



TENGAH ISLAND
CONSERVATION

2024

IMPACT REPORT 2024





TENGAH ISLAND CONSERVATION



About Us

Tengah Island Conservation (TIC) began its journey in 2015 as a small but passionate conservation unit of Batu Batu Resort. By 2019, our love for nature grew into something even bigger—a full-fledged NGO on a mission to protect Malaysia's incredible biodiversity. From the stunning coastlines and islands of Johor to communities across the state, our passion is for conservation, environmental protection, sustainability, and empowering communities to become stewards of the environment.

Conservation Pillars

- Habitat and Species Monitoring and Protection
- Integrated Island Waste Management
- Sustainable Tourism
- Education and Outreach

TIC Conservation Values

Environmental Conservation . Community Engagement . Scientific Integrity . Sustainability . Inclusivity and Collaboration . Transparency and Accountability . Youth and Future Generations . Connection to Nature

↓ In this impact report you will find:

Our 2024 impact data, updates on our latest projects, workshops, and more. Keep reading!



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TENGAH ISLAND CONSERVATION

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VISION

Malaysian ecosystems, full of life and rich in biodiversity where threatened species and local communities thrive side by side.



TENGAH ISLAND
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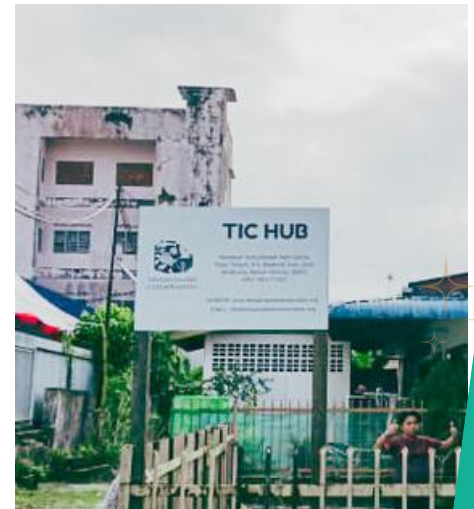
TIC Field Offices in Johor:



Pusat Konservasi
Tunku Abdul Jalil,
Pulau Tengah



Rumah Eko,
Pulau Besar



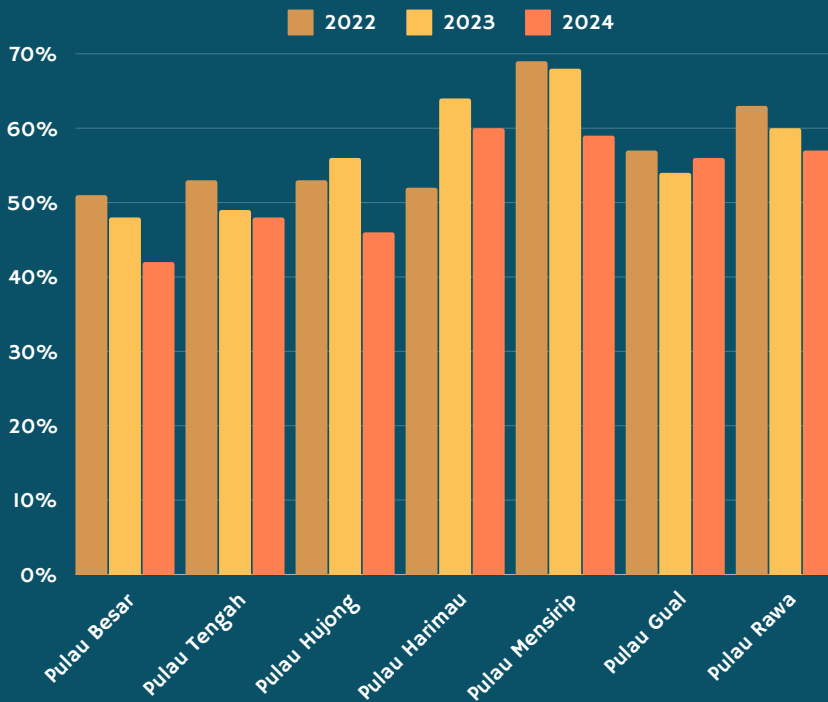
TIC Hub,
Mersing

TIC's conservation initiatives are carried out in partnership with District Office Mersing, District Council Mersing, Education Department of Johor, Mersing, and Department of Fisheries Malaysia, with the support of Johor State Government.

