, which the government needs to anticipate by providing infrastructure and public services targeting the elderly population in the coming years.

c) Population Distribution

Population distribution refers to the spread of the population across a specific area within sub-regions or levels. In the context of West Manggarai Regency, population distribution refers to the spread of the population in each district. The purpose of presenting population distribution data is to understand the population count per district, which will then illustrate the population density in each district. This analysis of population density serves as the basis for development planning related to spatial and regional aspects. Below is data regarding the population distribution across the districts in West Manggarai Regency.

Table 11. Population Density Growth by District in West Manggarai Regency for the Years 2013-2023

Kecamatan	Luas Wilayah (Km2)	2013		2016		2021		2023	
		Population (people)	Density (people/km²)	Population (people)	Density (people/km²))	Population (people)	Density (people/km²)	Population (people)	Density (people/km²)
Komodo	813,53	46.262	61	50.356	66	55.022	67	58.735	72
Boleng	486,56	17.662	39	19.278	42	19.138	39	19.918	41
Sano Nggoang	360,19	13.819	49	14.683	50 [1]	14.355	40	14.744	41
Mbeliling	231,53	13.164	*)	13.258	-	13.880	60	14.506	62
Lembor	145,68	50.393	129	33.491	146 [2]	33.928	233	35.593	244
Welak	319,19	19.800	66	22.004	73	21.564	67	22.382	70
Lembor Selatan	275,87	*)	*)	24.080	-	23.892	86	24.613	89
Kuwus	54,55	42.312	203	25.310	216 [3]	13.776	252	14.109	259
Ndoso	124,95	*)	*)	19.807	-	20.184	161	20.831	167
Kuwus Barat	42,66	-	-	-	-	10.776	252	11.287	265
Macang Pacar	174,64	30.275	113	35.315	131	16.069	91	16.580	95
Pacar	112,12	-	-	-	-	16.982	151	17.619	157
Manggarai Barat	**3.141,47**	**233.687**	**79**	**257.582**	**82**	**259.566**	**82**	**270.917**	**86**

The distribution or population spread, viewed in terms of the population density in each district of West Manggarai Regency, shows that the regency's population density has generally increased from 2013 to 2023. The increase went from 79 people/km² in 2013 to 86 people/km², an overall rise of 7 people/km² over the past ten years. Some areas have notably higher population densities compared to others, including the districts of Kuwus, Kuwus Barat, Lembor, Ndoso, and Pacar, all of which have densities above 100 people/km². Conversely, districts with the lowest population densities include Boleng and Sano Nggoang, both recording 41 people/km² in 2023. This trend of growing population density needs to be anticipated by the government, particularly regarding the need for infrastructure and basic regional services in the future.

5.2 Describe the tourism industry in the biosphere reserve. has tourism increased or decreased since nomination or the last periodic review? What new projects or initiatives have been undertaken? What types of tourism activities? What effect have these activities had on the economy, ecology and society of the biosphere reserve? Are there any studies that examine whether designation of the area as a biosphere reserve has influenced the number of tourists? Please provide the bibliographic information of any studies and/or a paper copy in an annex.

Tourism has significantly increased since the last periodic review. The number of visitors to the reserve, especially Komodo National Park, has grown substantially, thanks to both national and international attention. The development of environmentally conscious tourism and conservation is one of the 9 (nine) Spatial Planning Policies outlined in the Spatial Planning Document (RTRW) for West Manggarai Regency for 2021-2041, with the goal of "Creating a productive regional space, based on the tourism sector, urban planning, new economic growth area planning, and environmentally friendly agriculture to support the welfare of the people."

West Manggarai is known as one of the regions offering premium tourism through the Komodo Biosphere Reserve. This is why international tourists dominated visitor numbers before the COVID-19 pandemic. The unique natural attractions, which require effort to explore, and the adventurous spirit have attracted international tourists to the Komodo Biosphere Reserve, located within the administrative boundaries of West Manggarai Regency. After the pandemic, domestic tourists dominated the numbers, following the government's designation of West Manggarai as one of Indonesia's "New Balis." Tourist visit distribution by tourist destinations can be seen in the table below.

Since 2018, based on Peraturan Presiden (Perpres) Nomor 32 Tahun 2018 the new eco-tourism coordinators have been appointed to help manage the growing tourism sector namely The Labuan Bajo-Flores Tourism Authority (*Badan Otorita Pariwisata Labuanbajo-Flores*) from the Ministry of Tourism and Creative Economy. The Badan Otorita Pariwisata Labuan Bajo-Flores (Labuan Bajo-Flores Tourism Authority Agency), often abbreviated as BOPLBF, is a government agency established to manage and develop tourism in the Labuan Bajo and Flores areas, especially as part of the Super Priority Tourism Destinations in Indonesia. The agency operates under the Ministry of Tourism and Creative Economy and plays a crucial role in coordinating tourism development and promoting sustainable tourism practices in this region.

Key Roles and Responsibilities:

1) Tourism Management and Development: BOPLBF is responsible for managing tourism development in the Labuan Bajo-Flores area, which includes planning and implementing strategies to enhance the tourism potential, infrastructure, and facilities. This covers both land and marine tourism activities in the region.
2) Coordination and Collaboration: The agency collaborates with various stakeholders, including the local government, private sector, tourism associations, and communities, to ensure that tourism development is in line with sustainable practices. It acts as a bridge between the central government and regional entities to streamline tourism policies and initiatives.
3) Promotion and Marketing: BOPLBF is tasked with promoting Labuan Bajo and Flores as world-class tourism destinations. It works on marketing strategies to attract both domestic and international tourists, highlighting the unique attractions such as the Komodo National Park, diving sites, cultural experiences, and the natural beauty of the region.
4) Infrastructure and Investment: The agency plays a significant role in improving infrastructure, such as transportation, accommodation, and tourism facilities, to support the increasing number of visitors. BOPLBF also facilitates investment opportunities, encouraging both national and international investors to participate in tourism projects in the area.
5) Sustainable Tourism and Conservation: One of BOPLBF's primary goals is to ensure that tourism development aligns with environmental sustainability and conservation efforts, particularly given the ecological sensitivity of areas like Komodo National Park. The agency promotes eco-friendly tourism practices and aims to balance tourism growth with environmental preservation.

Importance of BOPLBF:

- Boosting the Local Economy: Through tourism development, BOPLBF contributes to the local economy by creating job opportunities, supporting

small and medium enterprises (SMEs), and generating revenue from tourism-related activities.

- Positioning Labuan Bajo as a Premium Destination: Labuan Bajo is one of the "10 New Bali" destinations identified by the Indonesian government, and BOPLBF plays a central role in positioning Labuan Bajo-Flores as a premium, sustainable tourist destination on both national and international stages.
- Improving Infrastructure and Accessibility: BOPLBF's involvement in infrastructure projects helps enhance accessibility to remote areas, making it easier for tourists to explore and experience the beauty of Labuan Bajo and Flores.

The Badan Otorita Pariwisata Labuan Bajo-Flores (BOPLBF) is a pivotal agency driving sustainable tourism development in the Labuan Bajo and Flores region. It focuses on promoting tourism, coordinating with stakeholders, improving infrastructure, and ensuring that tourism growth is balanced with conservation and environmental sustainability

Ecotourism activities

In Komodo National Park, a variety of ecotourism activities take advantage of the area's natural beauty and biodiversity. Komodo National Park offers a range of ecotourism activities that showcase its unique natural beauty and biodiversity. These ecotourism activities in Komodo National Park are designed to promote environmental sustainability and conservation while offering unforgettable experiences for visitors, blending adventure, education, and cultural exploration.

Rinca Island (Loh Buaya) and Komodo Island (Loh Liang) remain the main tourist destinations in West Manggarai Regency through 2023. These two islands are home to Komodo dragons, one of the few remaining ancient species. The presence of these ancient creatures, combined with the natural beauty and underwater scenery around these islands, continues to attract many visitors. Other tourist sites still require additional efforts from the government to increase their visibility and establish them as alternative attractions in West Manggarai Regency.

Here are some of the key ecotourism activities you can experience in the park:

1) **Komodo Dragon Observation**
    - **Loh Buaya (Rinca Island)** and **Loh Liang (Komodo Island)** are the primary spots where visitors can observe the famous Komodo dragons in their natural habitat. Guided tours ensure that visitors can safely witness the behavior of these giant reptiles while learning about their ecological significance.

Figure 35. Trekking activities at Loh Liang and Loh Buaya

2) Trekking and Hiking

- **Padar Island**: A popular trekking destination, Padar Island offers trails leading to a breathtaking panoramic viewpoint. Visitors are rewarded with stunning views of the island's distinct multi-colored beaches and surrounding ocean.
- **Komodo and Rinca Islands**: These islands offer various trekking routes, allowing visitors to explore the islands' landscapes, diverse wildlife, and unique vegetation.

Figure 36. Trekking activities in Padar

3) **Snorkeling and Scuba Diving**
   - **Batu Bolong**: One of the top dive sites, famous for its pristine coral reefs and abundant marine life, including turtles, reef sharks, and vibrant schools of fish.
   - **Manta Point**: A prime location for diving or snorkeling, where visitors can swim alongside graceful manta rays.
   - **Pink Beach**: Known for its pink sand, this beach is also a great spot for snorkeling, offering clear water and vibrant coral reefs teeming with marine life.
   - **Castle Rock**: Popular among advanced divers, this site is known for strong currents but offers sightings of large pelagic species like sharks, dolphins, and barracudas.
4) **Wildlife Viewing**
   - Apart from the Komodo dragons, visitors can observe a variety of wildlife in the park, including Timor deer, wild boar, and numerous bird species such as the orange-footed scrubfowl and green junglefowl.

5) **Kayaking**
   - Visitors can explore the calm coastal waters of the park by kayak, paddling around the islands, through mangroves, and past small, isolated beaches, all while enjoying the serene landscape.
6) **Beach Activities**
   - **Pink Beach**: Besides snorkeling, visitors can relax and enjoy the unique pink sand, a result of a natural mixture of red coral fragments and white sand.
   - **Kanawa Island**: A beautiful spot for swimming, snorkeling, and sunbathing on a tranquil beach with clear, shallow waters.
7) **Bird Watching**
   - The park is home to a variety of bird species. Bird watchers can spot exotic species such as sea eagles, frigatebirds, and cockatoos during their visit to the park's islands.

Figure 37. Bird watching activity

8) **Sunset Viewing**
   - **Kalong Island**: At sunset, visitors can experience a spectacular sight when thousands of fruit bats (kalong) take flight from the mangrove forests, creating a mesmerizing natural phenomenon.
9) **Cultural Tours**
   - Visiting local **fishing villages** around the park, such as **Komodo Village** on Komodo Island, allows tourists to learn about the traditional ways of life, including fishing techniques and local customs.

Figure 38. Village community activities drying fish

10) Sailing on a Phinisi Boat

- **Phinisi boats**, traditional Indonesian two-masted sailing ships, offer a luxurious and authentic way to explore the park. Visitors can embark on multi-day cruises aboard these handcrafted wooden vessels, which blend tradition with modern comfort.
- The cruises allow for a relaxed journey through the islands, with stops at key ecotourism spots such as Padar Island, Komodo Island, Pink Beach, and various snorkeling and diving locations.
- These boats often include **onboard accommodations**, meals, and guided tours, offering an immersive and sustainable travel experience while minimizing the environmental impact of travel on land.

Figure 39. Sailing Phinisi at Komodo National Park

11) Boat Tours and Island Hopping

- **Boat tours** are an essential part of the Komodo National Park experience. Visitors can charter private boats or join group tours that take them to different islands within the park. These boats often stop at multiple locations, allowing visitors to snorkel, dive, trek, and relax at the beaches.

- **Liveaboard boat trips** are also available, where tourists can spend several days living on the boat, visiting different islands, dive sites, and secluded beaches. These trips provide a close-up view of the park's marine biodiversity, especially for divers who want to maximize their underwater exploration.
- **Eco-friendly boating**: Many operators now emphasize sustainability, offering boats equipped with solar panels, reduced plastic usage, and environmentally friendly waste disposal systems to help preserve the delicate ecosystems of the park.

These sailing and boat tours not only provide convenient access to various attractions in the park but also offer an eco-conscious travel option, as they reduce the need for land-based infrastructure and promote low-impact tourism practices. Exploring Komodo National Park by phinisi or boat enhances the ecotourism experience, allowing visitors to fully immerse themselves in the region's stunning landscapes and marine environments.

Since the designation of Komodo National Park as a UNESCO World Heritage Site and biosphere reserve, tourism activities have both expanded and evolved. The number of visitors to the park, particularly international tourists, has steadily increased over the years, although there was a temporary decline during the COVID-19 pandemic. Post-pandemic recovery has seen a resurgence in tourism due to improved marketing efforts, infrastructure, and the diversification of tourism activities.

Data from the Department of Tourism shows that the number of tourist visits increased by 63.5% in 2019 compared to the previous year, driven by the number of international tourists visiting West Manggarai. However, there was a sharp decline in all categories of tourists in 2020-2021. The number of tourists increased significantly post-pandemic, with 109,915 more visitors in 2022, supported by domestic tourists, and there was a significant surge in 2023, with a total of 351,359 visitors, an increase of 106.25% from the previous year.

Table 12. Number of Visitors to Komodo National Park (2010-2024)

Year	Local tourist	Foreign tourist	Total
2010	2.965	41.527	44.492
2011	6.177	41.833	48.010
2012	8.010	41.972	49.982
2013	9.654	54.147	63.831
2014	13.357	67.089	80.626
2015	19.215	76.195	95.410
2016	29.094	78.617	107.711
2017	48.457	76.612	125.609
2018	55.423	121.411	176.834
2019	77.635	144.068	221.703
2020	38.529	13.089	51.618
2021	60.381	4.236	64.617
2022	102.051	80.625	182.676
2023	116.392	184.096	300.488
2024	74.345	139.282	213.627

Several initiatives have been undertaken to promote sustainable tourism and conservation:

- Community-based tourism projects, empowering local communities to participate in and benefit from tourism activities.
- Infrastructure improvements such as better transportation links, including upgraded harbors and eco-friendly accommodation, to support a growing number of visitors while minimizing ecological impact.
- Conservation programs led by national and international bodies to protect the biodiversity of Komodo National Park, including coral reef restoration projects and protection of the Komodo dragons' habitat.
- Sustainable Tourism Certification Programs, where operators must meet specific sustainability standards to minimize environmental impact.

Ecotourism Infrastructure Development

Various infrastructure and facilities have been installed in recent years, providing support for diverse activities in environmental research, conservation, education, information, and more, thus significantly strengthening the capacity of the Biosphere Reserve.

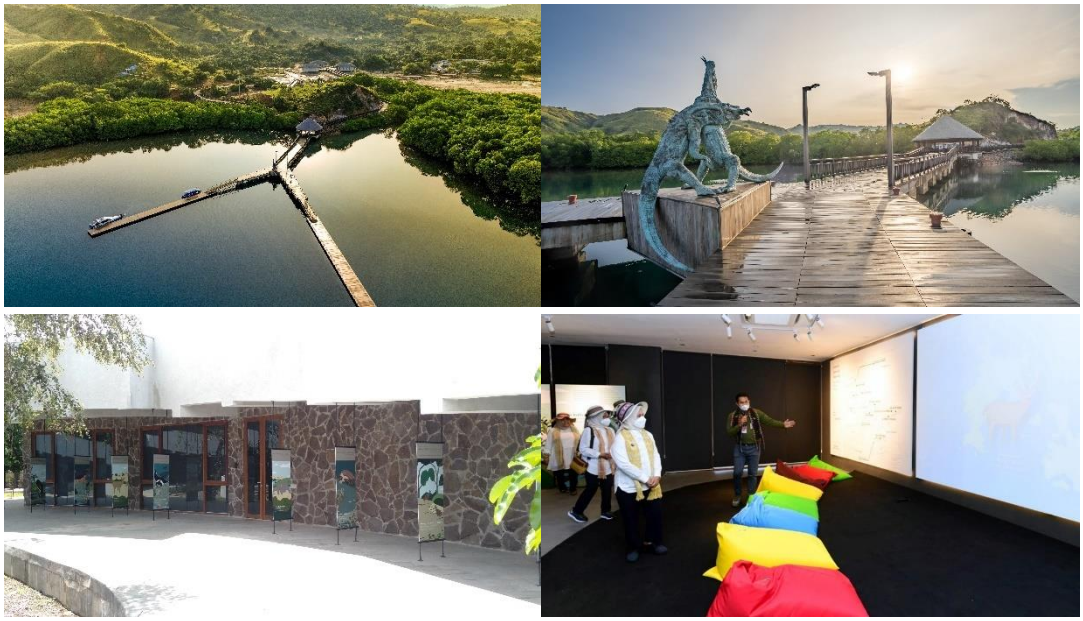


Figure 40. The Ecotourism Infrastructure Development at Komodo National Park

The Komodo National Park Authority (BTNK) has supported the development of facilities and infrastructure within the park. These efforts aim to enhance visitor experiences, improve park management, and support local communities. Below is a timeline of the support provided for facilities and infrastructure development:

- **2018**:
  - Focus on enhancing visitor facilities and infrastructure to meet the Minimum Service Standards (SPM) for tourists.
  - Significant capital expenditures were realized to ensure the availability of adequate infrastructure to support the influx of visitors, particularly for the IMF annual meeting in October 2018.
  - Plans for the development of an online ticket booking system were initiated to improve revenue management and prevent losses.
- **2019**:
  - Capital expenditures were prioritized to improve visitor comfort and services at tourist resorts.
  - Infrastructure development focused on supporting ecotourism within the park.

    - Efficiency measures were implemented to ensure budget allocations targeted essential components.
- **2020**:
    - Continued support for the development of tourism facilities and infrastructure as Komodo National Park was designated a Super Priority Tourism destination.
    - Focus on improving human resources and infrastructure within the park.
    - Completed projects included the renovation of the main office garage, repairs to the New7Wonder speedboat, maintenance of mooring buoys, and procurement of diving equipment.
    - Additional projects included expanding electrical power at the visitor center, installing fences at Loh Wau and Loh Sebita to protect against Komodo dragon attacks, procuring speedboats and mooring buoys for tourism and park management, renovating the Loh Baru pier, and acquiring diving equipment and generators for tourist resorts.
- **2021**:
    - Continued focus on improving facilities and infrastructure to support Komodo National Park as a Super Priority Tourism destination.
    - Implementation of the National Economic Recovery Program (PEN) to address the impacts of the COVID-19 pandemic.
    - Procurement of office equipment, including fingerprint scanners and projectors, to improve efficiency and service quality.
    - Infrastructure projects completed included constructing fences in villages to mitigate human-wildlife conflict, rehabilitating trails and toilets in Padar Selatan, constructing a pier and toilets in Gili Lawa, and procuring office equipment and diving gear.
- **2022**:
    - Focus on improving infrastructure to enhance visitor experience and park management.
    - Renovation of resorts to provide better working conditions for park staff.
    - Procurement of office equipment, including laptops, printers, scanners, and microphones, to improve efficiency and communication.
    - Repairs to speedboats and procurement of essential boat parts to ensure the safety and reliability of marine patrols and transportation.
- **2023**:
    - Continued efforts to enhance infrastructure and facilities within the park.
    - Renovation of the Loh Wenci pier to improve visitor access and safety.
    - Procurement of data processing and communication equipment, office equipment, and speedboat components to support park operations and management.

- Construction of fences in villages to mitigate human-wildlife conflict and ensure the safety of both residents and Komodo dragons.
- Rehabilitation of trails and toilets in Padar Selatan to enhance visitor experience and promote sustainable tourism.
- Construction of a pier and toilets in Gili Lawa to improve visitor facilities and access.

Effects of Tourism on the Economy, Ecology, and Society

- **Economic Impact**: Tourism has significantly boosted the local economy by providing jobs and improving local businesses in sectors such as hospitality, tour operations, and handicrafts. There has also been an increase in Non-Tax State Revenue (PNBP) due to entrance fees and tourism-related activities.

  These activities serve as the main attraction, drawing thousands of visitors annually and contributing significantly to Komodo National Park's revenue. In 2023, Komodo National Park recorded 300,488 visits, consisting of 116,392 domestic tourists and 184,096 international tourists. This number of visits had a direct impact on Non-Tax State Revenue (PNBP), with PNBP reaching Rp41,050,162,500 in 2023. This income not only supports the management and conservation of the area but also boosts the local economy by promoting sustainable tourism activities.

Table 13. Non-Tax State Revenue from Komodo National Park (2014-2024)

Year	Non-Tax State Revenue
2014	Rp5.490.325.000,-
2015	Rp19.287.508.000,-
2016	Rp22.815.956.000,-
2017	Rp28.345.609.486,-
2018	Rp33.124.497.097,-
2019	Rp38.187.858.602,-
2020	Rp4.905.690.000,-
2021	Rp4.604.117.500,-
2022	Rp20.060.747.500,-
2023	Rp41.050.162.500,-
2024	Rp31.497.375,- (until Agustus 2024)

The economic growth indicators affected by tourism sector performance can be seen in the contribution of the tourism sector to GRDP. Below is data on the contribution of the tourism sector to the GRDP of West Manggarai Regency over the past five years:

Table 14. Contribution of the Tourism Sector to the GRDP of West Manggarai Regency (2019-2023)

Indicator	2019	2020	2021	2022	2023
Contribution of tourism to GRDP	0.80	0.50	0,79	4,94	2,34

Source: Department of Tourism and Culture, West Manggarai Regency, 2021

The contribution of the tourism sector to the GRDP of West Manggarai Regency fluctuated between 2019 and 2023. This was partly due to the COVID-19 pandemic, which led to the closure of tourist sites, including those in the Core Zone, and a decrease in tourist numbers. These two factors resulted in a drop in tourist spending, leading to a decline in the tourism sector's contribution to GRDP in 2020-2021. However, there was a significant rebound in 2022 and 2023, with the highest contribution in 2022 at 4.94%, before dropping again to 2.34% in 2023.

The contribution of the tourism sector to the economy is also reflected in its percentage of Regional Original Income (PAD). The contribution of the tourism sector to PAD is one of the key indicators supporting the long-term planning performance of West Manggarai Regency. One of the biggest factors affecting the increase in PAD is the average length of stay of tourists in West Manggarai Regency. This figure does not spread evenly throughout the year, as certain months see spikes in tourist arrivals.

Table 15. Contribution of the Tourism Sector to PAD in West Manggarai Regency (2019-2023)

No	Year	PAD from Tourism (Rp)	TOTAL PAD (Rp)	Contribution to PAD (%)
1	2019	18.456.451.878	169.954.164.787	10,85
2	2020	2.692.490.000	99.340.732.323,62	2,71
3	2021	2.496.720.000	145.400.072.597,00	1,71
4	2022	9.436.060.000	190.819.870.963	4,94
5	2023	6.078.485.222	248.869.167.044,23	2,44

Source: Department of Tourism and Culture, West Manggarai Regency, 2023

The tourism sector's contribution to PAD in West Manggarai Regency has shown a fluctuating trend. It reached 10.85% in 2019, but dropped by 8.14% in 2020 due to the COVID-19 pandemic, which had a significant impact on PAD, as tourism is a sensitive industry. Nevertheless, its contribution began to rise again in 2022, though it fell by 2.50% in 2023. The tourism sector plays a critical role in West Manggarai Regency's long-term development goals. Therefore, tourism management must be optimized to have a positive impact on economic welfare while prioritizing environmental conservation.

- **Ecological Impact**: The increased number of visitors has put pressure on the park's natural resources, including fragile marine ecosystems (coral reefs) and the habitats of Komodo dragons. However, ecotourism initiatives and stricter park regulations aim to mitigate these effects.

  The ecological impact of tourism in Komodo National Park is a critical area of concern, particularly given the park's fragile ecosystems and status as a UNESCO World Heritage Site and biosphere reserve. Here are more detailed explanations of the key ecological impacts linked to tourism activities:

  1) **Coral Reef Degradation**
     - Problem: The park's coral reefs are one of its most valuable natural assets, attracting thousands of divers and snorkelers every year. However, these ecosystems are highly sensitive to human activities. Coral reefs have been damaged by boat anchors, careless divers, and snorkelers touching or stepping on the reefs.
     - Impact: Over time, these activities have caused physical damage to coral structures, leading to reduced reef health and biodiversity. In some areas, coral cover has declined, and reef-building corals are being replaced by more resilient but less beneficial species like algae. This affects the marine species that rely on the coral reefs for food and shelter, potentially altering marine food chains.
     - Mitigation Efforts: Dive operators and park authorities have introduced strict regulations, including "no touch" policies, educating tourists, using designated mooring buoys to prevent anchor damage, and creating protected areas where access is restricted.

  2) **Marine Pollution**
     - Problem: The increase in boat traffic, especially from motorized tourist boats, has led to pollution in the form of fuel spills, oil leaks, and sewage dumping. Additionally, improper waste disposal by

tourists, such as plastic and other non-biodegradable items, is a growing issue.

- Impact: Marine pollution threatens the health of marine species, including fish, turtles, and manta rays, and leads to coral bleaching. Plastic waste can be ingested by marine animals, leading to injury or death. Moreover, pollution damages the overall aesthetics of the underwater environment, reducing the quality of the visitor experience and the long-term sustainability of marine tourism.
- Mitigation Efforts: Efforts to reduce pollution include waste management programs initiated by local authorities, eco-friendly boating guidelines, and regular clean-up operations conducted by NGOs and local communities.

3) Disturbance to Komodo Dragon Habitats

- Problem: Increased foot traffic in Komodo dragon habitats, particularly at Loh Buaya (Rinca Island) and Loh Liang (Komodo Island), has led to habitat degradation. Trails through the dragons' habitat are frequented by thousands of tourists annually, which can lead to soil erosion, vegetation damage, and disturbances to the natural behaviors of the Komodo dragons.
- Impact: Frequent human presence may cause stress to Komodo dragons and other wildlife, potentially disrupting their natural behaviors such as feeding and mating. Furthermore, habitat degradation can make it more difficult for these animals to hunt or find shelter, ultimately impacting the park's biodiversity.
- Mitigation Efforts: Authorities have introduced regulated trekking paths, limited access to sensitive areas, and hired trained park rangers to manage interactions between tourists and wildlife. Restrictions on the number of visitors in certain areas have also been implemented to reduce pressure on the environment.

4) Overcrowding and Ecosystem Strain

- Problem: Komodo National Park has experienced overcrowding in its most popular sites, including Komodo Island, Padar Island, and Pink Beach. The influx of tourists in concentrated areas places additional strain on local ecosystems, including vegetation, soil stability, and freshwater resources.
- Impact: Overuse of specific tourist hotspots can lead to environmental degradation, such as deforestation, soil compaction, and erosion. For instance, popular trekking routes on Padar Island are increasingly affected by soil erosion due to heavy foot traffic. The increased demand for water by tourists also strains limited freshwater resources, which are vital for both humans and wildlife.
- Mitigation Efforts: Zoning has been applied in the park to limit visitor numbers in particularly vulnerable areas. New infrastructure,

such as boardwalks, has been built to reduce direct contact with sensitive terrain. There is also a push to spread tourist activities across a wider area of the park to reduce overcrowding in the most visited zones.

5) **Introduction of Invasive Species**
   - Problem: The movement of tourists and boats between islands increases the risk of introducing invasive species, such as certain plants or marine organisms, that could upset the balance of the local ecosystem.
   - Impact: Invasive species can outcompete native species, leading to a decline in biodiversity. For example, some invasive plants may displace native vegetation that is crucial for the survival of certain animals, while invasive marine organisms could damage coral reefs or disrupt the food chain.
   - Mitigation Efforts: To mitigate this risk, there are ongoing monitoring programs in place to detect and manage invasive species early. Education programs for tourists emphasize the importance of not transporting foreign materials or organisms between islands.
6) **Disruption of Marine Life**
   - Problem: Popular marine activities like snorkeling, scuba diving, and boat tours can disturb marine life, especially in areas known for their biodiversity, such as Manta Point and Batu Bolong.
   - Impact: The presence of large numbers of tourists and boats in marine areas can disturb natural feeding, breeding, and migratory behaviors of species like manta rays, sea turtles, and sharks. Noise pollution from boat engines may also negatively impact marine mammals, such as dolphins, that rely on echolocation.
   - Mitigation Efforts: Guidelines have been established for tour operators and divers to minimize disturbance, including maintaining a safe distance from marine animals, limiting the number of boats in popular dive sites, and enforcing speed limits for boats in sensitive areas.
7) **Coastal Erosion and Beach Degradation**
   - Problem: Increased foot traffic on coastal areas and beaches like Pink Beach, combined with the effects of climate change (rising sea levels, stronger storms), contributes to coastal erosion.
   - Impact: Coastal erosion not only impacts the natural landscape but also threatens marine ecosystems, such as mangroves and coral reefs, which are critical for coastal protection and biodiversity. Degraded beaches may also lose their appeal to tourists, leading to a decline in visitor numbers.

- Mitigation Efforts: Authorities have implemented beach protection measures, including limiting visitor access to certain fragile beach areas, establishing boardwalks, and initiating replanting efforts for mangroves and coastal vegetation.

8) Climate Change Vulnerability

- Problem: Komodo National Park is increasingly vulnerable to the impacts of climate change, including rising sea temperatures, which can cause coral bleaching, and more extreme weather events that damage both land and marine ecosystems.
- Impact: Climate change exacerbates many of the existing ecological challenges, such as marine pollution, habitat loss, and biodiversity decline. Warmer waters can lead to coral bleaching, which reduces the park's attractiveness for marine tourism and impacts the broader ecosystem.
- Mitigation Efforts: Conservation efforts are focusing on increasing the resilience of coral reefs through restoration projects and reducing local stressors, such as pollution and overfishing, to help the ecosystems better withstand the effects of climate change.

The ecological impacts of tourism in Komodo National Park are significant and complex, spanning issues related to marine and terrestrial ecosystems. While tourism is a key economic driver for the region, the pressures it exerts on the environment require continued management, strict regulations, and sustainable practices. Efforts are being made to address these challenges through a combination of government regulations, collaboration with local and international organizations, and eco-tourism initiatives aimed at minimizing the negative impacts of tourism while preserving the park's unique natural heritage for future generations.

- **Social Impact**: The social impact of tourism in Komodo National Park is multifaceted, involving changes in the local community's economic opportunities, culture, lifestyle, and social dynamics. While tourism has brought many benefits, such as increased income and employment, it has also introduced challenges that affect the social fabric of communities in and around the park. Below are more detailed insights into the social impact of tourism in the region:

1) Employment Opportunities and Income Generation

- Positive Impact: Tourism has created significant job opportunities for the local population. Many locals are employed directly in the tourism sector as tour guides, boat operators, dive instructors, hospitality workers (in hotels, restaurants, etc.), or as part of the park management. Indirect jobs have also been created

in sectors like transportation, handicrafts, and services supporting tourism activities. This has led to a considerable rise in income levels for many families who were previously dependent on fishing or farming.

- Challenges: While tourism has provided jobs, many of these positions are seasonal, meaning that the income can be inconsistent. There is also a gap in the types of jobs available—local people often fill lower-wage, lower-skill roles, while more specialized or high-paying jobs (e.g., dive masters, resort managers) are often taken by outsiders or expatriates due to a lack of local expertise or education.

2) **Shift from Traditional Livelihoods**
   - Positive Impact: Tourism has provided an alternative to traditional livelihoods, such as fishing and agriculture, which can be less stable or environmentally harmful when overexploited. Many former fishermen have transitioned into tourism-related jobs, leading to less dependence on fishing and a reduction in overfishing, which benefits marine conservation.
   - Challenges: The shift away from traditional occupations has led to the gradual erosion of skills and knowledge associated with fishing, farming, and other local practices. Some locals express concern over the sustainability of relying solely on tourism, especially in times of downturns (like during the COVID-19 pandemic) when tourism numbers drop dramatically.
3) **Cultural Preservation vs. Commercialization**
   - Positive Impact: The presence of tourists has led to increased interest in and appreciation for local culture and traditions. Cultural events, performances, and local crafts have been showcased to tourists, helping to preserve and promote traditional arts, music, and crafts. Local communities have also benefitted from the sale of handicrafts and souvenirs.
   - Challenges: The influx of tourists has led to the commodification of local culture, where certain traditions and practices are performed or altered primarily for tourist consumption. There is a risk that genuine cultural practices could become diluted or lose their significance as they are adapted to meet tourist expectations. Additionally, in some cases, traditional customs and lifestyles have been overshadowed by the demands of tourism, leading to a loss of cultural identity.
4) **Cost of Living Increases**
   - Positive Impact: The growth of tourism has stimulated local economies, leading to the development of infrastructure, services, and business opportunities. More money flowing into the region

has improved access to goods and services that were previously limited.

- Challenges: However, the increased demand for land, housing, and goods due to tourism has driven up the cost of living for local residents. Land prices in Labuan Bajo, for example, have soared, and locals now face higher costs for basic necessities such as food, transportation, and housing. This has created a disparity between those who benefit directly from tourism and those who do not, with the latter often finding it harder to keep up with rising expenses.

5) **Social Inequality and Marginalization**
   - Positive Impact: Tourism has the potential to reduce poverty by providing jobs and improving infrastructure. Some initiatives focus on ensuring that marginalized groups, such as women or those from remote communities, are included in the economic benefits of tourism, particularly through training and capacity-building programs.
   - Challenges: Despite these efforts, not all local communities equally benefit from tourism. Wealthy individuals and external investors often control the most profitable aspects of tourism, such as luxury resorts and dive centers. This can exacerbate social inequality, as wealth becomes concentrated in certain hands, while others are left out of the benefits. Marginalized communities, particularly those in more remote areas, may not see any significant improvement in their standard of living due to tourism.
6) **Changes in Lifestyle and Social Structure**
   - Positive Impact: Exposure to international visitors has broadened locals' perspectives and introduced new ideas, languages, and technologies, contributing to a more cosmopolitan outlook among younger generations. This has helped create opportunities for learning, entrepreneurship, and innovation.
   - Challenges: The rapid development of tourism has also disrupted traditional social structures. The influx of foreign visitors and workers can cause friction between locals and newcomers, leading to issues such as competition over resources (e.g., land and water) and a perceived loss of control over local decision-making. The increase in tourism-related activities, including nightlife and entertainment, has also led to changes in social behaviors, particularly among younger generations, who may become more disconnected from traditional values and customs.
7) **Infrastructure Strain and Public Services**
   - Positive Impact: Tourism has led to investments in infrastructure such as roads, water supply, electricity, and internet services. These developments have benefitted local communities by

improving access to public services that were previously limited, especially in more remote parts of the region.

- Challenges: However, the rapid growth of tourism has also placed a strain on existing infrastructure. Public services such as waste management, water supply, and sanitation facilities are often stretched beyond their capacity, especially during peak tourist seasons. In some cases, the needs of tourists and the tourism industry take precedence over those of the local population, leading to issues such as water shortages and inadequate waste disposal services.

8) Tourism-Induced Migration

- Positive Impact: Tourism has attracted new residents and entrepreneurs to the region, bringing investment and development to places like Labuan Bajo, which has transformed into a tourism hub.
- Challenges: The growing tourism industry has led to an influx of migrants, both from within Indonesia and abroad, who seek employment and business opportunities in the tourism sector. This migration has led to concerns among locals about being displaced or marginalized by newcomers, who may have better access to resources, capital, and networks. There is also the fear that the cultural identity of Labuan Bajo and surrounding villages may be lost as the population becomes more diverse and transient.

9) Community Empowerment and Local Participation

- Positive Impact: Various tourism initiatives, including community-based tourism, have helped empower local communities to take ownership of tourism development. Local residents have become more involved in guiding tours, managing homestays, and leading conservation efforts, ensuring that the benefits of tourism remain in the community. NGOs and government programs have provided training to locals, improving their skills in hospitality, language, and eco-tourism management.
- Challenges: Despite the growing involvement of local communities in tourism, there is still a need for more inclusive decision-making processes. In some cases, large-scale tourism developments have been implemented without adequate consultation with local communities, leading to dissatisfaction and a feeling of exclusion. Ensuring that local voices are heard in the planning and management of tourism activities is crucial for the long-term success of sustainable tourism.

10) Health and Safety Concerns

- Positive Impact: With increased tourism, there has been an improvement in healthcare services to cater to both tourists and

locals. The establishment of better emergency response systems, medical facilities, and health education programs has raised the overall health standards in the region.

- Challenges: The large influx of tourists can also introduce health risks, such as the spread of infectious diseases. Additionally, the strain on healthcare services during peak tourist seasons may limit access for local residents. Furthermore, the safety of both tourists and locals can be compromised in situations where there are insufficient safety measures in place, particularly in water-based activities and trekking routes.

The social impacts of tourism in Komodo National Park are broad and complex. While the economic benefits are clear, there are significant challenges in balancing the growth of tourism with the needs and well-being of local communities. The key to addressing these challenges lies in promoting inclusive and sustainable tourism practices that prioritize local participation, cultural preservation, and equitable distribution of benefits. Careful planning and management are essential to ensure that tourism continues to positively impact the region without eroding the social fabric or causing long-term harm to the community.

Several studies have examined the impact of Komodo National Park's designation as a biosphere reserve on tourism development and numbers. These studies generally show a correlation between the park's international recognition and an increase in both domestic and international tourist arrivals. Here are some key studies:

1) **Study 1: "Tourism Impact on Komodo National Park's Economy and Ecology" (2020)**
   - Summary: This study explores the dual impact of tourism on both the local economy and ecology in Komodo National Park. The research highlights how the biosphere reserve designation has led to a steady rise in tourist numbers, particularly after 2011 when Labuan Bajo was designated as a National Tourism Strategic Area (KSPN). The positive economic outcomes include increased local employment, higher incomes, and improved infrastructure. However, the ecological concerns are substantial, such as coral reef degradation, waste management issues, and disturbance to Komodo dragon habitats.
   - Findings: The study emphasizes the need for better management and regulation to ensure that tourism growth does not compromise the park's biodiversity.
   - Bibliographic Reference:
     Author: Rahmadi, I., & Sari, P.

