

SUMMARY OF SEMI-ANNUAL REPORT (JANUARY – JUNE 2024) CONSERVATION OF COASTAL FOREST AND PEATLANDS IN GUNUNG ARONG FOREST RESERVE, JOHOR

1. Introduction

The Global Environment Centre (GEC) and TH Plantations Berhad (THP) have been implementing a rehabilitation and conservation project for coastal forests and peatlands in the Gunung Arong Forest Reserve (GAFR), Johor since 2021. This project has received full support from the Johor State Forestry Department (JSFD) to rehabilitate the degraded areas of coastal forests and peatlands in the 4,300-ha northeast portion of GAFR. The conservation of coastal forests and peatlands in Gunung Arong Forest Reserve (GAFR), Johor, has currently entered the third year of implementation. The project emphasizes the long-term protection and rehabilitation of lowland forest, with approximately 1,500 ha of peat swamp forest/peatland. The implementation of the forest rehabilitation and conservation project in the first half of 2024 was challenging due to unpredictable weather and required a flexible plan to achieve the project goals.

2. Progress of the activities according to the project implementation plan from January to June 2024

The following Table 1 below is the outline the progress of the activities from January to June 2024 according to the project implementation plan which will contribute towards the achievement of the immediate objective:

No.	Activities	Implementation and progress from January to June 2024 (summary)
Component 1: Securing support and commitment from the community to engage with the conservation project of the coastal forest and peatlands in Gunung Arong Reserve Forest		
1.	Engaging the local community to establish a community - based Organisation (CBO).	A total of 15 meetings were conducted with the project community members to discuss and update on the project progress, revive their motivation to keep active involvement and strengthen relationships. The project community members are currently drafting their official application for the Registrar of Society (ROS) to establish the community group. They have decided to register the community group under the name of Komuniti Pelindung Alam Sekitar Mersing (KOMPAS). However, the name is not finalised yet, and ROS name check needs to be done before the application is submitted.
2.	Community Development: Peer-Learning Visit to Pulau Tanjung Surat	The peer learning visit to Pulau Tanjung Surat, Kota Tinggi, organized by GEC in collaboration with Sahabat Hutan Bakau Pulau Tanjung Surat (SHBPTS), took place on 6 th March 2024. The visit included 14 members from Mersing, with Mr. Rahmat bin Arshad representing the Johor State Forestry Department, 4 GEC staff and SHBPTS members. The purpose of the visit was to facilitate knowledge exchange and expose the newly established community to conservation and rehabilitation efforts, as well as sustainable

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		management practices and management of CBOs. The aim was to empower the Gunung Arong community with insights and inspiration necessary to implement successful projects in their area. During the visit, the Gunung Arong community had the opportunity to learn from an established pioneering CBO, Sahabat Hutan Bakau Pulau Tanjung Surat (SHBPTS).
Component 2: Rehabilitation and protection on the degraded forest area in Gunung Arong Forest Reserve		
3.	Field assessment and mapping	<p>Semi-annual year 2024: Assessments and field activities were carried out:</p> <ul style="list-style-type: none"> i. Wildlife monitoring: Ongoing wildlife monitoring and recording by using camera traps especially in FC 103 and FC 86 the northeast portion of GAFR. Monthly monitoring records species in the area. The wildlife roadkill patrolling and recording also actively conducted along the patrolling route including Jalan Teluk Arong – Kg. Sisek, Jalan Teluk Arong, Jalan Tanjung Resang, and the main road of Jalan Endau. The data is crucial for relevant agencies to reference for road or development planning as well as to guide wildlife protection. ii. Field assessment for Canal Blocks: Assessments for construction 2 canal blocks in the buffer zone of GAFR at Parit Sembilan, Air Papan and surveying potential new locations in Forest Compartment (FC) 83 and adjacent FC 84. These assessments aim to improve the groundwater level in the forest reserve and prepare for the upcoming dry season. Surveys regulated by DID, included ground truthing, water flow recording, canal depth and width measurement, vegetation study, aerial surveys, etc. The field assessment results facilitated paperwork preparation for an application for approval by JPS Mersing for 2 proposed canal blocks in Parit Sembilan. iii. Forestry Enactment Signages: Field assessment at FC 1, 36 and 38 with East Johor District Forest Office (PHDJT) for the forestry enactment signages installations. The survey targeted access routes used by trespassers near the forest compartment border and included application for permission for installation. Preliminary assessment carried out in the FDPM planting area, FC 94, recommended management





