

Mainstreaming GREEN ECONOMY in Setiu Wetland, Terengganu, Malaysia

TZR Technology Sdn Bhd



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Setiu Wetland: model for - Mainstreaming “GREEN ECONOMY” in Terengganu, Malaysia



Setiu is a district 40 km north of Kuala Terengganu, capital state of Terengganu

Setiu Wetland – poised to become the focus area for Terengganu’s **first planned “GREEN ECONOMY” implementation**

113 hectares natural lake (Tasek Berombak)

800 hectares of brackish water wetland area

8 rivers with total length of 135 km covering 79 thousand hectares basin

A triangle area of **seascape** between the islands (Susu Dara, Rawa, Serenggeh, Perhentian & Lang Tengah) and the shoreline



Setiu Wetland: model for - Mainstreaming “GREEN ECONOMY” in Terengganu, Malaysia

Setiu Wetland is an **area of high biodiversity**. Research concluded that **29 species of mammals, 161 species of birds and 36 species of reptiles and amphibians** are found in the wetland

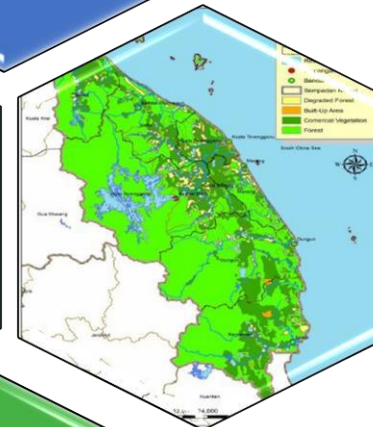


1. Setiu
“GREEN
ECONOMY”

Develop Setiu as a model for **“GREEN ECONOMY”** with emphasis on **harmoniously balanced** Societal Development, Economic Activities, Sustainable Livelihood Programs & Natural Environment

Replicating Setiu Model to other areas in Malaysia and the Region

2. Replicating
“GREEN
ECONOMY”
Model



The **largest natural wetland** in the East Coast of Peninsular Malaysia



3. Setiu
Wetland
Centre of
Excellence

Develop **“Centre of Excellence”** supported by **“Earth Observation System”** to better manage biodiversity & digital earth index in Setiu Wetland



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Tasik Berombak
(Lake)



Fish Farm Area



Sand Dune



Setiu Wetland



Google Earth

Image © 2016 TerraMetrics
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2016 CNES / Astrium



Propose Scope of Work for Setiu Wetland Livelihood Program

- Livelihood Program for Setiu Lagoon – **Farm Fishing**
 - Develop fish farming as **sustainable incoming generating** activity
 - Rehabilitation of farm fishing area in the lagoon
 - **Rehabilitate sand dune** protecting the lagoon
 - **Deeping** of the lagoon area
 - **Increase involvement** of more local communities in fish farming activities
 - Enhance related support infrastructure related to fish farming
 - Takeover the operation of **MOA Hatchery** in Pengkalan Gelap
 - Rehabilitation of **Sungai Ular**
 - Conduct detail **technical study** for conservation & rehabilitation program for fish farming activities



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Propose Scope of Work for Setiu Wetland Livelihood Program

- Livelihood Program for Setiu Lagoon – **eco-Tourism**
 - Development of a more **structured & more planned eco-tourism program**
 - Customizing tourism program to bring in “high yield” Japanese tourists
 - Develop appropriate tourism trails in Setiu Wetland



Propose Scope of Work for Setiu Wetland Livelihood Program

- **Conservation & Rehabilitation of “Setiu Wetland”**

- Development of mangrove & nipah seedling nursery
- Rehabilitation of Setiu Wetland
 - **Replantation** of mangrove & nipah seedling
 - **Deepening** of streams & tributaries
- **Rehabilitation** of Tasik Berombak
- Develop detail **technical study** for conservation & rehabilitation program for Setiu Wetland Biodiversity



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Propose Scope of Work for Setiu Wetland Livelihood Program

- Deployment of **new technologies & solutions** in GREEN ECONOMY
 - Development of Setiu Wetland Integrated **Community Portal**
 - Design & operate **Internet of Things (IOT)** sensors, web-cameras, etc to improve management & operation Setiu Wetland
- Conduct detail & comprehensive **Green Economy-based R&D** for sustainable Setiu Wetland