Pillar 1:

HABITAT & SPECIES MONITORING & PROTECTION

Coral Reef



Majority of the Besar islands cluster experienced a slight decrease in coral cover due to the coral bleaching event in June, 2024,

All islands in the cluster are deemed to be in "Good" condition, except for Pulau Besar, Pulau Tengah and Pulau Hujung, which are classified as "Fair" with 42%, 48% and 46% respectively.

The survey highlighted several concerning factors impacting the coral reefs, including coral bleaching, abandoned fishing nets, *Drupella* snail predation, and general trash.

The collaborative efforts of TIC, DOF, TLSI, RCM, and Pulau Besar Community were clearly demonstrated in their tireless initiatives to eliminate ghost nets from the coral reefs. This collective action aims to uphold the sustainability of the reef ecosystem by tackling the significant threats.



HABITAT & SPECIES MONITORING & PROTECTION

Seagrass

This initiative involved three islands in the Besar islands cluster, encompassed eight survey sites, and a total of 24 dives, providing us with a better understanding of the dynamic nature of seagrass ecosystems in this region. Our surveys revealed the rich biodiversity of seagrass species and identified four distinct varieties: *Halodule uninervis* (HU), *Halophila ovalis* (HO), *Cymodocea serrulata* (CS), and *Syringodium isoetifolium* (SI). This diversity contributes to the ecological resilience of the marine environment in these pristine waters.



Overall, Pulau Besar recorded the highest seagrass abundance (19%), followed by Pulau Hujung (15%) and Pulau Tengah (8%). Significant shifts in sand and beach topography were observed on Pulau Tengah, likely contributing to its lower seagrass abundance compared to the other islands. Algae coverage remained consistent across all sites, ranging from 5% to 15%. Given the limited data and the generally slow, patchy growth of seagrass in the Besar Islands Cluster, the key factors influencing seagrass abundance have yet to be identified.

However, despite its poor abundance status, the seagrass meadows in the cluster remain ecologically significant as critical feeding grounds for endangered sea turtles and dugongs.

HABITAT & SPECIES MONITORING & PROTECTION

Dugong sightings

2024
October



- Dugong feces found in Pulau Tengah.
- Dugong trails spotted in Pulau Tengah and Pulau Hujung.

2018
March



- Dugong sighted in Pulau Tengah



CORAL REHABILITATION



We are thrilled to the updates and development of our ongoing commitment to coral conservation and preservation from our recently established coral rehabilitation site at Junior Reef, Pulau Tengah in collaboration with various agencies.

This initiative was launched in response to a coral bleaching in June 2024, which simultaneously affected coral ecosystems in Pulau Redang and Pulau Tioman.

To address the bleaching's aftermath, in August 2024, TIC deployed seven metal frames with the dedicated assistance of LUSH, TNB and TIC team members. These "corals of opportunity" consisted of live coral fragments collected from the surrounding rehabilitation area. The collection effort yielded a diverse range of coral fragments comprising 13 different genera. This rich diversity is essential for the overall resilience and sustainability of the coral ecosystem.



CORAL REHABILITATION

Following the deployment, our team diligently conducted monthly coral measurements and health checks. These activities were crucial for assessing the survival rate of the coral fragments and evaluating the effectiveness of the methods and materials employed in the rehabilitation process. Despite facing challenges such as rough sea conditions and poor visibility due to the onset of the northeast monsoon season, our team managed to monitor the site until October. The three-month observation period yielded encouraging results—all 174 coral fragments remained securely attached to the artificial structure, and only few showed signs of mortality.

As the sea conditions are anticipated to improve, and visibility becomes more favourable with the passing of the northeast monsoon season, our monitoring efforts will resume in 2025. This will allow our team to conduct in-depth dive monitoring, ensuring a comprehensive understanding of the ongoing rehabilitation progress.



UNDERWATER CLEAN-UPS



In 2024, over 450kg of ghost nets were successfully removed from the reef, resulting in a total of 17 tonnes of such nets removed since 2018.

Our commitment to preventing the 'silent killer' of marine animals becoming entangled in abandoned fishing gear has prompted our involvement in the ghost net removal program in Pulau Harimau. Collaborating with the Department of Fisheries Johor, Island Community, and various government and NGOs, we collectively contribute to the health and sustainability of our underwater ecosystems.