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		<p>measures to be constructed in the drainage system for fire prevention and control during this dry season.</p> <p>iv. Canal Network and Peatland Assessment: Updating peatland distribution, drainage system and fire risk maps through aerial survey and ground truthing activities to confirm current conditions.</p> <p>v. Standard Operating Procedure (SOP): GEC developed the SOP for the Peatland Drainage System and Hydrological Assessment in the Peat Swamp Forest (Permanent Reserve Forest - HSK) and its surrounding area based on field assessments conducted from 2022 to March 2024. The SOP serves as a comprehensive guide for enhancing and restoring the groundwater level in the Peat Swamp Forest (Permanent Reserve Forest / HPG-HSK) in Johor, aiming for sustainable hydrological management, carbon emissions mitigation, and disaster risks reduction such as floods, fires, and haze.</p>
4.	<p>Meetings with Johor State Forestry Department (JSFD), East Johor District Forestry Office (PHDJT) and Mersing District Officer.</p>	<p>Meetings with the District Forestry Officer (DFO) and JSFD provided updates on project implementation for 2024, covering the monitoring and patrolling of fire prevention initiative, installation of the forestry enactment, Peatland Fire Risk Sign Marker and Fire Danger Rating System (FDRS) signages. In addition, a joint meeting with DID Mersing discussed 2 units of canal block construction in Parit Sembilan and community training activity plan.</p> <p>Key Meetings and Visits:</p> <p>A meeting led by DFO of East Johor Forestry, En Mohd Saman bin Mohd Sanget with Mersing District Officer (DO), Tuan Jamil Hasni bin Abdullah, focused on the introduction of GEC and updating on the current conservation project in GAFR funding by TH Plantations Berhad. The DO shows interest in making <i>Betta tussayae</i> a Mersing Icon and in the project community development programmes.</p> <p>On 22nd February 2024, a meeting chaired by YBr. Dato' Haji Salim bin Aman, the Director of Johor Forestry (JFSD), was held at Nusajaya, Johor. GEC presented the results and impacts of the 2023 project activities and the 2024 project implementation plan for TH Plantations rehabilitation and conservation project activities at GAFR.</p>

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5.	Stakeholder project site visit to GAFR	A project coordination meeting and site visit organised on 20 th February 2024 involved TH Plantations representatives, JSFD, FDP, the Penghulu of Mukim Penyabong and project community representatives. The visit showcased implementation efforts and included an introduction session with the project community group by TH Plantations Berhad.
6.	Meeting with Drainage and Irrigation Department (DID) of Mersing District	A meeting was held with the DID Mersing District Engineer, En. Shaiful Bahri bin Madi and his assistant engineer, En. Fadli bin Rashid, discussed the construction of two canal blocks in the DID canal at Parit Sembilan, Tenglu. The main agenda discussed canal blocks types, the anticipated effects nearby paddy fields and the oil palm plantations, future maintenance considerations. An approval letter for construction was received from JPS Mersing on 27 February 2024, with completion scheduled for the third quarter of 2024 considering the current weather condition.
7.	Water table monitoring (11 units of piezometer)	Community patroller group actively monitored belowground water tables, collecting data for 4 days in a week at 11 installed piezometers in FC 84, FC 103 and adjacent areas. The water table data was shared with the THP, JSFD and project community group via WhatsApp groups.
8.	Installation of the Enactment, FDRS, and Fire Risk Signages	During January-March 2024, the team successfully installed 8 forestry enactment signs, 4 Fire Danger Rating Systems (FDRS), and 3 Peatland Fire Risk Markers with piezometers in GAFR. Enactment signs detailing legal regulations and no-entry zones were installed at the borders of forest compartments prone to intrusion. FDRS signs, indicating wildfire risk levels with colour codes, were updated by patrollers based on MET Malaysia updates.
9.	Installation of the Peatland Fire Risk Markers with Piezometers in GAFR and the adjacent area	Three automatic Peatland Fire Risk Markers with piezometers were installed at FC 84, FC 103, and adjacent FC 83. These devices directly display peat water levels and provide immediate visual warnings about the risk of fire, crucial for monitoring and understanding groundwater levels. Traditionally, piezometers required manual measurements and couldn't display results. This innovation integrates the piezometer with a floating marker gauge, instantly showing water levels and peatland fire risk using a colour code. Low water levels increase fire risk and negatively impact peatland, while maintaining optimal levels prevents peatland fires, reduces GHG emissions, and mitigates land degradation.
10.	Maintenance on the canal block constructed	Several of canal block monitoring visits were conducted during this period. Overall, the canal blocks functioned