Possible Job Creation Potential for Setiu Wetland

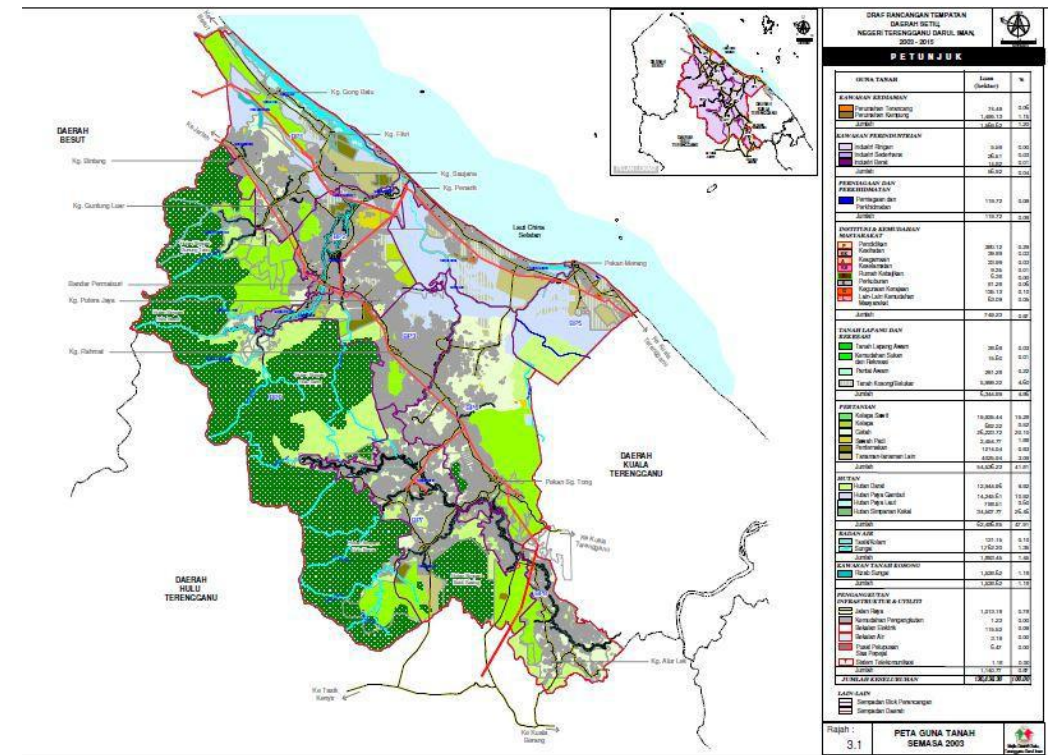
	POSITION	2017	2018	2019	2020	2021	Total
1.0	Environmental Engineer	1	2	3	3	5	5
2.0	Landscape Architect	1	1	2	2	3	3
3.0	Seascape Architect	0	1	1	1	1	1
4.0	Environmental Scientist	1	3	3	5	8	8
5.0	Research Scientist	2	5	5	8	12	12
6.0	Earth Observation Specialist	0	2	2	4	4	4
7.0	Environmental Auditor	1	1	1	2	2	2
8.0	Nursery Manager	0	1	1	1	1	1
9.0	Landscape Supervisor	1	1	1	1	2	2
10.0	Seascape Supervisor	1	1	1	1	1	1
11.0	Center of Excellence Manager	0	1	1	1	1	1
12.0	Finance & Admin Manager	1	1	1	1	1	1
13.0	Admin Assistant	0	1	1	1	2	2
14.0	Planters	6	26	30	115	115	115
	TOTAL	15	47	53	146	158	

These are direct job creation for local communities with the implementation of the livelihood program. There will certainly be many more spill-over jobs be created once the project becomes operational



Challenges for Setiu Wetland “GREEN ECONOMY”

- Challenges
 - Acceptance (buy-ins)** of Green Economy as a new & sustainable economic activity by all stakeholders (Federal/state Government, local communities, etc.)
 - Most current implementations are “**gimmick-centric**” activities with minimal &/or no follow through action plan
 - Outdated or inaccurate data/information** of current resources
 - Unavailability of “life size” successful model** to prove “Green Economy” is sustainable
 - Establishing a sustainable model that is benchmarked with “world standard”
 - Planning & implementation are **executed in isolation** by different parties
 - Establishment of **international collaboration, association & partnership** to collectively develop similar model
 - Pooling of world resources to address unique challenges within/between respective communities



