



LOW CARBON MODEL TOWN POLICY IN NORTH SULAWESI PROVINCE



BY
REGIONAL PLANNING AND DEVELOPMENT AGENCY
NORTH SULAWESI PROVINCE
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Middle Term Development Planning of North Sulawesi Province for 2016–2021 (regional regulation No. 3 year 2016)

NORTH SULAWESI's VISION FOR 2016-2021

**NORTH SULAWESI AS THE PROVINCE WITH
ECONOMIC SELF-SUFFICIENT, POLITICAL
SOVEREIGNTY, AND CULTURAL IDENTITY**



NORTH SULAWESI's MISSION 2016-2021

1

INTEGRATED ECONOMY BY STRENGTHENING AGRICULTURAL SECTOR, MARITIME RESOURCES , AND PROMOTING INDUSTRIAL SECTORS AND SERVICES

2

STRENGTHENING COMPETITIVE HUMAN RESOURCES

3

NORTH SULAWESI AS TOURISM AND INVESTMENT DESTINATION; ENVIRONMENTALLY SOUND

4

PROSPEROUS AND SELF SUFFICIENT COMMUNITY

5

SUSTAINABLE INFRASTRUCTURE DEVELOPMENT

6

NORTH SULAWESI AS INDONESIAN'S GATEWAY IN EAST INDONESIA

7

GOOD GOVERNANCE

MISSION 5 : TARGET OF DEVELOPMENT

GOALS:

- APPLYING RENEWABLE ENERGY
-EXISTING OF ELECTRICITY, FUEL AND GAS

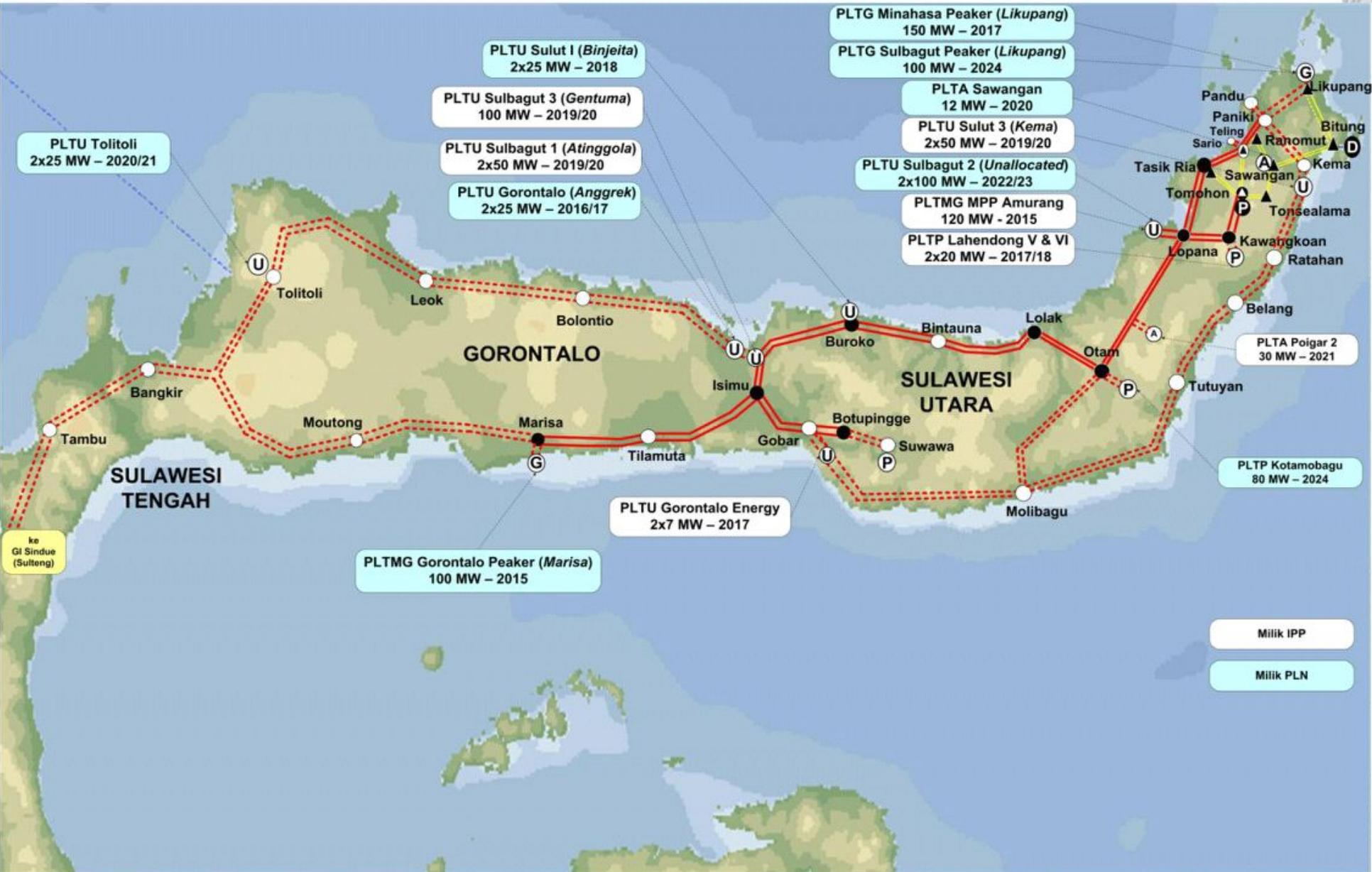
TARGET :

