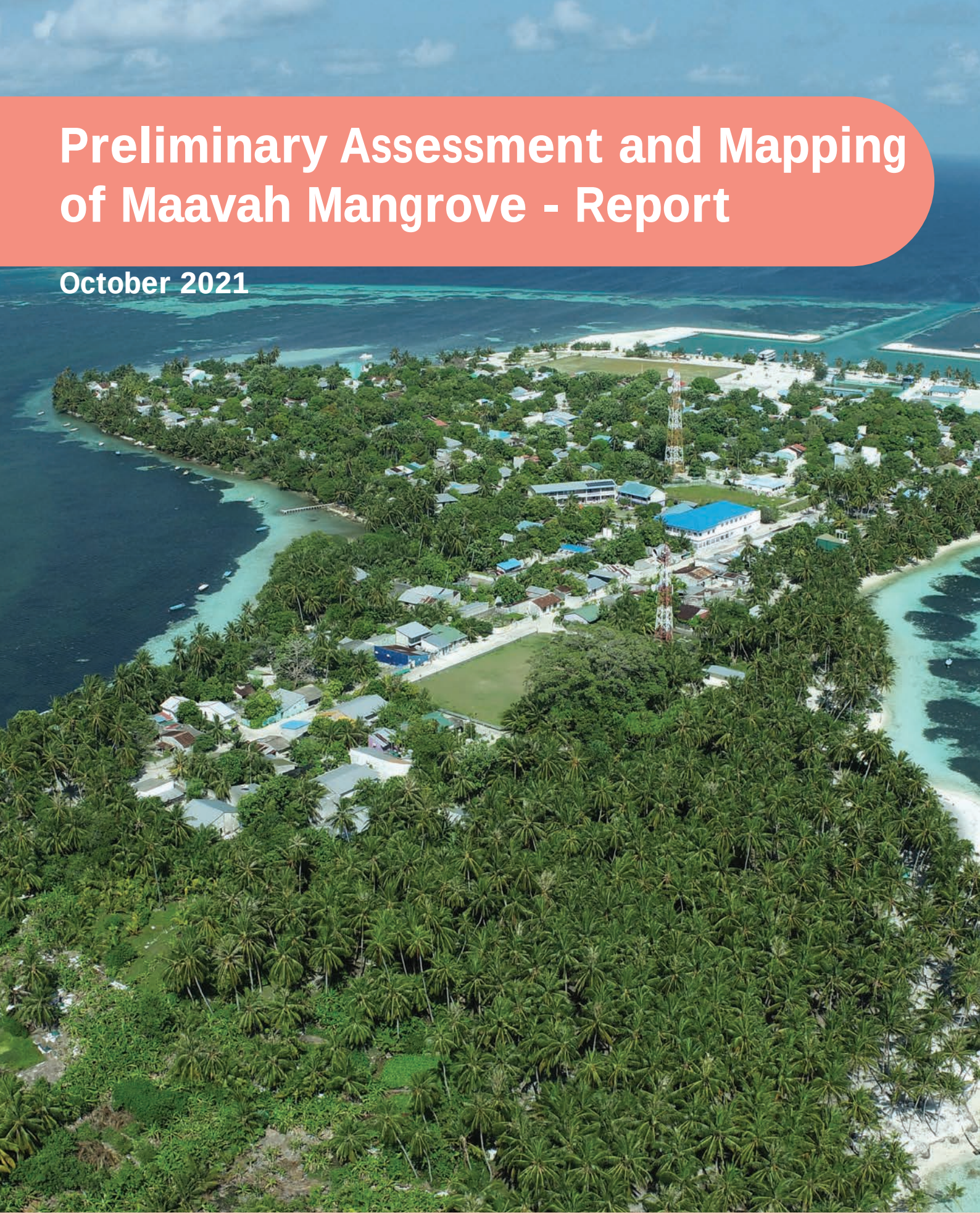
Preliminary Assessment and Mapping of Maavah Mangrove - Report

October 2021



Ministry of Environment, Climate Change and Technology

ENDhERI

gef

UN environment programme

Prepared by *Enhancing National Development through Environmentally Resilient Islands* (ENDhERI) Project for the Ministry of Environment, Climate Change and Technology

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ACRONYMS

ENDhERI	Enhancing National Development through Environmentally Resilient Islands
EPA	Environmental Protection Agency
NGO	Non Governmental Organization
LUP	Land Use Plan
MECCT	Ministry of Environment, Climate Change and Technology
UNEP	United Nation Environment Program
WDC	Women's Development Committee

Contents

1 Introduction:

Maavah is located in the western most side of Laamu Atoll. The island has a land area of around 40 hectares with a mean elevation of +0.93 m MSL. The reef system of Maavah is one of the largest in the Southcentral region with a length of 26 km, covering an area of 4500 ha. The island has a registered population of 2030.