Challenges for Setiu Wetland “GREEN ECONOMY”

Land use Update for Setiu Wetland

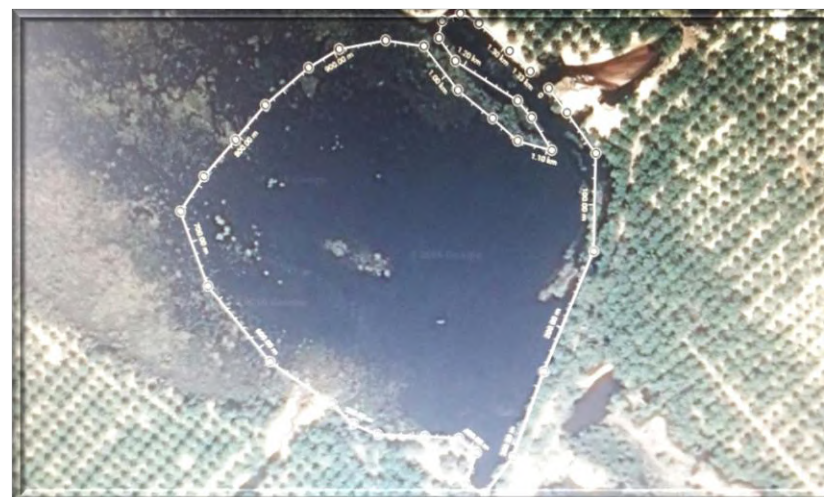
Biodiversity Index (Land use) for Setiu Wetland @ 5°31'0"N 102°46'0"E			
Land use	1990	2000	2015
Forest	30,751	26,180	24,802 ▼
Agriculture	29,642	35,710	35,710 ▲
Populated Area	648	1,276	1,384 ▲
Wetland	32,154	30,029	28,624 ▼

**Wetland area depletion
3,430 hectare between 1990 to 2015**



Exposed river banks

Erected concrete structure blocking the river flow



Surrounding lake area being cleared for Oil Palm plantation



Challenges for Setiu Wetland “GREEN ECONOMY”

Biodiversity Index (Wildlife) within Setiu Wetland

Green Turtle / Chelonia Mydas



< ENDANGERED >

EN

**Black Hornbill
(Anthracoceros malayanus)**



< NEAR
THREATENED >

NT

Setiu Wetland has spotted
160 bird species including 16
internationally endangered

The World's Most 25 Endangered Freshwater Turtles and Tortoises



< CRITICALLY
ENDANGERED >

CR



< CRITICALLY
ENDANGERED >

CR

Two Great Endangered Terrapin (River Terrapin , Sea Terrapin) among last
Ecology in Setiu Wetland



< VULNERABLE >

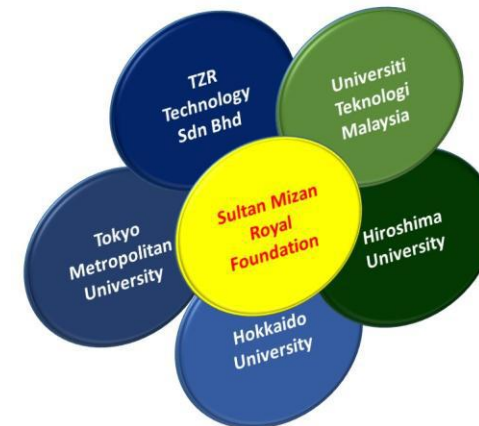
VU

Lesser Adjutant (Leptoptilos javanicus)
Endangered Species spotted in Telaga
Papan at Gelam Swamp



Problem Solving

- Problem Solving
 - Create “Mainstreaming Green Economy for Setiu Wetland” as the **anchor program** to centre-staged environmental awareness
 - Improve **awareness & education**
 - Establishing closer cooperation with federal/state government & their agencies
 - Continuously creating awareness & education programs for all stakeholders (local community, etc..)
 - Seek **global &/or regional support** for the implementation of the program above
 - Leverage IPSI & IPSI members

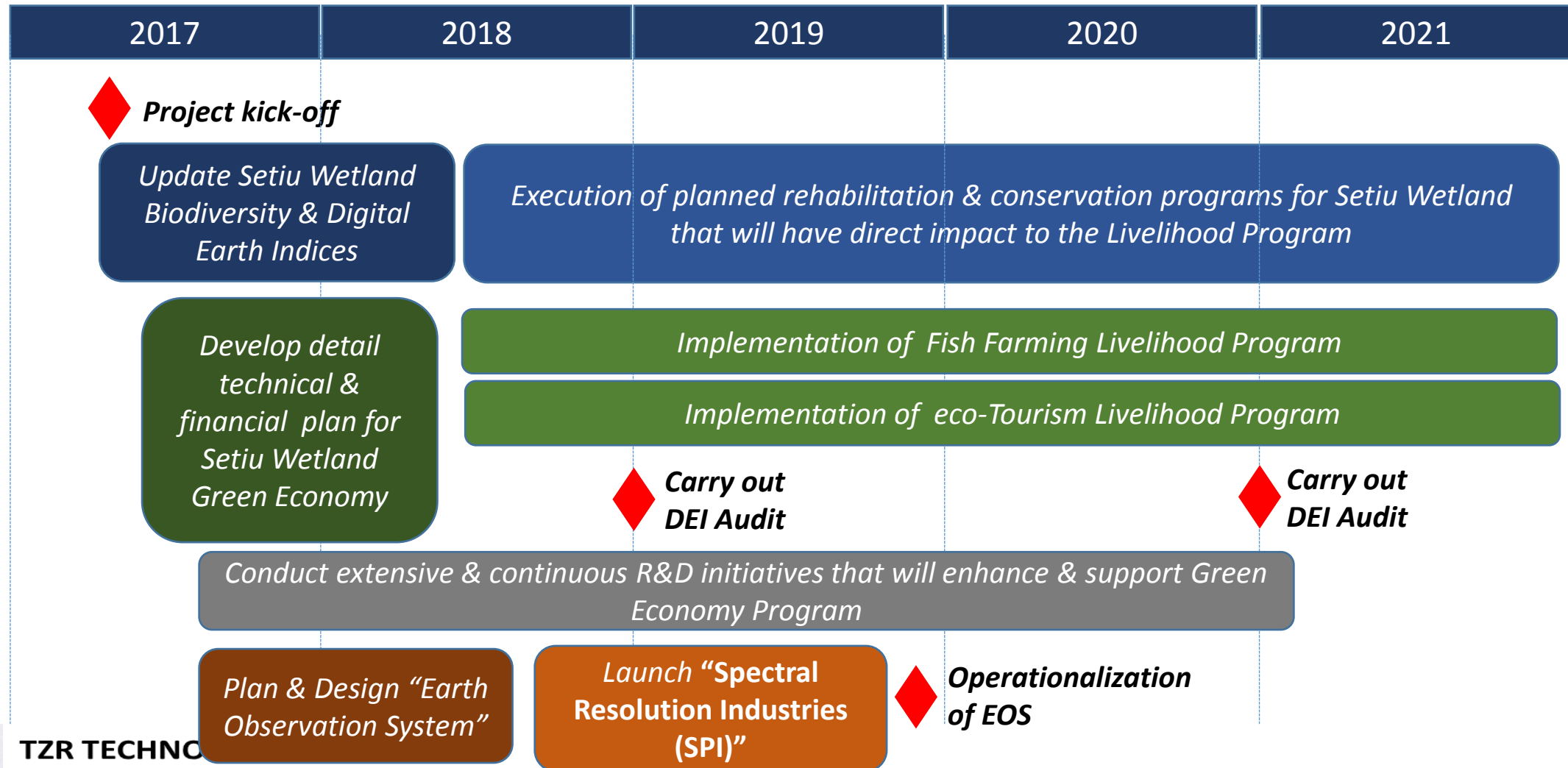


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Proposed Implementation Plan

5-year Development Program for Setiu Wetland



Next Step ..

- Establish Setiu Wetland as World Heritage Site for Wetland Conservation or other protection program to ascertain its existence for generations to come
- Establish Setiu Wetland as Malaysia National Green Economy & “CARBON SINK” reference centre
- Develop & implement specific programs to
 - Reintroduce &/or rehabilitate natural habitats for wetland wildlife (eg sea terrapin, green turtle, birds, crustaceans, etc)
 - Replant mangrove & nipah trees at the rate of 50-80 hectares per month
 - Replant sea grass
 - Rehabilitate Tasek Berombak (natural lake) & the rivers in Setiu back to the natural original condition



thank you



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