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		effectively. However, some blocks sustained damage due to increased water flow velocity, necessitating maintenance on three of the eight blocks constructed in 2023. Maintenance activities involved the community, and active monitoring is ongoing to prevent further damage.
11.	Forest fire patrolling and monitoring	The patroller group actively monitors and patrols fire-prone areas, updating FDRS signages along monitoring roads. This proactive approach aims to prevent fire incidents at the project site, GAFR, and adjacent areas, providing early warnings to the public about potential forest-related risks. Site condition reports, accompanied by pictures, are regularly shared on WhatsApp groups to inform relevant agencies and stakeholders.
12.	Peat fire incident occurred in FC 94 due to intense hot weather conditions	<p>A peatland fire occurred at the FDPM restoration project site in FC 94 GAFR, resulting in damage to over 50 hectares of peatland. The fire was first detected by the community residing in Tg. Kampung Resang at 11:30 pm on 13 March 2024 and reported to GEC. Upon receiving the report, GEC promptly informed the East Johor District Forestry Office (PHDJT) and BOMBA. GEC personnel arrived at the fire area to assess the risk of fire spreading and identify accessible routes. Unfortunately, firefighting operations couldn't commence due to the high risk associated with nighttime firefighting and limited equipment availability.</p> <p>Firefighting operations began the following morning with the involvement of PHDJT, firefighters, GEC, and community representatives. The efforts continued for three days and successfully brought the fire under control. Presently, monitoring activities are being conducted jointly by GEC and PHDJT to ensure the situation remains stable.</p>
13.	Community nursery establishment	A permanent nursery, necessary for a long-term project to supply trees, was built in the community ground at Kampung Triang. The nursery, estimated to accommodate 3,000 to 4,000 trees, is operated fully under community supervision. The four tree species - <i>Melicope lunu-ankenda</i> (Tenggek Burung), <i>Astonia scholaris</i> (Pulai), <i>Calophyllum retusuiti</i> (Bingator Gambut) and <i>Neolamarckia cadamba</i> (Kelampayang) - were placed there for the community to care for. This serves as the first step in training the community in nursery management, ensuring the saplings remain healthy through good monitoring and observation of their growth.

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14.	Trial planting activity at FC103, GAFR with Mersing community.	On 30th May 2024, 10 trees including 4 Merawan Siput Jantan (<i>Hopea odorata</i>), 4 trees Bintangor Paya (<i>Callophyllum ferrugineum</i>) and 2 trees of Kasai (<i>Pometia pinnata</i>) were planted as trial plantings in FC 103, GAFR. The activity involved community representatives Mr. Hafiz and Mr. Sufri. Preparations included site measurements, installation of wooden poles, ground clearing, and digging holes. GEC staff explained these procedures to the community and briefed them on planting methods, including rock phosphate application. Trees were planted in rows and will be regularly monitored. A discussion on future planting activities and monitoring was held, with the community pledging full support.
Component 3: Communication, Education and Public Awareness (CEPA)		
15.	Eco-Workshop Programme SDG 13 and 15 @ Teluk Buih Mersing	An Ocean Conservation and Marine Diversity Eco Workshop was conducted in Mersing under the East Coast Economic Region (ECER) and invited GEC to showcase the project progress in Mersing. Through this event, GEC presented the current TH Plantation conservation project in GAFR with community involvement. The aim of community participation is to promote collaborative action in sustainable forest management between the local people and relevant agencies to protect the peatland forest as part of climate action (SDG 13), Life on Land (SDG 15) and effectively communicating this information to the public.