UTILIZATION OF RENEWABLE ENERGY

REGIONAL PRIORITY PROGRAMS

REGIONAL PLANNING DEVELOPMENT AGENCY	ENVIRONMENTAL BOARD	TRANSPORTATION BOARD	FORESTRY BOARD	ENERGY DAN MINERALS AGENCY	INDUSTRIAL AND TRADE AGENCY
<p>INFRASTRUCTURE AND SPATIAL DEVELOPMENT PLANNING</p> <p>BIODIVERSITY EVALUATION AND REPORT</p> <p>-REVIEW ON GREENHOUSE-GAS EMISSIONS ACTION PLAN</p>	<p>- MONITORING AND EVALUATION THE ENVIRONMENTAL POLLUTION AND DEGRADATION</p> <p>-ENVIRONMENT CONSERVATION AND PROTECTION</p>	<p>-PARKING MANAGEMENT AND CONTROL</p> <p>-EMISSION TEST FOR VEHICLES AND HEAVY EQUIPMENT</p> <p>-ECO-SMART DRIVING COURSES</p>	<p>- MAINTENANCE THE UTILIZATION OF FORESTRY RESOURCES</p> <p>FOREST MANAGEMENT PROGRAM</p> <p>-FOREST PROTECTION AND CONSERVATION</p>	<p>-ENERGY PLANNING, MANAGEMENT AND DEVELOPMENT</p> <p>-ENERGY CONSERVATION AND PROTECTION</p>	<p>THE DEVELOPMENT OF SPECIAL ECONOMIC ZONE BITUNG</p>

ELECTRICITY DEVELOPMENT PLAN



Background of SEZ Bitung

- The Special Economic Zone (SEZ) Bitung is located in southeast of Bitung city. It also situated near Bitung's Subcenter and City Center, as well as Port of Bitung. The SEZ occupies area of 534 Ha.



Phase 1: 2017 – 2019

- Basic Infrastructure Development
- First residential, commercial and industrial activities



Phase 2: 2020-2021

- Improvement and expansion of basic infrastructure and support facilities
- Expansion of residential, commercial and industry development



Phase 3: 2022-2023

- Development of education and training facilities



Phase 4: 2024-2028

- Development of recreational areas
- Further expansion of residential and industrial areas



Phase 5: 2029-2031

- Further expansion of industrial areas

Low-Carbon Measures in SEZ Bitung

- The North Sulawesi's Regional Planning and Development Board (BAPPEDA) identifies the low-carbon measures in SEZ Bitung. Even though SEZ Bitung is under development, BAPPEDA tries to evaluate the low-carbon measures based on several planning documents, such as Masterplan of SEZ Bitung made by South Korean's MOLIT (Minister of Land, Infrastructure and Transport).