Title: *Tourism Impact on Komodo National Park's Economy and Ecology*
Journal: Environmental Sustainability Review
Year: 2020
Pages: 45-67
Publisher: Indonesian Ecotourism Research Group

2) **Study 2: "Sustainable Tourism and Conservation in Komodo National Park" (2019)**
   - Summary: This research assesses how sustainable tourism practices have been integrated into the management of Komodo National Park following its designation as a biosphere reserve. The paper outlines various conservation projects, including coral reef rehabilitation and the enforcement of limits on the number of tourists allowed to visit certain areas. It also details the role of community-based tourism, which involves local residents in guiding and managing tourism activities, ensuring that the benefits are shared more equitably.
   - Findings: The study concludes that while progress has been made, continued efforts are necessary to reduce ecological pressures and promote sustainable practices across all tourism operators.
   - Bibliographic Reference:
     Author: Wulandari, S., & Yusuf, T.
     Title: *Sustainable Tourism and Conservation in Komodo National Park*
     Journal: Journal of Sustainable Tourism Development
     Year: 2019
     Pages: 128-150
     Publisher: Indonesian Conservation Foundation
3) **Study 3: "Assessing the Growth of Marine Ecotourism in Komodo National Park" (2021)**
   - Summary: This study focuses on the rapid growth of marine-based tourism activities such as scuba diving and snorkeling in Komodo National Park. It tracks the rise in demand for marine tourism since the park's designation as a biosphere reserve, particularly the attraction of biodiversity hotspots like Batu Bolong and Manta Point. The research also highlights how tourist numbers have put pressure on underwater ecosystems, leading to stricter conservation efforts and collaboration with dive operators to promote eco-friendly diving practices.
   - Findings: The study demonstrates the need for enhanced marine conservation programs and responsible tourism practices to protect fragile coral reefs and marine life.
   - Bibliographic Reference:
     Author: Nugroho, M., & Permana, R.
     Title: *Assessing the Growth of Marine Ecotourism in Komodo National Park*
     Journal: Marine Ecology and Tourism Review

Year: 2021
Pages: 202-220
Publisher: Indonesian Institute for Marine Conservation

4) **Study 4: "Evaluating the Social Impact of Tourism Growth in Komodo National Park" (2018)**
   - Summary: This research focuses on the social changes brought by the influx of tourists, especially the impact on local communities in and around Komodo National Park. It examines how tourism has created new job opportunities but also challenges such as the commodification of local culture, increased cost of living, and infrastructure strain. The study highlights the importance of balancing tourism development with cultural preservation.
   - Findings: The research advocates for policies that protect local communities' rights and ensure that tourism development is inclusive and benefits everyone involved.
   - Bibliographic Reference:
     Author: Sutopo, H., & Wijayanto, A.
     Title: *Evaluating the Social Impact of Tourism Growth in Komodo National Park*
     Journal: Indonesian Journal of Social Development
     Year: 2018
     Pages: 98-116
     Publisher: Social Impact Research Institute

5) **Additional Sources:**
   - Government Reports: Several government reports from BPS (Statistics Indonesia) and Ministry of Tourism and Creative Economy detail statistical data on tourism growth, economic impacts, and PNBP revenue from Komodo National Park from 2010-2023.
   - NGO Studies: Environmental organizations such as WWF Indonesia and The Nature Conservancy have published reports on marine biodiversity conservation efforts linked to the rise in tourism.

5.3 When applicable, describe other key sectors and uses such as agriculture, fishing, forestry. Have they increased or decreased since the nomination or the last periodic review? What kind of new projects or initiatives have been undertaken? What effect have they had on the economy and ecology of the biosphere reserve, and on its biodiversity? Are there any studies that examine whether designation as a biosphere reserve has influenced the frequency of its activities? If so, provide the bibliographic information of these studies and/or a paper copy in an annex.

a) When applicable, describe other key sectors and uses such as agriculture, fishing, forestry. Have they increased or decreased since the nomination or the last periodic review?

Over the 10 years since the first review, the Komodo Biosphere Reserve has experienced rapid development, with a significant shift in the livelihoods of the community from agriculture to the service sector, particularly tourism services. Previously, the region was able to produce and be self-sufficient to meet local needs. However, there is now a dependency on supplies from outside the area, particularly for horticultural products.

- **Agriculture**:

  Agriculture has remained relatively stable but less dominant compared to the growing tourism industry. Due to limited arable land and water resources in the buffer and transition zones, agricultural activities are focused mainly on staple crops like maize, cassava, and horticulture products. Agroforestry and organic farming initiatives have been introduced to ensure sustainable land use. These projects are critical to improving food security and reducing deforestation in the buffer zones.

  Agriculture is the utilization of biological resources to produce food, industrial raw materials, or energy sources, and to manage the environment. The Komodo Biosphere Reserve, located in West Manggarai Regency, contributes to the growth of the agricultural sector in the region's Gross Regional Domestic Product (GRDP). The economic development of West Manggarai Regency is supported by the agricultural sector, which plays the most significant role in GRDP formation compared to other sectors. There are at least six subcategories of agriculture: food crops, horticulture, plantations, livestock, fisheries, and forestry.

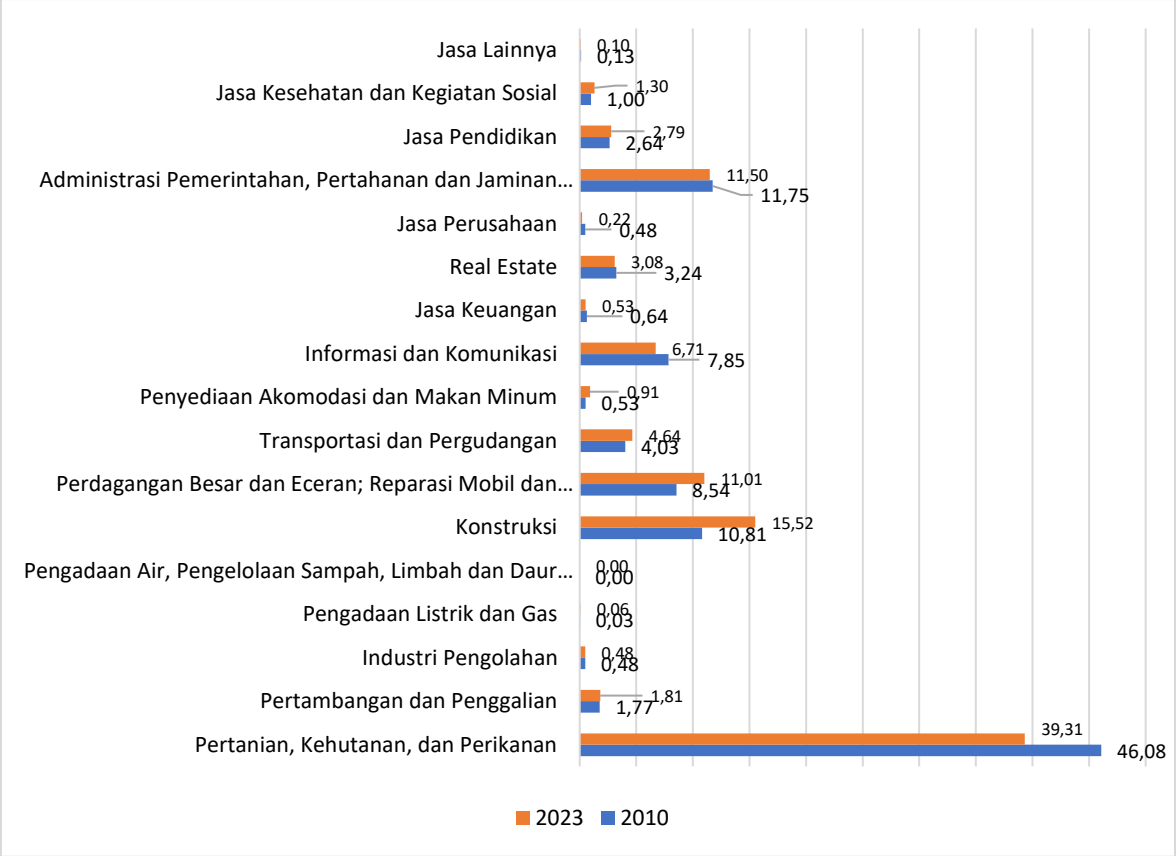


Figure 41. Comparison of GRDP Distribution at Current Prices (%) by Sector in West Manggarai Regency in 2010 and 2023
Source: BPS West Manggarai Regency, 2024

When comparing 2010 and 2023, the economy of West Manggarai Regency was predominantly supported by the Agriculture, Forestry, and Fisheries sectors. This means that there has been no significant shift in the sectors dominating the economic structure during this period. However, compared to its contribution in 2010, the sector's contribution decreased by -6.77% in 2023. Since it is a zero-sum game, if one sector's contribution to the GRDP decreases, another sector's contribution increases.

- **Fisheries**:
  Fisheries have long been a primary source of livelihood for the coastal communities of Labuan Bajo and the surrounding areas in West Manggarai Regency, East Nusa Tenggara. The region's waters are rich in diverse marine species, including tuna, mackerel, grouper, and reef fish, which hold high economic and ecological value. These fisheries not only support local food security by providing affordable protein but also contribute to the economic well-being of coastal communities.

Traditional Fishing Practices and Modern Initiatives

Local fishermen in Labuan Bajo traditionally use sustainable methods like handlines and traps, passed down through generations. However, recent initiatives, such as the Modern Fishing Village (KALAMO) program funded by the Ministry of Marine Affairs and Fisheries, aim to modernize the sector. This includes the development of temporary fish auction shelters (TPI) in Warloka Pesisir and Rangko, designed to reduce operational costs for fishermen by locating the facilities closer to fishing grounds.

This shift is also intended to support the cleanliness and sustainability of Labuan Bajo, as the current TPI in Labuan Bajo will be repurposed into a culinary center, potentially promoting tourism while preserving local fisheries.

Fish Export and Economic Growth

The fisheries of Labuan Bajo have high-quality marine products, which are increasingly being exported to international markets. CV Labuan Bajo Fishery led the first export of marine products from Labuan Bajo to Malaysia and Singapore, highlighting the potential for the region's fisheries to become a reliable export source. This move has boosted the local economy and opened new markets for marine products beyond Indonesia.

Challenges in the Fisheries Sector

The sector faces several challenges, including:

- Overfishing: Increasing demand, both locally and internationally, has led to pressure on fish stocks, particularly for high-value species like tuna and grouper.
- Climate Change: Rising sea temperatures and changes in marine ecosystems due to climate change affect fish migration patterns, reproduction cycles, and coral health, reducing fish availability.
- Marine Pollution: Waste, plastic, and oil spills pose significant risks to marine ecosystems, especially coral reefs that serve as critical habitats for fish breeding.

The fisheries sector in Komodo Biosphere Reserve is undergoing significant transformation. While traditional fishing practices remain vital, modern programs such as KALAMO, sustainable fisheries management, and integration with tourism are helping to ensure that the sector can meet growing demand while protecting marine resources for future generations. The sector's economic potential, particularly in

exports, is rising, but challenges such as overfishing, pollution, and climate change must continue to be addressed through collaborative

- **Forestry**:
  Although forestry is not a dominant sector within the core zone, sustainable forest management practices are promoted in the buffer and transition areas. Reforestation and community-based agroforestry initiatives are ongoing to combat deforestation and promote biodiversity conservation. These projects also support local economies through the harvesting of non-timber forest products.

  Forest resources are a vital support for life and must be managed wisely to provide optimal and sustainable benefits. Community forests can support the local economy, contributing to economic growth, job creation, and regional development. Forests, as ecosystems, not only store natural resources like timber but also offer many non-timber benefits that communities can utilize. Forests play a crucial role in providing water sources, producing oxygen, housing millions of flora and fauna, balancing the environment, and preventing global warming. The goal of forest utilization is to derive maximum benefits for the welfare of all communities equitably, while maintaining sustainability. Forests, as national resources, must be used for the benefit of the people and should not be concentrated in the hands of a single person, group, or class. Optimal benefits can be achieved when forest management activities produce high-quality, sustainable forests.

  Forestry development focuses on forest and critical land rehabilitation, the use of ecosystem services, and the utilization of non-timber forest products.

b. What kind of new projects or initiatives have been undertaken?

- **Sustainable Agriculture Programs**: Agroforestry and organic farming projects have been introduced, focusing on crops that thrive in the local climate, such as maize and cassava. These programs aim to improve productivity while maintaining soil health and reducing the environmental footprint.

- **Community-Based Forest Management**: Reforestation and sustainable logging projects are being implemented to reduce the impact of illegal logging. These projects focus on involving local communities in forest management and educating them about sustainable practices

- **Sustainable Fisheries Management and Initiatives**
  - Community-Based Fisheries Management: Fishermen are involved in managing marine resources through sustainable practices, such as selective fishing gear to minimize bycatch and avoiding overfishing in breeding areas.
  - Marine Protected Areas (MPAs): Komodo National Park's surrounding waters are designated MPAs, which regulate and, in some cases, prohibit fishing in sensitive areas to allow fish populations to recover.
  - Aquaculture: Aquaculture, particularly seaweed farming and fish farming in floating net cages, is growing as an alternative to capture fisheries. This helps alleviate pressure on wild fish stocks.
  - Integration with Tourism: Labuan Bajo is one of Indonesia's premier eco-tourism destinations, and the fisheries sector is increasingly linked with tourism. Initiatives such as eco-fishing tours allow tourists to experience traditional fishing methods while learning about sustainable practices. Additionally, many local restaurants and hotels are promoting sustainably sourced seafood, aligning the region's fisheries with its tourism-driven economy.

c. What effect have they had on the economy and ecology of the biosphere reserve, and on its biodiversity?

- Economy: These initiatives have created new income opportunities for local communities, particularly through eco-tourism, sustainable agriculture, and small-scale fisheries. Local economies have diversified, with less dependence on unsustainable resource extraction. Programs promoting organic agriculture and sustainable fisheries have provided new revenue streams while enhancing food security.

  One of the indicators for assessing the economic condition of a region during a specific period is the Gross Regional Domestic Product (GRDP) data, both based on current prices and constant prices. GRDP at Current Prices (ADHB) reflects the added value of goods and services calculated using prices prevailing each year, while GRDP at Constant Prices (ADHK) shows the added value of goods and services calculated using prices from a specific base year.

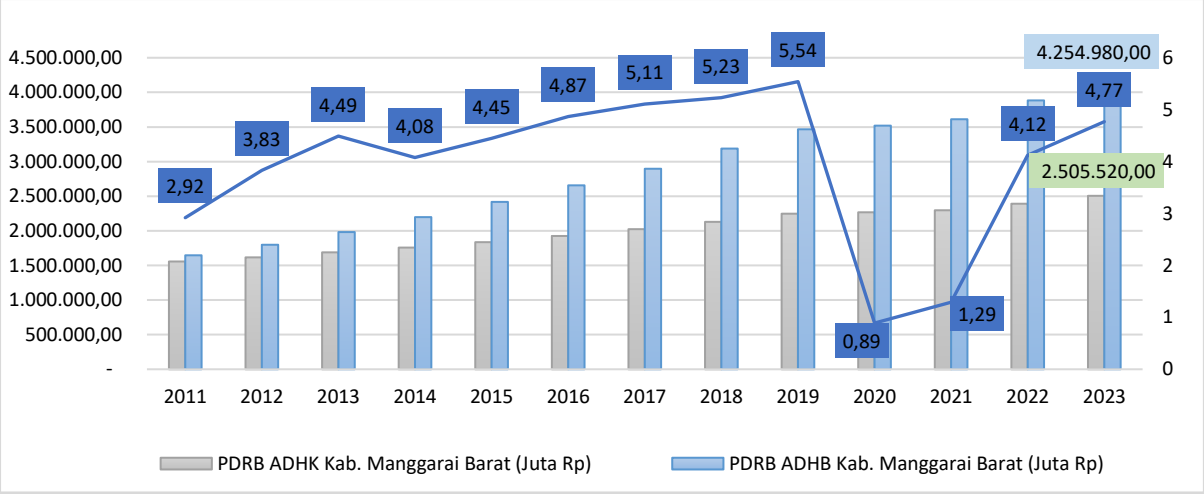


Figure 42. GRDP ADHB, ADHK, and Economic Growth (LPE) of West Manggarai Regency from 2011-2023

Source: BPS West Manggarai Regency, 2024

The ADHB and ADHK GRDP of West Manggarai Regency experienced an increase from 2011 to 2023. GRDP grew at an average rate of 3.86% annually, pushing real GRDP (ADHK) to reach IDR 2.5 trillion and nominal GRDP (ADHB) to IDR 4.2 trillion in 2023. Economic growth was positive between 2017 and 2019, reaching a peak of 5.54% in 2019. However, economic growth slowed in 2020 and 2021 due to the COVID-19 pandemic. Nevertheless, the economy began to recover, reaching 4.77% growth in 2023.

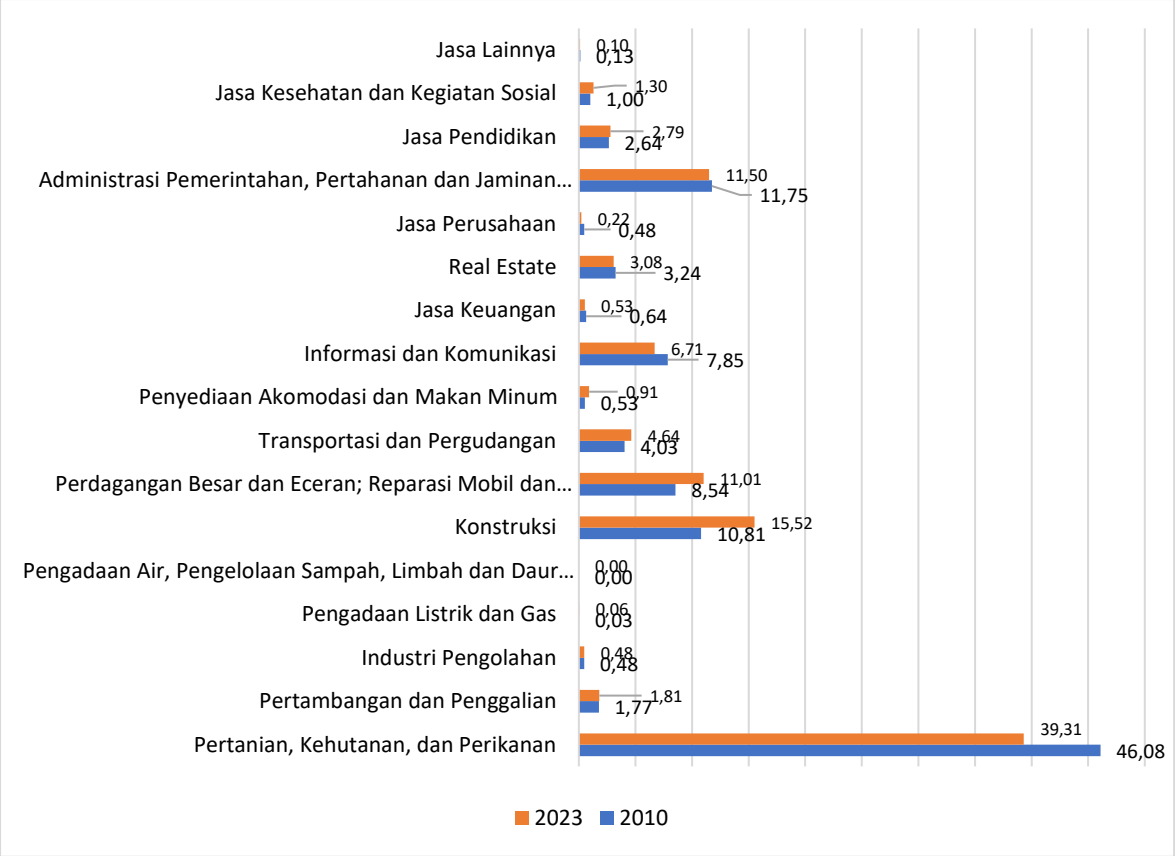


Figure 43. Comparison of GRDP Distribution by ADHB (%) According to Business Sectors in West Manggarai Regency in 2010 and 2023 Source: BPS West Manggarai Regency, 2024

Comparing 2010 and 2023, the economy of West Manggarai Regency remained predominantly supported by the Agriculture, Forestry, and Fisheries sector. This indicates that there was no significant shift in the dominant business sectors over the period. However, compared to its contribution in 2010, this sector's contribution decreased by -6.77% in 2023. Since the economy operates as a zero-sum game, a decline in one sector's contribution to GRDP results in increased contributions from other sectors.

Several business sectors have made notable contributions to West Manggarai Regency's economy in 2023. First, the Construction sector saw its contribution rise by 4.71% compared to 2010. Second, the Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles sector experienced an increase of 2.47%. Third, the Transportation and Warehousing sector's contribution increased by 0.61%. Fourth, the Accommodation and Food Service sector saw a 0.38% increase in its contribution. Meanwhile, compared to 2010, several sectors saw their contributions to the total GRDP of West Manggarai Regency decline by

2023. These sectors include Information and Communication, Financial Services, Real Estate, Business Services, Public Administration, Defense, Mandatory Social Security, and Other Services.

- **Ecology:**
  Sustainable practices in agriculture and fisheries have helped reduce environmental degradation, particularly in sensitive areas like mangroves and coral reefs. Reforestation projects and community-based agroforestry have contributed to habitat restoration, which is essential for biodiversity conservation in the buffer zones. The focus on limiting destructive fishing and overharvesting has resulted in improved biodiversity, particularly in marine ecosystems.

- **Biodiversity:**
  The reduction of destructive fishing practices has allowed marine species to recover, while reforestation and sustainable land-use practices have improved the health of terrestrial ecosystems. Efforts to preserve biodiversity, particularly through the protection of coral reefs and mangroves, have shown positive results over the past decade

d. Are there any studies that examine whether designation as a biosphere reserve has influenced the frequency of its activities?

   There have been several studies examining the impact of the Komodo Biosphere Reserve's designation on sectoral activities, particularly in fisheries and tourism. These studies conclude that the reserve's designation has played a significant role in attracting attention to sustainable management practices and has influenced positive changes in local governance, particularly in terms of environmental regulation and conservation funding.

e. If so, provide the bibliographic information of these studies and/or a paper copy in an annex.

   - Fadillah, R. & Setiawan, A. (2021). "Sustainability and Fisheries Management in the Komodo Biosphere Reserve" *Marine Science Review*, 2021.
     This study explores the impact of the Komodo Biosphere Reserve designation on sustainable fisheries practices and community-based management.
   - Handoko, T., & Pratama, Y. (2020). "Tourism and Conservation in Komodo National Park: Impacts and Management" *Indonesian Conservation Journal*, 2020.
     This paper discusses how the biosphere reserve status has influenced

tourism activities, promoting eco-tourism while regulating visitor impacts.

- Suryani, P., & Dewi, M. (2019). "Impact of Biosphere Reserve Designation on Local Environmental Policies" *Environmental Policy Research Institute*, 2019. This research examines how the biosphere reserve status has improved local environmental regulations and increased funding for conservation projects.
- Wijaya, R. & Siregar, E. (2020). "Biodiversity Conservation and Research in Komodo Biosphere Reserve" *Tropical Ecology Journal*, 2020. A detailed study on the increased frequency of research and biodiversity conservation efforts in the Komodo Biosphere Reserve.
- Nurhadi, F. & Hasan, A. (2021). "Community-Based Conservation and Governance in the Komodo Biosphere Reserve" *International Journal of Sustainable Development*, 2021. This paper focuses on the role of community involvement in conservation efforts and the collaborative governance structures developed in the region.

5.4 How do economic activities in the biosphere benefit local communities?

Economic activities in the biosphere reserve, particularly those linked to eco-tourism, have brought significant benefits to local communities:

- Job Creation: Tourism has created numerous jobs in hospitality, guiding, and eco-tourism services. Local residents have also started businesses catering to tourists, such as homestays, restaurants, and handicraft shops. The main contributor to the tourism sector workforce in West Manggarai Regency in 2023 is the Hotel/Akomodasi (Hotel/Accommodation) sector, with a total of 7,380 workers. This sector shows the largest workforce compared to other sectors in the same year.

Table 16. Tourism Sector Workforce in West Manggarai Regency

No.	Type of Tourism Business	2019	2020	2021	2022	2023
1	Tour Boats	960	340	372	1,443	1,443
2	Hotels/Accommodation	3550	1960	1020	3,450	7,380
3	Water Tourism	621	32	21	336	336
4	Food And Beverage	455	225	196	707	707
5	Travel Agencies	385	130	150	234	234
6	Tourism Information Services	21	8	10	45	45
7	Spa	12	0	0	18	50
Jumlah		6,004	2,695	1,769	**6,233**	10,195

The growth in the hotel/accommodation sector in West Manggarai Regency, particularly in 2023, can be attributed to several key factors:

1. Tourism Demand: West Manggarai Regency is home to the Komodo National Park, a UNESCO World Heritage site, which attracts both domestic and international tourists. Increased tourism, especially post-pandemic, has driven demand for accommodation services.

2. Government and International Events: The hosting of high-profile international events, such as the ASEAN Summit (2023), and side events for the G20 (2022), brought in a significant influx of visitors. These events create demand for high-quality accommodation facilities, driving the growth of hotels in the area.

3. Airport Upgrades and Infrastructure Development: The designation of Komodo Airport as an international airport and the start of international flights improved accessibility, making West Manggarai Regency a more attractive destination for international travelers. Improved infrastructure, such as roads, also plays a role in accommodating and attracting more tourists.

4. Investment in Tourism Infrastructure: Both public and private sectors have likely invested in expanding and improving hotel and accommodation facilities to cater to the growing number of tourists and the higher expectations of international travelers.

5. Recovery from the COVID-19 Pandemic: With the lifting of travel restrictions and the rebound of global tourism in 2022-2023, the hospitality sector, which had been heavily affected during the pandemic, saw a significant recovery. This led to the reopening of hotels and an increase in employment within the sector.

6. Marketing and Promotion: There have likely been significant efforts in promoting West Manggarai Regency as a key tourist destination, both by the government and private entities, which in turn has increased tourist numbers and boosted the hotel industry.

These factors collectively contributed to the significant rise in the workforce within the hotel/accommodation sector in 2023.

- Capacity Building: The vocational training programs initiated by the local government (like CLBK - "Cipta Lapangan Kerja Melalui BLK") have played a crucial role in enhancing job prospects. These programs focus on industry-specific skills that align with the needs of the local tourism market. For example, training in areas such as tour guiding, hospitality, barista skills, culinary arts, and air conditioning maintenance helps local residents gain skills that are directly applicable to jobs in the tourism industry.

  With more than 600 participants trained between 2022 and 2024, and 84% of them now employed in tourism or related fields, these initiatives have clearly contributed to increasing job opportunities.Opening training programs based on industry/labor market needs: Hotels/industries propose the required training, ensuring that BLK graduates are directly absorbed by the industry.

  This initiative is implemented with several strategies:

  - Opening training programs based on industry/labor market needs: Hotels/industries propose the required training, ensuring that BLK graduates are directly absorbed by the industry.
  - Announcing open and online registration: This provides access to all young workers in West Manggarai.
  - Collaborating with various community-based vocational training centers (BLK): Including BLK Seminari Yohanes St. Paulus (IT class), BLK Susteran Dian Yosefa (sewing class), BLK SMK Stella Maris (foreign language class), BLK St. Susteran Gorontalo (beauty and SPA class), SMKN 2 Tanah Ndereng (electrical class), and SMKN 1 Komodo (culinary class).

  Besides direct employment, tourism has spurred growth in related industries, such as construction, retail, and local transportation. The construction of

hotels, restaurants, and tourism facilities generates jobs, while increased tourist spending benefits local shops, markets, and businesses.

Moreover, the training of local youth in sectors like IT, foreign languages, and business management equips them with skills that enable them to work in administrative and managerial roles within the tourism industry. In addition, tourism has created opportunities for women to engage in the workforce. For instance, vocational training programs have trained women in areas like sewing, beauty and spa services, culinary arts, and hospitality, providing them with the skills to enter the labor market or start small businesses.

- Community-Based Resource Management: Local communities are directly involved in managing natural resources within the biosphere reserve, particularly in fisheries and forest products. This engagement has fostered a sense of ownership and responsibility for conservation efforts.

5.5 How do you assess the effectiveness of actions or strategies applied? (Describe the methods, indicators).

The effectiveness of the development strategies within the Komodo Biosphere Reserve can be assessed through several key indicators:

- Tourism Growth: The increase in visitor numbers and the expansion of eco-tourism facilities indicate successful promotion and management of tourism as an economic driver.
- Sustainability Indicators: The adoption of sustainable fishing and agricultural practices has helped mitigate environmental degradation while supporting local livelihoods. Regular monitoring of marine and forest ecosystems shows gradual improvement in biodiversity recovery.
- Community Involvement: The active participation of local communities in tourism and resource management has been key to the success of development initiatives

5.6 Community economic development initiatives. What programmes exist to promote comprehensive strategies for economic innovation, change, and adaptation within the biosphere reserve, and to what extent are they implemented?

Several community-based programs have been implemented to promote economic innovation and sustainable development:

- **Vocational Training Programs**: Initiatives such as the **Tour Guide Training** and **Service Skills Workshops** provide local residents with the skills necessary to work in the tourism industry.

- **Sustainable Agriculture Projects**: Agroforestry and organic farming training programs have been introduced to improve the sustainability of agricultural practices in buffer zones.
- **Small Business Support**: Local entrepreneurs receive financial and technical assistance to establish eco-friendly businesses, including handicraft production and eco-tourism services.
- **Fisheries management program** in the form of providing environmentally friendly fishing equipment;
- **Aquaculture management program** through the provision of facilities and infrastructure for freshwater fish farming (Tilapia);
- **Fish farming management program** through the provision of cool boxes for fishing groups and women fisherfolk, as well as fish feed supplies to be distributed to community management groups;
- **Empowerment program for medium, small, and micro enterprises (MSMEs)** through assistance in barista equipment (following vocational training at the West Manggarai Vocational Training Center) and the provision of woodworking and furniture tools;
- **Tourism and creative economy resource development program** through training, technical guidance, and creative economy assistance, community empowerment and development for tourism development, cultural heritage development, and the enhancement of education and training for traditional arts human resources.

5.7 Local business or other economic development initiatives. Are there specific "green" alternatives being undertaken to address sustainability issues? What relationships (if any) are there among these different activities?

There are several green economic development initiatives implemented within the Komodo Biosphere Reserve, focusing on sustainability in both tourism and agriculture:

- **Eco-tourism Development**: Community-based eco-tourism initiatives have been established to encourage sustainable tourism. These activities include eco-friendly accommodations, responsible tourist guiding, and the promotion of local heritage. These green tourism activities emphasize low environmental impact while providing sustainable income for local communities.
- **Agroforestry and Organic Farming**: Agroforestry initiatives help to maintain the ecological integrity of agricultural areas. By combining tree planting with crops, these programs reduce soil degradation and increase biodiversity, benefiting both the environment and local farmers. Organic farming practices are also promoted, reducing the use of harmful chemicals.
- **Sustainable Fishing Practices**: To combat overfishing, sustainable fishing initiatives have been introduced, including the promotion of fishing quotas,

the establishment of marine protected areas, and controlled fishing zones. These measures have helped conserve marine biodiversity while supporting the livelihoods of local fishers.

- **Waste Management and Recycling**: Waste management initiatives within the reserve focus on reducing pollution from tourism and local activities. Recycling programs and training on proper waste disposal have been introduced to ensure that waste from both local businesses and tourism is handled sustainably.

These initiatives are interconnected in promoting sustainability. For example, eco-tourism directly supports waste management by reducing environmental degradation, while sustainable fishing and farming contribute to the eco-tourism experience by preserving the natural beauty and biodiversity of the region.

One of the pillars of inclusive economic development is expanding access and opportunities. Expanding access and opportunities is an effort that needs to be undertaken to ensure that local economic actors can tap into the economic opportunities available in the region. This expansion is carried out through various interventions aimed at increasing job opportunities and opening market access for the entire population of West Manggarai Regency. These efforts are intended to ensure that all skilled and empowered residents of West Manggarai Regency can optimally access economic resources and market opportunities in the region.

The development of the creative economy supports the tourism sector and key commodities in local economic hubs. For local economic development, the West Manggarai Regency Government has established one Small and Medium Industry Center focused on traditional weaving and processed fish products, which can significantly boost the income of the local economy.

5.8 Describe the main changes (if there are any) in terms of cultural values (religious, historical, political, social, ethnological) and others, if possible, with distinction between material and intangible heritage.

(c.f. UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage 1972 and UNESCO Convention for the safeguard of the Intangible Cultural Heritage 2003 (http://portal.unesco.org/en/ev.php-URL_ID=13055&URL_DO=DO_TOPIC&URL_SECTION=201.html and http://portal.unesco.org/en/ev.php-RL_ID=17716&URL_DO=DO_TOPIC&URL_SECTION=201.html)).

Several changes have taken place over the past decade regarding the cultural values and heritage within the Komodo Biosphere Reserve:

- Intangible Heritage: Local traditions such as storytelling, dance, and spiritual rituals continue to play an important role in community life. Cultural festivals, including the Golo Koe Festival and Ata Modo Festival, are celebrated annually, highlighting traditional music, dances, and folklore. The

Komodo dragon itself is a significant cultural symbol, with local legends linking it to the region's spiritual heritage.

- Material Heritage: There has been a concerted effort to preserve tangible cultural heritage, such as traditional village architecture and sacred natural sites. Efforts to maintain the tenun ikat weaving tradition, which plays a significant role in local craftsmanship, have been strengthened through community development programs. These initiatives also provide economic opportunities, as traditional crafts are sold to tourists.

- Transmission of Cultural Knowledge: Programs aimed at preserving intangible cultural heritage have been introduced, including mentorship and training programs for youth. Local elders pass down traditional knowledge through storytelling, music, and participation in cultural events, ensuring the continuation of the community's heritage.

5.9 Community support facilities and services. What programmes in/for the biosphere reserve address issues such as job preparation and skills training, health and social services, and social justice questions. What are the relationships among them and with community economic development?

Several programs have been established to support communities in the Komodo Biosphere Reserve, addressing job preparation, skills training, health, and social justice:

- Job Preparation and Skills Training:
    - Tour Guide Training Programs: These programs aim to equip local residents, especially youth, with skills to work in the growing eco-tourism sector. Training includes language skills, hospitality, environmental education, and safety procedures for guiding tourists. This helps community members gain employment and generate income through tourism.
    - Handicraft Production Workshops: Training programs focus on developing skills in crafting souvenirs from sustainable materials. These initiatives create alternative income sources for women and marginalized groups, ensuring that economic opportunities are more evenly distributed.
- Health and Social Services:
    - Community Health Initiatives: Programs have been implemented to provide basic healthcare services, including maternal and child health, nutrition, and hygiene education. These health services improve the

overall well-being of communities, contributing to their capacity to engage in sustainable economic activities.

- Social Justice Programs:
    - Women's Empowerment Initiatives: Women's cooperatives have been established to support income-generating activities, such as handicraft production and small-scale farming. These initiatives provide access to financial resources, training, and market opportunities, promoting gender equality in economic development.

The integration of these programs contributes to the overall economic development of the biosphere reserve by ensuring that community members have the skills, health, and resources needed to participate in sustainable livelihood opportunities.

5.10 What indicators are in place to assess the effectiveness of activities aiming to foster sustainable development? What have these indicators shown?

The Komodo Biosphere Reserve uses several key indicators to assess the effectiveness of sustainable development activities:

- Tourism Impact Indicators: Visitor numbers, income generated from tourism, and the growth of eco-friendly accommodations are monitored. These indicators have shown a steady increase in sustainable tourism, with eco-tourism now representing a significant portion of the local economy.
- Biodiversity Health: Indicators such as coral reef health, marine species diversity, and forest cover are monitored regularly. Positive trends have been observed in reef recovery and increased fish populations due to sustainable fishing practices.
- Income Generation and Employment: The number of community members employed in eco-tourism, handicraft production, and sustainable agriculture serves as an indicator of economic development. These indicators show an increase in employment opportunities and household income, demonstrating the success of sustainable development initiatives.

Overall, these indicators suggest that sustainable development efforts have positively impacted both the economy and environment of the biosphere reserve.

5.11 What are the main factors that influenced (positively or negatively) the success of development efforts in the entire biosphere reserve? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be most effective?

Positive Factors:

- Community Engagement: Active participation from local communities in eco-tourism, sustainable agriculture, and conservation efforts has been a key factor in the success of development programs. Community-based resource management has fostered a sense of ownership and responsibility, ensuring that development efforts align with conservation goals.
- Support from NGOs and Government Agencies: Technical and financial support from NGOs, government agencies, and international organizations has facilitated the implementation of development programs. This support has provided training, funding, and infrastructure development, which has been critical to achieving sustainable outcomes.
-

Negative Factors:

- Tourism Pressures: The rapid growth of tourism has led to challenges such as waste management, habitat degradation, and increased living costs for local communities. Without effective regulation, tourism could negatively impact the reserve's ecological integrity.
- Limited Access to Markets and Resources: Some communities face challenges in accessing markets for their products, limiting the potential benefits of sustainable agriculture and handicraft initiatives.

New Strategies and Approaches:

- Strengthening Regulatory Frameworks: Implementing stricter regulations for tourism activities and natural resource management will help mitigate negative impacts and ensure sustainable development.
- Capacity Building and Education: Continued investment in education and capacity-building programs will empower communities to engage in sustainable economic activities and adapt to changing environmental and economic conditions.
- Diversification of Livelihoods: Promoting alternative income-generating activities, such as agroforestry, aquaculture, and renewable energy projects, will help reduce pressure on natural resources and provide communities with more resilient sources of income.

6. THE LOGISTIC FUNCTION:

[This refers to programs that enhance the capacity of people and organizations in the biosphere reserve to address both conservation and development issues for sustainable development as well as research, monitoring, demonstration projects and education needed to deal with the specific context and conditions of the biosphere reserve.]

6.1. Describe the main institutions conducting research or monitoring in the biosphere reserve, and their programmes. Comment on organizational changes (if any) in these institutions over the past ten years as they relate to their work in the biosphere reserve.

The Komodo Biosphere Reserve (KBR) is a critical site for research, supported by various institutions. The main institutions conducting research or monitoring in the Komodo Biosphere Reserve (KBR) include a variety of stakeholders ranging from government bodies, NGOs, academic institutions, and private entities. Some of the key institutions are:

1. Komodo National Park Authority (KNP) - This body is primarily responsible for the management and conservation efforts in the core area, including biodiversity monitoring, ecosystem research, and conservation programs.
2. West Manggarai Regency Government - Plays a crucial role in the buffer zone and transition areas, focusing on sustainable development practices and engaging with local communities.
3. Universities - Institutions such as Udayana University, Bogor Agricultural University (IPB), the University of Indonesia (UI), and Gadjah Mada University (UGM) contribute through scientific research, monitoring of ecological changes, and sustainable resource management projects.
4. NGOs and Private Sector - Various NGOs collaborate on conservation and community engagement, while the private sector is involved in eco-tourism and sustainable resource use within the transition area.

Research Stations: There are two primary research stations located on Rinca Island and Komodo Island, equipped with meteorological, hydrological, and biological monitoring systems. These stations support both local and international research initiatives, producing over 100 scientific studies in fields such as marine ecology, conservation biology, and socio-economic systems.

Organizational Changes: Over the past decade, collaboration between these institutions has strengthened, particularly in integrating scientific research into the management practices of the biosphere reserve.

6.2. Summarize the main themes of research and monitoring undertaken over the past ten years and the area(s) in which they were undertaken in order to address specific questions related to biosphere reserve management and for the implementation of the management plan (please refer to variables in Annex I).

(For each specific topic provide reference citations. Provide the full citations alphabetically by lead author at the end of Section 6 or in a separate annex

In the past ten years, the research and monitoring efforts within the Komodo Biosphere Reserve have focused on several key themes to address specific management questions and ensure the effective implementation of the management plan. Below are the main themes and areas where research and monitoring were conducted:

1. Biodiversity Conservation and Ecosystem Monitoring

- Theme: Research on biodiversity, including flora and fauna inventories, ecosystem rehabilitation, and monitoring of threatened species.
- Area: Komodo National Park, including both terrestrial and marine ecosystems.
- Objective: To preserve the biodiversity of the reserve and maintain ecosystem functions.

2. Ecological Restoration and Habitat Management

- Theme: Ecosystem restoration in degraded areas, focusing on both terrestrial and marine ecosystems.
- Area: Core conservation areas and surrounding buffer zones.
- Objective: To restore habitats that have been impacted by human activities or natural events, and enhance ecological integrity.

- **Use and Livelihoods**
  - Theme: Sustainable development programs, including community-based resource management and the promotion of eco-friendly livelihoods such as ecotourism and sustainable fisheries.
  - Area: Transition areas where human activities are permitted.
  - Objective: To balance conservation objectives with local community needs, particularly in relation to income generation and natural resource use.

4. Climate Change Monitoring and Adaptation

- Theme: Monitoring the effects of climate change on ecosystems and species, with a focus on both mitigation and adaptation strategies.
- Area: Various parts of the biosphere reserve, including coastal areas vulnerable to sea-level rise.
- Objective: To develop adaptive management strategies to mitigate the effects of climate change on the reserve's biodiversity.