The mangrove in Maavah island is identified as an environmentally significant area by the Environmental Protection Agency (EPA). A detail baseline study has not been conducted to identify the ecosystem and species in the mangrove, however few Small-leaved Orange Mangrove “Kandoo” (Bruguiera cylindrica) and Mangrove Apple “Kulhavah” (Sonneratia caseolaris) species are found in the mangrove. The mangrove has severely been impacted due to expansion of farmlands, extensive banana plantation, encroachment, land clearance, deforestation and disposal of waste. According to community members, they no longer observe certain species of mangrove and biodiversity due to the drastic changes to mangrove ecosystem. The mangrove area has significantly reduced over the years and slowly losing its values and significance.

The rapid loss in mangrove habitat and current status of mangrove was brought to attention of EPA by concerned NGOs in Maavah island. In order to address the issue EPA, Maavah council, and ENDhERI project held a meeting to discuss the issue of mangrove degradation in Maavah island. The outcome of the meeting was to conduct urgent action to restore and manage the Maavah mangrove. The proposed immediate actions were to conduct preliminary assessment of status of mangrove, demarcate the boundary of the mangrove, amend Land Use Plan (LUP) and conduct community consultations to identify the way forward to restore and manage Maavah mangrove as a collaboration between EPA, Maavah Council and ENDhERI.

This report outlines the findings of the preliminary investigation of Laamu Maavah Mangrove, conducted jointly by EPA and ENDhERI project, to identify the current status of mangrove and potential solutions and actions required for the restoration of the mangrove.

2 Aim and Objective of the Assignment

The assignment is carried out as a collaboratory work EPA, Maavah Council and ENDhERI project. The aim of the assignment is to assess the status of Maavah mangrove, identify the mangrove boundary and demarcate the mangrove and to conduct community consultations to identify a way forward to restore and manage Maavah mangrove.

The objective is:

1. to address the current mangrove degradation issues to find solutions to the current problem.
2. to identify ways to support and facilitate the restoration and management of Maavah mangrove.

3 Scope of work:

The scope of the assignment are as follows:

- Conduct stakeholder consultations with Maavah Council, NGOs, WDC, Schools, Farmers and other relevant stakeholders, to identify the drivers, pressure, state, impact and response (DP-SIR) in Maavah Mangrove.
- Develop zonation maps for Maavah Mangrove, Laamu Atoll. The survey team is responsible for developing draft boundary maps, participate in stakeholder consultations and integrate comments from stakeholders to develop the final zonation map for the site.
- Collect and collate raw and synthesized data collected through the survey, including representative photography and videography.
- Produce a detail report on stakeholder consultations and future action plan for the restoration and management of Maavah Mangrove.
- Share the reports and maps with Maavah Island Council

4 Key Deliverables:

The survey teams are expected to deliver the following deliverables

- Stakeholder Consultation report and action plan for the restoration and management of Maavah Mangrove
- Geographically reference maps of the Maavah mangrove and submitted in original (including but not limited to shape files), pdf and photo format in dhivehi and English
- Photos and videos of the surveyed area showing current condition.
- Figures of the area of habitats covered within the mangrove boundary in;
    - Total Terrestrial Area
    - Mangroves and wetland covered
    - Total area of water body
    - Vegetation covered

5 Methodology:

The assignment was conducted by a team from EPA and ENDhERI project. The assignment was carried out based on the TOR for the “Preliminary assessment of Maavah Mangrove” issued on 29th September2021 (Annex1). Field observations, stakeholder consultation and drone mapping were carried out is Maavah from 3-4th October 2021. The following methods approach was applied in conducting the assignment.

5.1. Literature Review:

Existing literature was reviewed to establish a background for the assignment. The literature from existing studies conducted in Laamu Atoll and EIA reports developed for projects in Maavah was used to identifying baseline. However, literature regarding Maavah Mangrove was very limited.

5.2. Field Observation & Mapping:

5.2.1. Mapping

Mapping of Maavah mangrove area to produce geographically referenced map was carried out using Real-time kinematic drone. RTK is onboard drone hardware that allows a survey drone to communicate with a base station in real time to validate its location in space. Photogrammetry data is collected at survey-grade accuracy as given in the following diagram.