Demand Total Point 2.92 	1. Town Structure	Total Point 3.0 
	2. Buildings	Total Point 3.0 
	3. Transportation	Total Point 2.75 

Low-Carbon Measures in SEZ Bitung

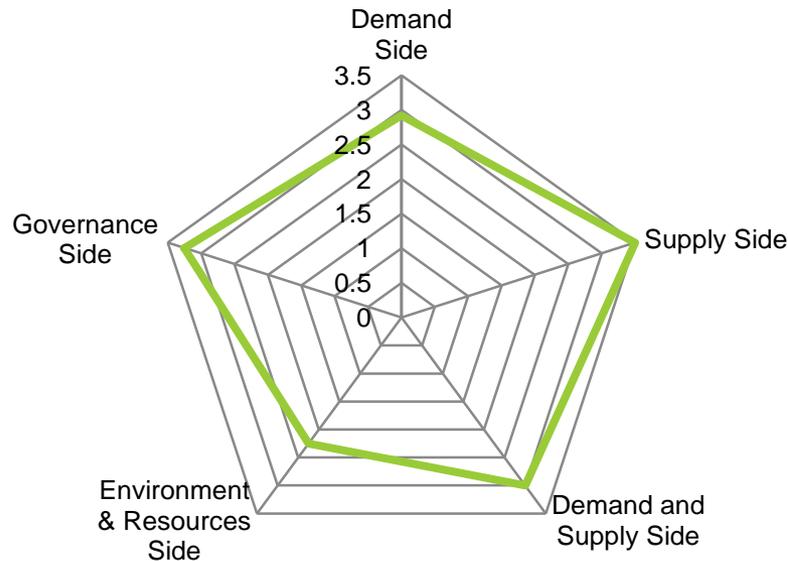
Supply Total Point 3.50 	4. Area Energy System	Total Point 1.0 
	5. Untapped Energy	Total Point 5.0 
	6. Renewable Energy	Total Point 4.0 
	7. Multi Energy System	Total Point 4.0 
Demand & Supply Total Point 3.00 	8. Energy Management System	Total Point 3.0 
Environment & Resources Total Point 2.25 	9. Greenery	Total Point 3.0 
	10. Water Management	Total Point 2.0 
	11. Waste Management	Total Point 2.0 
	12. Pollution	Total Point 2.0 

Low-Carbon Measures in SEZ Bitung

Governance	13. Policy Framework	Total Point 4.50 
Total Point 3.25 	14. Education & Management	Total Point 2.0 

Self-evaluation Results

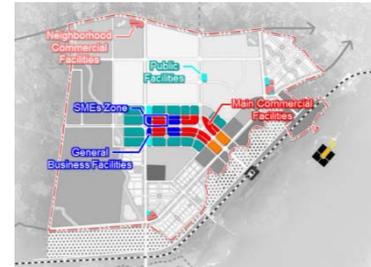
- AVERAGE POINT: **2.98**.
- This Chart shows the low carbon town development of SEZ Bitung, Indonesia. It is clearly stated that improving the environment and resources side in relation to support the low carbon town development in SEZ Bitung needs the cooperation among related stakeholders.



Self-evaluation Results

•DEMAND SIDE

- SEZ Bitung offers a number of the various types of housing, shaping the north-south linkage on site.
- Residential zones are equipped with lots of supporting facilities in walking distance.
- Deploy Big Valley Corridor (BVC) in the middle of nodal area of the central axis and metropolitan railway station



Self-evaluation Results

•SUPPLY SIDE

- Power demand is identified for industrial, logistics and other support facilities separately.
- 70% for industrial and logistic facilities
- 30% for other facilities
- There is a plan for using renewable energy, mainly used geothermal and Gas energy
- Total power demand is 56 – 75 MWA