5. Cultural and Traditional Knowledge Integration

- Theme: Documentation and integration of local traditional knowledge in conservation and management practices.
- Area: Buffer and transition zones, involving local and indigenous communities.
- Objective: To incorporate traditional management practices into modern conservation efforts, ensuring sustainable use of natural resources and the preservation of cultural heritage.

These themes reflect the integrated approach adopted by the Komodo Biosphere Reserve, where scientific research, conservation, and sustainable development are combined to maintain ecosystem services and biodiversity while supporting local communities.

Here are some examples the full citations for the research themes mentioned in above:

1. **Biodiversity Conservation and Ecosystem Monitoring**
   - Author: Komodo National Park Authority
   - Title: "Biodiversity Inventory and Monitoring in the Komodo National Park"
   - Year: 2021
   - Publisher: Ministry of Environment and Forestry, Indonesia.
   - Objective: Detailed inventory and regular monitoring of key species and ecosystems within the Komodo Biosphere Reserve.

2. **Ecological Restoration and Habitat Management**
   - Author: Udayana University, Bali
   - Title: "Coral Reef and Mangrove Restoration Programs in Komodo Biosphere Reserve"
   - Year: 2020
   - Publisher: Udayana University Press.
   - Objective: Examining the restoration and management of coral reefs and mangrove ecosystems.

3. **Sustainable Resource Use and Livelihoods**
   - Author: Bogor Agricultural University (IPB)
   - Title: "Sustainable Fisheries and Livelihood Development in the Transition Zones of Komodo Biosphere Reserve"
   - Year: 2019
   - Publisher: IPB Press.

- Objective: Focus on sustainable practices in local fisheries and ecotourism in buffer zones.

4. **Climate Change Monitoring and Adaptation**
   - Author: Indonesian Institute of Sciences (LIPI)
   - Title: "Monitoring Climate Change Impacts on Marine and Terrestrial Ecosystems in Komodo National Park"
   - Year: 2022
   - Publisher: LIPI.
   - Objective: Studying the impact of climate change on the ecosystems in the biosphere reserve.

5. **Cultural and Traditional Knowledge Integration**
   - Author: Flores Local Community Association
   - Title: "Integrating Traditional Knowledge in Natural Resource Management in Komodo Biosphere Reserve"
   - Year: 2018
   - Publisher: Flores Cultural Heritage.
   - Objective: Documenting and integrating local practices into modern conservation efforts in the reserve.

6.3. Describe how traditional and local knowledge and knowledge from relating to management practices have been collected, synthesized and disseminated. Explain how such knowledge is being applied to new management practices, and how and if it has been integrated into training and educational programmes.

In the Komodo Biosphere Reserve, traditional and local knowledge has been collected, synthesized, and disseminated through a combination of cultural preservation and community empowerment programs. Some of the key methods and initiatives include:

1. Identification and Documentation: The identification and documentation of local knowledge within the Komodo Biosphere Reserve have been an essential part of ensuring that traditional ecological wisdom is preserved and integrated into modern conservation efforts. This process primarily involves working with local communities to capture and formalize practices that have been passed down through generations. These practices are deeply tied to the spiritual, cultural, and environmental values of the indigenous populations living in and around the reserve.

Key Aspects of Identification and Documentation:

a. **Collaboration with Local Communities**: The collection of local knowledge begins with engaging village elders, traditional leaders, and community members. These individuals possess intimate knowledge of the land, sea, and biodiversity, having relied on natural resources for generations. Their insights are gathered through interviews, storytelling, and participatory meetings, ensuring that knowledge is captured in a way that respects cultural sensitivities and local norms.
b. **Cultural Practices – The Prafu Belief**: One of the most significant cultural practices documented in the reserve is the **Prafu belief**, which involves ancestor worship. This belief system links the well-being of the community to their ancestors and the land they inhabit. According to this tradition, ancestral spirits inhabit natural elements, including the mountains, seas, and forests. As a result, local people have developed rituals to honor these spirits, ensuring that their use of natural resources, such as fishing or harvesting, is done sustainably and respectfully.
c. **Rituals Related to Komodo Dragons**: Komodo dragons hold a special place in the local cosmology. There are rituals and taboos associated with interactions with these giant lizards, which have been respected for centuries. For example, locals believe that Komodo dragons are the reincarnated spirits of ancestors and, as such, must be treated with reverence. This spiritual view contributes to the careful and respectful management of the lizard populations, where community members actively support conservation efforts due to their cultural ties to the species.
d. **Knowledge Related to the Sea and Savanna**: The relationship between the local people and their environment extends beyond Komodo dragons sustainable fishing practices, seasonal migration patterns, and the use of specific plants for traditional medicines is another crucial aspect documented in the region. For instance, certain fishing methods are only practiced at specific times of the year to allow fish populations to recover, showing a long-standing commitment to resource sustainability.
e. **Integration into Conservation and Management**: Once documented, this local knowledge is incorporated into the overall management plans for the Komodo Biosphere Reserve. It helps create guidelines that not only protect biodiversity but also align with local customs, ensuring that conservation efforts are culturally sensitive and supported by the community. For example, conservation zones in and around Komodo National Park may be established in areas considered sacred, further protecting these regions from over-exploitation.
f. **Enhancing Conservation Through Tradition**: These traditional practices often align with modern conservation principles, making their integration into biosphere reserve management a natural fit. For instance,

taboos around overharvesting or prohibitions against certain activities during key periods (e.g., breeding seasons) contribute to sustainable resource management. By formalizing these practices, conservation authorities can enhance biodiversity protection while ensuring that local customs are maintained and respected.

The process of identifying and documenting local knowledge strengthens the relationship between conservation authorities and local communities, creating a cooperative framework for managing the biosphere reserve. It also serves as an important educational tool, ensuring that younger generations understand and appreciate their cultural heritage while also learning about modern environmental challenges. This approach helps bridge the gap between traditional knowledge and scientific understanding, ensuring that both perspectives are used to promote sustainability in the Komodo Biosphere Reserve.

2. **Integration into Educational Programs**: Educational initiatives, like the **"Ranger Goes to School"** (RGTS) program, aim to instil conservation awareness among local students by incorporating traditional knowledge into the curriculum. Additionally, cultural schools and workshops teach traditional arts, languages, and crafts, ensuring that younger generations remain connected to their heritage and local environmental practices.

   The "Ranger Goes to School" (RGTS) program in Komodo National Park is an educational initiative aimed at raising conservation awareness among high school students in Manggarai Barat. Launched in 2022, the program focuses on the biodiversity and conservation efforts within Komodo National Park. The program provides students with a semester-long course that covers topics such as the history of Komodo National Park, wildlife management, ecotourism, and the critical role park rangers play in preserving biodiversity. Key components of the RGTS program include:

   1) **Curriculum**: The program includes interactive lessons, discussions, and group activities that introduce students to various aspects of park management and conservation, emphasizing the challenges and importance of protecting a world heritage site like Komodo National Park.
   2) **Junior Ranger Internship**: Upon completing the course, students have the opportunity to intern as Junior Park Rangers. This immersive experience allows them to gain hands-on knowledge of conservation practices and park management for six months.
   3) **Community Engagement**: The program also encourages community involvement, with top-performing students invited to participate further in park activities and potentially pursue careers in conservation or park management.

The initiative aims to foster a deep appreciation for environmental protection and inspire future generations to contribute to the sustainability of Komodo National Park

Figure 44. Ranger Go to School and Junior Park Ranger at Komodo National Park

3. **Community Empowerment:**

Community empowerment within Komodo National Park is a vital part of the park's strategy to enhance conservation efforts while improving the livelihoods of the local population. By actively engaging local communities in sustainable livelihood development, the park ensures that conservation activities are not seen as a burden but rather as opportunities for economic growth and cultural preservation. Below is a detailed breakdown of the initiatives under the Community Empowerment programs:

a) Capacity-Building Programs for Sustainable Livelihoods

The empowerment process starts with training programs tailored to meet the needs of the local population while aligning with the ecological and conservation goals of the park. These programs provide the necessary skills and knowledge for sustainable livelihoods that not only reduce pressure on natural resources but also enhance income generation. Some of the core areas of focus are:

a. Training in Organic Farming

- Objective: Reducing dependency on unsustainable agricultural practices.
- Practice: Organic farming techniques are taught to the communities to ensure that agricultural practices do not harm the local ecosystem. Local farmers are encouraged to use organic fertilizers and pesticides, reduce water waste, and adopt permaculture practices that are aligned with traditional farming knowledge. This ensures that farming activities around the buffer zones of the park do not degrade the environment and remain sustainable for future generations.
- Outcome: These practices not only protect the land but also create higher-value crops that can be sold in local and tourist markets, enhancing economic resilience.

b. Handicraft Production

- Objective: Leveraging traditional skills to create income-generating opportunities.
- Practice: Many local communities possess traditional skills in weaving, carving, and creating handicrafts using materials sourced sustainably from their environment. The park provides training on how to improve the quality of these products, market them to tourists, and scale up production while maintaining eco-friendly practices. This includes:
  - Sourcing materials like bamboo, reeds, and other renewable resources.
  - Training on modern design techniques combined with traditional methods to appeal to broader markets.
- Outcome: Handicraft production not only preserves cultural heritage but also provides an alternative income stream for families who may otherwise rely on extractive practices such as illegal logging or unsustainable fishing.

b) Ecotourism Development

- Objective: Fostering a tourism economy that supports conservation goals and local livelihoods.
- Practice: The park has worked with communities to develop ecotourism enterprises that align with the environmental and cultural context of the region. Locals are trained in managing homestays, guiding tours, and providing services such as traditional boat trips or wildlife watching tours. Specific programs include:
  - Guide Training: Locals are trained to become tour guides, educating visitors about the park's biodiversity, cultural heritage, and conservation needs. This helps reinforce local pride and participation in conservation efforts.
  - Homestay and Guesthouse Initiatives: Locals are provided with the skills to host visitors, manage accommodations, and market their

services. This creates a direct link between tourism income and conservation, as successful ecotourism depends on the health of the natural environment.

- Cultural Tours: Guided visits to local villages, where tourists can experience traditional dances, crafts, and local cuisine, help generate income while educating visitors on the importance of preserving local culture and environment.

- Outcome: Ecotourism not only provides an immediate financial benefit to the community but also creates long-term incentives for conservation. As the well-being of the ecosystem directly affects the attractiveness of the park for tourists, locals are more inclined to participate in and support conservation measures.

c) Sustainable Harvesting of Non-Timber Forest Products (NTFPs)

- Objective: Promoting sustainable use of forest resources to reduce deforestation and habitat destruction.
- Practice: The promotion of sustainable harvesting practices, particularly of non-timber forest products (NTFPs), is a cornerstone of the empowerment initiative. Communities are trained in sustainable harvesting techniques that ensure forest regeneration while providing them with valuable resources. A prominent example is the sustainable collection of wild honey:
  - Honey Harvesting: Local knowledge of honeybee behavior and seasonality has been incorporated into the training, teaching communities to harvest honey without harming the bees or damaging the hives. This ensures that the bee populations remain stable and productive, benefiting both the forest ecosystem and the local economy.
  - Other NTFPs: Communities also engage in the sustainable collection of resins, medicinal plants, and fruits, which can be processed and sold as eco-friendly products in local and tourist markets.
- Outcome: This initiative provides a consistent income source for families while preserving the forest. By aligning with traditional ecological practices, locals maintain their cultural connection to the land while benefiting from its resources in a sustainable way.

4. Implementation of Traditional Ecological Knowledge

- Objective: Integrating ancestral and traditional knowledge with modern sustainable practices.
- Practice: Many community empowerment programs are rooted in traditional ecological knowledge that has been passed down through generations. This knowledge includes practices such as rotational farming, which reduces soil depletion, and the use of natural indicators to predict weather patterns for planting and harvesting. The park's management integrates these practices into broader sustainability

frameworks, ensuring that they are not only preserved but optimized for modern use.
    - For example, certain local fishing methods are considered more sustainable because they target specific species during times of abundance while allowing depleted stocks to recover.
    - Forest and land management techniques passed down by indigenous groups are often more effective in maintaining biodiversity than some modern industrial practices.
- Outcome: By applying traditional knowledge to new management frameworks, the park ensures that conservation efforts are culturally appropriate and effective in the long term. It fosters a sense of ownership among the local population, encouraging them to see themselves as stewards of the land.

5. Empowering Women and Vulnerable Groups

- Objective: Inclusion of women and vulnerable groups in sustainable livelihood activities.
- Practice: A significant part of the empowerment programs is focused on ensuring that women and marginalized groups are given opportunities to participate in and benefit from conservation-based livelihoods. Women, in particular, are trained in areas like organic farming, handicrafts, and hospitality for the ecotourism sector. Additionally, microfinance initiatives are often linked to these programs, enabling women to start and manage their own small businesses.
- Outcome: This not only provides financial independence for women but also promotes broader community engagement in conservation practices.

6. Monitoring and Evaluation

- **Objective**: Ensuring that empowerment programs are effective and adaptive.
- **Practice**: Monitoring and evaluation processes are put in place to assess the success of community empowerment initiatives. Regular feedback from participants is collected to understand the benefits and challenges faced by the community, allowing for adjustments in training and program design. This process helps ensure that the programs remain relevant and sustainable in the long term.

Through these empowerment initiatives, the Komodo National Park not only promotes conservation but also fosters economic resilience in the local population. By aligning traditional knowledge with sustainable practices, the park has managed to create a model where conservation and economic development go hand in hand, ensuring the protection of the park's biodiversity while improving the livelihoods of the people who depend on its resources.

4. Dissemination Through Cultural Festivals: Local festivals like the Golo Koe and Ata Modo Festivals serve as platforms for the dissemination of traditional knowledge, particularly through performances and storytelling. These festivals not only preserve cultural identity but also raise awareness about environmental conservation.

   Local festivals such as the **Golo Koe Festival** and **Ata Modo Festival** play a key role in the dissemination of traditional knowledge within the Komodo Biosphere Reserve. These festivals are deeply rooted in the cultural heritage of the local communities, showcasing traditional music, dances, rituals, and crafts. Through these events, ancestral practices and values, including respect for nature, are passed down to younger generations and shared with visitors, ensuring the survival of indigenous customs and their connection to the environment.

   These festivals are used as platforms to raise awareness about environmental conservation. Performances and storytelling during the festivals often incorporate themes of biodiversity protection, sustainable resource management, and the importance of coexisting with nature, such as through the spiritual significance of Komodo dragons. The festivals thus serve as a medium to communicate environmental challenges while engaging the community in conservation efforts in a culturally relevant way.

   The festivals attract tourists, providing an opportunity to educate outsiders about local conservation practices. By intertwining culture and conservation, the festivals enhance the visibility of both the ecological significance of the Komodo National Park and the role of local traditions in maintaining the balance between humans and nature. This dual purpose strengthens community pride while fostering an understanding of the need for continued environmental stewardship.

6.4. Environmental/sustainability educationt. Which are the main educational institutions ("formal" – schools, colleges, universities, and "informal" services for the general public) that are active in the biosphere reserve? Describe their programmes, including special school or adult education programmes, as these contribute towards the functions of the biosphere reserve. Comment on organizational changes (if any) in institutions and programmes that were identified in the biosphere reserve ten or so years ago (e.g., closed down, redesigned, new initiatives). Refer to programmes and initiatives of UNESCO Associated Schools networks, UNESCO Chairs and Centers where applicable.

Several educational institutions, both formal and informal, are involved in environmental and sustainability education within the Komodo Biosphere Reserve:

- Formal Institutions:
    - Primary and Secondary Schools: Local schools in the buffer and transition zones incorporate environmental education into their curriculum. These programs teach students about the importance of conservation, local biodiversity (such as the Komodo dragon), and sustainable living practices. Some schools collaborate with external partners, including NGOs, to provide hands-on environmental education projects.
    - Universities and Research Institutions: Universities such as Bogor Agricultural University and Hasanuddin University have been involved in research and environmental monitoring within the reserve. These institutions also offer educational outreach programs that involve both students and local communities in sustainability practices and biodiversity conservation efforts.

- Informal Educational Programs:
  Here is a structured overview of the initiatives undertaken by the Komodo National Park (BTNK) to empower local communities and promote sustainable management:
    - **Community-Based Environmental Education**: KNP works closely with local communities in and around the park, providing technical guidance and support for sustainable livelihood development. Informal programs aimed at local communities focus on sustainable fishing practices, waste management, and eco-tourism. These programs are often run by local NGOs and government agencies in collaboration with schools and universities.
    - **Public Awareness Campaign**s: Organizations within the biosphere reserve host awareness-raising activities, such as beach clean-ups, coral restoration events, and mangrove planting initiatives. These campaigns target the general public and tourists to promote environmental stewardship.
    - **Provision of Management Access**: Through conservation partnerships (Kemitraan Konservasi), BTNK grants communities regulated access to specific zones within the park. This allows traditional use and sustainable economic activities, fostering a sense of ownership and responsibility for conservation.
    - **Management of Productive Economic Enterprises**: BTNK supports the creation and growth of community-based businesses by providing training, financial assistance, and market access, improving economic opportunities and livelihoods.
    - **Capacity Building**: BTNK conducts training programs and workshops aimed at equipping community members with skills and knowledge for

sustainable practices. Topics include organic farming, handicraft production, ecotourism services, and financial management.

- **Nature Appreciation Program (Bina Cinta Alam)**: This program aims to raise environmental awareness, particularly among youth. It includes educational programs and activities that emphasize the importance of conservation and sustainable living.
- **Waste Management**: BTNK collaborates with communities and stakeholders to address waste management challenges. This involves training on waste reduction, recycling, and proper disposal practices.
- **Wildlife Conflict Management**: Training and awareness programs are provided to help communities mitigate and manage conflicts with wildlife, especially Komodo dragons.
- **Utilization of Non-Timber Forest Products**: BTNK promotes the sustainable harvesting of non-timber forest products, such as honey, by local communities.
- **Ecotourism Development**: The park encourages community-based ecotourism, providing training in guiding, interpretation, and hospitality services, thereby creating sustainable income opportunities for local residents.
- **Participation in Exhibitions**: BTNK actively participates in exhibitions and events to showcase its conservation efforts and raise awareness about the protection of the Komodo dragon and its habitat.

These initiatives collectively highlight BTNK's commitment to empowering local communities and ensuring their active role in the sustainable management and conservation of Komodo National Park.

- Adult Education Programs:

  - Vocational Training for Eco-Tourism: Local adults are provided with training programs to work as eco-tour guides or in sustainable agriculture. These programs are particularly important for communities transitioning from agriculture and fishing to eco-tourism.

  - The Government of West Manggarai Regency, through the Department of Manpower, Transmigration, and Cooperatives for MSMEs, is revitalizing the concept of vocational training through the "CLBK" innovation, which stands for Creating Job Opportunities through Vocational Training Centers.

  - Herewith the Competency Training Implemented in 2022-2024

Table 17. Trainings in 2022

No	Type of training	Male	Female	Organizer	Funding
1	Injection Motorbike Service Training	16	0	BLK West Manggarai	LOTIM
2	Tour Guide Training	16	0	BLK West Manggarai	LOTIM
3	Household AC Maintenance and Repair Training	16	0	BLK West Manggarai	LOTIM
4	Coffee Processing Training	5	11	BLK West Manggarai	LOTIM
5	Food and Beverage Service Training	2	14	BLK West Manggarai	LOTIM
6	Barista Training Package 1	14	2	BLK West Manggarai	LOTIM
7	Barista Training Package 2	13	3	BLK West Manggarai	LOTIM
8	Culinary Training	0	16	BLK West Manggarai	LOTIM
9	Tour Guide Training	15	1	BLK West Manggarai	LOTIM
10	Injection Motorbike Training	16	0	BLK West Manggarai	LOTIM

TOTAL for 2022: 113 Males, 47 Females, Total: 160 Participants

Table 18. Trainings in 2023

No	Type of training	Male	Female	Organizer	Funding
1	Barista Package 1	13	3	BLK West Manggarai	LOTIM
2	Basic Office (ICT) 2	2	14	Labuan Bajo Community BLK	LOTIM
3	Culinary	1	15	SMKN 1 Labuan Bajo	LOTIM
4	Coffee Processing Training	4	12	Labuan Bajo Community BLK	LOTIM
5	Sewing Package 2	1	15	Labuan Bajo Community BLK	LOTIM
6	Barista Package 2	13	3	BLK West Manggarai	LOTIM
7	Basic Office (ICT) 3	4	12	Labuan Bajo Community BLK	LOTIM
8	Tour Leader Training	11	5	BLK West Manggarai	LOTIM
9	Beauty Makeup Training	0	16	BLK West Manggarai	LOTIM
10	AC Maintenance Training	16	0	BLK West Manggarai	LOTIM
11	Basic Office (ICT) 1	3	13	Community BLK	
12	Food and Beverage Service	10	6	BLK West Manggarai	
13	Clothing Sewing Training	0	16	Community BLK	
14	Tour Guide Training	13	3	BLK West Manggarai	
15	Motorbike Service Training	16	0	BLK West Manggarai	

TOTAL for 2023: 107 Males, 133 Females, Total: 240 Participants

Table 19. Trainings in 2024 (until August)

No	Type of training	Male	Female	Organizer	Funding
1	Basic Office (ICT) Training	7	9	Labuan Bajo Community BLK	LOTIM
2	Barista Package 1	13	3	BLK West Manggarai	LOTIM
3	Clothing Sewing Training with Machines	1	15	Labuan Bajo Community BLK	LOTIM
4	Food and Beverage Service Training	2	14	BLK West Manggarai	LOTIM
5	Culinary Package 3	3	13	SMKN 1 Komodo	LOTIM
6	Beauty Makeup Training	1	15	Labuan Bajo Community BLK	LOTIM
7	Housekeeping Training	7	9	SMKN 1 Komodo	LOTIM
8	Culinary Package 2	2	14	SMKN 1 Komodo	LOTIM
9	Barista Package 2	9	7	BLK West Manggarai	LOTIM
10	Residential AC Maintenance Training	0	16	BLK West Manggarai	LOTIM
11	Coffee Processing Training	5	11	PLUT	LOTIM
12	Simple Building Electrical Installation	0	16	BLK West Manggarai	LOTIM
13	English for Front Line Training	7	9	Community BLK	LOTIM
14	Junior Photographer Training	3	13	In progress	LOTIM

TOTAL for 2024: 76 Males, 148 Females, Total: 244 Participants

- PLUT (Integrated Business Service Center): To enhance competencies, in addition to vocational training through BLK (Vocational Training Centers), the government also organizes industrial apprenticeships for the Super Priority Destination of Labuan Bajo for the workforce without prior work experience. This apprenticeship is carried out in collaboration with local industries and hotels in Labuan Bajo. The apprenticeship lasts for 5 months and concludes with a competency exam.

Table 20. Number of Workforce Apprenticeships

Year	Number of Apprentices	Employment Rate
2022	100 people	98% already employed
2023	80 people	80% already employed
2024	80 people	Ongoing until October 2024

Total: 260 workforce apprentices

- Naker Festival (Job Fair Festival)
  In addition to vocational training, the government also facilitates the annual JOB FAIR event. This has been a routine agenda since 2022. In 2024, the Government of West Manggarai Regency held the largest Naker Festival in NTT, attended by 1,400 job seekers. This event helps job seekers access both local and national labor market information.

- Organizational Changes: Over the past ten years, educational programs have evolved to address new challenges, such as the impacts of climate change on local ecosystems. New partnerships between universities, local government, and international organizations have expanded the scope of education to include climate adaptation and marine conservation. Additionally, some programs have been redesigned to better engage youth in environmental issues by incorporating digital tools and social media platforms.

The biosphere reserve has yet to fully integrate with the UNESCO Associated Schools network or the UNESCO Chairs and Centers programs, though future partnerships could further enhance educational outreach.

6.5. How do you assess the effectiveness of actions or strategies applied? (Describe the methods, indicators).

To assess the effectiveness of actions or strategies applied for the **logistic function** of the Komodo Biosphere Reserve, a combination of methods and indicators is used to ensure that the logistical aspects of research support, conservation management, and community engagement are functioning optimally. These methods allow the reserve to track the efficiency and impact of the logistical operations supporting its research, conservation, and educational activities.

1) Monitoring and Evaluation (M&E) Systems for Logistic Support

- Resource Allocation and Efficiency: The park employs an M&E framework to monitor how resources (e.g., financial, human, technical) are allocated and utilized. This involves tracking budgets, equipment usage, and staffing levels to ensure that logistical support is provided efficiently and that resources are being optimally distributed to research and conservation activities. Indicators like cost-effectiveness ratios and resource utilization rates are used to measure the effectiveness of these actions.
- Timeliness of Operations: Key logistical operations, such as the delivery of equipment, research materials, and the coordination of field activities, are tracked using timelines. Delays are recorded and analyzed to improve the coordination of activities in the future. Metrics such as project

completion times, delays in logistics, and time to implement research or conservation programs are key indicators of logistical effectiveness.

2) **Research Support and Capacity Building**
   - Support for Research Projects: The number and quality of research projects supported by the park's logistical function serve as a key indicator. This includes the provision of facilities, transportation, and equipment to researchers. Metrics such as number of research projects facilitated, availability of necessary infrastructure, and feedback from researchers on logistical support are used to assess effectiveness.
   - Research Output and Dissemination: The volume of research produced (e.g., reports, publications, and data sets) serves as an indicator of how well logistical support has contributed to the scientific output of the reserve. An increase in research outputs, particularly those that inform park management or are published in international journals, is a sign of successful logistical operations.

3) **Conservation and Monitoring Programs**
   - Data Collection Efficiency: The logistical function is critical to ensuring effective data collection for biodiversity monitoring, habitat assessments, and species tracking. Indicators include frequency of field monitoring and coverage of monitoring areas (both terrestrial and marine). Additionally, the functionality of equipment (e.g., tracking devices, boats, monitoring cameras) and the speed at which data is processed are tracked to assess logistical effectiveness.
   - Response Time for Conservation Actions: When conservation challenges arise (e.g., poaching, habitat degradation, or wildlife threats), the logistics team’s ability to respond promptly is measured. Indicators such as response time to threats, resolution times for identified issues, and success rates in mitigation efforts help evaluate logistical efficiency in conservation.

4) **Community Engagement and Capacity Building**
   - Facilitation of Training Programs: Logistical effectiveness is measured by how well the reserve supports training and capacity-building programs for local communities. This includes organizing workshops, providing transportation, and ensuring access to materials and resources. Indicators such as the number of participants, training program completion rates, and community feedback provide insights into how effective logistics are in engaging the community.
   - Resource Distribution to Local Communities: The reserve's ability to deliver sustainable livelihood resources (e.g., organic farming supplies, eco-tourism equipment) to local communities is also tracked. On-time

delivery of resources and access to logistical support for community-led initiatives are key indicators.

5) Infrastructure and Facility Management

- Maintenance of Research and Conservation Facilities: Logistical effectiveness also depends on the maintenance and functionality of facilities, including research stations, ranger posts, and eco-tourism centers. Indicators like frequency of maintenance checks, downtime of key infrastructure, and availability of operational facilities are used to assess whether logistical support is ensuring that essential infrastructure is well-maintained and functional.
- Sustainability of Logistical Operations: The reserve assesses the environmental impact of its logistical operations, including fuel use, waste management, and water usage. Indicators such as carbon footprint, waste reduction targets, and use of renewable energy in logistics are tracked to ensure that logistical activities align with the reserve's broader sustainability goals.

6) Feedback and Continuous Improvement

- Stakeholder Feedback: Feedback from park staff, researchers, and local communities is collected regularly to assess the overall satisfaction with logistical support. Surveys, interviews, and focus group discussions provide qualitative data on the effectiveness of logistical strategies. Satisfaction rates and feedback quality serve as indicators of logistical success and areas that need improvement.
- Adaptation and Flexibility: The ability of the logistical team to adapt to new challenges, such as increased tourism or environmental changes, is an important measure. Indicators like the speed of adaptation to new logistical needs and the effectiveness of new logistical solutions are used to track how flexible and resilient the logistics function is in the face of evolving challenges.

By using these methods and indicators, the Komodo Biosphere Reserve ensures that its logistic support function is effective, sustainable, and responsive to the needs of research, conservation, and community engagement activities. The continuous monitoring and evaluation of these logistical operations allow for timely improvements and the adaptive management of resources, ensuring the success of the reserve's overall mission

6.5.1. Describe the biosphere reserve's main internal and external communication mechanisms/systems

- Internal Communication: Communication among stakeholders, including local governments, NGOs, and communities, is facilitated through regular coordination meetings and forums. These meetings

address ongoing conservation and development projects, and ensure that all relevant parties are informed and involved.

- External Communication: The reserve engages external audiences, including tourists, international organizations, and researchers, through outreach programs, public awareness campaigns, and environmental education initiatives.

6.5.2. Is there a biosphere reserve website? If so, provide the link.

There is no dedicated website for the Komodo Biosphere Reserve yet, but both the Komodo National Park and the Manggarai Barat Regency Government have their respective websites.

Komodo National Park: Komodonp.com
Manggarai Barat Regency: https://manggaraibaratkab.go.id/
Badan Otorita Pariwisata Labuan Bajo: https://labuanbajoflores.id/
Bappeda Manggarai Barat: https://bappeda.manggaraibaratkab.go.id/

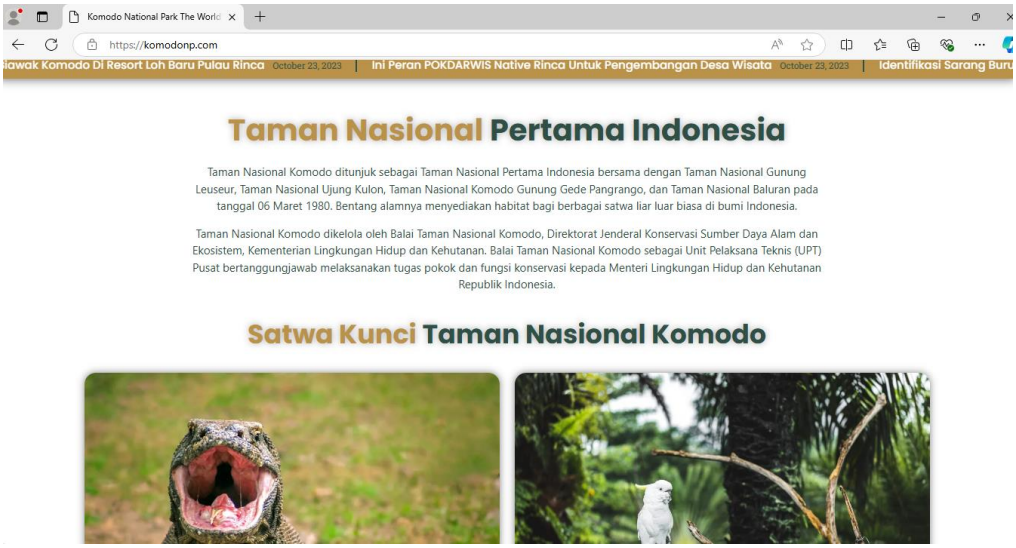


Figure 45. Website KOMODONP.com

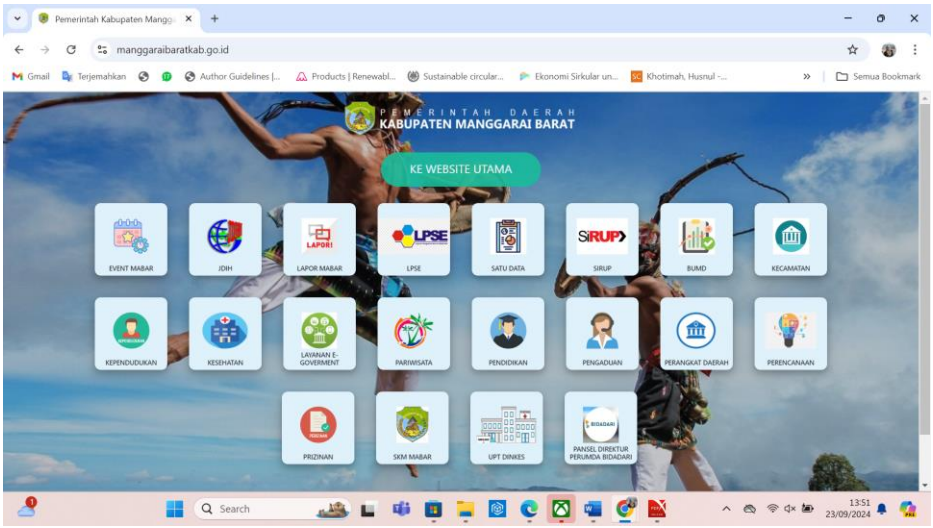


Figure 46. Website Manggarai Barat

Figure 47. Website BAPPEDA Manggarai Barat

6.5.3. Is there an electronic newsletter? How often is it published? (Provide the link, if applicable).

There are no formal updates, but we regularly share information about activities and monthly programs through our Instagram account, YouTube channel, and press releases from the Directorate General of Natural Resources and Ecosystem Conservation. These platforms provide regular updates to keep the public informed about ongoing initiatives in Komodo National Park.

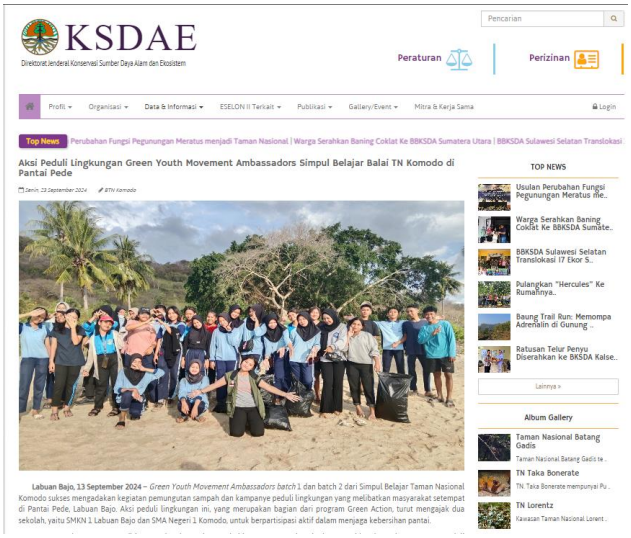


Figure 48. Update information at KSDAE website

6.5.4. Does the biosphere reserve belong to a social network (Facebook, Twitter, etc.)? Provide the contact.

There are no dedicated social media accounts for the Komodo Biosphere Reserve yet, but both the Komodo National Park and the Manggarai Regency Government have active social media platforms that help promote the area.

Komodo National Park actively disseminates information and promotes awareness through multiple channels, including its official website, Komodonp.com, as well as social media platforms such as Instagram and YouTube. These platforms are regularly updated with crucial details regarding park regulations, visitor guidelines, and ongoing conservation efforts. By providing easy access to such information, the park ensures that both tourists and local communities are well-informed about its operations and regulations.

In addition to sharing general park-related information, the park also uses its social media presence to actively promote regulations and policies. Through these platforms, the park educates the public on rules that are essential for preserving the biodiversity of the park, ensuring that both local communities and visitors understand the importance of conservation efforts. Social media posts frequently cover topics such as sustainable tourism practices, protection of wildlife habitats, and updates on specific conservation programs.

Furthermore, the park leverages its online presence to engage with the public on matters related to tourism management and conservation policies. This approach aligns with broader national conservation strategies,

allowing the park to reach a wide audience and foster a collaborative effort between the government, local communities, and tourists in preserving the unique natural resources of Komodo National Park.

Komodo National Park

Youtube: youtube KomodoNP.com
Instagram: BTN.Komodo

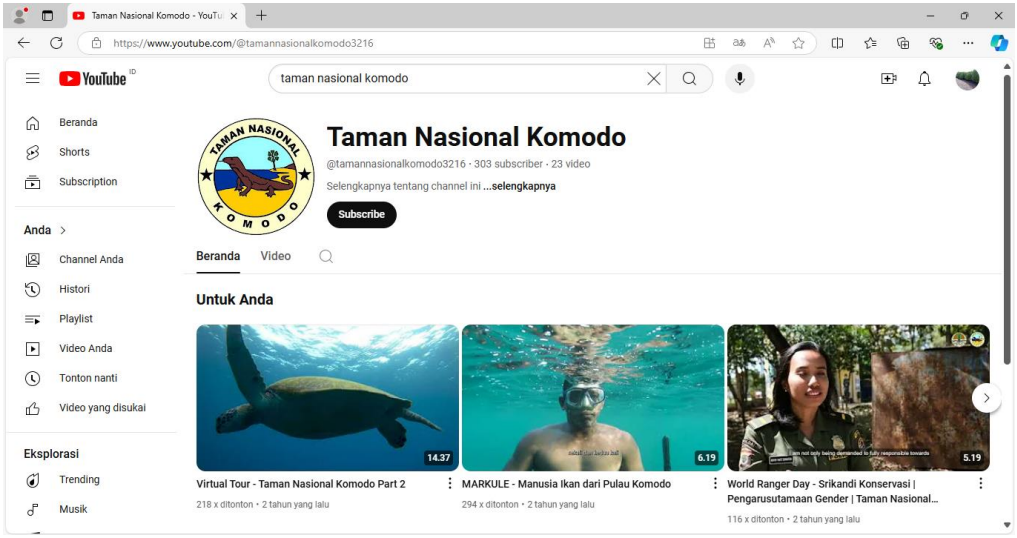


Figure 49. Youtube KomodoNP.com

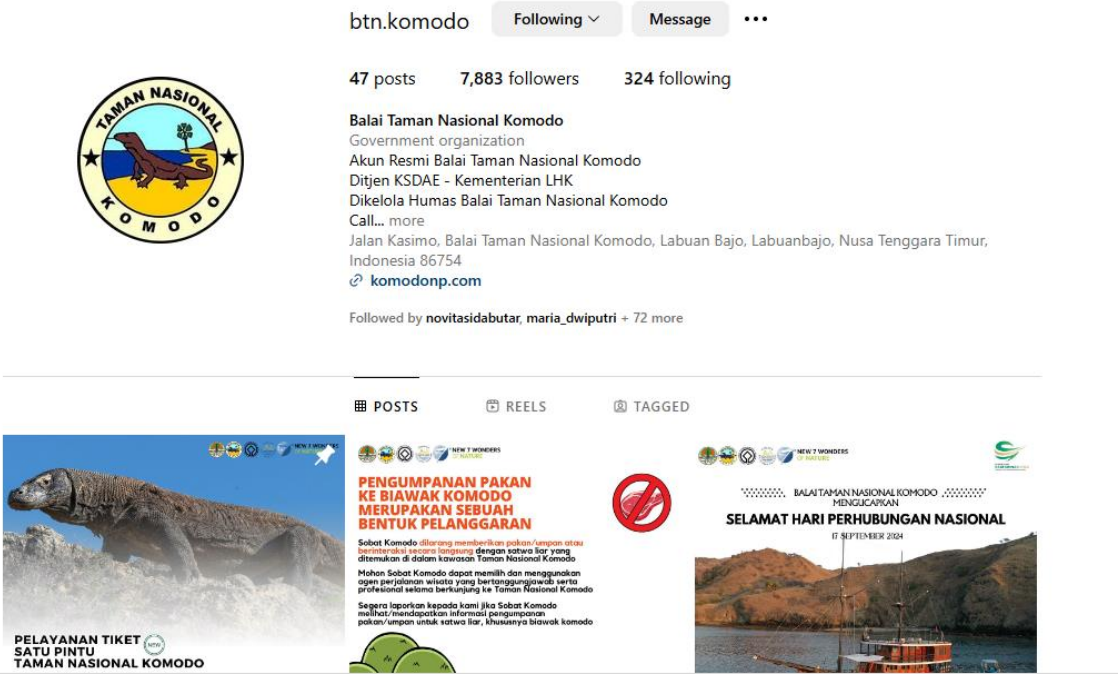


Figure 50. Instagram BTN.Komodo

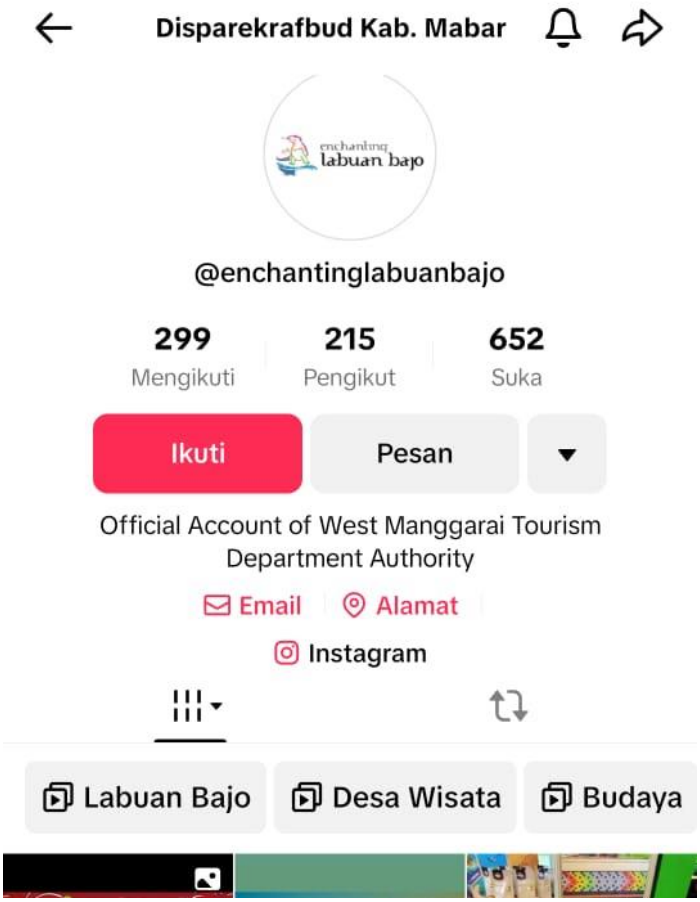


Figure 51. TikTok DisParBud Manggarai Barat

6.5.5. Are there any other internal communication systems? If so, describe them.
Other internal communication systems may include:

- **Email groups**: Used for sharing information among staff, stakeholders, and researchers.
- **WhatsApp or Telegram Groups**: Used for rapid communication between field teams and management.
  Whatsapp group : Tim Kerja Cagar Biosfer Komodo

6.6. Describe how the biosphere reserve currently contributes to the World Network of Biosphere Reserves and/or could do so in the future.