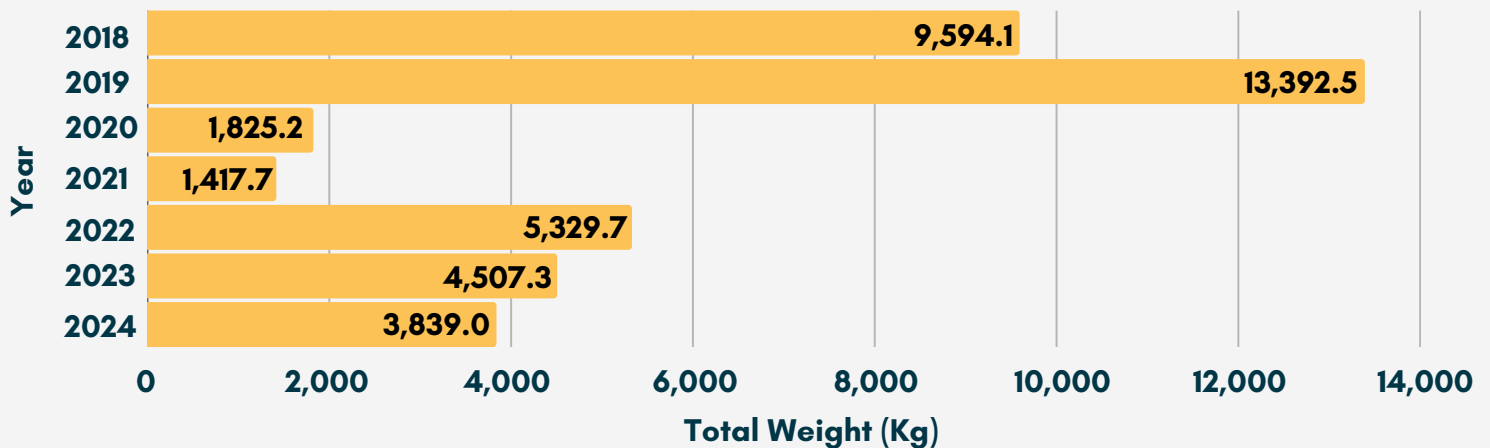
These achievements would not have been possible without the dedication of our volunteers and interns, the support of local communities, and the ongoing collaboration with partner organisations. As we move forward, we hope to continue working together to create a cleaner, healthier, and more sustainable environment for our community and future generations.

BEACH CLEAN-UPS



In 2024, our commitment to keeping our coastal areas clean led to the successful completion of 26 cleanup activities across six islands within the Johor Marine Park. Our weekly beach cleanup sessions with guests from Batu Batu Resort on Pulau Tengah have not only fostered environmental awareness with a wider audience but also facilitated hands-on participation in the conservation process.

The TIC team has achieved a significant milestone by removing a staggering 3,893 kg of marine debris in 2024 alone, This brings our cumulative total to an impressive 40 tonnes since the inception of our cleanup initiatives in 2018.



Fishing Gear Collection:

- Fishing gear, including buoys, fish traps, rope, and nets, topped the list of items collected, totalling over 1.6 tonnes in 2024 and surpassing 17 tonnes since 2018. Addressing this issue is vital to minimizing the impact on marine life and habitats.

Plastic Cleanup:

- The team collected over 8,000 kilograms of plastic waste, encompassing plastic bottles, straws, lollipop sticks, toothbrushes, lighters, and plastic containers. Tackling plastic pollution remains a central focus of our cleanup endeavours.

Pillar 1:

HABITAT & SPECIES MONITORING & PROTECTION

Sea Turtles

We're excited to share the results of our sea turtle monitoring and hatchery management in the Johor Marine Park (JMP) and its six islands. Our dedicated team, including interns and volunteers, patrolled daily from March to October, documenting 64 sea turtle activities.

The hatchery secured 26 nests, protecting 17 Hawksbill and 9 Green turtle nests, achieving 74.92% hatching success rate. Unfortunately, 8 nests were poached.

In total, we successfully relocated 2,986 eggs to our Tunku Abdul Jalil Conservation Center (TAJCC) Hatchery in Pulau Tengah and safely incubated them, allowing for successful releases once they hatched.



Since 2015, we've relocated 371 nests, releasing 30,102 Hawksbill and Green Turtle species hatchlings back into the wild.

Pillar 1:

HABITAT & SPECIES MONITORING & PROTECTION

Sea Turtle Database

Since 2018, 21 individuals have been identified using photo-ID methods. Of those, three individuals were new nesters in Pulau Tengah, as there are no records of prior nesting either in the photo-ID database or flipper tag record.