Self-evaluation Results

•SUPPLY SIDE

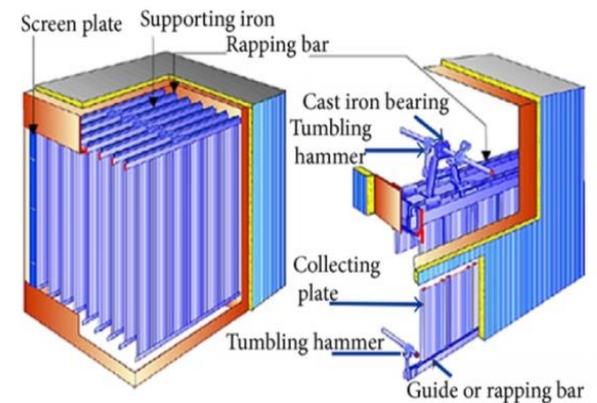
- SEZ Bitung plans to accommodate multiply energy resources as describe below

Order	Descriptions	Target capacity
1	Paniki Electricity Substation Development	60 MW (ext) in 2018
2	PLTU Sulut 3 - Tanjung Merah Electricity Substation	T/L 150 KV, 20 kms in 2019
3	Paniki - TanjungMerah/Kema Electricity Substation connectivity	T/L 150 KV, 27,152 kmr in 2015
4	Tanjung Merah Electricity Substation	30 MW in 2015
5	Tanjung Merah/ Kema Electricity Substation	60 MW in 2019
6	Likupang Electricity Substation	60 MW in 2016
7	Likupang Bitung Electricity Substation connectivity	T/L 20 Kv, 32 kms in 2015
8	Minahasa Peaker (PLTG/GU/MG)	150 MW in 2017

Self-evaluation Results

•SUPPLY SIDE

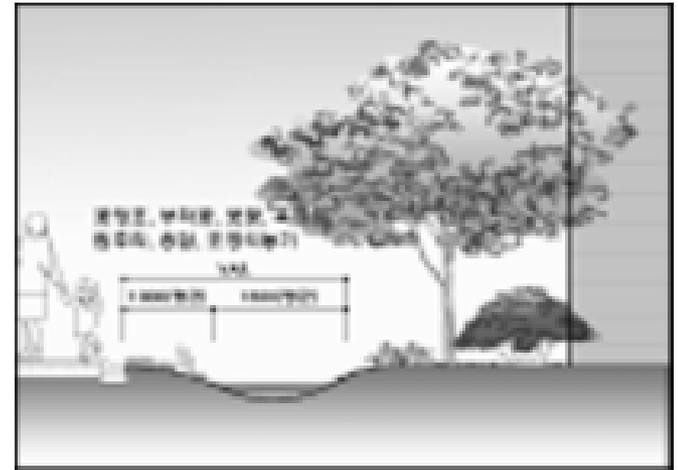
- SEZ Bitung accommodates the Multi-Energy System, which can minimise heat loss through the installation of collecting plates and building afforestation
- Reuse recyclable waste segregated from the construction waste generated from the complex including the industrial site as construction materials
- Recycle waste as materials to pave the ground and install facilities and sculptures in the complex using waste
- Install a topsoil stockyard to recycle the topsoil and rock generated at the time of civil work and develop a park or artificial hill using such materials
- Use plant resources which are cut down as pavement materials for trails and auxiliary materials for the installation of structures



Self-evaluation Results

•DEMAND AND SUPPLY SIDE

- SEZ Bitung determines the block scale, block layout and block unit in consideration of the continuity of green axis, formation of walking route, flexibility of individual construction, energy saving and limitation of unnecessary traffic volume.
- Promote the energy saving, cost reduction and minimization of damage to ecosystem through the layout that preserves the natural terrain to the maximum extent



Self-evaluation Results

- **ENVIRONMENT AND RESOURCES**
- SEZ Bitung proposes the eco-friendly plan which consist of:
 - Construct a natural ecology complex in which the natural environment can co-exist by associating natural resources with the ecological circulation
 - Secure sufficient green areas in the district to minimize the adverse environmental impact, including minimizing pollution causing facilities and excluding environmental pollution sources