The Komodo Biosphere Reserve contributes to the World Network of Biosphere Reserves (WNBR) through its participation in international conferences and partnerships with other biosphere reserves. By sharing research findings, best practices, and lessons learned, the Komodo Biosphere Reserve plays a role in the global effort to promote sustainable development and conservation.

6.6.1. Describe any collaboration with existing biosphere reserves at national, regional, and international levels, also within regional and bilateral agreements.

The Komodo Biosphere Reserve collaborates with other biosphere reserves in Indonesia and the Southeast Asian region through joint research programs, conferences, and workshops. It also participates in bilateral agreements with international organizations such as UNESCO's Man and the Biosphere Programme (MAB), which facilitates the exchange of knowledge on sustainable development and conservation strategies.

6.6.2. What are the current and expected benefits of international cooperation for the biosphere reserve?

International cooperation provides several key benefits:

- Funding and Technical Support: Partnerships with international organizations and donors provide financial resources and technical expertise for conservation projects and community development initiatives.
- Knowledge Exchange: International collaboration facilitates the exchange of research, monitoring techniques, and management strategies, helping improve the effectiveness of the reserve's conservation and development programs.

6.6.3. How do you intend to contribute to the World Network of Biosphere Reserves in the future and to the Regional and Thematic Networks?

To contribute to the World Network of Biosphere Reserves (WNBR) and the Regional and Thematic Networks in the future, the Komodo Biosphere Reserve is focused on several strategic areas to enhance global collaboration, knowledge sharing, and conservation efforts. These efforts are aimed at positioning Komodo as a leader in sustainable biosphere management and fostering stronger regional and international partnerships.

1) **Knowledge Sharing and Best Practices:**

Komodo Biosphere Reserve will actively participate in the exchange of knowledge within the WNBR by sharing its experiences in community-based conservation, sustainable tourism, and integrating traditional knowledge into environmental management. This exchange will provide valuable lessons on managing biodiversity hotspots under the pressures of rapid tourism growth, which other biosphere reserves can learn from. Through workshops, seminars, and digital platforms, Komodo will disseminate its best practices to biosphere reserves worldwide.

2) **Expanding Research Collaboration:**
   Komodo aims to expand its research collaboration with other biosphere reserves globally, particularly on key themes such as marine conservation, climate change adaptation, and eco-tourism. Partnering with international organizations, universities, and biosphere reserves, the goal is to conduct comparative research that will provide new insights into how these areas can address global environmental challenges. Through joint research, Komodo will contribute to global scientific knowledge, while benefiting from innovations developed by other reserves.
3) **Hosting International Conferences:**
   The Komodo Biosphere Reserve will play a pivotal role in the hosting of international conferences that bring together experts, policymakers, and practitioners from around the world. These conferences will focus on issues like sustainable tourism, ecosystem conservation, and community involvement in biosphere reserve management. The conferences will also provide a platform for Southeast Asian biosphere reserves to share their experiences and challenges, fostering greater regional collaboration. Through these forums, Komodo can strengthen its ties to both the WNBR and regional networks like the Southeast Asia Biosphere Reserve Network (SeaBRnet).
4) **Capacity Building and Training Programs:**
   A key contribution to the WNBR and regional networks will be through the development of capacity-building programs that offer training in areas such as ecotourism, sustainable resource management, and integrating traditional ecological knowledge. These programs will help other biosphere reserves implement successful strategies that Komodo has refined over the years. The park will also strengthen its local staff and community training programs, enhancing skills in conservation science, tourism management, and environmental monitoring, all of which are critical to biosphere management.
5) **Enhancing Digital Presence:**
   To reach a global audience and facilitate better engagement, the Komodo Biosphere Reserve plans to enhance its digital presence. By developing a dedicated biosphere reserve website and leveraging social media platforms, the reserve will be able to share its conservation efforts, promote sustainable tourism, and engage with global stakeholders. This digital outreach will also help build public awareness of the challenges facing biosphere reserves, encouraging more international support and collaboration.
6) **Improved Tourism Management and Conservation Financing:**
   With tourism being a major economic driver, Komodo will focus on improving tourism management by implementing visitor caps in sensitive areas, improving infrastructure for waste management, and promoting low-impact ecotourism. This will ensure that tourism benefits both the local

community and conservation goals. Additionally, the reserve plans to diversify its funding sources by establishing public-private partnerships and tapping into carbon credit schemes, creating sustainable financing for its conservation efforts.

7) **Regional and Global Networking:**
   Komodo Biosphere Reserve will further its role in **regional networks** by engaging in joint projects with neighboring biosphere reserves. Through collaboration on cross-border conservation efforts, such as coral reef and mangrove protection, the reserve will contribute to regional sustainability goals. These efforts will also strengthen its connection to global conservation initiatives, ensuring that Komodo remains at the forefront of global biosphere reserve management.

By pursuing these strategies, including expanding research collaboration, hosting international conferences, enhancing digital presence, and improving tourism and conservation management, the Komodo Biosphere Reserve will continue to make significant contributions to the World Network of Biosphere Reserves and the Regional and Thematic Networks. These efforts will not only boost global knowledge exchange but also ensure the long-term sustainability of Komodo's unique ecosystems and cultural heritage.

6.7. What are the main factors that influenced (positively or negatively) the success of activities contributing to the logistic support function? Given the experiences and lessons learned in the past ten years, what new strategies or approaches will be favored as being most effective?

Over the past decade, the Komodo Biosphere Reserve has experienced a variety of factors that have influenced the success of activities contributing to its logistic support function. These factors have included both positive influences that have bolstered conservation and development efforts, as well as challenges that have hindered the full potential of the initiatives.

Positive Factors:

- **Community Involvement:** A key driver of success has been the active engagement of local communities in both conservation efforts and sustainable tourism development. By incorporating a participatory approach, the management of Komodo National Park has ensured that local needs and traditional knowledge are integrated into conservation strategies. Community involvement has been seen in programs like organic farming, sustainable fishing, and ecotourism, where locals are trained to manage resources sustainably while benefiting economically from these initiatives. This approach has fostered a sense of ownership among the local population, making conservation efforts more sustainable and culturally sensitive. For

example, community members act as eco-guides and park rangers, enhancing the ability of the park to manage tourism and conservation simultaneously while providing livelihoods for local people.

- **International Partnerships**: Collaboration with international organizations, universities, and NGOs has been instrumental in providing much-needed financial resources, expertise, and technology. Partnerships with institutions such as WWF, UNESCO, and international universities have facilitated advanced research projects, environmental monitoring, and training programs. These collaborations have provided access to modern conservation techniques, such as remote sensing for habitat monitoring, as well as the introduction of sustainable tourism models that reduce environmental impacts. Additionally, international funding has enabled the park to implement large-scale projects, such as coral reef restoration and biodiversity conservation efforts. These collaborations have helped position Komodo as a globally recognized site for both conservation and sustainable development.

Negative Factors:

- **Rapid Tourism Growth**: While tourism has been an essential economic engine for the region, the rapid and often unregulated growth of tourist activities has posed significant challenges. The number of visitors to Komodo National Park has surged in recent years, putting immense pressure on local resources, including water supplies, waste management systems, and infrastructure. Increased foot traffic in sensitive areas has led to habitat degradation, particularly in coastal zones, where reefs and mangroves have been affected by unsustainable tourism activities. The high demand for accommodations and services has also contributed to increased land conversion and the expansion of facilities in buffer zones, which threatens local biodiversity. The uncontrolled growth of tourism has highlighted the need for better regulation and zoning to balance economic benefits with the protection of natural resources.
- **Resource Limitations**: Despite international partnerships, the park still faces resource limitations in terms of both financial and human resources. Budget constraints have delayed the full implementation of conservation and management plans. For example, while there are well-developed strategies for habitat restoration and wildlife monitoring, a lack of consistent funding has meant that some programs cannot be carried out at the required scale. Additionally, the park suffers from understaffing, which limits the ability to effectively monitor tourist activities, enforce regulations, and carry out day-to-day conservation work. Limited personnel also means that essential capacity-building programs, such as those focused on ecotourism and sustainable livelihoods, cannot reach all communities within the park's boundaries.

Future Strategies:

Given the lessons learned from the past decade, the management of Komodo Biosphere Reserve is planning to adopt several new strategies to enhance the effectiveness of its logistic support function:

- **Improved Tourism Management**: Moving forward, the park will prioritize sustainable tourism management to mitigate the negative impacts of visitor growth. This will involve the introduction of visitor caps, particularly in highly sensitive areas such as Komodo Island and Rinca Island, to prevent overuse and degradation. In addition, there will be stricter enforcement of zoning laws, where certain areas are designated as protected zones with limited or no tourist access. Infrastructure improvements, particularly in waste management systems and water conservation, will also be implemented to support sustainable tourism. The park management is also considering adopting low-impact tourism models, such as limiting motorized transport and encouraging eco-friendly accommodations.
- **Diversification of Funding Sources:** To overcome the issue of resource limitations, the park will focus on attracting a more diverse range of funding sources. This includes establishing public-private partnerships that allow private companies to invest in conservation initiatives, such as coral reef protection or habitat restoration projects, in exchange for branding opportunities or eco-tourism development rights. The park also plans to tap into carbon credit schemes, where companies or governments can offset their emissions by investing in Komodo's conservation programs. These financial innovations will help ensure a more sustainable funding stream for ongoing and future conservation efforts.
- **Capacity Building for Local Communities and Staff**: The empowerment of local communities and park staff will remain a central focus. Expanded capacity-building programs will train locals in advanced sustainable livelihood practices, such as eco-friendly agriculture, organic fishing, and artisanal crafts, providing them with alternative income streams that reduce pressure on natural resources. The park will also continue to enhance training for staff in conservation science, monitoring technologies, and tourism management to ensure that they can adapt to changing environmental and economic conditions. Increased investment in ranger training programs will help improve enforcement of environmental laws and tourist regulations, thereby safeguarding the biodiversity of the region more effectively.

These strategies reflect the park’s commitment to creating a sustainable balance between conservation and development, drawing from both traditional knowledge and modern conservation science. By addressing the challenges posed by tourism growth and resource limitations, and by building on the success of community involvement and international partnerships, the park is poised to continue its role as a global model for biosphere reserve management.

6.8. Other comments/observations from a biosphere reserve perspective.

The Komodo Biosphere Reserve represents a unique model of balancing tourism with biodiversity conservation. However, continued vigilance is needed to manage the environmental pressures of a growing tourism industry. Expanding educational programs, strengthening regulatory frameworks, and fostering stronger international partnerships will be crucial to maintaining the integrity of the reserve while supporting local communities.

7. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION:

[Biosphere reserve coordination/management coordinators/managers have to work within extensive overlays of government bodies, business enterprises, and a "civil society" mix of non-governmental organizations and community groups. These collectively constitute the structures of governance for the area of the biosphere reserve. Success in carrying out the functions of a biosphere reserve can be crucially dependent upon the collaborative arrangements that evolve with these organizations and actors. Key roles for those responsible for the biosphere reserve coordination/management are to learn about the governance system they must work within and to explore ways to enhance its collective capacities for fulfilling the functions of the biosphere reserve.]

7.1. What are the technical and logistical resources for the coordination of the biosphere reserve?

The coordination of the Komodo Biosphere Reserve relies on several technical and logistical resources:

- **Coordination Team**:
  A multi-stakeholder management body coordinates activities within the reserve, including representatives from the local government, the Ministry of Environment and Forestry, and community groups. This team oversees the implementation of the management plan and conservation efforts across the core, buffer, and transition zones.
- **Logistical Support**:
  Support includes transportation resources for patrolling, scientific monitoring, and community outreach. Boats and vehicles are used to access remote areas for both marine and terrestrial monitoring.
- **Information Technology**:
  The reserve utilizes GIS (Geographic Information Systems) for spatial planning and environmental monitoring. This allows for better tracking of changes in ecosystems and human activities within the reserve.

7.2. What is the overall framework for governance in the area of the biosphere reserve? Identify the main components and their contributions to the biosphere reserve.

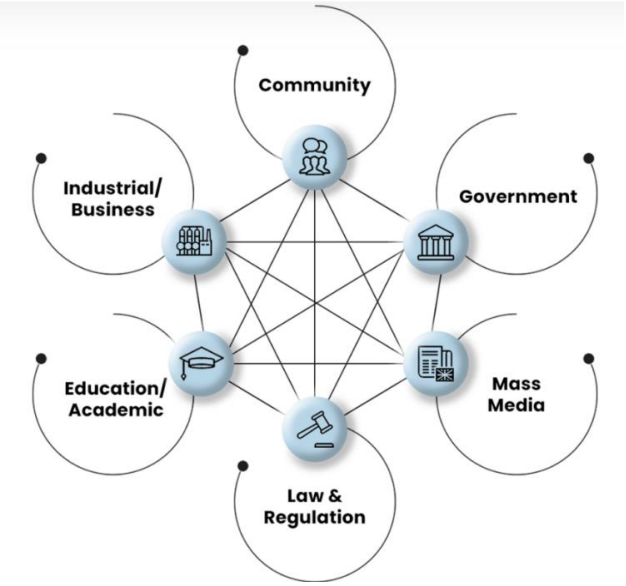


Figure 52. The Hexahelix collaboration scheme
(Zakaria et al., 2019)

The governance framework of the Komodo Biosphere Reserve is built on multi-level collaboration between various stakeholders called “hexahelix” collaboration scheme, where the concept embracing the elements of government (both central and regional), businesses, academia, non-governmental organizations (NGOs), the community or society and an additional stakeholder, which is the media. This making a total of six collaborating elements referred to as "hexahelix". Media involvement is crucial as a platform for disseminating the performance and best practices of biosphere reserves and to enhance public awareness regarding the importance of socio-economic and environmental balance in resource management. Furthermore, the media can play a role in promoting biosphere reserves as ecotourism destinations that support ecotourism development within these reserves. Nonetheless, the community or society remains the fundamental basis for implementing sustainable biosphere reserve management. They are at the forefront when it comes to implementing management programs within biosphere reserves, including the utilization of non-timber forest products (NTFPs), environmental services, area patrols, fire control, wildlife conflict mitigation, and the prevention of hunting and wildlife trade.

The main key to the success of this model is synergy and strong commitment between stakeholders. Apart from making it easier to achieve the development goals of Biosphere Reserve, the Hexahelix Collaboration also helps prevent overlapping policies and programs between interested parties. In the development of Biosphere Reserve, the business world or companies become the locomotive that drives synergy between stakeholders and the

development of Biosphere Reserve. The role of the media will strengthen the branding of biosphere reserves so that they can escalate the success of biosphere reserve management because the management of biosphere reserves is supervised and viewed by the public.

Table 21. Hexahelix stakeholders analysis of Komodo Biosphere Reserve

Stakeholder group	Institutions	Roles
Government	Government of East Nusa Tenggara through Regency of Manggarai Barat, The Ministry of Environment and Forestry through the National Park of Komodo, Ministry of Tourism and Creative Economy	- plays a crucial role in regulating land use, tourism, and conservation in the reserve. They are responsible for ensuring that development activities align with sustainability objectives. - implementation of conservation laws and policies. They manage the core conservation zones and help enforce environmental regulations
Academic Institutions	National and international universities	- Conduct ecological and social research - Train stakeholders in sustainable practices - Gather and analyze data
Private Sector	The tourism industry, primarily hotels, resorts, and tour operators, and Badan Otoritas	- The tourism industry, primarily hotels, resorts, and tour operators, collaborates with local authorities to ensure tourism practices are sustainable and beneficial to local communities. - Implement sustainable practices - Provide financial support - Engage in community development and CSR
NGOs	WWF, UNDP, etc	- Raise awareness and advocate for policy changes - Engage communities in sustainable practices - Execute conservation projects
Local Communities	Residents of surrounding villages and communities: Ata Modo tribe, Bajo tribe, Bugis tribe, Bima tribe	- Local communities are involved in resource management, eco-tourism, and conservation initiatives. Community leaders provide input on traditional knowledge and practices that contribute to sustainable resource use.
Media	Local and national media outlets, social media (Instagram, website, facebook)	- Spread awareness about conservation - Highlight environmental issues - Foster public support and involvement

7.3. Describe social impact assessments or similar tools and guidelines used to support indigenous and local rights and cultural initiatives (e.g., CBD Akwé: Kon guidelines, Free, Prior, and Informed Consent Programme/policy, access and benefit sharing institutional arrangements, etc.).

Social impact assessments and guidelines are increasingly integrated into the management practices of the reserve:

- **Free, Prior, and Informed Consent (FPIC)**: This principle is applied when engaging local communities in new development projects, particularly in the transition and buffer zones. Local communities must agree to projects that may affect their land, resources, or livelihoods.

- **Cultural Preservation Programs**: Initiatives aimed at preserving indigenous knowledge and traditions, such as traditional fishing methods, are supported by the reserve's management. These practices are seen as key components of sustainable resource management.

- In managing Komodo National Park, which holds the status of both a Man and Biosphere Reserve and a World Heritage Site, there is a special responsibility to preserve its natural environment and ecosystems. For example, when enhancing infrastructure related to the utilization of nature tourism services, it is highly recommended that permit holders in the tourism sector prepare Environmental Impact Assessments (EIA) and Social Impact Assessments (SIA). These documents serve as fundamental guidelines to ensure that tourism activities, including the development of supporting infrastructure, are conducted in an environmentally and socially responsible manner.

The rights of traditional use for local and indigenous communities are also practically implemented by allocating zoning areas within the national park for the use of local and indigenous communities. They are:

- ✓ **Traditional Zone for Local Communities** (Zona Tradisional Masyarakat Lokal): 18,172.59 hectares. Recognizes local communities' rights, allowing sustainable resource use and cultural activities.
- ✓ **Traditional Pelagic Zone** (Zona Tradisional Pelagis): 59,601 hectares. Permits traditional pelagic fishing by local communities, balancing sustainable fishing with marine conservation.

7.4. What (if any) are the main conflicts relating to the biosphere reserve and what solutions have been implemented?

7.4.1. Describe the main conflicts regarding access to, or the use of, resources in the area and the relevant timeframe. If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how this was achieved for each zone?

The main conflicts within the Komodo Biosphere Reserve typically revolve around:

- **Tourism vs. Conservation**: Rapid tourism growth has led to conflicts over land use, particularly regarding the expansion of tourist facilities into buffer and transition zones. Increased tourism also puts pressure on marine resources, leading to conflicts between conservation efforts and local economic interests.
    - Solution: Zoning regulations have been implemented to limit the expansion of tourism facilities in sensitive areas. Community-based tourism initiatives have been promoted to ensure local communities benefit economically while minimizing environmental impacts.
    - The Komodo National Park Authority divides the park into seven distinct zones: Core Zone, Wilderness Zone, Marine Protection Zone, Utilization Zone, Local Community Traditional Zone, Pelagic Traditional Zone, and Special Zone. These zones are strategically designated to balance conservation, sustainable use, and community needs within the park's total area of 173,300 hectares. The Utilization Zone, covering 2,408.23 hectares, is specifically designated for tourism activities, aligning with eco-tourism principles to minimize environmental impact while supporting local economies. This zone allows controlled tourism development, ensuring that visitor activities are managed to protect the park's unique biodiversity and cultural heritage, while other zones, such as the Core and Marine Protection Zones, remain strictly conserved to maintain ecological integrity and support endangered species like the Komodo dragon. The zoning system reflects a comprehensive approach to managing human use, ensuring that conservation objectives are met while facilitating sustainable economic benefits for local communities.
        - Below is Photo of Komodo National Park Zoning, the green zone is the utilization zone which is functionally used for tourism activities both on land and in the waters.

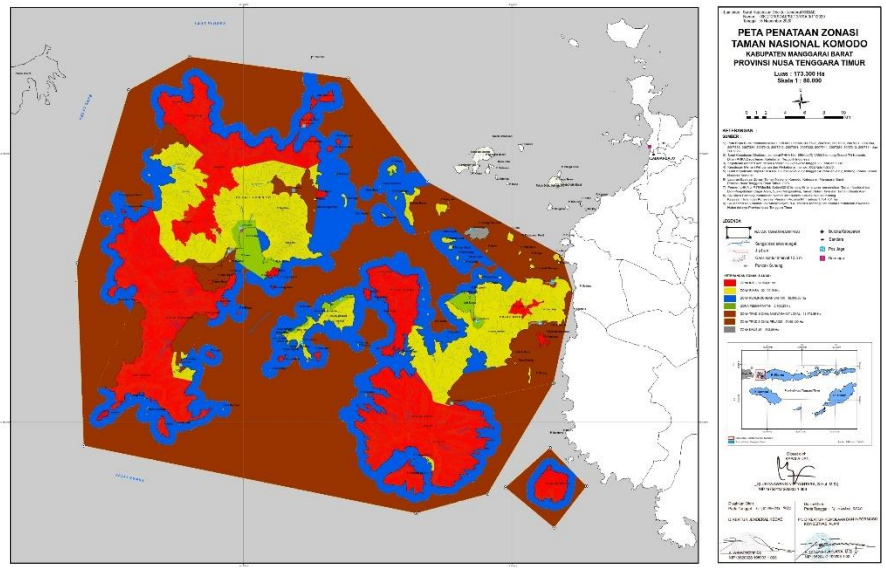


Figure 53. The zonation for conservation and tourism

- **Fisheries**: Overfishing and destructive fishing practices, such as blast fishing, have led to conflicts between local fishermen and conservation authorities.
    - Solution: The introduction of controlled fishing zones has helped reduce pressure on marine resources, while education campaigns have promoted sustainable fishing practices.
    - To address this issue, the Komodo National Park Authority has designated specific zones where fishing is permitted and regulated to ensure sustainability. Local communities are allowed to fish in the Local Community Traditional Zone (18,172.59 hectares) and the Pelagic Traditional Zone (59,601.00 hectares), with specific regulations on which fish species can be caught and which cannot. Fishing is strictly prohibited in the Marine Protection Zone, which spans 36,308.00 hectares, to preserve vital marine ecosystems. The introduction of these controlled fishing zones has helped reduce pressure on marine resources and protect biodiversity. Additionally, Komodo National Park Rangers routinely patrol these waters to enforce regulations and ensure that fishing is conducted sustainably and non-exploitatively. Education campaigns further support these efforts by promoting sustainable fishing practices among local communities, reducing destructive fishing methods, and fostering a collaborative approach to marine conservation.

7.4.2. Describe any conflicts in competence among the different administrative authorities involved in the management of the area comprising the biosphere reserve.

- **Overlap in Jurisdiction**: Conflicts sometimes arise between local and national authorities regarding the management of land and marine resources, particularly in the buffer zones where tourism and local agriculture intersect with conservation efforts.
  - Solution: A management coordination committee has been formed to address jurisdictional issues, ensuring that local, regional, and national authorities collaborate effectively on decision-making processes. The Komodo Biosphere Reserve Working team is the forum for communication and coordination in area management of Komodo Biosphere Reserve.

7.4.3. Explain the means used to resolve these conflicts, and their effectiveness. Describe its composition and functioning, resolution on a case-by-case basis. Are there local mediators; if so, are they approved by the biosphere reserve or by another authority?

Local Mediators: Trained mediators from local communities, often approved by the biosphere reserve management body, help resolve disputes related to land use and resource access. Mediation efforts are backed by local customary law and are aligned with national conservation regulations, ensuring that both traditional rights and environmental policies are respected.

7.5. Updated information about the representation and consultation of local communities and their participation in the life of the biosphere reserve:

7.5.1. Describe how local people (including women and indigenous people) are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultation of associations, women's groups).

Local communities, including indigenous groups and women, are represented in the planning and management of the Komodo Biosphere Reserve through various consultation mechanisms:

- **Community Assemblies**: Regular community meetings are held in buffer and transition zones where local representatives, including village leaders and indigenous elders, discuss resource management and conservation strategies. Community representation in decision-making in official forums is represented by the Regional People's Representative Council of East Nusa Tenggara Province and West Manggarai Regency, which are representatives of each electoral district.

- **Women's Groups**: Women's groups play an active role in community-based conservation efforts, particularly through eco-tourism and handicraft production. These groups are consulted during the planning and implementation of sustainable development projects to ensure gender-inclusive decision-making. An example of a community group within Komodo National Park is the Tanjung Keramat sea cucumber farming group, whose activities include collecting and raising sea cucumbers in prepared enclosures. Additionally, there is a community group in a buffer village, the "Canai" weaving and handicraft group in Golomori village, whose activities involve creating traditional woven fabrics and handicrafts made from pandan leaves. These groups contribute to both local livelihoods and the sustainable use of natural resources in the region.

- **Traditional Authorities**: Indigenous communities are consulted through their traditional leaders, ensuring that local knowledge and customs are integrated into the management of natural resources and cultural heritage. Dalu is a term for a Leader Figure of a Kedaluan region in the Manggarai cultural order. A Dalu is a descendant of nobility and his title is inherited from generation to generation from the same lineage. Dalu plays a major role in the management and development of a region, both in terms of land use, land ownership and others.

7.5.2. What form does this representation take: companies, associations, environmental associations, trade unions (list the various groups)?

Representation in the biosphere reserve takes various forms:

- **Local Associations**: Village-level associations, including farmers' cooperatives and fishing groups, represent the interests of local residents in discussions about resource use and development projects. The examples of local association are P3Kom (Persatuan Penyelam profesional Komodo), Kader Konservasi TN Komodo, Asosiasi Kapal Wisata Labuan Bajo, West Manggarai Farmers Association (PPMB), Indonesian Young Entrepreneurs Association (HIPMI) of West Manggarai Regency, West Manggarai Student Association (Perma),

West Manggarai Youth Student Association (IMPM), West Manggarai Regency Environmental Management Association (PPLH), West Manggarai Regency Farmers Group of Nusa Tenggara (KTN) of West Manggarai Regency, West Manggarai Small and Medium Enterprises Association (AUKM), Catholic Women of the Republic of Indonesia (WKRI) of West Manggarai Regency.

- **Environmental NGOs**: Environmental associations, such as local non-governmental organizations (NGOs), participate in conservation and development projects. These NGOs often work in collaboration with international partners to provide technical expertise and funding. Some NGO who work in Komodo Biosphere Reserve are Komodo Survival Program, Indnesian Waste Platforms, Burung Indonesia, Trash Hero, World Wildlife Fund (WWF) Indonesia, AIHSP, Bintari, 1000 HPK Foundation, Yakines, Wahana Visi Indonesia, InFlores, USAID Erat, Momentum.

- **Community Cooperatives**: Cooperatives involved in eco-tourism, handicraft production, and agroforestry represent local economic interests while supporting sustainable livelihoods within the biosphere reserve. Some community cooperatives are Kelompok Canai, Kelompok Sadar Wisata Bahari, Anak Labuan Bajo, Baku Peduli, Dapur Dite, RENGKA MOMANG, Weri Poong, Gejur Sama, Salang Gerak, Flores Institute, Komunitas Pemuda Merdeka (KPM) Labuan Bajo, Labuan Bajo Photography Community (LBPC)

7.5.3. Indicate whether there are procedures for integrating the representative body of local communities (e.g., financial, election of representatives, traditional authorities).

Procedures for integrating local communities include:

- **Election of Representatives**: Local communities elect representatives to participate in the Komodo Biosphere Reserve's management coordination forums. These representatives convey the concerns and interests of their communities, ensuring that they have a voice in decision-making processes.
- **Traditional Authority Consultation**: Indigenous leaders, representing the cultural and traditional practices of their communities, are formally included in consultations about land use and natural resource management. This ensures that decisions respect indigenous customs and cultural heritage.

7.5.4. How long-lived is the consultation mechanism (e.g., permanent assembly, consultation on specific projects)?

The consultation mechanism is both permanent and project-specific:

- **Permanent Assemblies**: The consultation mechanism through the Biosphere Reserve Working team (forum) has been in place since 2019. There are ongoing community consultation processes, such as regular management forum, where the working team with stakeholders and community representatives discuss long-term strategies for the biosphere reserve's conservation and development.

- **Project-Specific Consultations**: For specific development or conservation projects, ad-hoc consultations are conducted between related stakeholders to gather input from local stakeholders. These consultations ensure that local communities are engaged at every step of project planning and implementation.

- Tu'a Golo as a representation of the elder in the Manggarai customary position is one of the important figures who has social and political influence. The position of Tu'a Golo in the social strata of Manggarai culture has a very significant impact on the political influence of Tu'a Golo himself.

7.5.5. What is the impact of this consultation on the decision-making process (decisional, consultative or merely to inform the population)?

The consultation mechanisms have a **consultative** and **decisional** impact:

- In many cases, community input directly influences decisions related to resource management, conservation strategies, and sustainable development projects. Local communities, through their elected representatives and traditional leaders, have a role in shaping the reserve's management plans.
- For project-specific activities, consultations serve to both inform the population and gather feedback that can lead to adjustments in project implementation.
- In the decision-making process in the Komodo biosphere reserve area, the involvement of representatives of the indigenous community is a must. In the Manggarai community, especially those occupying the Transition zone, the existence of Tu'a Golo (representation of the elders in the Manggarai customary position) plays an important role.

The voice of Tu'a Golo is something that must be heard and considered in the decision-making process that involves and has an impact on the local community. The role of Tu'a Golo is also highly valued by the Regional Government as an element of local wisdom that always requires consideration in the decision-making process. The voice of Tu'a Golo is accepted as the highest voice in the Manggarai community. The involvement of Tu'a Golo is not only in the decision-making process but also in its implementation.

7.5.6. At which step in the existence of a biosphere reserve is the population involved: creation of the biosphere reserve, drawing up of the management plan, implementation of the plan, day to day management of the biosphere reserve? Give some practical examples.

Local communities have been involved at various stages of the Komodo Biosphere Reserve's existence:

- **Creation of the Biosphere Reserve**: Indigenous communities and local leaders were consulted during the initial designation of the biosphere reserve, ensuring that the interests of local populations were considered.
- **Management Plan Development**: During the development of the reserve's management plan, local communities participated through consultation workshops, contributing their knowledge about local ecosystems, resources, and local wisdoms
- **Implementation of the Plan**: Community members are involved in the day-to-day management of the biosphere reserve, particularly through eco-tourism, sustainable fishing practices, and agroforestry. For example, local guides lead eco-tourism activities, and fishing communities enforce sustainable practices to protect marine biodiversity.

7.6. Update on management and coordination structure:

7.6.1. Describe any changes regarding administrative authorities that have competence for each zone of the biosphere reserve (core area(s), buffer zone(s) and transition area(s))? If there are any changes since the nomination form/last periodic review report, please submit the original endorsements for each area.

No major changes have occurred regarding the administrative authorities responsible for the Komodo Biosphere Reserve. The Ministry of

Environment and Forestry through the National Park of Komodo remains the key authority overseeing the core areas, while local governments of Manggarai Barat have jurisdiction over buffer and transition zones.

7.6.2. Update information about the manager(s)/coordinator(s) of the biosphere reserve including designation procedures.

The management of the Komodo Biosphere Reserve continues to be overseen by local governments of Manggarai Barat Regency and the National Park of Komodo, with technical coordination from the Ministry of Environment and Forestry. Since 2018, based on Peraturan Presiden (Perpres) Nomor 32 Tahun 2018 the new eco-tourism coordinators have been appointed to help manage the growing tourism sector namely The Labuan Bajo-Flores Tourism Authority (Badan Otorita Pariwisata Labuanbajo-Flores) from the Ministry of Tourism and Creative Economy.

The Manggarai Barat Regency Government established new the Komodo Biosphere Reserve Working Team through the Regent of Manggarai Barat's Decree Number: 253/KEP/HK/2024, with the following composition:

- Advisors:
  Regent of Manggarai Barat
  Vice Regent of Manggarai Barat

- Chair:
  Secretary of Manggarai Barat Regency

- Vice Chair:
  Head of the Regional Development Planning Agency of Manggarai Barat Regency

- Secretary:
  Head of the Komodo National Park Office of Manggarai Barat Regency

- Conservation, Education, and Training Team:
  d) Head of the Regional Research and Innovation Agency of Manggarai Barat Regency (Coordinator)
  e) Head of the Environmental and Land Agency of Manggarai Barat Regency (Member)
  f) Head of the Tourism, Creative Economy, and Cultural Office of Manggarai Barat Regency (Member)
  g) Head of the Komodo National Park Office (Member)

h) Head of the Natural Resources Conservation Office (Member)
i) Head of the Food Security and Fisheries Office of Manggarai Barat Regency (Member)
j) Functional Junior Planner in the Economy and Natural Resources Division (Member)

- Community Empowerment Team:
  a. Head of the Community Empowerment and Village Office of Manggarai Barat Regency (Coordinator)
  b. Head of the Livestock and Animal Health Office of Manggarai Barat Regency
  c. Head of the Food Crops, Horticulture, and Plantation Office of Manggarai Barat Regency
  d. Head of the Food Security and Fisheries Office of Manggarai Barat Regency
  e. Head of the Trade and Industry Office of Manggarai Barat Regency
  f. Head of the Manpower, Transmigration, Cooperatives, and SMEs Office of Manggarai Barat Regency
  g. Head of the Economic Division of the Manggarai Barat Regency Secretariat
  h. Head of the Civil Registration and Population Office of Manggarai Barat Regency
  i. Functional Junior Planner in the Economy and Natural Resources Division

- Sustainable Development Team:
  a. Head of the Regional Development Planning Agency of Manggarai Barat Regency (Coordinator)
  b. Head of the Tourism, Creative Economy, and Cultural Office of Manggarai Barat Regency
  c. Head of the Spatial Planning, Housing, and Settlement Area Office of Manggarai Barat Regency
  d. Head of the Economy and Natural Resources Division of the Regional Development Planning Agency of Manggarai Barat Regency
  e. Head of the Forestry UPTD of East Nusa Tenggara Province in Labuan Bajo
  f. President Director of the Labuan Bajo-Flores Tourism Authority
  g. Head of the Fisheries UPTD of East Nusa Tenggara Province

The Working Group is tasked with the following responsibilities:

1) Coordinating and facilitating communication among various authorized agencies and stakeholders by defining roles and responsibilities in the implementation of the Integrated Biosphere Reserve Management concept, which includes conservation areas, natural landscapes, and cultivation zones.
2) Formulating mechanisms for coordination and communication to implement the Integrated Biosphere Reserve Management concept.
3) Coordinating and communicating with stakeholders to optimize the Integrated Biosphere Reserve Management.
4) Initiating, mediating, and advocating for differing interests and perceptions among stakeholders in the implementation of the Integrated Biosphere Reserve Management concept.
5) Establishing a network and communication with similar forums/institutions, including the World Network of Biosphere Reserves – UNESCO Man and the Biosphere (MAB) Programme.

7.6.3. Are there any changes with regard to the coordination structure of the biosphere reserve? (If yes, describe in details its functioning, composition and the relative proportion of each group in this structure, its role and competence.). Is this coordination structure autonomous or is it under the authority of local or central government, or of the manager of the biosphere reserve?).

There have been minor adjustments to the coordination structure, mainly to accommodate the increase in tourism. Since 2018, based on Presiden Regulation (Perpres) Number 32 Year 2018 the new eco-tourism coordinators namely The Labuan Bajo-Flores Tourism Authority have been assigned to manage eco-tourism projects, community-based conservation initiatives, and monitoring activities. However, the overall structure remains under the authority of central and local government of Manggarai Barat for Buffer and Transition zones and National Park of Komodo for Core zone. The assistance of the Indonesia National Committee also very supportive in guiding the management of the biosphere reserve in accordance with the concepts and principles of the Man and the Biosphere (MAB) program.

7.6.4. How has the management/coordination been adapted to the local situation?

The management and coordination structure of the Komodo Biosphere Reserve has been tailored to the specific socio-cultural, economic, and environmental conditions of the region. Local stakeholders, including

indigenous communities and women's groups, are actively involved in decision-making processes through consultation forums and community assemblies. The management approach emphasizes community-based resource management, where local communities take an active role in the conservation and sustainable development of the biosphere reserve. Additionally, coordination with local government and NGOs has been strengthened to address local needs, such as improving waste management in high-tourism areas and developing sustainable fishing practices.

The presence of NGOs as development partners to the government plays a highly significant role. This is closely related to key development support sectors such as: community empowerment, the empowerment of women and children, environmental and ecosystem issues, food security, climate change, and the involvement of young people in holistic sustainable development.

7.6.5. Was the effectiveness of the management/coordination evaluated? If yes, was it according to a procedure?

Yes, the effectiveness of management and coordination in the biosphere reserve has been evaluated regularly through internal reviews and external assessments by government agencies and international partners. Key indicators used for these evaluations include the success of conservation programs, the economic impact of sustainable tourism, and the involvement of local communities in governance. Procedures for these evaluations should be outlined in the biosphere reserve's management plan, which includes periodic stakeholder consultations and performance reviews based on established goals for conservation, development, and education and Lima Action Plan

7.7. Update on the management/cooperation plan/policy:

7.7.1. Are there any changes with regard to the management/cooperation plan/policy and the stakeholders involved? If yes, provide detailed information on process for involvement of stakeholders, adoption and revision of the plan.

Yes, there have been several significant adjustments to the management and cooperation plan of the Komodo Biosphere Reserve (KBR). These changes include updates to both the stakeholders involved and the strategies for engaging those stakeholders. Below is a detailed breakdown of the modifications:

1. Inclusion of New Stakeholders

The management plan has been revised to include additional stakeholders, reflecting a shift towards more comprehensive and inclusive management. These new stakeholders include:

- **Private eco-tourism operators**: To ensure sustainable tourism that aligns with conservation goals, several private eco-tourism companies have been invited to participate in the planning and management of tourism activities. This collaboration aims to promote low-impact tourism while generating revenue for both local communities and conservation efforts.
- **International conservation organizations**: Global conservation groups, such as the World Wildlife Fund (WWF) and Conservation International, have been brought on board to provide technical expertise and support for the conservation of critical habitats. These organizations help in implementing best practices for biodiversity protection and in securing international funding.
- **Academic and research institutions**: There has been an increased emphasis on the involvement of universities and research organizations, both local and international, to support the reserve's scientific research and monitoring efforts. Their involvement ensures that the management plan is based on the latest ecological research and biodiversity data.

2. Increased Involvement of Local Communities

One of the most significant changes in the management and cooperation plan is the enhanced participation of local communities in the decision-making process. This shift was prompted by the recognition that sustainable conservation requires the buy-in of the people who live in and around the reserve. Some key changes include:

- **Community forums and consultations**: Public consultations and community forums have been held regularly to gather input from local residents, fishers, and indigenous communities. These forums provide a platform for the community to express their needs, concerns, and ideas regarding the management of natural resources.
- **Co-management and capacity building**: Local leaders are now part of the management structure, especially in transition zones where economic development and conservation must be balanced. Capacity-building programs, such as training in eco-tourism and sustainable fishing practices, have been introduced to empower local communities and give them a stake in the reserve's success.

3. Stakeholder Involvement Process

The process of involving these new stakeholders has been collaborative and iterative, ensuring that all voices are heard. The involvement process includes:

- **Multi-stakeholder workshops**: Workshops have been held to allow private sector representatives, local governments, and international organizations to provide input on the management strategies. These workshops help align various interests and ensure that the management plan is both comprehensive and actionable.
- **Consultation with local governments**: Collaboration with local governments, particularly the Manggarai Barat Regency Government and the Bima District Government, has been strengthened. These local authorities are key to enforcing regulations in the buffer and transition zones, where development activities take place.
- **Coordination with NGOs**: Non-governmental organizations (NGOs) play a critical role in providing on-the-ground support for community-based initiatives, such as sustainable fisheries and agroforestry. NGOs also facilitate communication between international conservation agencies and local communities.

4. Adoption and Revision of the Management Plan

The management plan has undergone significant revisions to reflect the evolving needs of both conservation and development. These revisions include:

- **Expanded Marine Protection**: New marine protection measures, such as **no-fishing zones**, have been introduced in key areas of the Komodo National Park to protect fragile ecosystems like coral reefs. Sustainable fishing practices have been promoted in buffer zones to ensure that the livelihoods of local fishers are not harmed.
- **Tourism Management Updates**: With the growing number of visitors, eco-tourism guidelines have been revised. The plan now includes stricter **visitor caps** in sensitive areas, such as Komodo Island, to prevent environmental degradation. New regulations have been implemented to promote responsible tourism that benefits local communities while minimizing environmental impact.
- **Increased Scientific Research**: The plan has also been updated to promote further scientific research, particularly related to climate change, species conservation, and habitat restoration. Collaboration with research institutions has led to new data on species distribution, ecosystem health, and the impacts of climate change.

5. Outcomes of Stakeholder Involvement

The involvement of these diverse stakeholders has led to more holistic and effective management of the Komodo Biosphere Reserve. Some key outcomes include:

- **Improved Conservation Efforts**: The integration of private eco-tourism operators and international conservation organizations has resulted in more resources and expertise being dedicated to habitat restoration, species monitoring, and anti-poaching efforts.
- **Increased Local Ownership**: Local communities now feel a greater sense of ownership over the reserve, which has led to more effective enforcement of conservation rules. Community-based monitoring initiatives, where local fishers and residents help patrol marine areas, have proven to be effective in reducing illegal fishing activities.
- **Enhanced Economic Opportunities**: With more inclusive management, local communities have benefited economically from eco-tourism and sustainable resource use in transition zones. Community-based tourism initiatives, where locals serve as guides or manage homestays, have provided new income streams.

The management and cooperation plan for the Komodo Biosphere Reserve has undergone important revisions to include a broader range of stakeholders and to ensure a more participatory approach to conservation. This process has strengthened the overall effectiveness of the plan, making it more responsive to local needs while maintaining a focus on biodiversity conservation. These changes reflect a more integrated and inclusive approach to managing the biosphere reserve, balancing environmental sustainability with economic development.

7.7.2. Describe contents of the management/cooperation plan (provide some examples of measures and guidelines). Is the plan binding? Is it based on consensus?

The management/cooperation plan for the Komodo Biosphere Reserve (KBR) is a comprehensive framework designed to balance the conservation of biodiversity with the sustainable development needs of local communities. Below are detailed aspects of the management plan, including key measures, guidelines, and its binding nature.

1. Zoning Regulations

The KBR follows a well-defined zoning system that divides the reserve into three main zones: the core area, buffer zone, and transition area. Each zone has specific regulations aimed at managing land and marine resources in a way that ensures conservation while allowing for human activity in less sensitive areas.

- Core Area: This zone is designated strictly for conservation, with activities limited to research, education, and low-impact eco-tourism. Any activities that could disturb the natural environment, such as construction, hunting, or fishing, are strictly prohibited. The core area includes Komodo National Park, where the iconic Komodo dragons live.
- Buffer Zone: The buffer zone surrounds the core area and allows for limited, sustainable use of natural resources. This includes eco-friendly activities such as agroforestry, community-based tourism, and controlled fishing practices. The buffer zone plays a critical role in protecting the core area by reducing the impact of human activities.
- Transition Zone: The transition zone is the largest area, where sustainable development activities such as eco-tourism, agriculture, and industry can take place. This zone encourages collaboration between local communities, businesses, and conservation groups to promote economic development while maintaining environmental integrity. The activities here are regulated to ensure they do not negatively impact the core and buffer zones.

2. Tourism Management

A key component of the management plan is the regulation of tourism activities within the KBR. Tourism is a major source of revenue for the region, but it also poses risks to the environment if not managed properly. To address this, the plan includes several specific measures:

- Visitor Limits: The number of visitors to sensitive areas, especially in the core area (Komodo National Park), is capped to prevent overcrowding and minimize environmental degradation. For example, daily visitor limits have been imposed on Komodo Island to reduce pressure on the ecosystem.
- Eco-Tourism Guidelines: Eco-tourism practices are promoted to ensure that tourism activities are environmentally sustainable. This includes guidelines for tour operators to minimize waste, limit carbon footprints, and avoid disturbing wildlife. Community-based tourism initiatives, where locals are trained as guides or manage homestays, are encouraged to ensure that tourism benefits local communities.
- Marine Tourism: In marine areas, specific zones are designated for activities like diving and snorkeling, while other areas are off-limits to protect delicate coral reefs and marine species. Guidelines for marine tourism emphasize the need to avoid damaging coral and disturbing marine life such as sea turtles and dolphins.

3. Marine Protection Measures

Given the unique marine biodiversity in the Komodo Biosphere Reserve, the management plan places a strong emphasis on marine conservation. Some of the key marine protection measures include:

- Fishing-Free Zones: Certain areas, especially within the core area, are designated as no-fishing zones to protect marine ecosystems, including coral reefs, seagrass beds, and mangrove forests. These zones are critical for maintaining healthy fish populations and ensuring long-term sustainability.
- Sustainable Fishing Practices: In the buffer and transition zones, sustainable fishing practices are encouraged. This includes restrictions on fishing methods (e.g., banning destructive practices like blast fishing and trawling) and seasonal fishing bans to allow fish populations to recover. Local fishers are also provided training and incentives to adopt more sustainable fishing techniques.

4. Community Involvement and Resource Management

The management plan is deeply rooted in community involvement, particularly in the buffer and transition zones. Local communities play a key role in managing the reserve, and their involvement is formalized through various mechanisms:

- Community-Based Resource Management: Local communities are encouraged to participate in managing resources, particularly in buffer zones where sustainable use is allowed. For example, local fishers are involved in monitoring fishing activities to ensure compliance with regulations. Communities are also encouraged to engage in eco-tourism and sustainable agriculture, providing them with economic benefits while protecting the environment.
- Public Consultations and Forums: The management plan includes provisions for regular public consultations, where local communities can voice their concerns and provide input on resource management decisions. This participatory approach helps to build trust and ensure that the needs of the local population are met while adhering to conservation goals.

5. Research, Education, and Monitoring

Another critical aspect of the management plan is its focus on research, education, and monitoring. The biosphere reserve serves as a living laboratory for scientific research on biodiversity, climate change, and sustainable development. Key components include:

- Research Stations: Research stations have been established within the core area to monitor biodiversity and ecosystem health. Scientists

conduct long-term studies on species populations, habitat conditions, and the impacts of human activities on the environment.

- Education and Capacity Building: The management plan includes programs to educate both locals and visitors about the importance of conservation and sustainable development. Workshops and training programs are provided to local communities on topics such as sustainable fishing, eco-tourism, and waste management. Schools and universities are also involved in promoting environmental education.
- Monitoring and Evaluation: Regular monitoring of the reserve's ecological health is conducted to ensure that the conservation measures are effective. This includes tracking wildlife populations, assessing habitat conditions, and monitoring the impact of tourism and fishing activities. Data collected through these monitoring efforts are used to adjust management strategies as needed.

6. Is the Plan Binding and Consensus-Based?

- Binding Nature: The management plan is legally binding, as it is backed by national and local regulations. For example, fishing restrictions and tourism caps are enforced by law, and violators may face penalties. Local governments, in collaboration with the Ministry of Environment and Forestry, are responsible for enforcing these regulations.
- Consensus-Based Approach: The plan is also consensus-based, meaning it was developed through a process of consultation and agreement among various stakeholders, including government agencies, local communities, NGOs, and private sector actors. This ensures that the interests of all parties are considered, making the plan more likely to be accepted and followed.

The management plan for the Komodo Biosphere Reserve is a comprehensive and legally binding framework designed to balance the needs of conservation with sustainable development. It covers key areas such as zoning, tourism management, marine protection, and community involvement. The plan is based on consensus and enforced by local and national authorities, ensuring long-term protection of the biosphere's unique ecosystems while supporting the livelihoods of local communities.

7.7.3. Indicate how the management plan addresses the objectives of the biosphere reserve.

The management plan is closely aligned with the biosphere reserve's primary objectives:

- **Biodiversity Conservation**: It seeks to protect critical habitats and ensure that biodiversity in the core areas remains intact.

- **Sustainable Development**: It promotes eco-tourism and local community involvement in sustainable livelihood practices to balance economic development with conservation efforts.
- **Education and Research**: It fosters environmental education and encourages research into conservation practices. The plan supports the biosphere reserve's three core functions: conservation, sustainable development, and logistical support for research and education.

7.7.4. What are the progresses with regard to the guidelines of the management/cooperation plan/policy?

Significant progress has been achieved in implementing the management and cooperation plan of the Komodo Biosphere Reserve (KBR), focusing on conservation, sustainable development, and community engagement. Below is a more detailed overview of the key areas of progress:

1. Enhanced Eco-Tourism Management and Revenue Growth

- Eco-Tourism Revenue: There has been a notable increase in eco-tourism revenue, which directly benefits both local communities and conservation efforts. The successful implementation of tourism management guidelines—such as visitor caps in sensitive areas—has resulted in sustainable tourism growth. The increased revenue is reinvested in conservation activities, infrastructure improvements, and community-based projects.
- Visitor Management: Strict regulations have been enforced to limit visitor numbers in core areas like Komodo Island, reducing human impact on the environment. The introduction of an online booking system and guided tours ensures tourists adhere to eco-tourism guidelines, reducing environmental stress and ensuring sustainable tourist experiences.

2. Expansion and Strengthening of Marine Protected Areas

- Marine Conservation: Marine protected areas have been expanded, especially around critical coral reefs and seagrass beds, providing greater protection for key ecosystems. New regulations have been introduced to limit fishing in certain zones, and these areas have shown recovery signs, with healthier fish populations and restored coral reefs.
- Sustainable Fishing Practices: Local fishers have been engaged through training programs that promote sustainable fishing practices. In buffer and transition zones, sustainable fishing guidelines have reduced overfishing and destructive practices like blast fishing, contributing to the preservation of marine biodiversity.

3. Community Involvement and Capacity Building

- Increased Community Engagement: There has been significant progress in involving local communities in decision-making processes. The establishment of community forums has provided a platform for local voices to be heard, particularly in managing resources in the buffer and transition zones. This participatory approach has improved compliance with conservation rules and strengthened local ownership of the reserve.
- Capacity Building: Local communities have been trained in sustainable practices, such as eco-tourism management, sustainable agriculture, and fisheries. This has enhanced the community's ability to manage resources sustainably and contributed to poverty alleviation by creating new income opportunities. Community-based tourism has thrived, with locals offering homestays and acting as guides.

4. Integration of Research, Education, and Conservation

- Scientific Research and Monitoring: The reserve has made substantial progress in integrating research and monitoring into its management. New research stations have been established, allowing for better data collection on species, habitats, and the impacts of climate change. Research results have informed policy adjustments, particularly in managing sensitive ecosystems like coral reefs and Komodo dragon habitats.
- Education Programs: Educational programs have expanded, targeting both locals and visitors to raise awareness about the importance of conservation. Schools and universities are now involved in promoting environmental education, and training workshops for local communities have helped improve sustainable land-use practices. Research collaborations with international institutions have contributed to better conservation outcomes.

5. Strengthened Institutional Cooperation and Policy Implementation

- Institutional Collaboration: The management plan has fostered stronger cooperation between various stakeholders, including local governments, NGOs, the private sector, and conservation groups. Regular coordination meetings and workshops have ensured that all parties are aligned with the reserve's conservation and development objectives.
- Policy Enforcement: Enforcement of regulations, particularly regarding illegal fishing, poaching, and unregulated tourism, has improved. While enforcement capacity was initially a challenge,

additional resources have been allocated to increase patrolling and monitoring in critical zones. This has reduced illegal activities and enhanced the overall effectiveness of the management plan.

6. Challenges and Areas for Improvement

Despite the progress, some challenges remain:

- Balancing Conservation and Development: There are ongoing tensions between the need for development, especially in the transition zones, and conservation efforts. Tourism infrastructure development has sometimes clashed with environmental goals, necessitating continuous monitoring and adaptive management.
- Limited Resources: Enforcement of regulations remains under-resourced, particularly in more remote areas of the biosphere reserve. While progress has been made, further investment is needed to enhance monitoring, patrolling, and community outreach.

The Komodo Biosphere Reserve has made significant strides in implementing the guidelines of the management and cooperation plan. Key achievements include improved eco-tourism management, expansion of marine protected areas, increased community involvement, and strengthened scientific research. While challenges persist, particularly in balancing development pressures with conservation goals, the overall trajectory is positive, with sustainable practices becoming more integrated into the reserve's governance and operations

7.7.5. Were there any factors and/or changes that impeded or helped with the implementation of the management/coordination plan/policy? (Reluctance of local people, conflicts between different levels of decision-making).

- Supporting Factors: The strong involvement of local communities and the backing of international conservation organizations have been crucial in facilitating the plan's implementation.
- Challenges: Conflicts over land use in transition zones have posed challenges, particularly between tourism development interests and conservation efforts. Additionally, limited enforcement capacity due to a lack of resources has hampered the effective monitoring of the reserve

7.7.6. If applicable, how is the biosphere integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve?

(Please provide detailed information if there are any changes since the nomination form/last periodic review report).

The Komodo Biosphere Reserve (KBR) is deeply integrated into various national and regional strategies, reflecting Indonesia's broader commitments to biodiversity conservation, sustainable development, and climate change mitigation. This integration is achieved through a multi-layered approach that aligns KBR's management plans with national policies, regional frameworks, and local development objectives, ensuring that the reserve not only meets its core functions but also contributes significantly to national and international environmental goals.

Integration with National and Regional Strategies

National Biodiversity Strategy and Action Plan (NBSAP)

The KBR plays a vital role in supporting Indonesia's National Biodiversity Strategy and Action Plan (NBSAP), which aims to protect biodiversity, enhance ecosystem resilience, and promote sustainable use of natural resources. The biosphere reserve contributes to the NBSAP through several key actions:

- Protecting Unique Ecosystems: The core area of the biosphere reserve, primarily Komodo National Park, is dedicated to the strict conservation of its diverse habitats, including savannas, tropical forests, coral reefs, and mangrove forests. These ecosystems are critical for preserving endangered species like the Komodo dragon (Varanus komodoensis) and the Yellow-crested cockatoo (Cacatua sulphurea occidentalis), which depend on these protected areas for their survival. The park's stringent protection measures help maintain ecological integrity and support Indonesia's broader biodiversity conservation targets;
- Sustainable Use of Resources: In the buffer and transition zones, KBR promotes sustainable resource use through eco-tourism, sustainable agriculture, and traditional fishing practices. These activities are carefully managed to align with the NBSAP's objectives of reducing environmental degradation, enhancing ecosystem services, and supporting the livelihoods of local communities. For example, regulated fishing practices help maintain fish populations while providing food security and income for local residents

Climate Change Adaptation and Mitigation Plans

The Komodo Biosphere Reserve is also a key player in Indonesia's national strategy for climate change adaptation and mitigation. The reserve's

ecosystems, particularly its mangrove forests and extensive marine areas, play crucial roles in carbon sequestration and coastal protection:

- Marine Conservation: The expansion of marine protected areas within the biosphere reserve helps safeguard coral reefs and seagrass beds, which are essential in absorbing carbon dioxide and mitigating the effects of ocean acidification. Coral reefs, in particular, act as natural buffers against storm surges, protecting coastal communities from extreme weather events intensified by climate change.
- Sustainable Land Use: In the transition zones, sustainable agricultural practices are promoted to minimize deforestation and reduce greenhouse gas emissions. This includes agroforestry initiatives and organic farming techniques that not only enhance soil quality but also contribute to climate resilience, supporting Indonesia's national climate commitments under the Paris Agreement.

National Tourism Development

Recognizing Komodo as a flagship destination for eco-tourism, the Indonesian government integrates the KBR into its national tourism strategies. This integration aims to develop Komodo into a model for sustainable tourism, balancing visitor experiences with conservation needs:

- Tourism Development: National tourism policies support the management plan's objectives of regulating visitor numbers, ensuring that tourism does not exceed the carrying capacity of the environment. This is achieved through measures like limiting access to sensitive areas, implementing strict waste management protocols, and training local guides in sustainable tourism practices. The revenues generated from eco-tourism are reinvested into conservation and community development, creating a sustainable economic cycle that benefits both people and nature.
- Infrastructure and Capacity Building: Investments in infrastructure, such as improved waste management systems, renewable energy installations, and sustainable transportation networks, are aligned with the biosphere reserve's goals. These improvements not only enhance the quality of tourism but also reduce the environmental footprint of tourism activities, supporting Indonesia's commitment to sustainable development.

Regional and Local Development Plans

The provincial and municipal development plans in Manggarai Barat (NTT) and Bima (NTB) align closely with the objectives of the Komodo Biosphere

Reserve. This alignment ensures that regional growth supports the conservation and sustainable development goals of the reserve:

- Land-Use Planning: Regional spatial planning regulations are designed to complement the biosphere reserve's zoning framework. This includes directing development away from sensitive habitats and promoting land uses that are compatible with conservation, such as low-impact tourism and sustainable agriculture. By integrating biosphere reserve principles into local plans, these regulations help prevent habitat fragmentation and ensure that development activities do not infringe on core conservation areas.
- Local Involvement: Local governments actively incorporate the biosphere reserve's guidelines into their policies, promoting community participation in sustainable projects. Programs such as community-based eco-tourism, handicrafts, and fishing cooperatives are supported by local authorities, ensuring that the economic benefits of the biosphere reserve reach local populations. This inclusive approach fosters a sense of stewardship among communities, who are directly involved inconservation and benefit from sustainable use initiatives.

Cross-Sectoral Collaboration

The KBR's management aligns with international conservation frameworks such as the UNESCO Man and Biosphere Programme, the Convention on Biological Diversity (CBD), and the Paris Agreement. These commitments enhance the biosphere reserve's strategies and contribute to global efforts in biodiversity conservation and climate action. Through participation in the World Network of Biosphere Reserves, the KBR engages in information exchange, research collaborations, and shared best practices on sustainable development and conservation management.

Mechanisms for Implementation:

- Zoning Regulations and Eco-Tourism Guidelines: These mechanisms control human activities to ensure alignment with conservation goals, including managing visitor impacts and promoting sustainable use of resources.
- Management Policy and Plan: The Komodo Biosphere Reserve's strategic and long-term management plans provide clear guidelines for conservation, sustainable tourism, and resource use, prioritizing biodiversity protection and community benefits.
- Authority for Implementation: Managed by a coordination committee involving the Komodo National Park Authority, local governments, and

other stakeholders, these bodies work together to implement policies and ensure that management objectives are achieved.

- Programs for Research, Monitoring, Education, and Training: Ongoing research and monitoring programs track ecosystem health and biodiversity, while education and training initiatives empower local communities with sustainable livelihood skills.

Main Objectives of the Biosphere Reserve for the Coming Years:

- **Enhancing Eco-Tourism:** The KBR aims to expand sustainable tourism by developing new eco-tourism products, enhancing visitor management, and promoting responsible tourism practices that support local economies while minimizing environmental impact.
- **Strengthening Conservation Efforts:** The biosphere reserve will focus on protecting critical marine ecosystems, such as coral reefs and mangroves, which are vital for biodiversity and climate adaptation. Restoration projects, stricter protection measures, and increased monitoring are planned to combat the effects of climate change and ensure long-term ecological resilience.
- **Community Empowerment:** The KBR continues to prioritize education, capacity-building, and job creation programs, ensuring that local communities benefit directly from sustainable development initiatives. By involving communities in conservation and sustainable tourism, the reserve supports both ecological integrity and local economic growth.

The integration of the Komodo Biosphere Reserve into national and regional strategies ensures that it remains a model for sustainable development while preserving unique biodiversity. This integration happens at multiple levels, from aligning with Indonesia's national biodiversity and climate strategies to incorporating biosphere reserve principles into local development plans. This multi-layered approach helps balance conservation with economic growth and community welfare.

8. CRITERIA AND PROGRESS MADE:

[Conclude by highlighting the major changes, achievements, and progress made in your biosphere reserve since nomination or the last periodic review. How does your biosphere reserve fulfill the criteria? Develop justification for the site to be a biosphere reserve and rationale for the zonation. What is lacking, and how could it be improved? What can your biosphere reserve share with others on how to implement sustainable development into practice?]

Brief justification of the way in which the biosphere reserve fulfills each criteria of article 4 of the Statutory Framework of the World Network of Biosphere Reserves:

1. “Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions”.

   (The term "major biogeographic region" is not strictly defined but it would be useful to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

   The Komodo Biosphere Reserve encompasses a rich mosaic of ecosystems, from marine coral reefs and mangrove forests to terrestrial savannas and tropical forests. It is located east of the Wallacea Line, specifically in the Nusa Tenggara archipelago, and is part of the Indo-Malay biogeographic region, which is recognized for its high biodiversity. The core area, Komodo National Park, is highly protected and consists of savanna ecosystems, tropical forest ecosystems, quasi-cloud forests, mangrove ecosystems, coral reefs, seagrass beds, and marine ecosystems.

   The reserve’s zonation reflects varying levels of human intervention. In the buffer and transition zones, the area includes dry tropical ecosystems, swamps, mangroves, coral reefs, seagrass beds, deep-sea ecosystem, and coastal forests. The buffer zone permits limited sustainable activities, while the transition zone allows for more intensive human use. This zonation demonstrates a gradation of human interventions that balances conservation with sustainable development.

2. “Be of Significance for biological diversity conservation”.

   The Komodo Biosphere Reserve holds significant value for the conservation of biological diversity due to its rich and diverse ecosystems, including coral reefs, mangroves, seagrass beds, tropical dry forests, and savannas, which support a wide range of marine and terrestrial species. The reserve’s zoning system effectively protects these ecosystems through designated core, buffer, and transition zones.

   In the core zone, which is primarily composed of Komodo National Park, there is a strong commitment to the conservation of two key species: the Komodo dragon (Varanus komodoensis) and the Yellow-crested cockatoo (Cacatua sulphurea occidentalis). These species are critically dependent on their natural habitats, which include savannas, tropical forests, and mangroves, for shelter, breeding, and food sources. The protection of these habitats is crucial not only for the survival of these flagship species but also for maintaining the ecological balance that supports a broader range of biodiversity within the park.

   In the buffer and transition zones, which include areas around West Manggarai, these ecosystems provide habitats for endemic bird species and are crucial for sustaining Komodo populations along the southern coastal regions. These zones allow for sustainable human activities, such as ecotourism and controlled fishing, while ensuring the conservation of vital habitats and food sources for the species within. The management

strategies employed in these zones contribute to the preservation of biodiversity by maintaining ecological connectivity and reducing human impacts on critical habitats.

Overall, the Komodo Biosphere Reserve exemplifies a comprehensive approach to biodiversity conservation, balancing strict protection measures in the core zone with sustainable use practices in surrounding areas. This strategy ensures the long-term survival of key species, protects critical habitats, and supports the overall resilience of ecosystems against threats such as climate change, habitat degradation, and over-exploitation.

3. "Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale".

(Including examples or learning experiences from putting sustainable development into practice).

The Komodo Biosphere Reserve provides a unique opportunity to explore and demonstrate approaches to sustainable development on a regional scale. As highlighted in recent performance reports, various initiatives in the reserve integrate conservation efforts with sustainable economic activities that directly benefit local communities and protect critical ecosystems.

In the core zone, Komodo National Park, strict conservation measures protect the habitats of key species like the Komodo dragon and the Yellow-crested cockatoo. These efforts include habitat restoration, controlled ecotourism, and community engagement programs that educate visitors and locals about sustainable practices. For example, ecotourism activities such as diving and snorkeling are managed to minimize impact on coral reefs, while community-led initiatives support habitat preservation and reduce human-wildlife conflict.

In the buffer and transition zones, sustainable development is promoted through the careful management of natural resources and community involvement. Local communities participate in sustainable fishing practices, utilizing traditional gear that minimizes environmental impact. Additionally, eco-friendly aquaculture projects, like seaweed farming, provide alternative livelihoods that reduce dependence on natural resources within protected areas. Renewable energy projects, such as the installation of solar panels, also support the transition to a greener economy in the surrounding regions.

These initiatives not only protect biodiversity but also serve as living examples of how conservation and development can coexist. The Komodo Biosphere Reserve, with its diverse ecosystems and strong management practices, demonstrates how regional development can be achieved sustainably. This model encourages the adoption of similar approaches in other regions facing conservation and development challenges, reinforcing the importance of integrated, sustainable management practices that balance human needs with environmental protection.

4. “Have an appropriate size to serve the three functions of biosphere reserves”.

The realization of the three core functions-which are conservation, sustainable development, and logistic support-of biosphere reserves is pursued effectively through its well-thought-out zonation system represented by the Komodo National Park as the core zone, and West Manggarai as the buffer and transition zones, respectively. Zonation Appropriate for the Three Functions:

- **Core Zone**: This is a fully protected zone for the conservation of biodiversity, critical habitats that comprise savannas, tropical forests, mangroves, and coral reefs. The zone provides key protection to very important species, including Komodo dragons and lesser Yellow-crested cockatoos, because of minimal human interference that allows natural ecological processes to take place without any interruption. Strict management of the park with regard to habitat conservation, species protection, and ecological monitoring ensures that the integrity of this zone remains intact.

Figure 54. Reef Health Monitoring at Komodo NP Marine

- **Buffer Zone**: It allows sustainable activities within the buffer zone, provided there is no habitat degradation, like through eco-tourism, scientific research, and community-based conservation. Controlled fishing and community programs fitting livelihoods into their respective environmental preservations are pursued in West Manggarai to balance human uses with conservation. This zone acts as a protective layer around the core where low-impact use supports local economic growth while ecological stability is maintained.
- **Transition Zone**: It allows for more intensive human activities: agriculture, infrastructure for tourism, and settlement. This area allows taking into consideration the sustainable development and the growth of communities and economic activities that

do not harm the overall values of conservation. Activities involve eco-friendly agriculture and providing local facilities for tourism; it ensures balanced integration between the use by mankind and the objectives of environmental conservation.

This zonation system of the entire Komodo Biosphere Reserve serves as a balanced reflection of protection, sustainable use, and education. With this unequivocal delineation of zones, management can actually guarantee that each area's functions will serve the interest of biosphere reserves. The strategic framework here indicates how proper zonation can facilitate biodiversity conservation by furthering sustainable regional development and providing logistics support for continued research and education.

5. "Appropriate zonation to serve the three functions"

The Komodo Biosphere Reserve represents an example of appropriate zonation for the effective performance of the three core functions of biosphere reserves: conservation, sustainable development, and logistic support for research and education. This would mean its zonation strategy involves using Komodo National Park as the core zone and West Manggarai as buffer and transition zones, thus depicting a balance in these functions through particular attention to their respective specific needs.

The core area will be the Komodo National Park, strictly protected to conserve biodiversity and preserve critical habitat types such as savanna, tropical forest, mangrove, and coral reefs. This area will protect key iconic species of the region, like the Komodo dragon and Yellow-crested cockatoo (*Cacatua sulphurea occidentalis*), so their habitats will remain free from human disturbance. The conservation functions in the core zone are concerned with the maintenance of ecological integrity and biodiversity as its main contribution to the conservation function of the biosphere reserve.

Sustainable Development Function: The zones of utilization are concerned with ecotourism, which is permitted in Komodo National Park under controlled conditions to support the economy while respecting the environment. Carefully managed activities such as guided tours, snorkeling, and diving do not affect the sensitive ecosystems and allow direct economic benefits to the local communities in the form of jobs and tourism revenue. In sum, the sustainable activities in the buffer zone of West Manggarai include ecotourism, traditional fishing, and community-led conservation projects. Such agriculture and tourism infrastructure are allowed in the transition zone but are managed in such a way as to positively support the local economy, having no negative impact on core conservation goals.

Logistic Supporting Function: Buffer and Transition Zones of West Manggarai The buffer and transition zones perform logistic supporting functions for research, monitoring, education, and community training. These, in turn, allow for various scientific research on biodiversity, impacts of climate change, and management of resources in a sustainable

manner. This supports the role that the reserve plays in learning and knowledge sharing. These zones enhance local capacity for sustainable practices through the educational programs and community engagement initiatives, while fostering broader awareness of conservation issues.

The zoning system in the Komodo Biosphere Reserve was elaborately designed to serve its three core functions like any other biosphere reserve in general. There is a proper balance between the need for strict conservation in the core zone with sustainable development and educational opportunities in the buffer and transition zones, respectively. This strategic approach not only protects biodiversity but also fosters sustainable economic activities and facilitates on-site research and education, serving as a model for biosphere reserves from around the world.

6. "Organizational 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".

The Komodo Biosphere Reserve has established robust organizational arrangements to involve various stakeholders in the management of its zones, which include Komodo National Park as the core zone and West Manggarai as the buffer and transition zones. These arrangements ensure that public authorities, local communities, and private interests collaborate effectively to fulfill the reserve's conservation and sustainable development objectives.

- Public Authorities: The Komodo National Park Authority (Komodo National Park Office) is the main managing body responsible for the core zone, overseeing the conservation of natural resources and biodiversity within the park. As part of the Directorate General of Natural Resources and Ecosystem Conservation (KSDAE), the park authority coordinates with national and regional authorities to implement conservation strategies, enforce regulations, and oversee protected areas management. The involvement of public authorities ensures compliance with conservation laws and alignment with national biodiversity targets.
- Local Communities: Local communities in West Manggarai, which comprise the buffer and transition zones, actively participate in the biosphere reserve's management through co-management agreements and community-led conservation initiatives. Programs are designed to provide sustainable economic opportunities, such as traditional fishing rights, ecotourism activities, and habitat restoration projects. These efforts not only help conserve biodiversity but also support local livelihoods, integrating traditional knowledge and local practices into conservation management.
- Private Interests and NGOs: The involvement of private entities, including tourism operators, NGOs, and other businesses, plays a crucial role in supporting the reserve's sustainable development function. Partnerships with the private sector promote eco-friendly tourism and sustainable business practices that benefit both the local economy and conservation efforts. Private sector engagement is seen in ecotourism ventures and

investment in sustainable infrastructure, contributing to preserving the ecological balance while enhancing visitor experiences.

The reserve's management is a collaborative effort involving the government, local communities, NGOs, and the private sector. Regular consultations and participatory decision-making processes ensure that stakeholders are actively involved in management and planning. Women's groups and indigenous peoples are also represented in various governance structures, emphasizing inclusivity and diverse representation in the management of the biosphere reserve.

Figure 55. Women's Weaving Groups in the buffer zone of the biosphere reserve

Figure 56. The involvement of women rangers in security patrols within the Komodo National Park area

These organizational arrangements foster a collaborative approach to managing the Komodo Biosphere Reserve, ensuring that conservation, sustainable development, and research activities are carried out effectively. The inclusive governance model integrates diverse stakeholder interests, enhancing the resilience and sustainability of the reserve's management.

7. Mechanisms for implementation:

The Komodo Biosphere Reserve has established comprehensive mechanisms to manage human use and activities, implement management policies, and foster cooperation at national, regional, and international levels. These mechanisms ensure that the biosphere reserve effectively fulfills its functions of conservation, sustainable development, and logistic support.

- Mechanisms to Manage Human Use and Activities: Zoning regulations, eco-tourism guidelines, and sustainable resource management practices have been established to control human activities within the reserve. The core zone (Komodo National Park) is strictly protected to conserve biodiversity, while the buffer and transition zones (West Manggarai) allow sustainable activities that align with conservation goals. Eco-tourism guidelines are in place to manage visitor numbers, reduce environmental impact, and ensure that tourism revenue supports local communities and conservation efforts. Sustainable resource management practices, such as traditional fishing methods and controlled tourism infrastructure development, help maintain ecological integrity
- Management Policy or Plan: The management plan for the Komodo Biosphere Reserve emphasizes sustainable development while safeguarding biodiversity. It includes clear guidelines for the use of resources, management of tourism, and conservation strategies, aiming to balance ecological protection with economic opportunities for local communities. The plan is periodically reviewed and updated to adapt to emerging challenges such as climate change, habitat degradation, and the growing demand for tourism.
- Authority or Mechanism to Implement the Policy or Plan: The reserve is managed by a coordination committee involving the Komodo National Park Authority, local governments, and other stakeholders. This collaborative structure ensures that management policies are implemented effectively, with clear roles and responsibilities assigned to each participating entity. National and regional authorities work together to enforce regulations, monitor activities, and ensure that conservation and development objectives are met
- Programs for Research, Monitoring, Education, and Training: The biosphere reserve hosts ongoing research and monitoring programs that track biodiversity, assess ecosystem health, and evaluate the effectiveness of conservation measures. These programs provide critical data that inform management decisions and policy adjustments. Additionally, education and training programs are conducted regularly to equip local communities with skills in sustainable resource use, eco-tourism, and

conservation, empowering them to participate actively in the reserve's management and benefit from its resources

Cooperative Activities with Other Biosphere Reserves:

At the National Level: The Komodo Biosphere Reserve cooperates with other Indonesian biosphere reserves, sharing best practices in conservation, eco-tourism, and sustainable development. These cooperative activities include information exchanges, joint training programs, and collaborative research projects.

At the Regional Level: The reserve engages in regional cooperation with other Southeast Asian biosphere reserves, particularly focusing on marine biodiversity conservation and climate change adaptation. This collaboration facilitates the sharing of strategies to manage similar environmental challenges across the region.

Within the World Network: As part of the World Network of Biosphere Reserves, the Komodo Biosphere Reserve participates in global exchanges of information, research, and best practices on sustainable development. This involvement helps the reserve stay connected with international standards and innovations in biosphere management.

Obstacles Encountered and Measures to be Taken: The Komodo Biosphere Reserve faces challenges such as increasing tourism pressure, habitat degradation, and the effects of climate change on marine ecosystems. Measures to address these challenges include stricter enforcement of zoning regulations, enhanced monitoring, and increased community engagement to foster sustainable practices. Assistance from the World Network is expected in terms of capacity-building, technical support, and sharing successful conservation models.

Main Objectives of the Biosphere Reserve for the Coming Years:

Enhancing Eco-Tourism: The reserve aims to expand sustainable tourism initiatives to further support local economies while minimizing environmental impact. This includes developing new eco-tourism products, enhancing visitor management, and promoting responsible tourism practices.

Strengthening Conservation Efforts: A key objective is to enhance the protection of marine ecosystems, particularly coral reefs and mangroves, which are critical for biodiversity and act as natural buffers against climate change impacts. This will involve restoration projects, stricter protection measures, and increased monitoring.

Community Empowerment: The biosphere reserve will continue to promote education, capacity-building, and job creation programs to ensure that local communities benefit from sustainable development initiatives. Empowering communities to participate in conservation and sustainable tourism is central to the reserve's long-term success.

This response integrates the mechanisms, cooperative activities, and main objectives of the Komodo Biosphere Reserve, aligning with the data from the documents and emphasizing the reserve's strategic approach to managing its functions. Let me know if further adjustments are needed!

9. SUPPORTING DOCUMENTS

[List of the annexes submitted with periodic review report.]

(1) Updated location and zonation map with coordinates

[Provide the biosphere reserve's standard geographical coordinates (all projected under WGS 84). Provide a map on a topographic layer of the precise location and delimitation of the three zones of the biosphere reserve (Map(s) shall be provided in both paper and electronic copies). Shapefiles (also in WGS 84 projection system) used to produce the map must also be attached to the electronic copy of the form. If applicable, also provide a link to access this map on the internet (e.g. Google map, website…).]

(2) Updated vegetation map or land cover map

[A vegetation map or land cover map showing the principal habitats and land cover types of the biosphere reserve should be provided, if available.]

(3) Updated list of legal documents (if possible with English, French or Spanish synthesis of its contents and a translation of its most relevant provisions)

[If applicable update the principal legal documents since the nomination of the biosphere reserve and provide a copy of these documents.]

(4) Updated list of land use and management/cooperation plans

[List existing land use and management/cooperation plans (with dates and reference numbers) for the administrative area(s) included within the biosphere reserve. Provide a copy of these documents. It is recommended to produce an English, French or Spanish synthesis of its contents and a translation of its most relevant provisions.]

(5) Updated species list (to be annexed)

[Provide a list of important species occurring within the proposed biosphere reserve, including common names, wherever possible.]

(6) Updated list of main bibliographic references (to be annexed)

[Provide a list of the main publications and articles of relevance to the proposed biosphere reserve.]

(7) Further supporting documents.

10. ADRESSES

10.1 Contact address of the proposed biosphere reserve:

[Government agency, organization, or other entity (entities) to serve as the main contact to whom all correspondence within the World Network of Biosphere Reserves should be addressed.]

Name	: Badan Perencanaan Pembangunan Daerah Kabupaten Manggarai Barat
Street or P.O. Box	: Jln. Sernaru
City with postal code	: Labuan Bajo, 86754_
Country	: Indonesia
Telephone	: (0385) 41492
E-mail	: bappelitbangdamanggaraibarat@gmail.com
Web site	: bappeda.manggaraibaratkab.go.id

20.2. Administering entity of the core area(s):

Name	: Komodo National Park
Street or P.O. Box	: Jalan Kasimo 8754
City with postal code	: Labuan Bajo, 86754_
Country	: Indonesia
Telephone	: +62811-3829-0000
E-mail	: tn_komodo@yahoo.com
Web site	: komodonp.com

20.3. Administering entity of the buffer zone(s) and the transition area(s):

Name	: Sekretaris Daerah Kabupaten Manggarai Barat
Street or P.O. Box	: Jl. Prof WZ Johanes, Kelurahan Wae Kelambu Kecamatan Komodo, Kabupaten Manggarai Barat
City with postal code	: Labuan Bajo, 86754_
Country	: Indonesia
Telephone	: (0385) 41123
E-mail	: kominfo@manggaraibaratkab.go.id
Web site	: https://manggaraibaratkab.go.id/beranda.html

Name	: Badan Perencanaan Pembangunan Daerah Kabupaten Manggarai Barat
Street or P.O. Box	: Jln. Sernaru
City with postal code	: Labuan Bajo, 86754_
Country	: Indonesia
Telephone	: (0385) 41492
E-mail	: bappelitbangdamanggaraibarat@gmail.com
Web site	: bappeda.manggaraibaratkab.go.id

ANNEX I TO THE BIOSPHERE RESERVE PERIODIC REVIEW, SEPTEMBER 2024 MABNET DIRECTORY OF BIOSPHERE

Administrative details

Country	**:** Indonesia
Name of BR	**:** Komodo Biosphere Reserve
Year designated	**:** 1977
Administrative authorities	**:** Managed primarily by the Ministry of Environment and Forestry through the Komodo National Park Authority. Local governments in West Manggarai Regency oversee buffer and transition areas.
Contact	: Badan Perencanaan Pembangunan Daerah Kabupaten Manggarai Barat
Street or P.O. Box	: Jln. Sernaru, Labuan Bajo, Indonesia
Telephone	: (0385) 41492
E-mail	: bappelitbangdamanggaraibarat@gmail.com
Web site	: bappeda.manggaraibaratkab.go.id

Description

General description:

Over the past decade, the **Komodo Biosphere Reserve (KBR)** has seen significant advancements in **conservation** efforts, focusing on both terrestrial and marine ecosystems. Programs aimed at restoring coral reefs and mangrove forests have led to considerable improvements in biodiversity preservation. Conservation of the iconic Komodo dragon has been strengthened through enhanced monitoring and protection measures. The core zone, which includes Komodo National Park, remains critical for safeguarding the habitats of key species, while surrounding buffer and transition zones support sustainable activities that complement conservation efforts.

In terms of **economic development**, tourism has grown rapidly, especially in Labuan Bajo, which has been designated a national super-priority tourism destination. This shift has encouraged local communities to move from traditional livelihoods, such as farming and fishing, into the tourism service sector. While this has led to economic growth and improved well-being for many, challenges remain, particularly in addressing socio-economic disparities. Vulnerable groups in the region still face poverty, highlighting the need for inclusive development strategies within the biosphere reserve.

In the area of **logistics**, the Komodo Biosphere Reserve has made strides in research, monitoring, and education. Collaborative efforts with universities and conservation organizations have provided crucial data on ecosystem health, the impacts of climate change, and sustainable practices. Improved logistical support, such as the use of satellite imaging and remote sensing, has enhanced the reserve's ability to monitor ecological changes in real time. These efforts, combined with regular evaluations, ensure that KBR successfully fulfills its three core functions as a biosphere reserve: conserving biodiversity, promoting sustainable development, and supporting research and education.

Major ecosystem type	: Coastal-marine and terrestrial ecosystems, including
Major habitats & land cover types	: savannahs, monsoon forests, coral reefs, and mangrove swamps.
Bioclimatic zone	: Arid/semi-arid
Location (latitude & longitude)	: 119º20'95" to 119º49'20" E, 8º24'35" to 8º50'25" S
Total Area (ha)	: 1,118,003 hectares
Core area(s)	: terrestrial 57,613.00 ha + marine 115,687.00 ha = 173,300 hectares
Buffer zone(s)	: terrestrial 43,975.00 ha + marine 244,378.00 ha = 288,353 hectares
Transition area(s)	: terrestrial 231,363.00 ha + marine 424,987.00 ha = 656,350 hectares
Different existing zonation	: -
Altitudinal range	: From sea level up to 735 meters above sea level

Main objectives of the biosphere reserve

Brief description

The main objectives of the Komodo Biosphere Reserve include the conservation of biodiversity, promotion of sustainable development, and support for research and education. The reserve aims to balance the protection of key species like the Komodo dragon with eco-friendly tourism and the sustainable use of resources by local communities.

Research

Brief description

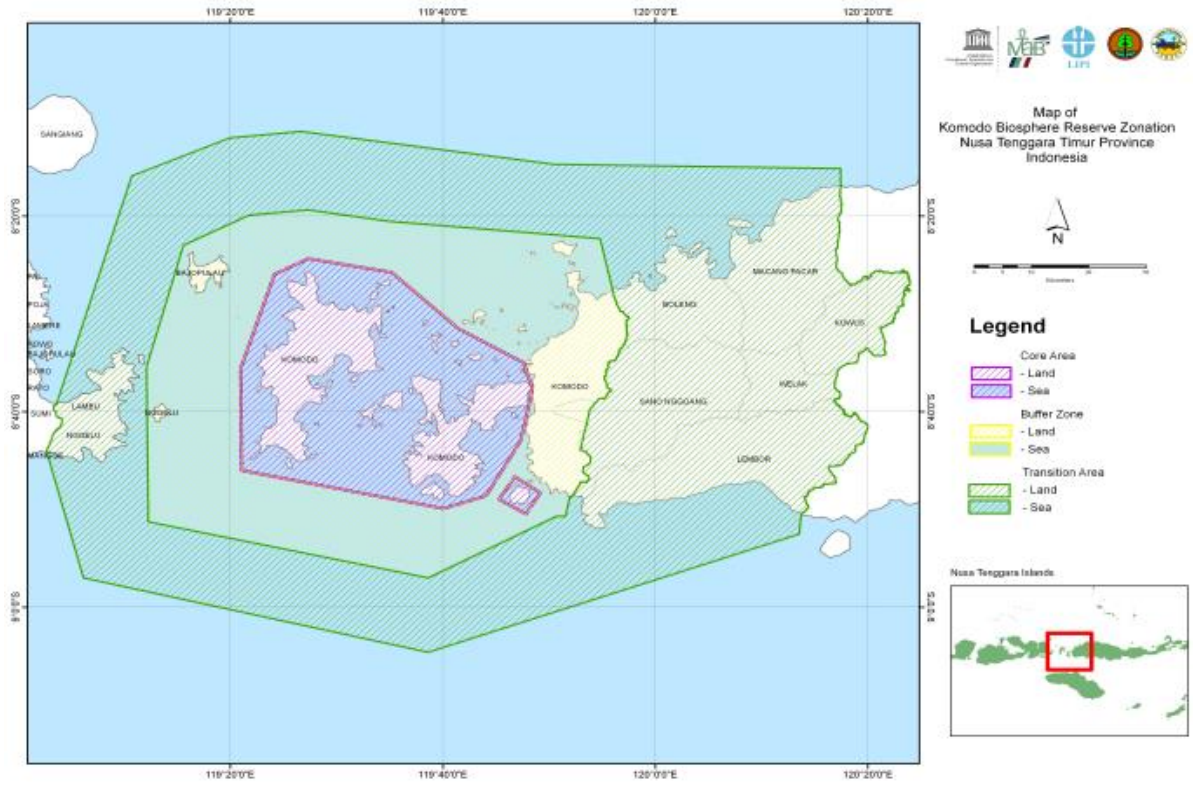
Research in the Komodo Biosphere Reserve focuses on biodiversity conservation, particularly monitoring the population of Komodo dragons and other species. It also includes studies on ecosystem dynamics, impacts of climate change, and sustainable tourism practices. Collaborative efforts with universities and conservation organizations contribute to ongoing data collection and analysis.

Monitoring

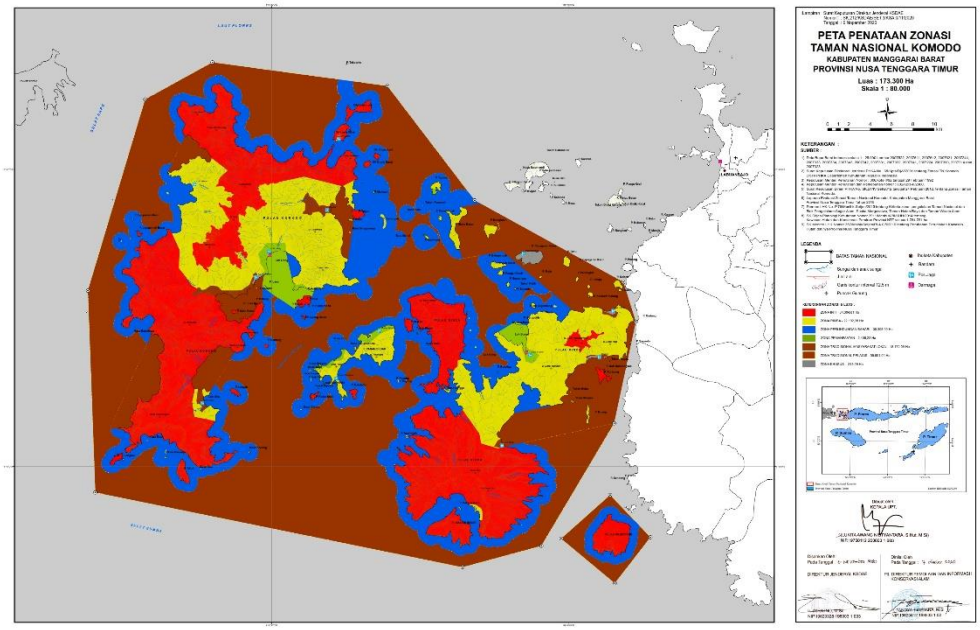
Brief description

Monitoring programs track changes in biodiversity, especially in the core and buffer zones. These programs include regular population assessments of the Komodo dragon, coral reef health, and the impact of human activities like fishing and tourism. Data from these programs inform conservation strategies and management decisions.

Zonation map(s) (refer to section 2.2.2):



Zonation of Komodo National Park



Regulation Letter about Komodo National Park Zonation

KEMENTERIAN LINGKUNGAN HIDUP DAN KEHUTANAN
DIREKTORAT JENDERAL
KONSERVASI SUMBER DAYA ALAM DAN EKOSISTEM

KEPUTUSAN DIREKTUR JENDERAL
KONSERVASI SUMBER DAYA ALAM DAN EKOSISTEM
NOMOR : SK. 212/KSDAE/SET.3/KSA.0/11/2020

TENTANG

ZONASI TAMAN NASIONAL KOMODO,
KABUPATEN MANGGARAI BARAT, PROVINSI NUSA TENGGARA TIMUR

DIREKTUR JENDERAL KONSERVASI ALAM SUMBER DAYA ALAM DAN EKOSISTEM,

Menimbang :

a. bahwa berdasarkan Keputusan Menteri Kehutanan Nomor : 306/Kpts-II/1992 tanggal 29 Februari 1992, telah diubah fungsi Suaka Margasatwa Pulau Komodo, Pulau Rinca, Pulau Padar, seluas 40.728 (empat puluh ribu tujuh ratus dua puluh delapan) hektar, serta telah ditunjuk perairan laut disekitarnya seluas 132.572 (seratus tiga puluh dua lima ratus tujuh puluh dua) hektar, Kabupaten Daerah Tingkat II Manggarai Barat (dh. Manggarai), Provinsi Daerah Tingkat I Nusa Tenggara Timur menjadi Taman Nasional Komodo;

b. bahwa berdasarkan Keputusan Menteri Kehutanan dan Perkebunan Nomor : 172/Kpts-II/2000 tanggal 29 Juni 2000, telah ditetapkan Kawasan Perairan Taman Nasional Komodo, Kabupaten Manggarai Barat, Provinsi Nusa Tenggara Timur, seluas 132.572 (seratrus tiga puluh dua ribu lima ratus tujuh puluh dua) hektar;

c. bahwa berdasarkan Keputusan Direktur Jenderal Perlindungan dan Konservasi Alam Nomor SK. 21/IV-SET/2012 tanggal 24 Februari 2012, telah ditetapkan Zonasi Taman Nasional Komodo;

d. bahwa berdasarkan hasil evaluasi dan mempertimbangkan kondisi dinamika yang terjadi di dalam maupun di luar Taman Nasional Komodo, maka perlu dilakukan revisi zonasi Taman Nasional Komodo sebagaimana dimaksud pada huruf c;

e. bahwa Kepala Balai Taman Nasonal Komodo sesuai surat S.679/T.17/TU/Evlp/8/2020 tanggal 24 Agustus 2020, mengusulkan Review Zonasi Taman Nasional Komodo kepada Direktur Jenderal Konservasi Sumber Daya Alam dan Ekosistem;

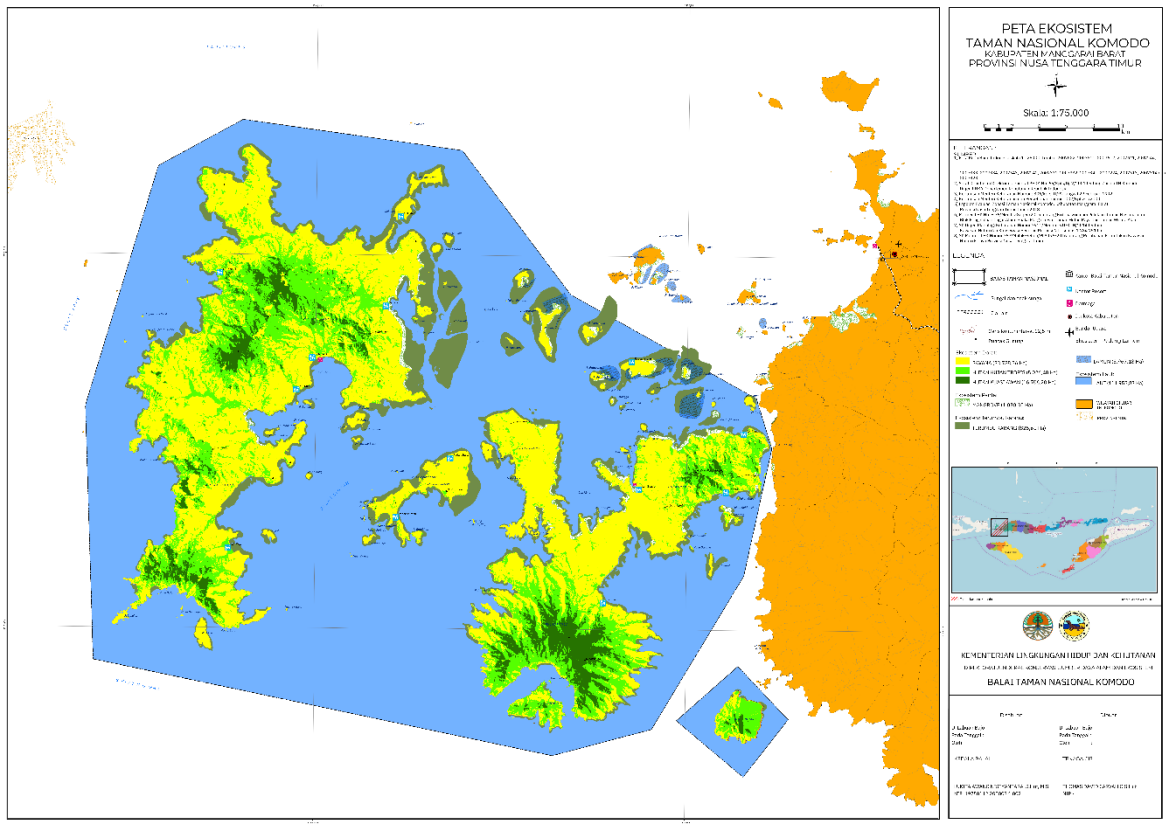
f. bahwa berdasarkan pertimbangan sebagaimana dimaksud pada huruf a, huruf b, huruf c, huruf d dan huruf e, perlu menetapkan Keputusan Direktur Jenderal Konservasi Sumber Daya Alam dan Ekosistem tentang Zonasi Taman Nasional Komodo, Kabupaten Manggarai Barat, Provinsi Nusa Tenggara Barat.

Mengingat :

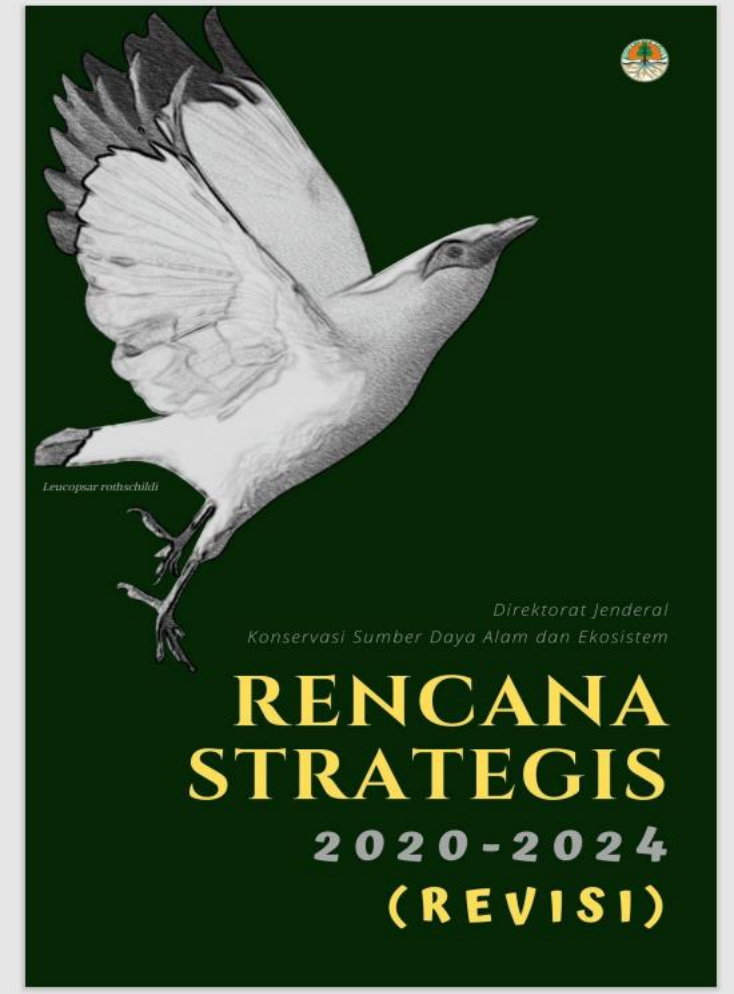
1. Undang-undang Nomor 5 Tahun 1990 tentang Konservasi Sumberdaya Alam Hayati dan Ekosistemnya;
2. Peraturan Pemerintah Nomor 36 Tahun 2010 tentang Pengusahaan Pariwisata Alam di Suaka Margasatwa, Taman Nasional, Taman Hutan Raya dan Taman Wisata Alam;

3. Peraturan....

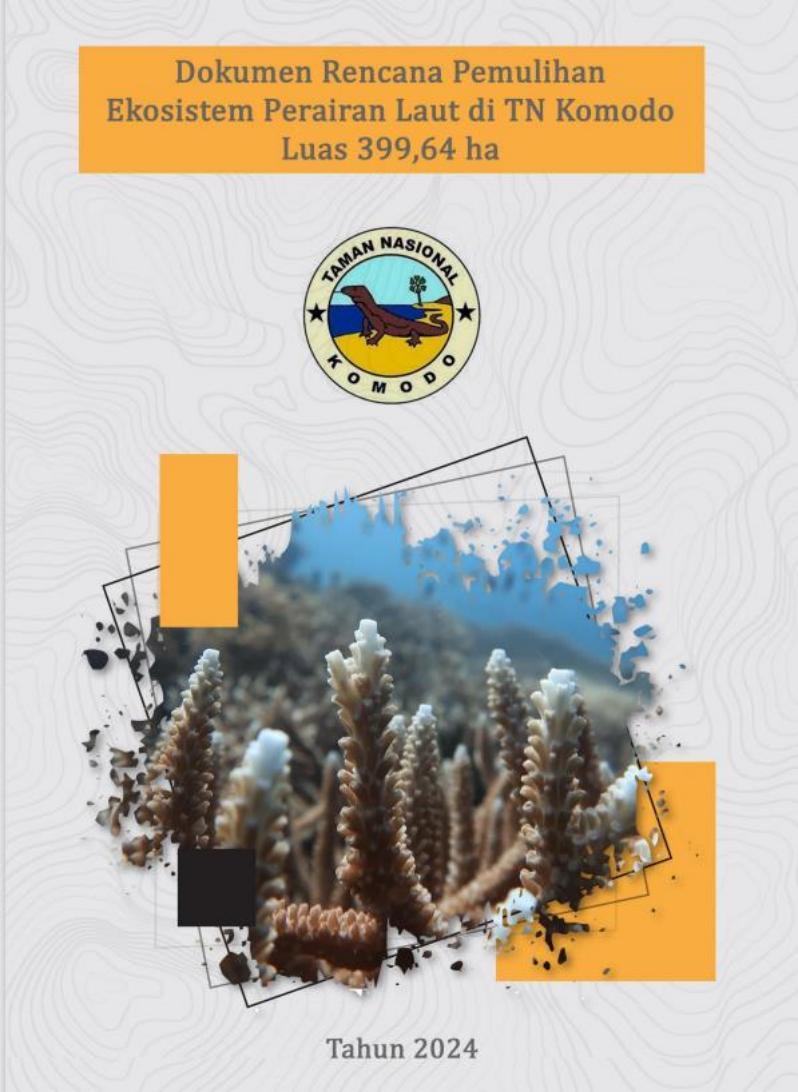
Vegetation map or land cover map at Komodo National Park as Core Zone



Strategic Plan of the Directorate General of Natural Resources and Ecosystem Conservation



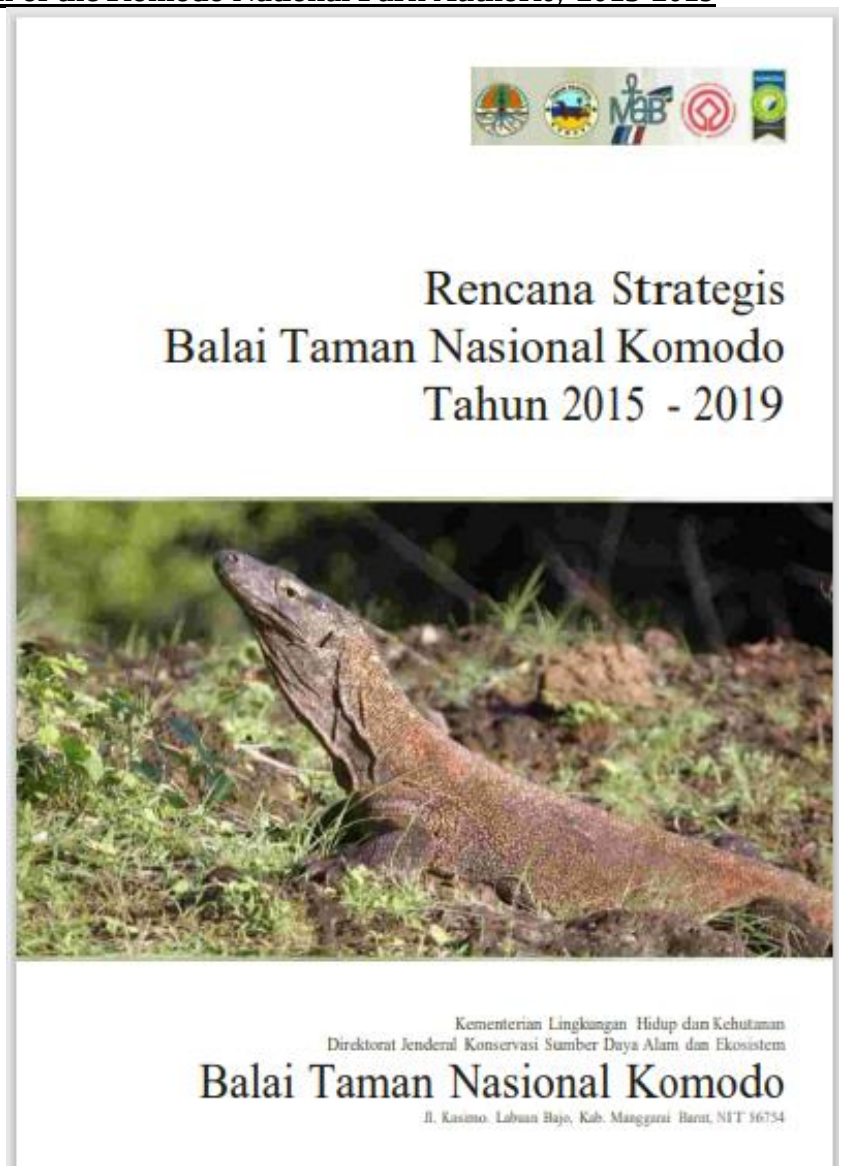
Ecosystem Restoration Plan of the Komodo National Park Authority.



Long-Term Management Plan of the Komodo National Park Authority 2016-2025

Strategic Plan of the Komodo National Park Authority 2020-2024

Strategic Plan of the Komodo National Park Authority 2015-2019



List of Fauna at Core Zone

No	Clasification	Indonesia Name	Scientific Name
1	Aquatic Mammals	Lumba lumba	*Delphinidae*
2	Aves	Alap Alap	*Falconidae*
3	Aves	Ayam Hutan	*Gallus varius*
4	Aves	Bubut alangalang	*Centropus bengalensis*
5	Aves	Burung	*Aves*
6	Aves	Burung Hantu / Celepuk	*Otus spp*
7	Aves	Burung madu kelapa	*Anthreptes malecaensis*
8	Aves	Burung madu matari	*Nectarina solaris*
9	Aves	Burung madu riganti	*Nectarinia jugularis*
10	Aves	Cangak Laut	*Ardea sumatrana*
11	Aves	Cekakak	*Kingfisher*
12	Aves	Cekakak Sungai / Raja Udang	*Todiramphus chloris*
13	Aves	Cikukua abu	*Philemon kisserensis*
14	Aves	Cikukua tanduk / Kuakiau	*Philemon buceroides*
15	Aves	Decu belang	*Saxicola caprata*
16	Aves	Dederuk jawa	*Streptopelia bitorquata*
17	Aves	Delimukan zamrud	*Chalcophaps indica*
18	Aves	Elang Bondol	*Haliastur indus*
19	Aves	Elang Flores	*Nisaetus floris*
20	Aves	Elang Tiram	*Pandion haliaetus*
21	Aves	Elanglaut Perut Putih	*Haliaeetus leucogaster*
22	Aves	Gagak kampung	*Corvus macrorhynchos*
23	Aves	Gosong kakimerah	*Megapodius reinwardt*
24	Aves	Isapmadu	*Lichmera sp*
25	Aves	Kacamata Wallacea	*Zosterops wallacei*
26	Aves	Kakatua kecil jambul kuning	*Cacatua sulphurea occidentalis*
27	Aves	Kancilan emas	*Pachycephala pectoralis*
28	Aves	Kehicap ranting	*Hypothymis azurea*
29	Aves	Kekep babi	*Artamus leucorhynchus*
30	Aves	Kepodang kuduk hitam	*Oriolus chinensis*
31	Aves	Kirik kirik	*Merops sp*
32	Aves	Kokoan Laut	*Butarides striatus*
33	Aves	Kuntul Karang	*Egretta sacra*
34	Aves	Pergam Hijau	*Ducula aenea*
35	Aves	Perkutut loreng	*Geopelia maugei*
36	Aves	Pipit zebra	*Taeniopygia guttata*
37	Aves	Srigunting Wallacea	*Dicrurus densus*
38	Aves	Tekukur biasa	*Streptopelia chinensis*
39	Aves	Tuwur asia	*Eudynamis scolopacea*
40	Aves	Walik kembang	*Ptilinopus melanospila*
41	Aves	Wili wili besar	*Esacus neglectus*
42	Mamalia	Anjing	*Canis sp*
43	Mamalia	Babi Hutan	*Sus scrofa*
44	Mamalia	Kerbau Liar	*Bubalus bubalis*
45	Mamalia	Musang	*Paradoxurus hermaphroditus*
46	Mamalia	Rusa Timor	*Rusa timorensis*
47	Primate	Monyet Ekor Panjang	*Macaca fascicularis*

48	Reptile	Biawak Air	*Varanus salvator*
49	Reptile	Biawak Komodo	*Varanus komodoensis*
50	Reptile	Penyu Hijau	*Chelonia mydas*
51	Reptile	Penyu Sisik	*Eretmochelys imbricata*
52	Reptile	Tokek	*Gekko gecko*
53	Reptile	Cicak Batu	*Cyrtodactylus darmandvillei*
54	Reptile	Cicak Gula	*Behyra mutilata*
55	Reptile	Cicak Kayu	*Hemidactylus frenatus*
56	Reptile	Ular Tikus Sunda	*Coelognathus subradiatus*
57	Reptile	Tokek Duka	*Lepidodactylus lugubris*
58	Reptile	Kadal Mata Ular Burden	*Cryptoblepharus burdeni*
59	Reptile	Kadal Pantai Dun	*Emoia similis*
60	Reptile	Kadal Ekor Biru	*Cryptoblepharus renschi*
61	Reptile	Kadal Tanah	*Eutropis multifasciata*
62	Reptile	Kadal Hutan	*Spenomorphus schlegeli*
63	Reptile	Kadal Sunda Leher Hitam	*Sphenomorphus melanopogon*
64	Reptile	Kadal Belang Flores	*Sphenomorphus striolatus*
65	Reptile	Cekiber	*Draco boschmai*
66	Reptile	Ular Karung	*Acrochordus granulatur*
67	Reptile	Ular Tambak	*Cerberus schneidei*
68	Reptile	Ular Kucing Sunda	*Boiga houseli*
69	Reptile	Ular Tali	*Dendrelaphis inornatus*
70	Reptile	Ular Cecak	*Lycodon capucinus*
71	Reptile	Ular Beludak Palsu	*Psammodynastes pulvererulentes*
72	Reptile	Ular kobra	*Naja sputatric*
73	Reptile	Ular Bandotan Puspa	*Doboia siamensis*
74	Reptile	Sanca Timur	*Malayphyton timorensis*
75	Reptile	Ular Bungka Laut	*Trimeresurus insularis*
76	Reptile	Ular Kepala Dua	*Cylindrophis opisthorhodus*
77	Amphibi	Katak Sawah	*Fejervaya cancrivora*
78	Amphibi	Belentung Kembang	*Kaloula pulchra*
79	Amphibi	Kodok Jam Pasir Komodo	*Oreophryne jeffersniana*

List of Flora at core zone

No	Indonesia Name	Scientific Name
1	Akasia	Acacia spp
2	Api-api balah	Lumnitzera racemosa
3	Api-api hitam	Avicennia alba
4	Api-api putih	Avicennia marina
5	Asam jawa	Tamarindus indica
6	Bakau	Rhizophora spp
7	Bakau	Rhizophora spp/Bruguiera spp
8	Bakau	Rhizophora stylosa
9	Bambu Hutan	
10	Bidara	Ziziphus jujuba
11	Bungur	Lagerstroemia speciosa
12	Cemara laut	Casuarina equisetifolia
13	Dadap laut	Clerodendrum inermae
14	Eboni	Diospyros spp
15	Gebang	Corypha utan
16	Jangkang bugis	Rhizophora mucronata
17	Jangkang pisang	Rhizophora apiculata
18	Jarak Merah	Jatropha gossypifolia
19	Kaktus	Opuntia engelmannii
20	Kecubung hutan	Brugmansia suaveolens
21	Kedondong Hutan	Spondias spp
22	Kelumpang	Sterculia spp
23	Kemuning	Murraya paniculata
24	Ketapang	Terminalia spp
25	Kukun	Schoutenia ovata
26	Mengkudu	Morinda citrifolia
27	Nyamplung	Calophyllum inophyllum
28	Nyireh	Xylocarpus granatum
29	Pandan	Pandanus tectorius
30	Perepat	Sonneratia alba
31	Pidada Putih	Sonneratia alba
32	Pohon Ara	Ficus spp
33	Pulai	Alstonia spp
34	Putat laut	Barringtonia asiatica
35	Sawo Kecik	Manilkara spp
36	Sentigi	Phemphis acidula
37	Sonokembang	Pterocarpus indicus
38	Srikaya	Annona squamosa
39	Teruntum merah	Lumnitzera littorea
40	Tingi	Ceriops tagal
42	Waru laut	Hibiscus tiliaceus
43	Waru laut	Thespesia populnea

List of Fauna at Manggarai Barat (from Burung Indonesia)

No	Family	Nama Ilmiah	Nama Indonesia
1	Megapodiidae	*Megapodius reinwardt*	Gosong kaki-merah
2	Phasianidae	*Gallus varius*	Ayam hutan hijau
3	Anatidae	*Dendrocygna arcuata*	Belibis kembang
4	Anatidae	*Dendrocygna javanica*	Belibis batu
5	Anatidae	*Anas superciliosa*	Itik alis
6	Anatidae	*Anas gibberifrons*	Itik benjut
7	Podicipedidae	*Tachybaptus ruficollis*	Titihan telaga
8	Ciconiidae	*Ciconia episcopus*	Bangau sandang-lawe
9	Ardeidae	*Nycticorax caledonicus*	Kowak-malam merah
10	Ardeidae	*Bubulcus ibis*	Kuntul kerbau
11	Ardeidae	*Egretta garzetta*	Kuntul kecil
12	Ardeidae	*Egretta sacra*	Kuntul karang
13	Ardeidae	*Egretta eulophotes*	Kuntul cina
14	Ardeidae	*Ixobrychus cinnamomeus*	Bambangan merah
15	Ardeidae	*Butorides striata*	Kokokan laut
16	Ardeidae	*Ardeola speciosa*	Blekok sawah
17	Ardeidae	*Ardea cinerea*	Cangak abu
18	Ardeidae	*Ardea sumatrana*	Cangak laut
19	Ardeidae	*Ardea purpurea*	Cangak merah
20	Ardeidae	*Ardea alba*	Kuntul besar
21	Ardeidae	*Ardea intermedia*	Kuntul perak
22	Fregatidae	*Fregata andrewsi*	Cikalang christmas
23	Fregatidae	*Fregata minor*	Cikalang besar
24	Fregatidae	*Fregata ariel*	Cikalang kecil
25	Phalacrocoracidae	*Microcarbo melanoleucos*	Pecuk-padi belang
26	Phalacrocoracidae	*Phalacrocorax sulcirostris*	Pecuk-padi hitam
27	Falconidae	*Falco moluccensis*	Alap-alap sapi
28	Accipitridae	*Nisaetus floris*	Elang flores
29	Accipitridae	*Pernis ptilorhynchus*	Sikep-madu asia
30	Accipitridae	*Elanus caeruleus*	Elang tikus
31	Accipitridae	*Haliastur indus*	Elang bondol
32	Accipitridae	*Haliaeetus leucogaster*	Elang-laut perut-putih
33	Accipitridae	*Circaetus gallicus*	Elang-ular jari-pendek
34	Accipitridae	*Accipiter sylvestris*	Elang-alap nusa-tenggara
35	Accipitridae	*Accipiter fasciatus*	Elang-alap coklat
36	Accipitridae	*Aquila fasciata*	Elang bonelli
37	Rallidae	*Rallina fasciata*	Tikusan ceruling
38	Rallidae	*Hypotaenidia philippensis*	Mandar-padi kalung-kuning
39	Rallidae	*Amaurornis phoenicurus*	Kareo padi
40	Rallidae	*Gallinula chloropus*	Mandar batu
41	Turnicidae	*Turnix maculosus*	Gemak totol
42	Turnicidae	*Turnix suscitator*	Gemak loreng

43	Scolopacidae	*Numenius phaeopus*	Gajahan pengala
44	Scolopacidae	*Tringa nebularia*	Trinil kaki-hijau
45	Scolopacidae	*Actitis hypoleucos*	Trinil pantai
46	Laridae	*Thalasseus bergii*	Dara-laut jambul
47	Columbidae	*Caloenas nicobarica*	Junai mas
48	Columbidae	*Columba livia*	Merpati batu
49	Columbidae	*Streptopelia bitorquata*	Dederuk jawa
50	Columbidae	*Stigmatopelia chinensis*	Tekukur
51	Columbidae	*Macropygia emiliana*	Uncal buau
52	Columbidae	*Chalcophaps indica*	Delimukan zamrud
53	Columbidae	*Geopelia striata*	Perkutut jawa
54	Columbidae	*Geopelia maugeus*	Perkutut kateu
55	Columbidae	*Ptilinopus cinctus*	Walik putih
56	Columbidae	*Ptilinopus melanospilus*	Walik kembang
57	Columbidae	*Ducula aenea*	Pergam hijau
58	Columbidae	*Ducula lacernulata*	Pergam punggung-hitam
59	Columbidae	*Treron floris*	Punai flores
60	Cacatuidae	*Cacatua sulphurea*	Kakatua-kecil jambul-kuning
61	Psittacidae	*Loriculus flosculus*	Serindit flores
62	Psittacidae	*Trichoglossus weberi*	Perkici flores
63	Psittacidae	*Geoffroyus geoffroyi*	Nuri pipi-merah
64	Psittacidae	*Tanygnathus megalorynchos*	Betet-kelapa paruh-besar
65	Cuculidae	*Cuculus saturatus*	Kangkok himalaya
66	Cuculidae	*Cacomantis variolosus*	Wiwik belukar
67	Cuculidae	*Chalcites minutillus*	Kedasi laut
68	Cuculidae	*Chalcites lucidus*	Kedasi emas
69	Cuculidae	*Eudynamys scolopaceus*	Tuwur asia
70	Cuculidae	*Centropus bengalensis*	Bubut alang-alang
71	Tytonidae	*Tyto alba*	Serak jawa
72	Strigidae	*Otus alfredi*	Celepuk flores
73	Strigidae	*Otus magicus*	Celepuk maluku
74	Strigidae	*Otus silvicola*	Celepuk wallacea
75	Caprimulgidae	*Caprimulgus macrurus*	Cabak maling
76	Caprimulgidae	*Caprimulgus affinis*	Cabak kota
77	Apodidae	*Collocalia esculenta*	Walet sapi
78	Apodidae	*Apus nipalensis*	Kapinis rumah
79	Coraciidae	*Eurystomus orientalis*	Tiong-lampu biasa
80	Alcedinidae	*Caridonax fulgidus*	Cekakak tunggir-putih
81	Alcedinidae	*Pelargopsis capensis*	Pekaka emas
82	Alcedinidae	*Todiramphus chloris*	Cekakak sungai
83	Alcedinidae	*Todiramphus sanctus*	Cekakak suci
84	Alcedinidae	*Ceyx rufidorsa*	Udang punggung-merah
85	Alcedinidae	*Alcedo atthis*	Raja-udang eurasia
86	Alcedinidae	*Alcedo coerulescens*	Raja-udang biru
87	Meropidae	*Merops philippinus*	Kirik-kirik laut