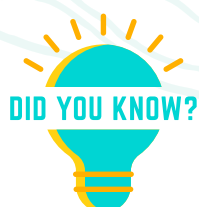
Most of the nesting females nested in Johor Marine Park two to three times throughout the season.

The nesting intervals of these females ranged between 10 and 14 days. As TIC only conducts morning boat patrols around five other islands in the Johor Marine Park, many female turtle individuals nesting in the night were missed, resulting in no facial photos of these nesting females.



YEAR SPOTTED	GREEN ID	TURTLE NAME	JUVENILE / ADULT	SEX (M / F)	STATUS	LAST SIGHTING	NO. OF SIGHTING (Beach)	NO. OF SIGHTING (Underwater)	TAG	S/N LEFT	S/N RIGHT
2018	PTG0001F	n/a	Adult	F	ALIVE	7/29/2018	0	1	NO		
2018	PTG0002F	n/a	Juvenile	F	ALIVE	7/20/2018	0	1	NO		
2019	PGG0003F	n/a	Adult	F	ALIVE	8/22/2019	1	0	YES	M0081	M0080
2019	TICGT0006J	n/a	Juvenile	-	ALIVE	3/11/2019	0	1	NO		
2020	PTG0004F	n/a	Adult	F	ALIVE	n/a	1	0	YES	M0051	M0052
2020	PTG0003M	n/a	Adult	M	ALIVE	3/27/2020	0	1	NO		
2022	TICGT001F	Namia	Adult	F	ALIVE	4/27/2022	3	0	NO		
2022	TICGT002F	n/a	Adult	F	ALIVE	8/8/2022	1	0	NO		
2023	TICGT003F	n/a	Adult	F	ALIVE	6/10/2023	2	0	NO		
2023	TICGT004F	ManJat	Adult	F	ALIVE	7/24/2023	0	2	NO		
2023	TICGT005F	Allypoot	Adult	F	ALIVE	8/30/2023	1	0	NO		
2024	TICGT0007	Mulau	Adult	F	ALIVE	19/06/2024	5	0	NO		
2024	TICGT0008	Antoo	Juvenile	-	ALIVE	9/7/2024	0	1	NO		

YEAR SPOTTED	HAWKSBILL TURTLE ID	TURTLE NAME	JUVENILE / ADULT	SEX (M / F)	STATUS	LAST SIGHTING	NO. OF SIGHTING (Beach)	NO. OF SIGHTING (Underwater)	TAG	S/N LEFT	S/N RIGHT
2018	PH0001F	n/a	Adult	F	ALIVE	9/21/2018	1	0	NO		
2019	PMH0001F	n/a	Juvenile	F	ALIVE	10/2019.	0	2	NO		
2020	PRH0001F	n/a	Juvenile	F	ALIVE	9/18/2020	0	1	NO		
2020	PTH0005F	n/a	Adult	F	ALIVE	n/a	1	0	YES	M0053	M0054
2022	TICHB008F	Sivbell	Adult	F	ALIVE	n/a	1	0	NO		
2023	TICHB006J	Sideeye	Juvenile	-	ALIVE	9/19/2023	0	1	NO		
2023	TICHB007F	n/a	Adult	F	ALIVE	7/16/2023	2	0	NO		
2024	TICHB0009	n/a	Adult	F	ALIVE	7/8/2024	1	0	NO		



DID YOU KNOW?

Sea turtles will generally lay **more than one nest per season**. Usually **from 2 to 8 nests**. There will be 110 eggs on average in one nest. The smallest nest would be around 50 eggs, and the largest nests would be over 200 eggs in one nest.

Pillar 1:

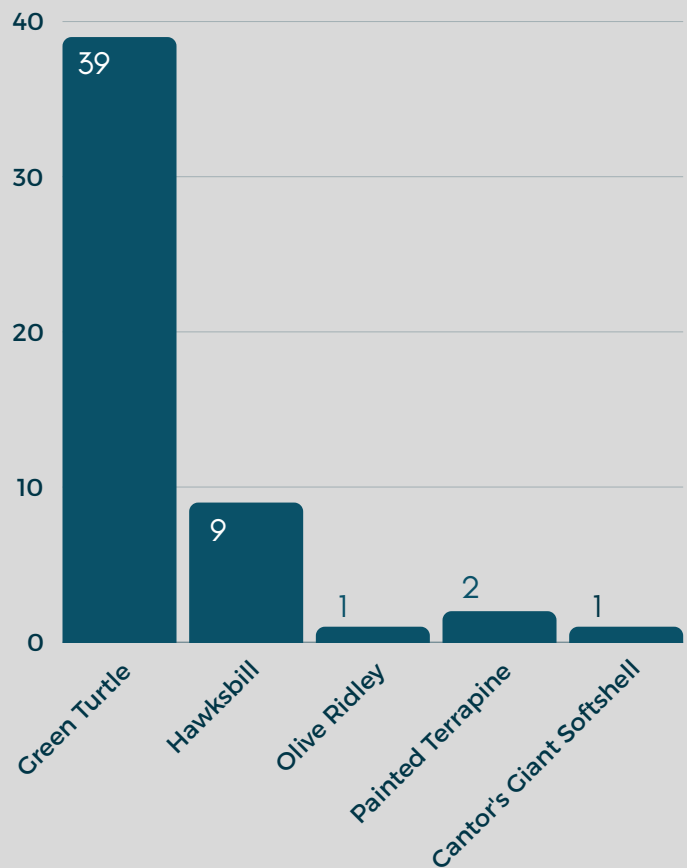
HABITAT & SPECIES MONITORING & PROTECTION

Sea Turtle Stranding Incidents



Sadly, two Green sea turtles were lost in 2024. Unfortunately, determining the cause of death proved challenging, as the turtles were discovered in a moderately decomposed state, hindering necropsy efforts. Internal issues were the most likely cause of the stranding turtles, as no external factors such as boat strikes or net entanglement were observed. Since 2015, a total of 52 stranding turtles from various species have been recorded by TIC, highlighting the urgent need for conservation measures. The diverse age and gender among the casualties shows the widespread impact on the sea turtle population. This concerning trend stresses the importance of collaborative efforts to protect these creatures and address the imminent threats they face. Collective ongoing support from all stakeholders is vital in addressing and mitigating this issue.

Number of Stranding Incidents by Species (2015 - 2024)





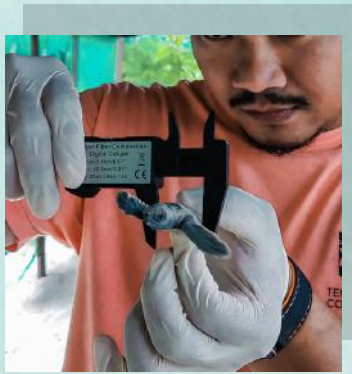
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SEA TURTLE CONSERVATION 2015 - 2024

No. of Nests Relocated

Hatching Success Rate

No. of Hatchlings Released



432

73.4%

30,102

TIC SEA TURTLE DATABASE

21 individuals identified:

13 Green Turtles

8 Hawksbill Turtles





INTEGRATED ISLAND WASTE MANAGEMENT



Managing waste on islands is always a significant challenge. On an island such as Pulau Besar which does not have existing collection, disposal, or recycling systems in place, it is even more so.

To address this, in 2024, TIC in collaboration with The Habitat Foundation (THF) and the United Nations Development Program (UNDP), designed and implemented a pilot waste management system on Pulau Besar that incorporates elements of recycling, upcycling, and composting.



INTEGRATED ISLAND WASTE MANAGEMENT



In collaboration with key partners such as the Social Hero Foundation, ILP Volunteering, and the local community, TIC made significant strides in waste reduction and management in Pulau Besar. Efforts such as the International Coastal Cleanup at Rapang Beach, led to improved waste handling and a cleaner environment, reinforcing TIC's commitment to long-term sustainability.

Recognising that waste is not only an island issue, TIC also organised a host of beach clean-up activities with local stakeholders in Mersing to raise awareness of marine debris. The clean-up activities took place at various locations in Mersing and its islands, such as Pulau Tengah, Pulau Besar. In total, trash collected was around 1.15 tonnes. Close to 400 participants collected approximately 1.15 tonnes of trash from the islands and the mainland.



Pillar 3:

SUSTAINABLE TOURISM

Rumah Eko



RUMAH EKO on Pulau Besar showcases an Integrated island waste management system and a sustainable tourism model with a commitment to sustainability that addresses environmental issues, and enhances visitor knowledge. It also contributes to the economic betterment of the local community and is a step towards establishing Pulau Besar as a sustainable destination.