Self-evaluation Results

•GOVERNANCE

- The Government of North Sulawesi has established some rules related to low-carbon initiative such as:
- RPJMD 2016-2021 (North Sulawesi Rule No. 3/2016)
- RTRW 2014-2034 (North Sulawesi Rule No. 1/2014)
- RAD-GRK (Governor Rule No. 56/2012)
- LCMT team work at SamRat Univ. Rule No. 39/UN12.10/LL/2017
- These rules contain global indication program related to Low Carbon Initiative in North Sulawesi and the task force LCMT SEZ Bitung team at the University.**



Future Plan of SEZ Bitung

- *The Special Economic Zone of Bitung will become a national and global model for sustainable, low carbon urban and industrial planning, and will contribute to the national goal of reducing GHG emissions by 26% by 2020 (29% by 2030) compared to a Business-as-Usual Scenario. This vision will be implemented developing the Low Carbon Model Town strategy along the following four axes:*
- *Ensure alignment with existing local and national development policies, regulatory frameworks and institutional set-ups;*
- *Reduce energy consumption through the use of clean, green energy generation and more energy efficient technologies and practices;*
- *Ensure an efficient and environmentally balanced management of resources through the utilisation of the best available low carbon technologies for industry, commercial and residential areas, for solid waste and wastewater management, for forestry and land use, and for transportation;*
- *Apply an accurate, transparent and functional monitoring, reporting and verification system (MRV) of the GHG emissions and additional sustainable development impacts.*
- *Promote the low-carbon vehicles to reduce fuel consumption*
- *Reducing the fossil fuel energy usage by promoting eco-driving contributes to the low-carbon town development in SEZ Bitung.*



PROBLEMS

- THE ABSENCE OF ENERGY PLANNING DOCUMENTS FOR NORTH SULAWESI PROVINCE , SEZ AREA AND BITUNG CITY
- CAPACITY BUILDING FOR GOVERNMENT OFFICIALS, INDUSTRIAL SECTORS, SCHOLARS
- THE DEVELOPMENT OF RENEWABLE ENERGY NEEDS A LOT OF FUNDS (VERY EXPENSIVE)
- ADVANCED TECHNOLOGY TO EXPLORE THE RENEWABLE ENERGY POTENTIAL

Implemented projects

No	PROGRAMS	Bitung Gov't	North Sulawesi Gov't	Ministry of Energy and Mineral Resources	Donor Countries Via IEA
1	CAPACITY BUILDING		Conducting Socialisation of the Masterplan of Regional Energy	Conducting Training on Implementation of Energy Audit in Government buildings in Bitung City, Manado City and North Sulawesi Province	Conducting the field trip to Bitung City, in collaboration with the Ministry of Energy and Mineral Resources conducting workshop with the stakeholders.
				Conducting the Training on Formulation of the Masterplan of Regional Energy	Proposed Projects to APEC in relation to Capacity Building via Australia-Indonesia Center

Implemented projects....continued

No	PROGRAMS	Bitung Gov't	North Sulawesi Gov't	Ministry of Energy and Mineral Resources	Donor Countries Via IEA
2	Preparation of land-use administration	<p>Providing the land and data of land ownership in SEZ's area.</p> <p>Preparing general administrative management personnel in SEZ's Bitung</p>	Preparing and proposing the land management right to the central gov't	Supporting the ongoing processes in collaboration with National SEZ Board	
3	Development of Basic Infrastructure	Land clearing from squatters	Developing Entrance access to SEZ, and Administrative office (collaboration with Ministry of Industry)		

CONCLUSION

- Bitung SEZ development should be continuously encouraged in order to provide economic and social impacts for people.
- The development of SEZ Bitung is expected to absorb as much as possible local workforce.
- Need a breakthrough in relation to SEZ's land acquisition
- As an industrial area, SEZ Bitung requires a large amount of energy. Therefore, the utilisation of renewable energy resources is absolutely necessary.
- The implementation of renewable energy use requires technological as well as financial support
- North Sulawesi has renewable energy potential (solar, hydro, wind and geothermal). It needs advanced technologies and funds to explore.