88	Meropidae	*Merops ornatus*	Kirik-kirik australia
89	Picidae	*Picoides moluccensis*	Caladi tilik
90	Pittidae	*Pitta concinna*	Paok elok
91	Meliphagidae	*Philemon buceroides*	Cikukua tanduk
92	Meliphagidae	*Lichmera lombokia*	Isap-madu topi-sisik
93	Acanthizidae	*Gerygone sulphurea*	Remetuk laut
94	Artamidae	*Artamus leucorynchus*	Kekep babi
95	Campephagidae	*Edolisoma dohertyi*	Kepudang-sungu sumba
96	Campephagidae	*Pericrocotus lansbergei*	Sepah kerdil
97	Pachycephalidae	*Pachycephala fulvotincta*	Kancilan dada-karat
98	Pachycephalidae	*Pachycephala nudigula*	Kancilan flores
99	Laniidae	*Lanius schach*	Bentet kelabu
100	Oriolidae	*Oriolus chinensis*	Kepudang kuduk-hitam
101	Dicruridae	*Dicrurus densus*	Srigunting wallacea
102	Rhipiduridae	*Rhipidura diluta*	Kipasan flores
103	Rhipiduridae	*Rhipidura dryas*	Kipasan aru
104	Monarchidae	*Symposiachrus sacerdotum*	Kehicap flores
105	Monarchidae	*Hypothymis azurea*	Kehicap ranting
106	Monarchidae	*Terpsiphone floris*	Seriwang nusa tenggara
107	Monarchidae	*Symposiachrus trivirgatus*	Kehicap kacamata
108	Corvidae	*Corvus macrorhynchos*	Gagak kampung
109	Corvidae	*Corvus florensis*	Gagak flores
110	Paridae	*Parus major*	Gelatik batu kelabu
111	Hirundinidae	*Cecropis daurica*	Layang-layang gua
112	Hirundinidae	*Hirundo rustica*	Layang-layang api
113	Hirundinidae	*Hirundo javanica*	Layang-layang batu
114	Alaudidae	*Mirafra javanica*	Branjangan jawa
115	Cisticolidae	*Cisticola juncidis*	Cici padi
116	Sylviidae	*Phyllergates cuculatus*	Cinenen gunung
117	Scotocercidae	*Tesia everetti*	Tesia timor
118	Phylloscopidae	*Phylloscopus borealis*	Cikrak kutub
119	Phylloscopidae	*Phylloscopus presbytes*	Cikrak timor
120	Pnoepygidae	*Pnoepyga pusilla*	Berencet kerdil
121	Zosteropidae	*Zosterops citrinella*	Kacamata limau
122	Zosteropidae	*Zosterops japonicus*	Kacamata gunung
123	Zosteropidae	*Heleia wallacei*	Kacamata wallacea
124	Zosteropidae	*Heleia superciliaris*	Opior flores
125	Zosteropidae	*Heleia dohertyi*	Opior jambul
126	Zosteropidae	*Heleia crassirostris*	Opior paruh-tebal
127	Sturnidae	*Gracula venerata*	Tiong flores
128	Sturnidae	*Aplonis minor*	Perling kecil
129	Turdidae	*Zoothera andromedae*	Anis hutan
130	Turdidae	*Brachypteryx floris*	Cingcoang flores
131	Turdidae	*Geokichla interpres*	Anis kembang
132	Turdidae	*Geokichla dohertyi*	Anis nusa tenggara

133	Muscicapidae	*Saxicola caprata*	Decu belang
134	Muscicapidae	*Cyornis oscillans*	Sikatan-rimba ayun
135	Muscicapidae	*Ficedula westermanni*	Sikatan belang
136	Muscicapidae	*Ficedula dumetoria*	Sikatan dada-merah
137	Dicaeidae	*Dicaeum annae*	Cabai emas
138	Dicaeidae	*Dicaeum agile*	Cabai gesit
139	Dicaeidae	*Dicaeum igniferum*	Cabai dahi-hitam
140	Nectariniidae	*Anthreptes malacensis*	Burung-madu kelapa
141	Nectariniidae	*Cinnyris jugularis*	Burung-madu sriganti
142	Nectariniidae	*Cinnyris solaris*	Burung-madu matari
143	Passeridae	*Passer montanus*	Burung gereja eurasia
144	Estrildidae	*Amandava amandava*	Pipit benggala
145	Estrildidae	*Taeniopygia guttata*	Pipit zebra
146	Estrildidae	*Lonchura molucca*	Bondol taruk
147	Estrildidae	*Lonchura punctulata*	Bondol peking
148	Estrildidae	*Lonchura quinticolor*	Bondol panca-warna
149	Estrildidae	*Lonchura pallida*	Bondol kepala-pucat
150	Motacillidae	*Motacilla cinerea*	Kicuit batu
151	Motacillidae	*Anthus novaeseelandiae*	Apung tanah

Specific variables (fill in the table below and tick the relevant parameters)

Abiotic		**Biodiversity**	
Abiotic factors	✓	Afforestation/Reforestation	✓
Acidic deposition/Atmospheric factors	✓	Algae	✓
Air quality	✓	Alien and/or invasive species	✓
Air temperature	✓	Amphibians	✓
Climate, climatology	✓	Arid and semi-arid systems	✓
Contaminants	✓	Autoecology	✓
Drought	✓	Beach/soft bottom systems	✓
Erosion	✓	Benthos	✓
Geology	✓	Biodiversity aspects	✓
Geomorphology	✓	Biogeography	✓
Geophysics	✓	Biology	✓
Glaciology		Biotechnology	✓
Global change	✓	Birds	✓
Groundwater	✓	Boreal forest systems	✓
Habitat issues	✓	Breeding	✓
Heavy metals		Coastal/marine systems	✓
Hydrology	✓	Community studies	✓
Indicators	✓	Conservation	✓
Meteorology	✓	Coral reefs	✓
Modeling	✓	Degraded areas	
Monitoring/methodologies	✓	Desertification	
Nutrients	✓	Dune systems	✓
Physical oceanography	✓	Ecology	✓
Pollution, pollutants	✓	Ecosystem assessment	✓
Siltation/sedimentation	✓	Ecosystem functioning/structure	✓
Soil	✓	Ecosystem services	✓
Speleology		Ecotones	✓
Topography	✓	Endemic species	✓
Toxicology	✓	Ethology	✓
UV radiation	✓	Evapotranspirati	✓
		Evolutionary studies/Palaeoecology	✓
		Fauna	✓
		Fires/fire ecology	✓
		Fishes	✓
		Flora	✓
		Forest systems	✓
		Freshwater systems	✓
		Fungi	✓
		Genetic resources	✓
		Genetically modified organisms	
		Home gardens	
		Indicators	
		Invertebrates	✓

		Island systems/studies	
		Lagoon systems	
		Lichens	✓
		Mammals	✓
		Mangrove systems	✓
		Mediterranean type systems	
		Microorganisms	✓
		Migrating populations	✓
		Modeling	✓
		Monitoring/methodologies	✓
		Mountain and highland systems	✓
		Natural and other resources	✓
		Natural medicinal products	✓
		Perturbations and resilience	
		Pests/Diseases	
		Phenology	
		Phytosociology/Succession	✓
		Plankton	✓
		Plants	✓
		Polar systems	
		Pollination	✓
		Population genetics/dynamics	✓
		Productivity	✓
		Rare/Endangered species	✓
		Reptiles	✓
		Restoration/Rehabilitation	✓
		Species (re) introduction	✓
		Species inventorying	✓
		Sub-tropical and temperate rainforest	✓
		Taxonomy	✓
		Temperate forest systems	✓
		Temperate grassland systems	✓
		Tropical dry forest systems	✓
		Tropical grassland and savannah systems	✓
		Tropical humid forest systems	✓
		Tundra systems	✓
		Vegetation studies	✓
		Volcanic/Geothermal systems	
		Wetland systems	
		Wildlife	✓

		Integrated monitoring	
Agriculture/Other production systems		Biogeochemical studies	✓
Agroforestry		Carrying capacity	✓
Anthropological studies	✓	Climate change	✓
Aquaculture		Conflict analysis/resolution	
Archaeology		Ecosystem approach	✓
Bioprospecting		Education and public awareness	✓
Capacity building	✓	Environmental changes	✓
Cottage (home-based) industry		Geographic Information System (GIS)	✓
Cultural aspects		Impact and risk studies	✓
Demography	✓	Indicators	✓
Economic studies	✓	Indicators of environmental quality	✓
Economically important species		Infrastructure development	
Energy production systems		Institutional and legal aspects	
Ethnology/traditional practices/knowledge		Integrated studies	
Firewood cutting		Interdisciplinary studies	
Fishery	✓	Land tenure	
Forestry	✓	Land use/Land cover	
Human health		Landscape inventorying/monitoring	
Human migration		Management issues	
Hunting		Mapping	✓
Indicators		Modeling	
Indicators of sustainability		Monitoring/methodologies	✓
Indigenous people's issues		Planning and zoning measures	✓
Industry		Policy issues	✓
Livelihood measures		Remote sensing	
Livestock and related impacts		Rural systems	
Local participation		Sustainable development/use	
Micro-credits		Transboundary issues/measures	
Mining		Urban systems	
Modeling		Watershed studies/monitoring	
Monitoring/methodologies			
Natural hazards			
Non-timber forest products	✓		
Pastoralism			
People-Nature relations			
Poverty			
Quality economies/marketing			
Recreation			
Resource use			
Role of women	✓		
Sacred sites	✓		
Small business initiatives	✓		
Social/Socio-economic aspects			
Stakeholders' interests			
Tourism	✓		

Transports	✓		

List of research and development activities conducted in the Komodo Biosphere Reserve over the past 10 years

No.	Penulis/Periset	Judul Tulisan/Riset	Tahun Terbit
1.	Ariefiandy, A., Purwandana, D., Seno, A., Chrismiawati, M., Jessop, T. S., & Ciofi, S	Evaluation of three field monitoring-density estimation protocols and their relevance to Komodo dragon conservation	2014
2.	Cahyaningrum, D.	Rejection of International Environmental NGOs Case Study of The Nature Conservancy in Komodo National Park	2014
3.	Dewa, E.	Study of the Structure and Perceptions of Visitors to the Komodo National Park Conservation Area in West Manggarai, East Nusa Tenggara	2014
4.	Purwandana, D., Ariefiandy, A., Imansyah, M. J., Rudiharto, H., Seno, A., Ciofi, C., Fordham, D. A., & Jessop, T. S.	Demographic status of Komodo dragons populations in Komodo National Park	2014
5.	Wandur, S. R.	Feasibility Study of Diving and Snorkeling Ecotourism in Komodo National Park, West Manggarai Regency	2014
6.	Adil, A., & Triwijoyo, B. K.	Spatial Analysis of Settlement Distribution on Rinca Island (Komodo National Park Area)	2015
7.	Ariefiandy, A., Purwandana, D., Nas, S. A., Surahman, M., Ciofi, C., & Jessop, T. S.	First Record of Komodo Dragon Nesting Activity and Hatchling Emergence from North Flores, Eastern Indonesia	2015
8.	Candraningsih, D. S.	Analysis of Komodo Daily Behavior Patterns in Loh Liang and Description of Potential Hiking Trails in Loh Buaya Komodo National Park	2015
9.	Darciani, L. S.	Management of the Komodo Region as a Komodo National Park Tourism Area in West Manggarai Regency	2015
10.	Moan, F. A. C. W., & Suwandi, T.	An Overview of The Causes of Work Accidents in the Komodo's Bite Workers in Komodo National Park	2015
11.	Purba, R. O.	Selection of Regular and Non-Regular Trekking Routes and Komodo Shelters for Tourism Management in Komodo National Park	2015

12.	Tobing, S. Y. E. L.	Inventory of Seagrass Types on West Merah Padar Beach and Inspection of Regular and Non-Regular Trekking Routes in Loh Buaya, Rinca Island, Komodo National Park	2015
13.	Wandur, S. R.	Feasibility of Diving Ecotourism in Komodo National Park, West Manggarai Regency	2015
14.	Ziku, R. M	Komodo Village Community Participation in Ecotourism Development on Komodo Island	2015
15.	Ariefiandy, A., Forsyth, D. M., Purwandana, D., Imansyah, M. J., Ciofi, C., Rudiharto, H., Seno, A., & Jessop, T. S.	Temporal and spatial dynamics of insular Rusa deer and wild pig populations in Komodo National Park	2016
16.	Damanik, J	Lack of Stakeholder Partnerships in Destination Management: Lessons Learned from Labuan Bajo, Eastern Indonesia	2016
17.	Imansyah, M. J., Purwandana, D., Ariefiandy, A., Benu, Y. J., Jessop, T. S., & Trainor, C. R.	Valley-floor censuses of the Critically Endangered Yellow-crested Cockatoo on Komodo Island	2016
18.	Lestari, N.	Community Based Ecotourism Development in Komodo National Park	2016
19.	Purwandana, D., Ariefiandy, A., Imansyah, M. J., Seno, A., Ciofi, C., Letnic, M., & Jessop, T. S.	Ecological allometries and niche use dynamics across Komodo dragon ontogeny	2016
20.	Sudibyo, D. L.	Between Conservation and Tourism: Socioeconomic Dynamics of Fishermen in Komodo National Park	2016
21.	Laiskodat, V. B., Kameo, D. D., & Utami, I.	The value chain of tourism at Komodo Island of Indonesia	2017
22.	Lalu, S.	Analysis of Guest Assessments of Komodo National Park in NTT Province, Flores Island	2017
23.	Lukita, A., & Sunarto, S.	The Role of the Ministry of Tourism in Campaigning for Komodo National Park Through the Pesona Indonesia Brand	2017
24.	Sari, P. S	Regional Tourism Management of Komodo National Park in West Manggarai Regency, East Nusa Tenggara Province	2017

25.	Sehandi, K.	Prevalence of Komodo Gastrointestinal Worm Infection (Varanus komodoensis) on Rinca Island and Komodo Island	2017
26.	Serliyati, S.	Komodo Village Community Perceptions of Tourism Development on Komodo Island, East Nusa Tenggara Province	2017
27.	Adil, A.	Spatial Design for Potential Development of Settlement-Based Craft Products in Komodo National Park	2018
28.	Ardiantiono, A., Jessop, T. S., Purwandana, D., Ciof, C., Imansyah, M. J., Panggur, M. R., & Ariefiandy, A.	Effects of human activities on Komodo dragons in Komodo National Park.	2018
29.	Imron, M. A., Satria, R. A., & Ramlan, M. F. P.	Komodo Dragon Predation on Crab-Eating Macaques at the Rinca Island's Visitor Centre, Indonesia	2018
30.	Jessop, T. S., Ariefiandy, A., Purwandana, D., Ciofi, C., Imansyah, M. J., Benu, Y. J., Fordham, D. A., Forsyth, D. M., Mulder, R. A., & Phillips, B. L.	Exploring mechanisms and origins of reduced dispersal in island Komodo dragons	2018
31.	Kennedi, U. F.	Herpetofauna Diversity in Komodo National Park and Surroundings	2018
32.	Lasso, A., & Dahles, H.	Are tourism livelihoods sustainable? Tourism development and economic transformation on Komodo Island, Indonesia	2018
33.	Putra, P. S. E., & Parno, R.	Ecotourism Development Strategy for Komodo National Park in Komodo Village, East Nusa Tenggara	2018
34.	Turicchia, E., Hoeksema, B. W., & Ponti, M.	The coral-killing sponge Chalinula nematifera as a common substrate generalist in Komodo National Park, Indonesia.	2018
35.	Zulkifli, A.	The Role of Komodo National Park (KNP) on the Community Economy in Komodo Village	2018
36.	Widaningrum, A., & Damanik, J.	Stakeholder Governance Network in Tourist Destination: Case of the Komodo National Park and Labuan Bajo City, Indonesia	2018
37.	Ahmad, R., & Yunita, R. D.	Gender Injustice Against Women in the Komodo National Park Tourism Industry	2019

38.	Anggraeni, A., & Hanifah, H.	The Influence of Tourist Attractions on Tourist Visiting Interest in Pasir Panjang Village, Komodo National Park	2019
39.	Ariefiandy, A., Purwandana, D., Benu, Y. J., Letnic, M., & Jessop, T. S.	Knee deep in trouble: rusa deer use an aquatic escape behavior to delay attack by Komodo dragons	2019
40.	Erikssona, B., Johansson, F., & Blicharska, M.	Socio-economic impacts of marine conservation efforts in three Indonesian fishing communities	2019
41.	Jessop, T. S., Ariefiandy, A., Purwandana, D., Benu, Y. J., Hyatt, M., & Letnic, M.	Little to fear: largest lizard predator induces weak defense responses in ungulate prey	2019
42.	Kamil, P. I., Susianto, H., Purwandana, D., & Ariefiandy, A.	Anthropomorphic and factual approaches in Komodo dragon conservation awareness program for elementary school students: Initial study	2019
43.	Kurniasari, K.	Understanding visitors experiences in nature-based tourism: A case study of Komodo National Park Indonesia	2019
44.	Liestiandre, H. K., Mertha, I. W., Mahadewi, N. M. E., & Tirtawati, N. M.	Tourists willingness to pay for destination quality improvement in Komodo National Park	2019
45.	Mustari, A. H., Siga, H. R., Noviandi, T., Ayatullah, A., & Zainuddin, Z.	Ecological study and status of Komodo population *Varanus komodoensis* on Padar Island, Komodo National Park.	2019
46.	Prakoso, M. N., & Pratiwi, A.	Reservation Process of Travel Tourism Sailing to Komodo Island Through Kakabantrip Tour and Travel Service	2019
47.	Putera, M. I.	Investigating Tourists Motivation for Visiting National Park: Case of Komodo National Park, Indonesia	2019
48.	Sulaeman, D., Sjarmidi, A., & Iskandar, D. T.	Professional Management on Ecotourism and Conservation to Ensure the Future of Komodo National Park	2019
49.	Toly, S. R.	Analysis of Flora Diversity and Vegetation Types in Komodo National Park, East Nusa Tenggara	2019
50.	Yogiabu, L.	Study of Komodo (Varanus komodoensis) activity in Loh Baru Komodo National Park	2019

51.	Benu, F., Muskanan, M. W., King, P. G., Asa, H. M., & Wulakada, H. H.	Community Participation and Sustainable Tourism Development Model in Komodo National Park	2020
52.	Dale, C. J. P., & Afioma, G.	Puzzling Confluence of Conservation and Ecotourism in Komodo National Park, Indonesia	2020
53.	Gabur, M. F. A., & Sukana, M.	Tourism Management on Padar Island, Komodo National Park, Labuan Bajo.	2020
54.	Jones, A. R., Jessop, T. S., Ariefiandy, A., Brook, B. W., Brown, S. C., Ciofi, C., Benu, Y. J., Purwandana, D., Sitorus, T., Wigley, T. M. L., & Fordham, D. A.	Identifying island safe havens to prevent the extinction of the World's largest lizard from global warming	2020
55.	Kennedi, U. F., Kusrini, M. D., Ariefiandy, A., & Mardiastuti, A.	Invasive Toads Are Close To But Absent From Komodo National Park	2020
56.	Nusantara, M. G. G.	Distribution of Komodo Nests on Longos Island and Komodo Nesting Behavior on Rinca Island, East Nusa Tenggara	2020
57.	Purwandana, D., Imansyah, M. J., Ariefiandy, A., Rudiharto, H., Ciofi, C., & Jessop, T. S.	Insights into the Nesting Ecology and Annual Hatchling Production of the Komodo Dragon	2020
58.	Reuleaux, A., Siregar, B. A., Collar, N. G., Panggur, M. R., Mardiastuti, A., Jones, M. J., & Marsden, S. J.	Protected by dragons: Density surface modeling confirms large population of the critically endangered Yellow-crested Cockatoo on Komodo Island.	2020
59.	Shabrina, K. L. N.	The Effectiveness of Videos Based on Local Wisdom and Ethnobiology on Komodo Island as Learning Media in PLH Subjects	2020
60.	Sunkar, A., Kusrini, M. D., & Ramadhani, F. S.	Role of culture in the emotional response towards komodo dragon in Komodo and Rinca Islands of Komodo National Park	2020
61.	Suraji, S., Hasan, S., Suharyanto, S., Yonvitner, Y., Koeshendrajana, S., Prasetiyo, D. E., Widianto, A., & Dermawan, A.	National Important and Strategic Values of the Zoning Plan for the Komodo National Park Area	2020
62.	Sutomo, S.	Vegetation composition of savanna ecosystem as a habitat for the Komodo Dragon (Varanus komodoensis) on Padar and Komodo Islands, Flores East Nusa Tenggara Indonesia.	2020

63.	Widiyarto, S.	Komodo Island Challenges: The Dilemma of Temporary Closure Discourse	2020
64.	Wulakada, H. H., Nalle, A. A., Benu, F. L., & Tiro, M.	Economic Valuation of the Komodo National Park West Manggarai Regency, East Nusa Tenggara	2020
65.	Choirisa, S. F., Purnamaningsih, P., & Alexandra, Y.	The Effect E-Wom On Destination Image And Attitude Towards To The Visit Intention Komodo National Park, Indonesia.	2021
66.	Choirisa, S. F., Purnomo, E., & Harianto, A.	Stakeholder perceptions to support Jurassic Park project as a future wildlife tourism	2021
67.	Gabur, M. F. A.	Three Element Work System in Tourism Development in the Komodo National Park (KNP) Labuan Bajo, East Nusa Tenggara	2021
68.	Haking, N.	Management and tourism services for Komodo National Park, Komodo Village, West Manggarai Regency, East Nusa Tenggara Province	2021
69.	Hidyarko, A. I. F., Gayatri, A. C., Rifa, V. A., Astuti, A., Kusumaningrum, L., Mau, Y. S., Rudiharto, H., & Setyawan, A. D.	Reviews : Komodo National Park as a Conservation Area For The Komodo Species (Varanus Komodoensis) and sustainable ecotourism	2021
70.	Islami, M. E. N., Enggarwati, D., & Saputra, A. D.	Analysis of Socio-Economic Impacts of Tourism Development in Komodo National Park, East Nusa Tenggara (A Case Study of Rinca Island and Komodo Island).	2021
71.	Kennedi, U. F., Kusrini, M., Mardiastuti, A., & Ariefiandy, A.	The Amphibians and Reptiles in Komodo National Park and The Surrounding Area.	2021
72.	Nurbasari, A., Kuswoyo, C., Aribowo, A., & Raharjo, G. P. A.	Impact of Destination Image, Place Attachment, Tourist Satisfaction on Tourist Loyalty (World Natural Heritage Site and Biosphere Reserve in Komodo National Park).	2021
73.	Reza, C. M., Triyoni, P., Rachma, P., Riyana, S., Taufik, K. M., Adi, W. S. P., Nurjamin, N., Suparmo, S., & Serly, S.	Preliminary Study of the Effect of Tourism Activities on Litter Pollution: a Case Study on Padar Island, Komodo National Park, Indonesia.	2021
74.	Salmayenti R., & Ramadhanti, P. A. M.	Precipitation and Land Cover Change in Komodo National Park During El Nino and La Nina	2021
75.	Setiawan, R. A.	Komodo behavior on Rinca Island, Komodo National Park, East Nusa	2021

		Tenggara during the Covid-19 Pandemic	
76.	Sudiartha, I. G., Sudana, I. P., Dwirandra, A. A. N. B., & Wirajaya, I.	Implementation of Good Governance in Komodo National Park Management: A Case Study.	2021
77.	Zuhri, S., Illahi, A. G., & Apriliana, D.	Framing Analysis of The News Komodo 'Jurassic Park' Project on Liputan6.com and Tempo.co.	2021
78.	Zulpikar, F., & Handayani, T.	Life form, diversity, and spatial distribution of macroalgae in Komodo National Park waters, East Nusa Tenggara	2021
79.	Adveni, L. V., & Razali, G.	Hypercapitalism and Product Commodification through Digital-based Marketing Communication in Komodo National Park.	2022
80.	Berto, A. R., & Murwani, E.	Sociocultural Information Gap in the Dive Tourism Industry: Evidence from Komodo National Park	2022
81.	Deni, A. M., Suwitra, M., & Sudibya, D. G.	Land Tenure on Kanawa Island as a Buffer for the Komodo National Park in Labuan Bajo, West Manggarai Regency, NTT Province	2022
82.	Firmansyah, S. B., & Putri, N. S.	Unpacking Jurassic Park Turbulence at Komodo Island: Indigenous mitigation furtherance	2022
83.	Germanov, E. S., Pierce, S. J., Marshall, A. D., Hendrawan, I. G., Kefi, A., Bejder, L., & Loneragan, N.	Residency, movement patterns, behavior and demographics of reef manta rays in Komodo National Park.	2022
84.	Jaya, L. M. G., Saputra, R. A., & Idrus, S. H.	Using Support Vector Machine To Identify Land Cover Change During Covid-19 Pandemic in Komodo National Park, Indonesia.	2022
85.	Jerry, A.	The Influence of Komodo National Park Island Tourism Development on Tourism Actors in Labuan Bajo in 2022. Thesis. Warmadewa University.	2022
86.	Jessop, T. S., Purwandana, D., Imansyah, M. J., Ciofi, C., Benu, Y. J., & Arieifandy, A.	The influence of tropical seasonality on breeding phenology, growth, survival, and movement of a large reptile (Varanus komodoensis)	2022
87.	Johan, O., Idris, I., Fakhrurrozi, F., & Sianipar, O.	The impact of Manta Mae Phinisi ship grounding at Gili Lawa Darat Marine National Park of Komodo, West Manggarai, East Nusa Tenggara	2022

88.	Kodir, A., Tanjung, A., Sumarmi, S., Ahmad, R., & Simanjutak, T. B.	Tourism Governance in Komodo National Park, Indonesia: Blessing or Curse?	2022
89.	Mariati, S., Parera, A. K., & Rahmanita, M.	Sustainability Analysis of Komodo National Park as a Sustainable Tourism Destination	2022
90.	Noer'aulia, S.	Estimasi Stok Karbon di atas Permukaan (Above Ground Carbon) pada Mangrove Menggunakan Citra Sentinel-2A di Loh Buaya SPTN Wilayah I Pulau Rinca Balai Taman Nasional Komodo	2022
91.	Nurhayati, N.	WWF's Role in Management of Komodo National Park in Indonesia 2017-2019	2022
92.	Paulus C. A., Yahyah, Y., & Ayubi, A. A.	Policy Design for Coastal and Marine Tourism Development in Komodo National Park Using Interpretative Structural Modeling: A Case Study of Padar and Komodo Islands.	2022
93.	Raditya, K.	Differences in the Nest Characteristics of Komodo Dragons (Varanus komodoensis) in Monsoon Forest and Savanna on Komodo Island, Komodo National Park, East Nusa Tenggara.	2022
94.	Safarani, J. A., Adriyanto, A., & Saragih, H. J. R.	Cultural and Social Welfare Approaches in Komodo National Park to Support National Security: A Literature Review.	2022
95.	Sani, A. S., & Budi, I.	Sentimen Analysis On Jurassic Park Development In The Komodo Conservation Area.	2022
96.	Sianipar, I. M. J., Tehupeiory, A., Maya, A. J., Huy, H. L. A., Tuan, H. Q., & Suryawan, I. W. K.	Human Ecosystem Approach to The Dynamics of Sustainable Development in Komodo National Park, Indonesia.	2022
97.	Susanti, E., Badu, M. N., & Ulfah, S. M.	The Role of UNESCO as a world heritage center in the issues tourism projects in Komodo National Park reviewed from environmental concepts.	2022
98.	Umam, A. F. F.	Analysis of Shoreline Changes at SPTN II Padar Island Komodo National Park Hall Using the Digital Shoreline Analysis System (DSAS) Method	2022
99.	Abdu, D. M.	Determination of Blue Carbon Potential in Mangroves on Papagarang Island SPTN Region III Padar Island	2023

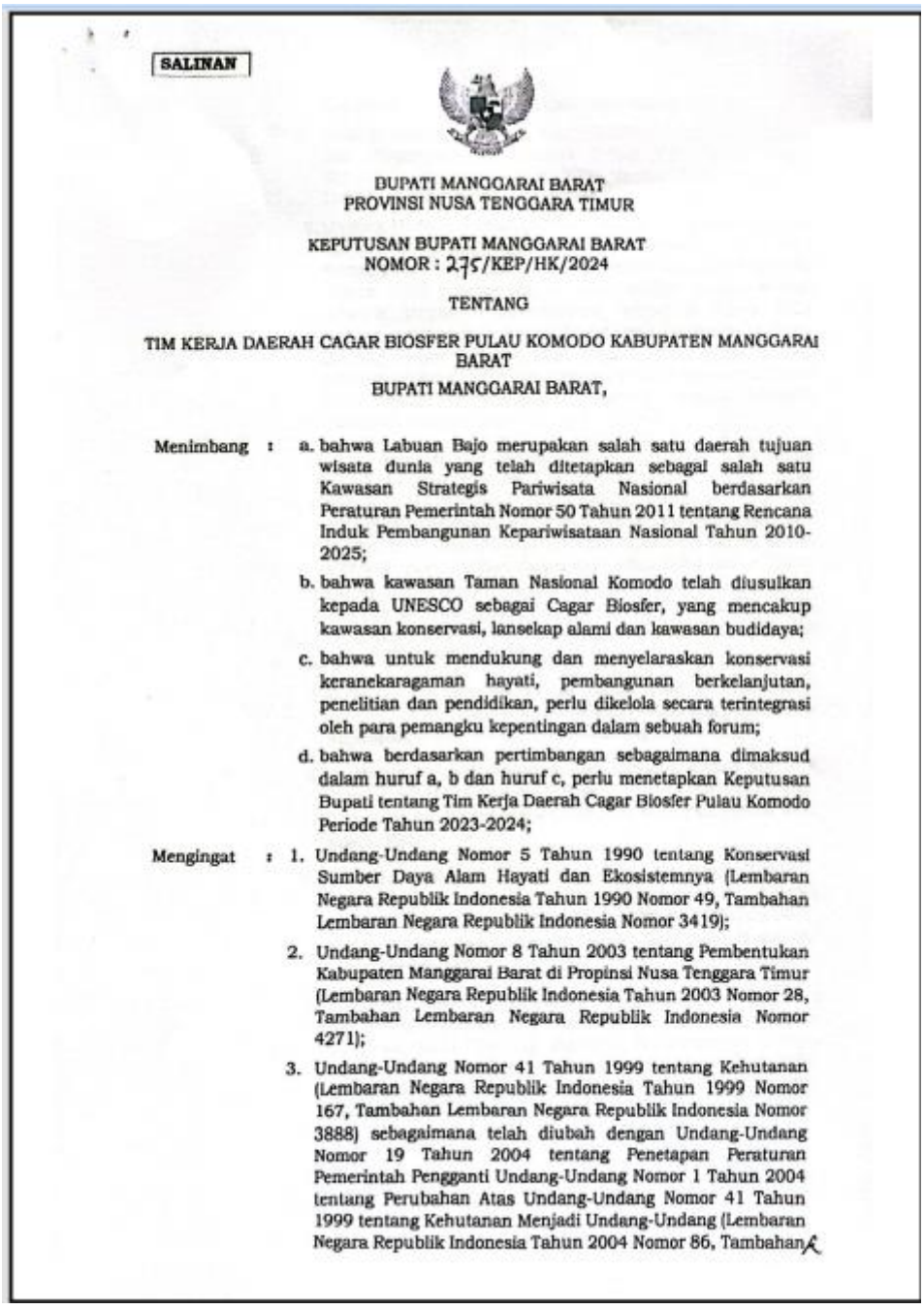
		and Kalong Rinca Island SPTN Region I Rinca Island Komodo National Park Hall	
100.	Ajirismandiar, M. N.	Mapping the Habitat Suitability of Timor Deer (Rusa timorensis) on Komodo Island, Komodo National Park	2023
101.	Audina, K. A.	Identification of Genus and Coral Growth Forms Using the Coral Finder Method at the Komodo National Park Office.	2023
102.	Candra, P. H., Maulida, F. H., & Zamahsari, G. M.	Women in Sustainable Tourism Development (Case Study at Komodo and Labuan Bajo Tourism Destination)	2023
103.	Choirisa, S. F.	Pros and Cons Tourism Development in Komodo National Park, Indonesia	2023
104.	Darnia, M. E., Hazra, F. A., Putri, R. D. I., Ahmad, N. H., & Hendrik, M. A.	Rights of Indigenous Peoples to Local Natural Resources on Komodo Island: Quo Vadis?	2023
105.	Djago, I. S. F.	Cultural and Spiritual Values of Nature at The Intersection of Conservation and Tourism Management in Komodo National Park, Indonesia	2023
106.	Firmansyah, I.	Modelling of Carrying Capacity at Komodo National Park: System Dynamics Approach (Case Study: Komodo Island and Padar Island, East Nusa Tenggara Province)	2023
107.	Firmansyah, I., Budiasa, W., Paulus, C. A., Rahman, D. A., Sukwika, T., Hermawan, E., & Casnan, C.	Ecosystem Services and Environmental Benefit Values On Komodo Island and Padar Island in Komodo National Park, Indonesia	2023
108.	Gasa, F. M., Chandra, P. H., Ngalu, R., & Luru, M. N.	The Jurassic park project in Rinca Island is a hyperreality for government of Indonesia	2023
109.	Hadi, T. A., Sujono, P. A. W., Clarita, C., Budiyanto, A., Edrus, N. I., Sulha, S., Kefi, A., & Giyanto, G.	Interactions between hard corals and reef fish communities in the Komodo National Park, East Nusa Tenggara Timur	2023
110.	Hardyanti, H., Isdarmanto, I., & Damiasih, D.	Local Community Empowerment Strategy Efforts in Ecotourism Development in Komodo National Park, West Manggarai Regency.	2023
111.	Jem, Y. H., Beda, R., Utami, N. M. V., & Rafael, A. M. D.	Public Signs In Komodo National Park, Flores-NTT: A Linguistic Landscape Stud	2023

112.	Leten, C. A. H.	Environmental Carrying Capacity of the Loh Buaya Tourist Area on Rinca Island, Komodo National Park (KNP)	2023
113.	Nurbandi, W.	The Political Ecology of Human-Komodo Dragon Conflict: Uncovering The Dysfunction of Conservation and Control in the Komodo National Park, Indonesia	2023
114.	Pasada, M. R.	Mapping the Habitat Suitability of the Komodo Dragon (Varanus komodoensis Ouwens, 1912) on Komodo Island, Komodo National Park	2023
115.	Purnama, A. O. D. A. A., Ibrahim, M., & Pratama, A. R.	The Potential of Komodo National Park in East Nusa Tenggara Province	2023
116.	Purwandana, A.	Hydrography and mixing estimates in the Komodo Island waters, Indonesia	2023
117.	Rahmafitria, F., Dirgahayani, P., Putro, H. P. H., Rosyidie, A., & Hudalah, D.	Tourism accessibility in protected islands: the case of the Komodo National Park, Indonesia	2023
118.	Rahmafitria, F., Pratama, A. R., Kaswanto, K., & Miller, L.	Tourism accessibility in a protected area: toward the psycho-social approach	2023
119.	Rijal, S. S., Pham, T. D., Noer'aulia, S., Putera, M. I., & Saintilan, N.	Mapping Mangrove Above-Ground Using Multi-Source Remote Sensing Data and Machine Learning Approach in Loh Buaya, Komodo National Park, Indonesia.	2023
120.	Sari, D. G., & Fasya, M.	Indonesian Jurrasic Park's Komodo National Park Project Controversy (A Critical Discourse Analysis of Tempo.co's Environmental News)	2023
121.	Wicaksono, M. A.	Richness of Wild Animal Types and Activities on the Loh Liang Tourist Route, Komodo National Park Using Camera Trap	2023
122.	Yogesvari, M., & Sitepu, E	The Impact of Ticketing System Agent-Based Modelling and Simulation Applied at Komodo National Park	2023
123.	Afioma, G., Galvin, K. A., Kwiatkowski, L., & Stevis, D.	Political dimensions of livelihood transformation of the Indigenous Ata Modo people in Komodo National Park, Indonesia	2024
124.	Agung, D. K.	Tourism Dependency Patterns in Komodo National Park	2024

125.	Aka, M. A. C.	The Ata Modo's Everyday Resistance Against Conservation and Tourism Expansion on Komodo Island, Indonesia	2024
126.	Batubara, H. B.	Valuasi Ekonomi: Travel Cost dan Willingness To Pay Ekowisata Taman Nasional Komodo	2024
127.	Fauzia, A. M., Kusrini, M. D., Mulyani, Y. A., Nusantara, M. G. G., Sari, F. E., Setiawan, R. A., & Ariefiandy, A.	Community Perspective in Ethogram for Komodo Dragon (Varanus komodoensis) in the Wild	2024
128.	Mahmudin, T.	Strategic Management of Tourist Services: Implications for Business Performance and Customer Satisfaction in Komodo National Park.	2024
129.	Mongi, E. M., Afifa, F., Fauziah, R., & Rahallus, S.	Review of Political Ecology Perspective: Community Perceptions of Premium Tourism Development Plans in Komodo National Park, Komodo Island.	2024
130.	Sianipar, I. M. J., Lee, C. H., Wang, H. J., Kim, D. C., & Suryawan, I. W. K.	Adaptive strategies and community engagement for sustainable conservation and tourism in Komodo National Park, Indonesia.	2024
131.	Sianipar, I. M. J., Lee, C. H., Wang, H. J., Kim, D. C., & Suryawan, I. W. K.	Determinant of importance-performance and willingness to participate in Komodo adaptive conservation programs	2024
132.	Sianipar, I. M. J., Lee, C. H., Wang, H. J., Kim, D. C., & Suryawan, I. W. K.	Unraveling factors influencing local willingness to participate in sustainable Komodo conservation and protected area tourism	2024
133.	Sianipar, I. M. J., & Suryawan, I. W. K.	Tourist Growth and Adaptation of Local Community in Komodo National Park and Labuan Bajo, Manggarai Barat Regency, Indonesia	2024
134.	Wirakusuma, R. M., Gardiner, S., & Coghlan, A.	Overtourism and Tourism Sustainable Management in the Komodo National Park, Indonesia.	2024
135.	Yogesvari, M., Mudzakkir, F., Billy MS, D., & Alamsjah, F.	Using Acceptance Model to Enhance Digital Services: Focused on Komodo National Park.	2024
136.	Kajian Riset dan Inovasi Daerah Kabupaten Manggarai Barat Badan Riset & Politeknik eLBajo	Preparation of inclusive tourism documents in West Manggarai Regency	2023

137.	WWF Indonesia	Better Management Practices Wilayah Kelola Perairan Berbasis Masyarakat	2021
138.	Sukandar, Haries WWF Indonesia	Ecological Monitoring in Community-Based Water Management Areas	2020
139.	Paulus, C. A., et al.	Feasibility of Potential Seaweed Investment in West Manggarai Regency	2022
140.	Wera, E., et al	Development of Indigofera zollingeriana Forage Products in Cattle Farming Investment in West Manggarai Regency	N/A
141.	WWF Indonesia	Study of Ecosystem Based Fisheries Management in Alor, East Flores and West Manggarai	2021
142.	Tim Kerja EAFM & Fakultas Perikanan UKAW	Ecosystem Approach to Fisheries Management (EAFM) di Kabupaten Manggarai Barat	2021
143.	Germanov, E. S., et al.	Residency, Movement Patterns, Behavior and Demographics of Reef Manta Rays in Komodo National Park	2022

The Komodo Biosphere Reserve Working Team through the Decree of the Regent of West Manggarai: 253/KEP/HK/2024