Table 2: The following pictorial updates of the progress of the activities from January to June 2024 according to the project implementation plan:

No.	Activities	Pictures	
1.	Patrolling and monitoring activities conducted by the community patrollers.		
2.	Regular monitoring and checkups conducted on the camera traps installed in GAFR		

3. Project coordination meeting held with Johor State Forestry Department (JSFD) and East Johor Forestry Office (PHDJT)



4. Meeting and engagement session with the community members conducted by GEC.



5. TH Plantations delegation visited the project site in GAFR for a working visit to assess progress and discuss further developments.



6. A peer-learning visit was organized to Pulau Tanjung Surat, Kota Tinggi, Johor, providing an opportunity for knowledge exchange and collaboration



<p>7.</p>	<p>Enactment signages were installed in collaboration with PHDJT forest rangers to ensure proper implementation and adherence to forest regulations.</p>		
<p>8.</p>	<p>Fire risk marker / signage was installed at fire-prone sites in GAFR and adjacent areas to alert locals and prevent potential fire hazards.</p>		

9. The GEC team was involved in firefighting in FC 94 with PHDJT, firefighters, and monitoring, and they are in discussions with the agencies to find an effective method to stop the fire.



10. Nursery construction in Kampung Triang Mersing by the project community group.



11. Ground truthing to assess the potential site for additional canal block construction.



12. A visit from Mersing District Officer (DO), Tuan Jamil Hasni bin Abdullah to the community nursery.



13. Ocean Conservation and Marine Diversity Eco Workshop had been organised by East Coast Economic Region Development Council (ECERDC) in Teluk Buih Mersing



14. Focus group discussion (FGD) organised by Mersing District Office to draft on the Mersing Sustainable Tourism Plan 2023.



3. Challenges and problems encountered during the project implementation period (January – June 2024)

i. Weather patterns and Impacts on GAFR

In the first half of 2024, the El Niño phenomenon significantly impacted regional weather patterns. Following the end of the Northeast Monsoon in March, Mersing District, including GAFR, experienced reduced rainfall, leading to a hot and dry season. Although MET Malaysia did not issue a hot weather status for Mersing, high temperatures and occasional heat waves persisted. The Southwest Monsoon began in May and is expected to continue until September.

From January to June 2024, extreme weather and El Niño made planting activities unsuitable, risking tree growth and community health. With El Niño expected to end in June, future planting is planned for the third quarter of 2024, aligning with responsible environmental stewardship to ensure optimal tree growth and survival.

ii. Peatland fire

A significant challenge faced was a peatland fire at FC94, GAFR where the FDPM is conducting a restoration project. The fire which broke out in March 2024 and resulted in the degradation of about 50 hectares of peatland was first detected by the Kampung Tanjung Resang community. The fire was controlled after three days and ongoing monitoring by GEC and PHDJT ensures no further incidents. Due to this challenge, the Mersing office is now equipped with a complete set of firefighting and water pumping equipment and has alerted the community patroller team to remain vigilant and on standby at all times for future firefighting and mitigation actions.

4. Conclusion

The January-June 2024 project activities at Gunung Arong Forest Reserve (GAFR) have largely been implemented as planned, achieving notable successes in rehabilitation and conservation. Key accomplishments include the installation of fire risk signage, establishment of a community nursery, and increased local engagement. The growing involvement of community members indicates their strong interest and commitment.

However, challenges arose due to El Niño-induced weather patterns and a peatland fire incident, necessitating adjustments to the timeline for canal block installations and postponement of tree planting activities. Despite these setbacks, the project adapted through improved fire mitigation strategies.

Water level data from piezometers highlighted the impact of hot weather on the peat swamp area, guiding future fire risk monitoring efforts. Moving forward, the project will focus on registering the community under a Community-Based Organization (CBO), resuming tree planting activities when conditions improve, continuing CEPA programs, and regular fire risk monitoring.

By addressing challenges and building on progress, the project aims to ensure the continued protection and sustainable management of GAFR, contributing to both local community development and broader environmental conservation goals.

Note: A detailed report of each of the activities described in this summary report and associated pictures has been included in the progress report for January to June 2024.