Aerial imagery of island was collected using the DJI Phantom 4 RTK with 1-inch 20 Mega Pixel CMOS sensor. The flight plans were created using Creating flight paths on the controller using the built-in app (DJI GS RTK app), at the height of 120 meters.Even though from the Drone integrated GPS provides geo-referencing, it was essential in this project to take ground control points to make the map as accurate as possible. To increase geo-location accuracy during post-processing, five (5) ground control points (GCPs) randomly distributed were marked within and along the edges and in open areas using natural markers. Horizontal GPS locations of these markers were taken with Topcon GR-5 GPS and Base Station at a ± 10.0 mm or ± 1 cm accuracy using the RTK mode. The GCP’s were taken before the mapping of the area.

5.2.2. Boundary demarcation

Boundary demarcation was done using GPS and identified points were marked on the ground with an iron rod simultaneously during the mapping exercise..

5.2.3. Field Observation:

Field observations were recorded for the purpose of reporting. Since, the scope of TOR is limited to boundary demarcation and there was severe modification of mangrove area vegetation survey was not conducted in this assignment.

5.3. Stakeholder Consultations:

The stakeholders identified in accordance with TORs was consulted in form of meetings and group discussions. The following stakeholder meetings were conducted and minutes are annexed in this report.

- Island Council and Women's Development Committee
- NGOs, Government and Private Institutions
- Maavah School

6 Outcomes and Results:

6.1. Mangrove Field Observations:

General observation of the mangrove shows heavy degradation of mangrove area, due to excessive dumping of waste and encroachment and farming activities. The area of mangrove is not recognizable as a mangrove due to absence key features of mangrove due to severe modification. Significant part of mangrove had, overgrown invasive plants and weeds, banana and taro plantations. Large number of cardboard boxes and mixed waste was observed at the remnant of the mangrove. A few mangrove plants such as Small-leaved Orange Mangrove “Kandoo” (Bruguiera cylindrica) and Mangrove Apple “Kulhavah” (Sonneratia caseolaris) species were observed sparsely distributed within the area.

According to the council, the taro and banana farming is carried out without proper permits from council. Additionally, due to limited land area and Island Waste and Resource Management Center (IWRMC) being few feet away from mangrove, waste disposal into the mangrove has increased, significantly impacting the ecosystem. The following timeline with Google earth images indicate the changes in mangrove vegetation over the years.

2005

2012

2014

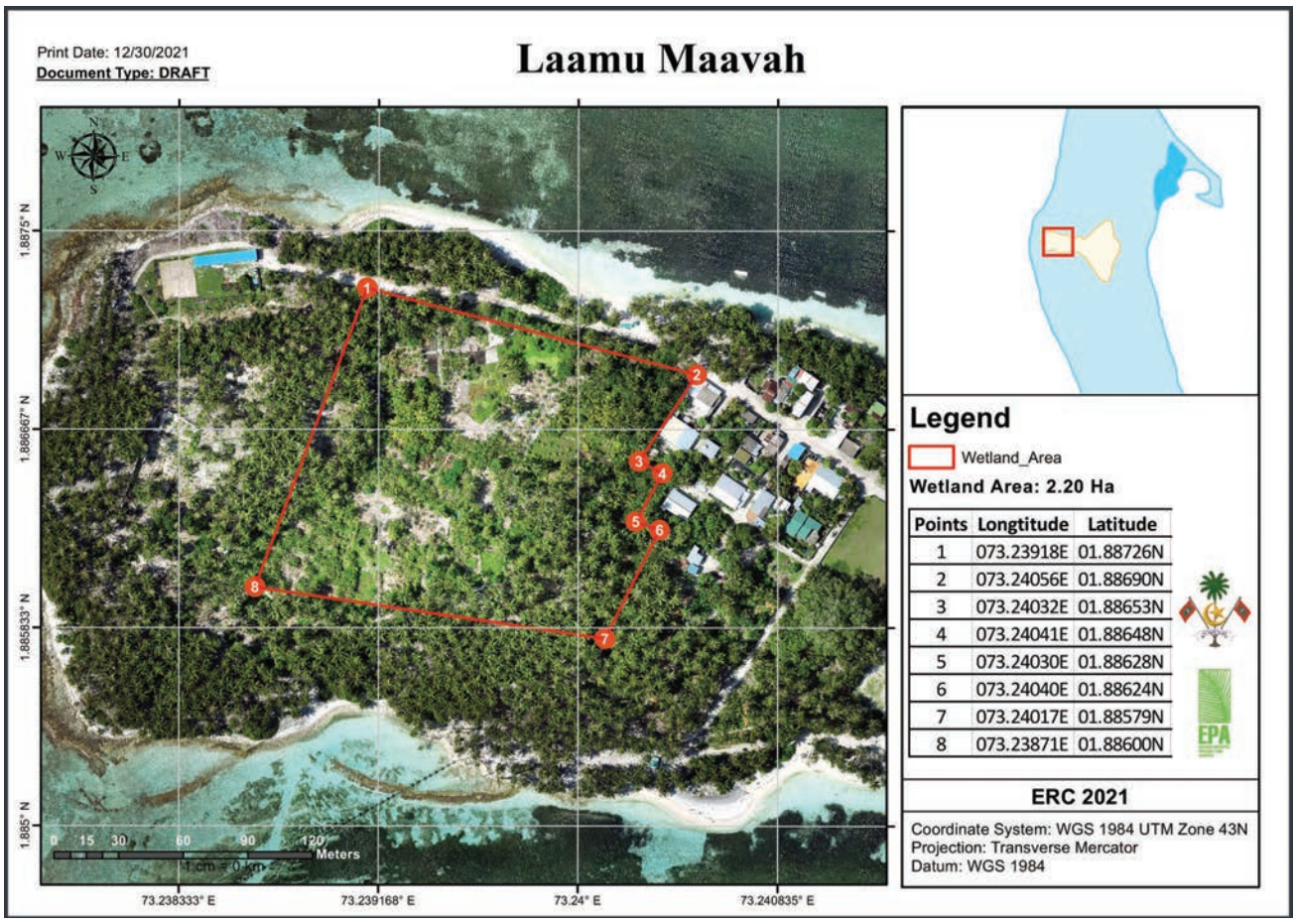
2016

2019

2022

6.2. Mangrove Boundary:

Identifying the boundary of the maavah mangrove was one of the key deliverables of the assignment. The boundary of mangrove was demarcated during this assessment and ground points were marked on the field, to be included in LUP and for future physical boundary demarcation. The total mangrove area is 2.20 hectors as shown in the map.



6.3. Stakeholder Consultation:

The consultation was conducted with island council, women's development committee, NGO, civil society and school. The participants of three meetings agree to the fact that the mangrove was a thick forest of mangrove species especially Small-leaved Orange Mangrove "Kandoo" (Bruguiera cylindrica) and community has benefited from the mangrove resources as far as they remember.

However, in past few years the encroachment has increased with no regulation of farmlands which impacted the mangrove severely. The large mangrove trees were replaced by banana and taro plantation. The participants agreed on the need for restoration of the Maavah mangrove and demarcation of mangrove boundary to prevent encroachment of farm lands. The meeting outcomes are included in the Annex 2 of this report.

Additionally, regulation of farming activities is needed to preserve the mangrove. The community members raised concern that mangrove ecosystem is severely degraded and heavily deforested up to the extend, there is only a handful of mangrove trees left now. Furthermore, they highligted that tsunami 2004 severely impacted the already deforested mangrove habitat and introduction of invasive species together with waste disposal the degradation of mangrove was accelerated.

The Maavah island council expressed their interest in restoration and conservation of mangrove; however, their main concern was lack of technical expertise to conduct the restoration. The council informed they have some amount of funding dedicated for the work; however, the funding is insufficient compared to the work that needs to be carried out

7 Discussion and Recommendations:

- The preliminary assessment of Maavah mangrove indicates that, the mangrove was once thick forest of mangrove species. The mangrove has been heavily modified, due to illegal farming activities within mangrove, encroachment, vegetation clearance and improper disposal of waste.

- A detailed vegetation survey, along with assessment of impacts to mangrove due to waste disposal and farming activities needs to be conducted in order to understand the extent of degradation.

- The number of farmers invested in the banana and taro plantation needs to be identified prior to any intervention. An acceptable duration of notice to vacate area, should be given to farmers and grievance mechanism should be in place.

- In order to restore the mangrove area, as recommended in the stakeholder consultation meetings, a plan of action needs to be developed.

- Some potential future actions and way forward to restore Maavah Mangrove are proposed in the Annex 3 of this report. The following are main actions recommended:
  - Demarcation of Maavah Mangrove
  - Formalizing Maavah Mangrove Boundary
  - Identification of mangrove resource use
  - Restoration and Rehabilitation of Maavah Mangrove
  - Maavah Mangrove Management planning
  - Decentralized community management of Maavah Mangrove

- The restoration works are expected to incur significant amount of budget, therefore, appropriate financial mechanism needs to be in place, before commencement of work.

Annex 1: Terms of Reference

Terms of Reference: Preliminary Assessment, Consultation and Mapping of Maavah Mangrove, Laamu Atoll

Background

Maavah is an located in the western most side of Laamu Atoll. The island has a land area of around 40 hectares with a mean elevation of +0.93 m MSL. The reef system of Maavah is one of the largest in the Southcentral region with a length of 26 km, covering an area of 4500 ha (CDE Consulting 2020). The island is densely populated with a registered population of 2030.

The mangrove in Maavah island is identified as an environmentally significant area by the Environmental Protection Agency(EPA). A detail baseline study has not be conducted to identify the ecosystem and species in the mangrove, however few Small-leaved Orange Mangrove "Kandoo" *(Bruguiera cylindrica)* and Mangrove Apple "Kulhavah" *(Sonneratia caseolaris)* species are found in the mangrove. The mangrove has severely been impacted due to expansion of farmlands, extensive banana plantation, encroachment, land clearance, deforestation and disposal of waste. According to locals, they no longer observe certain species of mangrove and biodiversity due to the drastic changes to mangrove ecosystem. The mangrove area has significantly reduced over the years and slowly losing its values and significance.

The rapid loss in mangrove habitat and current status of mangrove was brought to attention of EPA by concerned NGOs in Maavah island. In order to address the issue EPA, Maavah council, and ENDhERI project held a meeting to discuss the issue of mangrove degradation in Maavah island. The outcome of the meeting was to conduct urgent action to restore and manage the Maavah mangrove. The first actions was to demarcate the boundary of the mangrove, amend LUP and conduct community consultations to identify the way forward to restore and manage Maavah mangrove as a collaboration between EPA, Maavah Council and ENDhERI.

Members of the survey team

Name	Designation	Organisation
Aishath Farhath Ali	Assistant Director	EPA
Hussain Sufran	Assistant Director	EPA
Enas Mohamed	Environment Analyst	EPA
Ali Nishan	Assistant Environment Officer	EPA
Mariyam Rifga	Community Co-Management Consultant	MoECCT
Ahmed Nadheem	ENDhERI Project Coordinator/ Laamu	MoECCT
Ali Nizar	ENDhERI Project Communications Officer	MoECCT

Scope of work

- Conduct stakeholder consultations with Maavah Council, NGOs, WDC, Schools, Farmers and other relevant stakeholders, to identify the drivers, pressure, state, impact and response (DPSIR) in Maavah Mangrove.
- Develop zonation maps for Maavah Mangrove, Laamu Atoll. The survey team is responsible for developing draft

boundary maps, participate in stakeholder consultations and integrate comments from stakeholders to develop the final zonation map for the site.

- Collect and collate raw and synthesized data collected through the survey, including representative photography and videography.
- Produce a detail report on stakeholder consultations and future action plan for the restoration and management of Maavah Mangrove.
- Share the reports and maps with Maavan Island Council

Key Deliverables

The survey teams are expected to deliver the following deliverables

- Stakeholder Consultation report and action plan for the restoration and management of Maavah Mangrove
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- Figures of the area of habitats covered within the mangrove boundary in ;
    1. Total Terrestrial Area
    2. Mangroves and wetland covered
    3. Total area of water body
    4. Vegetation covered

The survey team should ensure that:

- Highest standards of confidentiality are maintained
- The data collected and maps are produced in a raw and processed and editable formats that can be used for future analysis.
- The process of data collection is participatory and transparent while protecting the rights of the individuals with all necessary permits attained.
- All works are completed in a timely manner in close collaboration with the Ministry of Environment, Climate Change and Technology and Maavah Island Council
- The laws and regulations of the Maldives are complied with and safety and health is not compromised of anyone involved in the survey.

Collaboration, Guidance and Supervision:

- The Survey team will be lead by Environmental Protection Agency and will be responsible for the towards delivery of the outputs of the task.
- The survey team will follow the guidance of the project coordinator from the Ministry .

Duration of the assignment:

- The survey team is required to complete all the tasks of the project within 30 (Thirty) calendar days.
- The assignment is marked complete; after the submitted report as per the deliverables are evaluated and accepted by ENDhERI Project.

ANNEX 1: Procedures for mapping of sites

The draft provided by the Ministry will be used for zonation surveys.

The zonation survey should aim to delineate the boundary of the mangrove based on the:

- Draft or finalized land use plans
- Atoll development plans and island development plan of the inhabited islands
- Ongoing and planned developmental projects and EIA submitted to these projects if present.
- A member of the island council in inhabited islands will assist the team to identify the boundary coordinates for ground truthing

If appropriate, incorporate heritage sites in the zonation as these are key sites that need protection for future generations.

Where possible, a vegetation of 15 m surrounding the wetland should be included in the boundary of protected areas.

Date: 29th September 2021

Annex 2: Meeting Minutes

ENHANCING NATIONAL DEVELOPMENT THROUGH ENVIRONMENTALLY RESILIENT ISLANDS (ENDhERI)

MEETING DATE: Sunday, October 3, 2021
MEETING DURATION: 10:30hrs – 11:30hrs
MEETING VENUE: Maavah Council
MEETING TITLE: Preliminary consultation and boundary demarcation meeting regarding Maavah Mangrove (Community Group)

ATTENDEES

NAME	TITLE	ORGANIZATION
Hussain Nizam	Secretary General	Games Association of Maavah
Adam Hussain	S. Admin Officer	Maavah Health Centre
Mausoom Ali	Secretary	Maavashu Zuvaanunge Gulhun
Hamdoon	Sergeant	Maldives Police Service
Ibrahim Nazmee	President	Games Assosication of Maavah
Aboobakuru Ahmed	Representative	Fenaka Co.
Hussain Jameel	President	BINA Jamiyya
Yazeedh Ahmed	Secretary	BINA Jamiyya
Adam Sabah	Member	BINA Jamiyya
Arif	Representative	Maldives Police Service
Aishath Farhath Ali	Assistant Director	EPA
Hussain Shufran	Assistant Director	EPA
Eanash Mohamed	Environment Analyst	EPA
Ali Nishan	Assistant Environment Officer	EPA
Fathimath Huwaidha	Environment Analyst	EPA
Mariyam Rifga	Community Co-management Consultant	ENDhERI Project
Ali Nizar	Communication Officer	ENDhERI Project
Ahmed Nadheem	Project Coordinator	ENDhERI Project

DISCUSSIONS

#	DETAILS
	Introduction of all participants were given individually.
	- Opening remarks given and introduced main objectives of the visit by EPA: · Addressing the complaint received regarding degradation of Maavah Mangrove · Identification of historical use of mangrove · Current status and resources use · Community view on restoration and management of Maavah Mangrove
	- Remarks from ENDhERI project was given by Community Co- Management Consultant. She explained a brief on objectives of the project, project components, the role of ENDhERI and how the council and community can get support from the project to implement, the management and restoration works of Maavah Mangrove.

	- Mangrove has been a lush green forest of small- leaved orange mangrove. - Significant changes have been brought over the years with waste disposal and farming practices within the mangrove without proper permits. - The mangrove ecosystem is severely degraded and heavily deforested up to the extend, there is only handful of mangrove trees are seen now. - The mangrove was a habitat for bird species including kanbili" and a native dragon fly variety locally known as "Thubba" is also commonly found in the mangrove area. - Tsunami 2004 severely impacted already deforested mangrove habitat and introduction of invasive species together with waste disposal the degradation mangrove was accelerated. - Currently there is no proper boundary of mangrove. Farming around the mangrove is not regulated. - Island is significantly small - Waste management center is located at close proximity to the mangrove and large quantity of waste is also disposed into the mangrove. - The community group raised concern regarding current status of mangrove and their desire to see a restored and managed mangrove in maavah island. - The community agrees, farming practices has to be regulated, boundary should be demarcated and the council should play a major role in the process. - Also, the issues in waste management center built during LECReD project was highlighted. Even though machinery is provided for waste management due to structural flaws operating the machinery has become a challenge.
	Wrap up: EPA highlighted they will assist in boundary demarcation and provide technical support to council to make plans for restoration and management of mangrove. Protection of the mangrove has to be community level, with the legal authority given under decentralization act. ENDhERI highlighted that project has a component to grant funding for such community-based projects which can be an opportunity for the council to carry out restoration and management of maavah mangrove. The project can provide support in raising awareness and training to sensitize the community and resource users and managers. Emphasis should be given to build capacity within the council in upcoming years to have trained and educated staff in environment field to implement management regime for Maavah Mangrove.
	Meeting was concluded at 11:30 and further meetings and consultations are to be conducted after boundary demarcation, to plan out restoration and management of Maavah Mangrove.

AGREED ACTIONS

#	**DETAIL**	**DEADLINE**	**ASIGNEE**
1.	Boundary Demarcation by EPA	End of October	EPA
2	Update LUP by Council	November 2021	Maavah Council

ENHANCING NATIONAL DEVELOPMENT THROUGH ENVIRONMENTALLY RESILIENT ISLANDS (ENDhERI)

MEETING DATE: Sunday, October 3, 2021
MEETING DURATION: 10:30hrs – 11:30hrs
MEETING VENUE: Maavah Council
MEETING TITLE: Preliminary consultation and boundary demarcation meeting regarding Maavah Mangrove (Maavah Council)

ATTENDEES

NAME	TITLE	ORGANIZATION
Aminath Ansoodha	Member	Maavashu Council Secretariat
Ibrahim Aboobakuru	Vice President	Maavashu Council Secretariat
Ali Mohamed	Council Executive	Maavashu Council Secretariat
Salman AbdulRaheem	Member	Maavashu Council Secretariat
Ahmed Moosa	President	Maavashu Council Secretariat
Khadheeja Shifla	WDC Member	Maavashu Council Secretariat
Fathimath Adam	WDC Member	Maavashu Council Secretariat
Aishath Farhath Ali	Assistant Director	EPA
Eanash Mohamed	Environment Analyst	EPA
Fathimath Huwaidha	Environment Analyst	EPA
Mariyam Rifga	Community Co Management Consultant	ENDhERI Project
Ali Nizar	Communication Specialist	ENDhERI Project
Ahmed Nadheem	Project Coordinator	ENDhERI Project

DISCUSSIONS

#	DETAILS
	Introduction of all participants were given individually.
	- Opening remarks given and introduced main objectives of the visit by EPA: · Addressing the complaint received regarding degradation of Maavah Mangrove · Identification of historical use of mangrove · Current status and resources use · Community view on restoration and management of Maavah Mangrove
	- Remarks from ENDhERI project was given by Community Co- Management Consultant. She explained a brief on objectives of the project, project components, the role of ENDhERI and how the council and community can get support from the project to implement, the management and restoration works of Maavah Mangrove.

	- Maavah council thanked EPA and ENDhERI project for the prompt response to the issue of Maavah Mangrove. - As per the meeting held with EPA, the councils assured that they have plans to restore and manage Maavah Mangrove. - The challenge for the council is that the mangrove area is not demarcated and encroachment and illegal farming activities. - Also, the issues in waste management center built during LECReD project was highlighted. Even though machinery is provided for waste management due to structural flaws operating the machinery has become a challenge. - Waste management center is located at close proximity to the mangrove and large quantity of waste is also disposed into the mangrove. - The council has budgeted MVR 50,000, this year for the conservation works of Maavah Mangrove. - Also, council highlighted that they lack in technical capacity and expertise in implementation of their plan, therefore requested help from EPA and ENDhERI project in terms of technical support. - Council requested EPA to create a demarcation map and identify demarcation points physically on the ground during this visit. - Council expressed their willingness to restore and manage the Maavah Mangrove and establish a nature park in Maavah.
	Wrap up: EPA highlighted they will assist in boundary demarcation and provide technical support to council to make plans for restoration and management of mangrove. Protection of the mangrove has to be community level, with the legal authority given under decentralization act. ENDhERI highlighted that project has a component to grant funding for such community-based projects which can be an opportunity for the council to carry out restoration and management of maavah mangrove. The project can provide support in raising awareness and training to sensitize the community and resource users and managers. Emphasis should be given to build capacity within the council in upcoming years to have trained and educated staff in environment field to implement management regime for Maavah Mangrove.
	Meeting was concluded at 12:30 and further meetings and consultations are to be conducted after boundary demarcation, to plan out restoration and management of Maavah Mangrove.

AGREED ACTIONS

#	**DETAIL**	**DEADLINE**	**ASIGNEE**
1.	Boundary Demarcation by EPA	End of October	EPA
2	Update LUP by Council	November 2021	Maavah Council

ENHANCING NATIONAL DEVELOPMENT THROUGH ENVIRONMENTALLY RESILIENT ISLANDS (ENDhERI)

MEETING DATE: Sunday, October 3, 2021
MEETING DURATION: 11:30hrs – 12:30hrs
MEETING VENUE: Maavah School
MEETING TITLE: Preliminary consultation and boundary demarcation meeting regarding Maavah Mangrove (Maavah school)

ATTENDEES

NAME	TITLE	ORGANIZATION
Mariyam Rafeeu Hassan	Leading Teacher	Maavashu School
Aishath Hanima	Leading Teacher	Maavashu School
Mohamed Ali	Leading Teacher	Maavashu School
Shahima Adam	Leading Teacher	Maavashu School
Zulaikha Rafeeu	Principal	Maavashu School
Aishath Farhath Ali	Assistant Director	EPA
Eanash Mohamed	Environment Analyst	EPA
Fathimath Huwaidha	Environment Analyst	EPA
Mariyam Rifga	Community Co-management Consultant	ENDhERI Project
Ali Nizar	Communication Specialist	ENDhERI Project
Ahmed Nadheem	Project Coordinator	ENDhERI Project

DISCUSSIONS

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	- Remarks from ENDhERI project was given by Community Co- Management Consultant. She explained a brief on objectives of the project, project components, the role of ENDhERI and how the council and community can get support from the project to implement, the management and restoration works of Maavah Mangrove.

	- Mangrove has been a lush green forest of small- leaved orange mangrove. - Previously known as “Kanduluthere”. Principal stated mangrove has thick vegetation and hardly accessible. - Significant changes have been brought over the years with waste disposal and farming practices within the mangrove without proper permits. - The mangrove ecosystem is severely degraded and heavily deforested up to the extend, there is only handful of mangrove trees are seen now. - Tsunami 2004 severely impacted already deforested mangrove habitat and introduction of invasive species together with waste disposal the degradation mangrove was accelerated. - Uniform bodies of Maavah school conducted several cleaning events and field visits to the mangrove. - The school management would like to see the mangrove restored and managed. - School management showed willingness to actively involve school students, education, awareness and research as well as restoration and management of Maavah Mangrove. - School Management believes it’s a treasure that needs to be preserved for generations to come.
	Wrap up: ENDhERI highlighted that project has components for Awareness and trainings planned for future. Currently ENDhERI is in process of conducting KAP survey. ENDhERI highlighted the importance of imparting the knowledge to younger generation, especially students to conserve natural resources and being actively involved in the process and also expand career path for their future. EPA highlighted they will assist in boundary demarcation and provide technical support to council to make plans for restoration and management of mangrove. ENDhERI highlighted that project has a component to grant funding for such community-based projects which can be an opportunity for the council to carry out restoration and management of maavah mangrove. The project can provide support in raising awareness and training to sensitize the community and resource users and managers.
	Meeting was concluded at 12:30 and further meetings and consultations are to be conducted after boundary demarcation, to plan out restoration and management of Maavah Mangrove.

AGREED ACTIONS

#	DETAIL	DEADLINE	ASIGNEE
1.	Collaborate with school in raising awareness	Not decided	ENDhERI / EPA
2	Actively involve students in process of restoration	Not decided	Maavah School

Annex 3: Future Interventions and Action

#	Objective	Action	Indicator	Lead	Stakeholders	Timeline
1	Demarcation of Maavah Mangrove	Conduct ecological baseline survey	Ecological Baseline Report	EPA	Council, NGOs, Farmers, school, WDC	2 months
		Conduct survey for mangrove boundary identification and zonation	Mangrove boundary Map	EPA	Council, NGOs, Farmers, school, WDC	2 months
2	Formalizing Maavah Mangrove Boundary	Updating Land Use Plan	Final LUP	Maavah Council	MPIND	5 months
3	Identification of mangrove resource use	Conduct stakeholder consultation to identify resource use in maavah mangrove	Resource use map	EPA	Council, NGOs, Farmers, school, WDC, ENDhERI	2 months
4	Restoration and Rehabilitation of Maavah Mangrove	Conduct clean-up programs	Clean up events & Waste collected	Maavah Council	NGOs, Farmers, school, WDC	3 months
		Conduct mangrove Replantation programs	Number of new mangrove trees planted	Maavah council	EPA, NGOs, Farmers, school, WDC, ENDhERI	10 months
5	Maavah Mangrove Management planning	Design and develop community management concept for Maavah Mangrove	Maavah mangrove management concept document	Maavah council	EPA, NGOs, Farmers, school, WDC, ENDhERI	1 months
		Design and develop management plan and financial plan for Maavah mangrove	Maavah Mangrove management plan and financial plan	Maavah council	EPA, NGOs, Farmers, school, WDC, ENDhERI	3 months
		Formulation of community co-management committee	Community management committee	Maavah council	EPA, NGOs, Farmers, school, WDC, ENDhERI	1 month
6	Decentralized community management of Maavah Mangrove	Legal framework for the management of Maavah Mangrove (decentralized act)	Maavah Mangrove management regulation	Maavah council	EPA, NGOs, Farmers, school, WDC, ENDhERI	3 months
		Implementation of Maavah mangrove nature park (community management)	Demarcation boards, park wardens, visitor log, monitoring reports.	Maavah council	NGOs, Farmers, school, WDC	