SALINAN

BUPATI MANGGARAI BARAT
PROVINSI NUSA TENGGARA TIMUR

KEPUTUSAN BUPATI MANGGARAI BARAT
NOMOR : 275/KEP/HK/2024

TENTANG

TIM KERJA DAERAH CAGAR BIOSFER PULAU KOMODO KABUPATEN MANGGARAI BARAT

BUPATI MANGGARAI BARAT,

Menimbang :

a. bahwa Labuan Bajo merupakan salah satu daerah tujuan wisata dunia yang telah ditetapkan sebagai salah satu Kawasan Strategis Pariwisata Nasional berdasarkan Peraturan Pemerintah Nomor 50 Tahun 2011 tentang Rencana Induk Pembangunan Kepariwisataan Nasional Tahun 2010-2025;

b. bahwa kawasan Taman Nasional Komodo telah diusulkan kepada UNESCO sebagai Cagar Biosfer, yang mencakup kawasan konservasi, lansekap alami dan kawasan budidaya;

c. bahwa untuk mendukung dan menyelaraskan konservasi keranekaragaman hayati, pembangunan berkelanjutan, penelitian dan pendidikan, perlu dikelola secara terintegrasi oleh para pemangku kepentingan dalam sebuah forum;

d. bahwa berdasarkan pertimbangan sebagaimana dimaksud dalam huruf a, b dan huruf c, perlu menetapkan Keputusan Bupati tentang Tim Kerja Daerah Cagar Biosfer Pulau Komodo Periode Tahun 2023-2024;

Mengingat :

1. Undang-Undang Nomor 5 Tahun 1990 tentang Konservasi Sumber Daya Alam Hayati dan Ekosistemnya (Lembaran Negara Republik Indonesia Tahun 1990 Nomor 49, Tambahan Lembaran Negara Republik Indonesia Nomor 3419);

2. Undang-Undang Nomor 8 Tahun 2003 tentang Pembentukan Kabupaten Manggarai Barat di Propinsi Nusa Tenggara Timur (Lembaran Negara Republik Indonesia Tahun 2003 Nomor 28, Tambahan Lembaran Negara Republik Indonesia Nomor 4271);

3. Undang-Undang Nomor 41 Tahun 1999 tentang Kehutanan (Lembaran Negara Republik Indonesia Tahun 1999 Nomor 167, Tambahan Lembaran Negara Republik Indonesia Nomor 3888) sebagaimana telah diubah dengan Undang-Undang Nomor 19 Tahun 2004 tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 1 Tahun 2004 tentang Perubahan Atas Undang-Undang Nomor 41 Tahun 1999 tentang Kehutanan Menjadi Undang-Undang (Lembaran Negara Republik Indonesia Tahun 2004 Nomor 86, Tambahan

Lembaran Negara Republik Indonesia Nomor 4412);

4. Undang-Undang Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup (Lembaran Negara Republik Indonesia Tahun 2009 Nomor 140, Tambahan Lembaran Negara Republik Indonesia Nomor 5059);
5. Undang-Undang Nomor 23 Tahun 2014 tentang Pemerintahan Daerah (Lembaran Negara Republik Indonesia Tahun 2014 Nomor 244, Tambahan Lembaran Negara Republik Indonesia Nomor 5587) sebagaimana telah diubah beberapa kali, terakhir dengan Undang-Undang Nomor 6 Tahun 2023 tentang Penetapan Peraturan Pemerintah Pengganti Undang-Undang Nomor 2 Tahun 2022 tentang Cipta Kerja menjadi Undang-Undang (Lembaran Negara Republik Indonesia Tahun 2023 Nomor 41, Tambahan Lembaran Negara Republik Indonesia Nomor 6856);
6. Keputusan Menteri Lingkungan Hidup dan Kehutanan Nomor 306/Kpts-II/92 tentang Perubahan Fungsi Suaka Marga Satwa Pulau Komodo, Pulau Rinca, Pulau Padar Seluas 40.728 (Empat Puluh Ribu Tujuh Ratus Dua Puluh Delapan) Hektar Serta Penunjukan Perairan Laut Sekitarnya Seluas 132.572 (Seratus Tiga Puluh Dua Ribu Lima Ratus Tujuh Puluh Dua) Hektar Yang Terletak di Kabupaten Daerah Tingkat II Manggarai, Propinsi Daerah Tingkat I Nusa Tenggara Timur Menjadi Taman Nasional Dengan Nama Taman Nasional Komodo
7. Peraturan Presiden Nomor 32 Tahun 2018 tentang Badan Otorita Pengelolaan Pariwisata Labuan Bajo Flores (Lembaran Negara Republik Indonesia Tahun 2018, Nomor 55);
8. Peraturan Menteri Pariwisata dan Ekonomi Kreatif Nomor 9 Tahun 2021 Tentang Pedoman Destinasi Pariwisata Berkelanjutan (Berita Negara Republik Indonesia Tahun 2021 Nomor 781);
9. Peraturan Daerah Kabupaten Manggarai Barat Nomor 2 Tahun 2017 tentang Sistem Kepariwisataan Daerah (Lembaran Daerah Kabupaten Manggarai Barat Tahun 2017, Nomor 2, Tambahan Lembaran Daerah Kabupaten Manggarai Barat Nomor 169);
10. Peraturan Daerah Kabupaten Manggarai Barat Nomor 5 Tahun 2023 tentang Perubahan atas Peraturan Daerah Nomor 2 Tahun 2021 Tentang Rencana Pembangunan Jangka Menengah Daerah Kabupaten Manggarai Barat Tahun 2021-2026 (Lembaran Daerah Kabupaten Manggarai Barat Tahun 2023 Nomor 5);

MEMUTUSKAN :

Menetapkan :

KESATU : Membentuk Tim Kerja Daerah Cagar Biosfer Pulau Komodo Kabupaten Manggarai Barat, dengan susunan Tim sebagaimana tercantum dalam Lampiran sebagai bagian tidak terpisahkan dengan Keputusan ini;

KEDUA : Tim Kerja Daerah sebagaimana dimaksud dalam diktum KESATU mempunyai tugas:

1. melaksanakan koordinasi dan komunikasi di antara berbagai Instansi yang berwenang dengan para pemangku kepentingan (stakeholder) melalui pembagian peran dan tanggung jawab dalam mengimplementasikan konsepsi Pengelolaan Terpadu Cagar Biosfer, yang mencakup kawasan konservasi, lansekap alami dan kawasan budidaya;.
2. merumuskan mekanisme koordinasi dan komunikasi untuk mengimplementasikan konsepsi Pengelolaan Terpadu Cagar Biosfer;
3. melaksanakan koordinasi dan komunikasi antar pemangku kepentingan untuk mengoptimalkan Pengelolaan Terpadu Cagar Biosfer;
4. melaksanakan inisiasi, mediasi dan advokasi terhadap perbedaan kepentingan dan persepsi antar pemangku kepentingan dalam implementasi konsepsi Pengelolaan Terpadu Cagar Biosfer;
5. menyelenggarakan jaringan kerja dan komunikasi dengan forum/lembaga sejenis, termasuk dengan Jaringan Cagar Biosfer Dunia – Man and the Biosphere UNESCO;.
6. melaporkan hasil pelaksanaan tugasnya kepada Bupati.

KETIGA : Segala biaya yang dikeluarkan akibat ditetapkannya Keputusan ini dibebankan pada Anggaran Pendapatan dan Belaja Daerah melalui Dokumen Pelaksanaan Anggaran Daerah (DPA) Satuan Kerja Perangkat Badan Perencanaan Pembangunan Daerah Kabupaten Manggarai Barat Tahun Anggaran 2025.

KEEMPAT : Keputusan ini mulai berlaku sejak tanggal ditetapkan dan berlaku surut sejak tanggal 15 Mei 2024 dengan ketentuan dapat ditinjau kembali sebagaimana mestinya apabila terdapat kekeliruan dalam penetapannya.

Salinan sesuai dengan aslinya
KEPALA BAGIAN HUKUM

SEKRETARIAT DAERAH

NOVANTURA PURNAMA RAYA, SH
NIP. 19790710 200904 1 004

Dikeluarkan di Labuan Bajo
pada tanggal 30 Juli 2024

BUPATI MANGGARAI BARAT,

TTD

EDISTASIUS ENDI

LAMPIRAN : KEPUTUSAN BUPATI MANGGARAI BARAT
NOMOR : 275 /KEP/HK/2024
TANGGAL : 30 Juli 2024
TENTANG : TIM KERJA DAERAH CAGAR BIOSFER PULAU KOMODO KABUPATEN MANGGARAI BARAT

SUSUNAN TIM KERJA DAERAH CAGAR BIOSFER PULAU KOMODO KABUPATEN MANGGARAI BARAT

NO	JABATAN/NAMA	KEDUDUKAN DALAM TIM
1	Bupati Manggarai Barat	Pengarah
2	Wakil Bupati Manggarai Barat	Pengarah
3	Sekretaris Daerah Kabupaten Manggarai Barat	Ketua
4	Kepala Badan Perencanaan Pembangunan Daerah Kabupaten Manggarai Barat	Wakil Ketua
5	Kepala Balai Taman Nasional Komodo Kabupaten Manggarai Barat	Sekretaris
TIM KONSERVASI PENDIDIKAN DAN PELATIHAN		
1	Kepala Badan Riset dan Inovasi Daerah Kabupaten Manggarai Barat	Koodinator
2	Kepala Dinas Lingkungan Hidup dan Pertanahan Kabupaten Manggarai Barat	Anggota
3	Kepala Dinas Pariwisata, Ekonomi Kreatif dan Kebudayaan Kabupaten Manggarai Barat	Anggota
4	Kepala Balai Taman Nasional Komodo	Anggota
5	Kepala Balai Konservasi Sumber Daya Alam	Anggota
6	Kepala Dinas Ketahanan Pangan dan Perikanan Kabupaten Manggarai Barat	Anggota
7	Fungsional Perencana Ahli Muda pada Bidang Perekonomian dan SDA	Anggota
TIM PEMBERDAYAAN MASYARAKAT		
1	Kepala Dinas Pemberdayaan Masyarakat dan Desa Kabupaten Manggarai Barat	Koordinator
2	Kepala Dinas Peternakan dan Kesehatan Hewan Kabupaten Manggarai Barat	Anggota
3	Kepala Dinas Tanaman Pangan, Hortikultura dan Perkebunan Kabupaten Manggarai Barat	Anggota
4	Kepala Dinas Ketahanan Pangan dan Perikanan Kabupaten Manggarai Barat	Anggota
5	Kepala Dinas Perdagangan dan Perindustrian Kabupaten Manggarai Barat	Anggota

6	Kepala Dinas Perdagangan dan Perindustrian Kabupaten Manggarai Barat	Anggota
7	Kepala Dinas Tenaga Kerja, Transmigrasi, Koperasi dan UKM Kabupaten Manggarai Barat	Anggota
8	Kepala Bagian Ekonomi Setda Kabupaten Manggarai Barat	Anggota
9	Kepala Dinas Pencatatan Sipil dan Kependudukan Kabupaten Manggarai Barat	Anggota
10	Fungsional Perencana Ahli Muda pada Bidang Perekonomian dan SDA	Anggota
TIM PEMBANGUNAN BERKELANJUTAN		
1	Kepala Badan Perencanaan Pembangunan Daerah Kabupaten Manggarai Barat	Koordinator
2	Kepala Dinas Pariwisata, Ekonomi Kreatif dan Kebudayaan Kabupaten Manggarai Barat	Anggota
3	Kepala Dinas Cipta Karya, Tata Ruang, Perumahan dan Kawasan Permukiman Kabupaten Manggarai	Anggota
4	Kepala Bidang Perekonomian dan SDA Badan Perencanaan Pembangunan Daerah Kabupaten Manggarai Barat	Anggota
5	Kepala UPTD Kehutanan Provinsi Nusa Tenggara Timur di Labuan Bajo	Anggota
6	Direktur Utama Badan Pelaksana Otoritas Pariwisata Labuan Bajo-Flores	Anggota
7	Kepala UPT Perikanan Provinsi NTT	Anggota

BUPATI MANGGARAI BARAT,

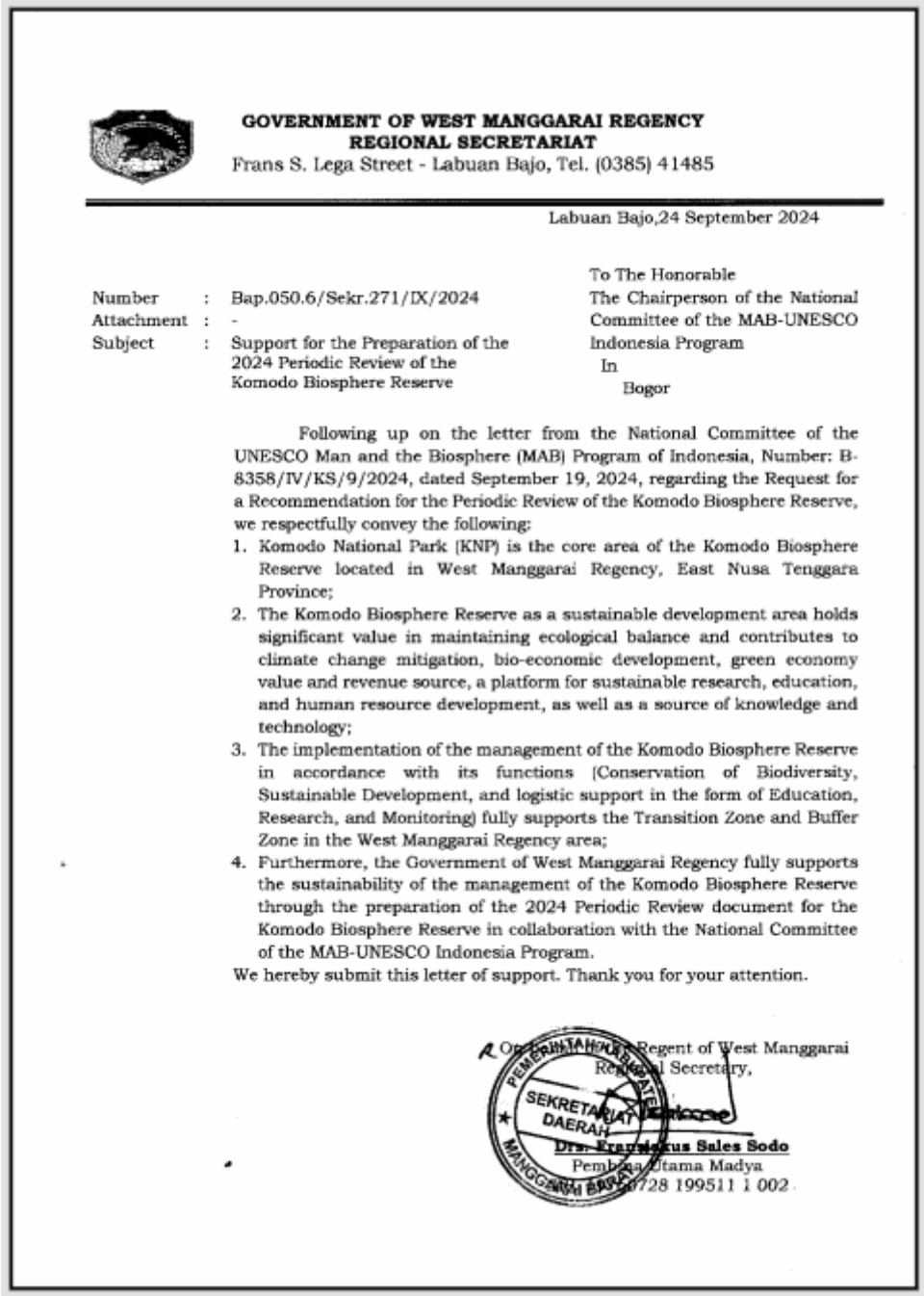
TTD

EDISTASIUS ENDI

Salinan sesuai dengan aslinya
KEPALA BAGIAN HUKUM

YOSAFANTURA PERNAMA RAYA, SH
NIP. 19790716 200904 1 004

Letter of Support from Government of West Manggarai Regency



GOVERNMENT OF WEST MANGGARAI REGENCY
REGIONAL SECRETARIAT
Frans S. Lega Street - Labuan Bajo, Tel. (0385) 41485

Labuan Bajo,24 September 2024

Number : Bap.050.6/Sekr.271/IX/2024
Attachment : -
Subject : Support for the Preparation of the 2024 Periodic Review of the Komodo Biosphere Reserve

To The Honorable
The Chairperson of the National Committee of the MAB-UNESCO Indonesia Program
In
Bogor

Following up on the letter from the National Committee of the UNESCO Man and the Biosphere (MAB) Program of Indonesia, Number: B-8358/IV/KS/9/2024, dated September 19, 2024, regarding the Request for a Recommendation for the Periodic Review of the Komodo Biosphere Reserve, we respectfully convey the following:

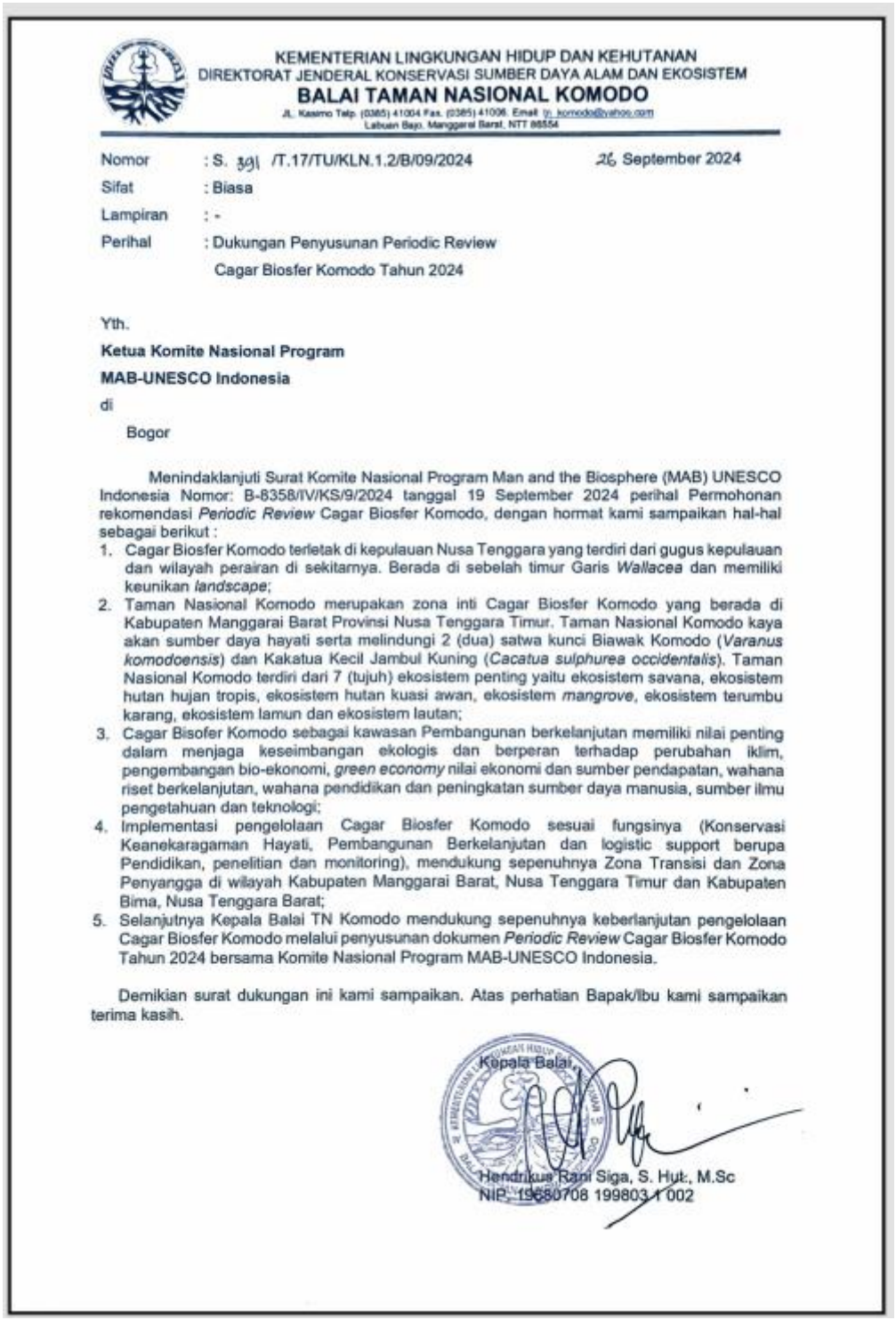
1. Komodo National Park (KNP) is the core area of the Komodo Biosphere Reserve located in West Manggarai Regency, East Nusa Tenggara Province;
2. The Komodo Biosphere Reserve as a sustainable development area holds significant value in maintaining ecological balance and contributes to climate change mitigation, bio-economic development, green economy value and revenue source, a platform for sustainable research, education, and human resource development, as well as a source of knowledge and technology;
3. The implementation of the management of the Komodo Biosphere Reserve in accordance with its functions (Conservation of Biodiversity, Sustainable Development, and logistic support in the form of Education, Research, and Monitoring) fully supports the Transition Zone and Buffer Zone in the West Manggarai Regency area;
4. Furthermore, the Government of West Manggarai Regency fully supports the sustainability of the management of the Komodo Biosphere Reserve through the preparation of the 2024 Periodic Review document for the Komodo Biosphere Reserve in collaboration with the National Committee of the MAB-UNESCO Indonesia Program.

We hereby submit this letter of support. Thank you for your attention.

On behalf of the Regent of West Manggarai
Regional Secretary,

Drs. Fransiskus Sales Sodo
Pembina Utama Madya
NIP. 19680728 199511 1 002

Letter of Support from Komodo National Park



KEMENTERIAN LINGKUNGAN HIDUP DAN KEHUTANAN
DIREKTORAT JENDERAL KONSERVASI SUMBER DAYA ALAM DAN EKOSISTEM
BALAI TAMAN NASIONAL KOMODO
Jl. Kasmo Telp. (0385) 41004 Fax. (0385) 41006. Email tn_komodo@yahoo.com
Labuan Bajo, Manggarai Barat, NTT 86554

Nomor : S. 391 /T.17/TU/KLN.1.2/B/09/2024 26 September 2024
Sifat : Biasa
Lampiran : -
Perihal : Dukungan Penyusunan Periodic Review Cagar Biosfer Komodo Tahun 2024

Yth.
Ketua Komite Nasional Program
MAB-UNESCO Indonesia
di
Bogor

Menindaklanjuti Surat Komite Nasional Program Man and the Biosphere (MAB) UNESCO Indonesia Nomor: B-8358/IV/KS/9/2024 tanggal 19 September 2024 perihal Permohonan rekomendasi *Periodic Review* Cagar Biosfer Komodo, dengan hormat kami sampaikan hal-hal sebagai berikut :

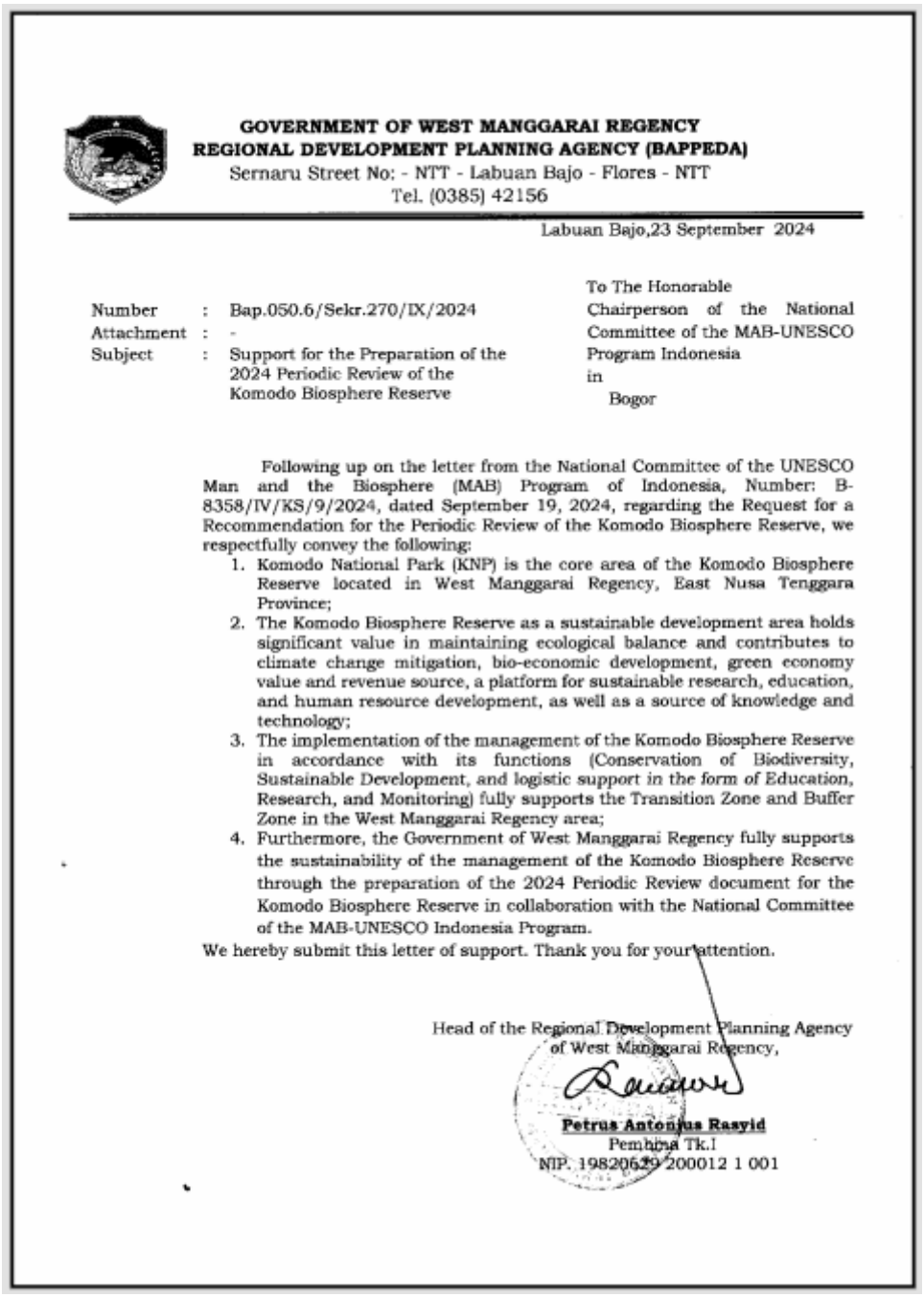
1. Cagar Biosfer Komodo terletak di kepulauan Nusa Tenggara yang terdiri dari gugus kepulauan dan wilayah perairan di sekitarnya. Berada di sebelah timur Garis *Wallacea* dan memiliki keunikan *landscape*;
2. Taman Nasional Komodo merupakan zona inti Cagar Biosfer Komodo yang berada di Kabupaten Manggarai Barat Provinsi Nusa Tenggara Timur. Taman Nasional Komodo kaya akan sumber daya hayati serta melindungi 2 (dua) satwa kunci Biawak Komodo (*Varanus komodoensis*) dan Kakatua Kecil Jambul Kuning (*Cacatua sulphurea occidentalis*). Taman Nasional Komodo terdiri dari 7 (tujuh) ekosistem penting yaitu ekosistem savana, ekosistem hutan hujan tropis, ekosistem hutan kuasi awan, ekosistem *mangrove*, ekosistem terumbu karang, ekosistem lamun dan ekosistem lautan;
3. Cagar Bisofer Komodo sebagai kawasan Pembangunan berkelanjutan memiliki nilai penting dalam menjaga keseimbangan ekologis dan berperan terhadap perubahan iklim, pengembangan bio-ekonomi, *green economy* nilai ekonomi dan sumber pendapatan, wahana riset berkelanjutan, wahana pendidikan dan peningkatan sumber daya manusia, sumber ilmu pengetahuan dan teknologi;
4. Implementasi pengelolaan Cagar Biosfer Komodo sesuai fungsinya (Konservasi Keanekaragaman Hayati, Pembangunan Berkelanjutan dan logistic support berupa Pendidikan, penelitian dan monitoring), mendukung sepenuhnya Zona Transisi dan Zona Penyangga di wilayah Kabupaten Manggarai Barat, Nusa Tenggara Timur dan Kabupaten Bima, Nusa Tenggara Barat;
5. Selanjutnya Kepala Balai TN Komodo mendukung sepenuhnya keberlanjutan pengelolaan Cagar Biosfer Komodo melalui penyusunan dokumen *Periodic Review* Cagar Biosfer Komodo Tahun 2024 bersama Komite Nasional Program MAB-UNESCO Indonesia.

Demikian surat dukungan ini kami sampaikan. Atas perhatian Bapak/Ibu kami sampaikan terima kasih.

Kepala Balai,

Hendrikus Rani Siga, S. Hut., M.Sc
NIP. 19680708 199803 1 002

Letter of Support from Government of West Manggarai Regency, Regional Development Planning Agency



GOVERNMENT OF WEST MANGGARAI REGENCY
REGIONAL DEVELOPMENT PLANNING AGENCY (BAPPEDA)
Sernaru Street No: - NTT - Labuan Bajo - Flores - NTT
Tel. (0385) 42156

Labuan Bajo,23 September 2024

Number : Bap.050.6/Sekr.270/IX/2024
Attachment : -
Subject : Support for the Preparation of the 2024 Periodic Review of the Komodo Biosphere Reserve

To The Honorable
Chairperson of the National Committee of the MAB-UNESCO Program Indonesia
in
Bogor

Following up on the letter from the National Committee of the UNESCO Man and the Biosphere (MAB) Program of Indonesia, Number: B-8358/IV/KS/9/2024, dated September 19, 2024, regarding the Request for a Recommendation for the Periodic Review of the Komodo Biosphere Reserve, we respectfully convey the following:

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4. Furthermore, the Government of West Manggarai Regency fully supports the sustainability of the management of the Komodo Biosphere Reserve through the preparation of the 2024 Periodic Review document for the Komodo Biosphere Reserve in collaboration with the National Committee of the MAB-UNESCO Indonesia Program.

We hereby submit this letter of support. Thank you for your attention.

Head of the Regional Development Planning Agency
of West Manggarai Regency,

Petrus Antonius Rasyid
Pembina Tk.I
NIP. 19820629 200012 1 001

ANNEX II TO THE BIOSPHERE RESERVE PERIODIC REVIEW, SEPTEMBER 2024 PROMOTION AND COMMUNICATION MATERIALS FOR THE BIOSPHERE RESERVEMABNET DIRECTORY OF BIOSPHERE RESERVES

Provide some promotional material regarding the site, notably high quality photos, and/or short videos on the site so as to allow the Secretariat to prepare appropriate files for press events. To this end, a selection of photographs in high resolution (300 dpi), with photo credits and captions and video footage (rushes), without any comments or sub-titles, of professional quality – DV CAM or BETA only, will be needed.

In addition, return a signed copy of the following Agreements on Non-Exclusive Rights for photo(s) and video(s).

United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation,
la science et la culture

Organización
de las Naciones Unidas
para la Educación,
la Ciencia y la Cultura

Организация
Объединенных Наций по
вопросам образования,
науки и культуры

منظمة الأمم المتحدة
للتربية والعلم والثقافة

联合国教育、
科学及文化组织

UNESCO PHOTO LIBRARY

Bureau of Public Information

AGREEMENT GRANTING NON-EXCLUSIVE RIGHTS

Reference:

1. a) I the undersigned, copyright-holder of the above mentioned video(s) hereby grant to UNESCO free of charge the non-exclusive right to exploit, publish, reproduce, diffuse, communicate to the public in any form and on any support, including digital, all or part of the photograph(s) and to licence these rights to third parties on the basis of the rights herein vested in UNESCO

   b) These rights are granted to UNESCO for the legal term of copyright throughout the world.

   c) The name of the author/copyright holder will be cited alongside UNESCO's whenever his/her work is used in any form.

2. I certify that:
   a) I am the sole copyright holder of the video(s) and am the owner of the rights granted by virtue of this agreement and other rights conferred to me by national legislation and pertinent international conventions on copyright and that I have full rights to enter into this agreement.

b) The video(s) is/are in no way whatever a violation or an infringement of any existing copyright or licence, and contain(s) nothing obscene, libellous or defamatory.

Name and Address: Petrus Antonius Rasyid ((Head of the West Manggarai Regency Regional Development Planning Agency)
Labuan Bajo, Manggarai Barat, Nusa Tenggara Timur

Signature : PEMERINTAH KABUPATEN BAPPEDA MANGGARAI BARAT

Date: September 25, 2024

Name and Address: Hendrikus Rani Siga, S.Hut, M.Sc (Head of Komodo National Park)

Labuan Bajo, Manggarai Barat, Nusa Tenggara Timur

Signature : 

Date: September 28th 2024

(Sign, return to UNESCO two copies of the Agreement and retain the original for yourself)
Mailing address: 7 Place Fontenoy, 75352 Paris 07 SP, Direct Telephone: 00331 – 45681687
Direct Fax: 00331 – 45685655; e-mail: photobank@unesco.org; m.ravassard@unesco.org

ANNEX III TO THE BIOSPHERE RESERVE PERIODIC REVIEW, JANUARY 2013 THE STATUTORY FRAMEWORK OF THE WORLD NETWORK OF BIOSPHERE RESERVES

Introduction

Within UNESCO's Man and the Biosphere (MAB) programme, biosphere reserves are established to promote and demonstrate a balanced relationship between humans and the biosphere. Biosphere reserves are designated by the International Co-ordinating Council of the MAB Programme, at the request of the State concerned. Biosphere reserves, each of which remains under the sole sovereignty of the State where it is situated and thereby submitted to State legislation only, form a World Network in which participation by the States is voluntary.

The present Statutory Framework of the World Network of Biosphere Reserves has been formulated with the objectives of enhancing the effectiveness of individual biosphere reserves and strengthening common understanding, communication and co-operation at regional and international levels.

This Statutory Framework is intended to contribute to the widespread recognition of biosphere reserves and to encourage and promote good working examples. The delisting procedure foreseen should be considered as an exception to this basically positive approach, and should be applied only after careful examination, paying due respect to the cultural and socio-economic situation of the country, and after consulting the government concerned.

The text provides for the designation, support and promotion of biosphere reserves, while taking account of the diversity of national and local situations. States are encouraged to elaborate and implement national criteria for biosphere reserves which take into account the special conditions of the State concerned.

Article 1 – Definition

Biosphere reserves are areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognized within the framework of UNESCO's programme on Man and the Biosphere (MAB), in accordance with the present Statutory Framework.

Article 2 - World Network of Biosphere Reserves

1. Biosphere reserves form a worldwide network, known as the World Network of Biosphere Reserves, hereafter called the Network.
2. The Network constitutes a tool for the conservation of biological diversity and the sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments.
3. Individual biosphere reserves remain under the sovereign jurisdiction of the States where they are situated. Under the present Statutory Framework, States take the measures which they deem necessary according to their national legislation

Article 3 - Functions

In combining the three functions below, biosphere reserves should strive to be sites of excellence to explore and demonstrate approaches to conservation and sustainabledevelopment on a regional scale:

(i) conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation;
(ii) development - foster economic and human development which is socio-culturally and ecologically sustainable;
(iii) logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development.

Article 4 – Criteria

General criteria for an area to be qualified for designation as a biosphere reserve:

1. It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions.
2. It should be of significance for biological diversity conservation.
3. It should provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.
4. It should have an appropriate size to serve the three functions of biosphere reserves, as set out in Article 3.
5. It should include these functions, through appropriate zonation, recognizing:
   (a) a legally constituted core area or areas devoted to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives;
   (b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place;
   (c) an outer transition area where sustainable resource management practices are promoted and developed.
6. Organizational 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 carrying out the functions of a biosphere reserve.
7. In addition, provisions should be made for:
   (a) mechanisms to manage human use and activities in the buffer zone or zones;
   (b) a management policy or plan for the area as a biosphere reserve;
   (c) a designated authority or mechanism to implement this policy or plan;
   (d) programmes for research, monitoring, education and training.

Article 5 - Designation procedure

1. Biosphere reserves are designated for inclusion in the Network by the International Co ordinating Council (ICC) of the MAB programme in accordance with the following procedure:
   (a) States, through National MAB Committees where appropriate, forward nominations with supporting documentation to the secretariat after having reviewed potential sites, taking into account the criteria as defined in Article 4;

(b) the secretariat verifies the content and supporting documentation: in the case of incomplete nomination, the secretariat requests the missing information from the nominating State;
(c) nominations will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC;
(d) ICC of the MAB programme takes a decision on nominations for designation. The Director General of UNESCO notifies the State concerned of the decision of ICC.

2. States are encouraged to examine and improve the adequacy of any existing biosphere reserve, and to propose extension as appropriate, to enable it to function fully within the Network. Proposals for extension follow the same procedure as described above for new designations.

3. Biosphere reserves which have been designated before the adoption of the present Statutory Framework are considered to be already part of the Network. The provisions of the Statutory Framework therefore apply to them.

Article 6 – Publicity

1. The designation of an area as a biosphere reserve should be given appropriate publicity by the State and authorities concerned, including commemorative plaques and dissemination of information material.
2. Biosphere reserves within the Network, as well as the objectives, should be given appropriate and continuing promotion.

Article 7 - Participation in the Network

1. States participate in or facilitate co-operative activities of the Network, including scientific research and monitoring, at the global, regional and sub-regional levels.
2. The appropriate authorities should make available the results of research, associated publications and other data, taking into account intellectual property rights, in order to ensure the proper functioning of the Network and maximize the benefits from information exchanges.
3. States and appropriate authorities should promote environmental education and training, as well as the development of human resources, in co-operation with other biosphere reserves in the Network.

Article 8 - Regional and thematic subnetworks

States should encourage the constitution and co-operative operation of regional and/or thematic subnetworks of biosphere reserves, and promote development of information exchanges, including electronic information, within the framework of these subnetworks.

Article 9 - Periodic review

1. The status of each biosphere reserve should be subject to a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4, and forwarded to the secretariat by the State concerned.
2. The report will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC.

3. ICC will examine the periodic reports from States concerned.
4. If ICC considers that the status or management of the biosphere reserve is satisfactory, or has improved since designation or the last review, this will be formally recognized by ICC.
5. If ICC considers that the biosphere reserve no longer satisfies the criteria contained in Article 4, it may recommend that the State concerned take measures to ensure conformity with the provisions of Article 4, taking into account the cultural and socio-economic context of the State concerned. ICC indicates to the secretariat actions that it should take to assist the State concerned in the implementation of such measures.
6. Should ICC find that the biosphere reserve in question still does not satisfy the criteria contained in Article 4, within a reasonable period, the area will no longer be referred to as a biosphere reserve which is part of the Network.
7. The Director-General of UNESCO notifies the State concerned of the decision of ICC.
8. Should a State wish to remove a biosphere reserve under its jurisdiction from the Network, it notifies the secretariat. This notification shall be transmitted to ICC for information. The area will then no longer be referred to as a biosphere reserve which is part of the Network.

Article 10 – Secretariat

1. UNESCO shall act as the secretariat of the Network and be responsible for its functioning and promotion. The secretariat shall facilitate communication and interaction among individual biosphere reserves and among experts. UNESCO shall also develop and maintain a worldwide accessible information system on biosphere reserves, to be linked to other relevant initiatives.
2. In order to reinforce individual biosphere reserves and the functioning of the Network and sub-networks, UNESCO shall seek financial support from bilateral and multilateral sources.
3. The list of biosphere reserves forming part of the Network, their objectives and descriptive details, shall be updated, published and distributed by the secretariat periodically.