In 2024, TIC organised six sustainability workshops and 1 volunteering program with over 100 participants from Mersing and Negeri Sembilan respectively. TIC mission to educate sustainable practices and promoting alternative livelihood to the locals. These workshops targeted participants from various backgrounds such as handcraft sellers, housewives, retired, business man/women, students and more.



**Rumah
Eko**

Pillar 3:

SUSTAINABLE TOURISM

Rumah Eko



TIC hosts various fun and educational workshops for visitors at Rumah Eko on Pulau Besar, where the green and sustainability-focused environment adds a wholistic dimension to the total learning experience for participants. Amongst the workshops conducted in 2024 include:

- Soap making
- Scented candle making
- Canting Batik and eco-print
- Precious Plastic machine
- Cooking with the community of Pulau Besar
- Volunteering



**Rumah
Eko**



Pillar 4:

EDUCATION & AWARENESS

Throughout 2024, TIC carried out various marine awareness-related programs, including conservation talks at Batu Batu Resort, beach clean-ups, and educational outreach (PEDAS) programmes, touching the lives of over 2,800 local community and stakeholders. Additionally, over 10,000 people are indirectly impacted by TIC efforts to raise awareness of marine ecosystems and conservation efforts in Mersing through social media, exhibitions, and also awareness information boards placed around Mersing and its Islands.





Pillar 4: EDUCATION & AWARENESS

number of government official, private sector and Mersing community visits to TAJCC.

185

number of indirect people aware on conservation effort carry out by TIC via social media posts and signage viewing around Mersing and its Island.

>10,000

305

number of student involves in PEDAS from 11 schools.

870

number of participants involves in TIC outreach activities in Mersing (excluding TAJCC visitation and PEDAS program)



OUR INTERNS & VOLUNTEERS OF 2024

Our utmost appreciation to all our interns and volunteers for their invaluable support, which enabled us to carry out our conservation initiatives more effectively. Their contribution made such an impactful difference, and we are truly grateful for their passion and dedication.



Our Impacts

2015-2024



30,102

Hawksbill turtles (critically endangered) and Green turtles (endangered) released



85

Kilometres square area monitored to record and reduce unlicensed eggs retrieval



40

Tonnes of marine debris and ghost nets removed from coral reefs and beaches



8.1

Kilometres square (60 sites) coral reef and seagrasses (8 sites) cleaned, mapped, and monitored (7 islands) annually



TENGAH ISLAND CONSERVATION



1.9

Tonnes of food compost produced at Rumah Eko

> 15

Tonnes of solid waste transported out from Pulau Besar to Mersing



17 workshops (> 1000 participants)

Sustainable workshops together with Pulau Besar and Mersing community



1,800

Participants

Outreach programmes in Mersing schools



TIC 2025 Conservation Initiatives

- Marine Protected Area (MPA) Activation
- Sea Turtle Population Program (Satellite Telemetry)
- Coral Reef Habitat Mapping
- Dugong and Seagrass Monitoring in Besar Islands
- Launching of Rumah Eko, Sustainable Tourism Package and Besar Festival
- TIC Voyager Road Tour Awareness Program



and many more! Stay tuned and follow our social media for the updates.



@tengahislandconservation

ANNOUNCEMENT

FUNDING WIN FOR MARINE POLLUTION COLLABORATION

- 1) BlueNet: Solar-Powered IoT System for Transforming Ghost Gear into Sustainable Filament (UNDP)
- 2) Solar Powered Integrated Environmental Weather Station (TVET)

We are excited to announce our successful funding collaboration with Polytechnic Mersing Johor to tackle marine pollution. This partnership is a step toward protecting marine ecosystems and coastal communities. Marine pollution, particularly plastic waste, ghost net, threatens biodiversity, fisheries, and tourism. Poor waste management has led to pollutants accumulating in our oceans, endangering marine life.

This initiative will focus on:

- **Research & Innovation:** Identifying pollution sources and solutions.
- **Waste Management:** Implementing eco-friendly collection and recycling systems.
- **Community Engagement:** Raising awareness and training locals.
- **Technology Integration:** Using smart monitoring and eco-engineering.

This funding enables us to drive impactful change for cleaner oceans. We thank Polytechnic Mersing and look forward to progress updates!



APPRECIATION

THANK YOU TO ALL OUR FUNDERS AND STRATEGIC PARTNERS



Funders:



BATU BATU



Strategic Partners:

