Kementerian PPN/ Bappenas

ASEAN INDONESIA 2023

Indonesia's Future Towards Green Economy

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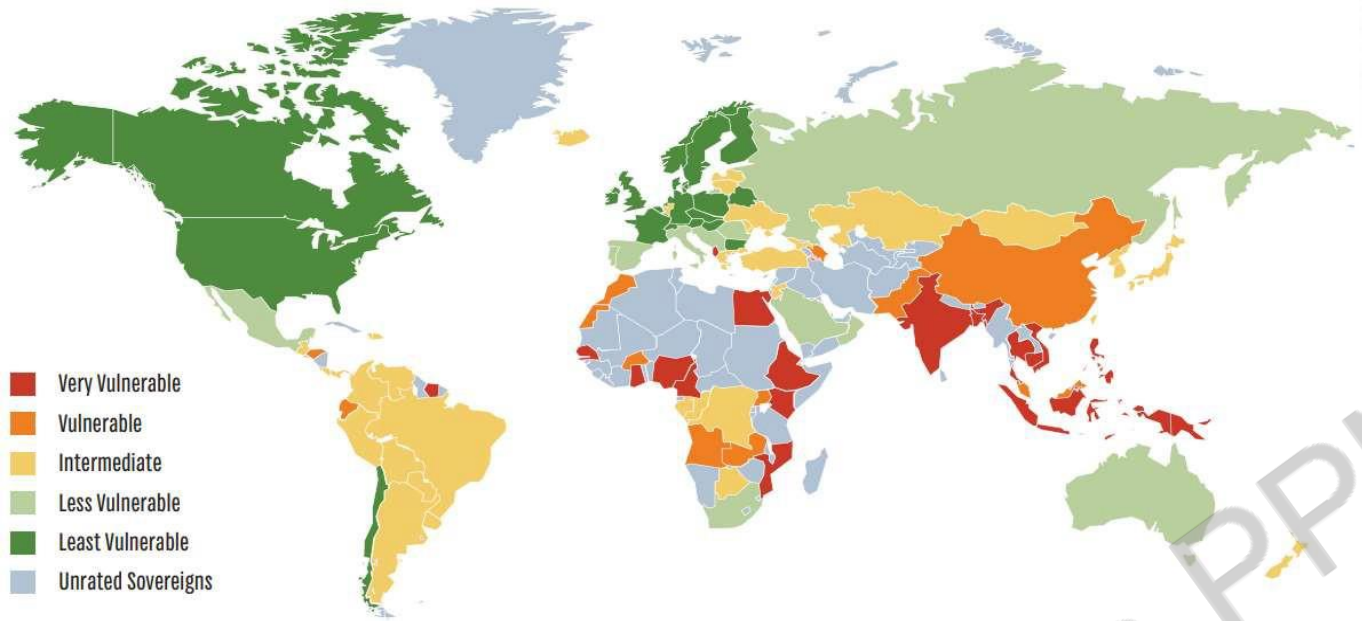
Jakarta, 5th June 2023

CLIMATE CHANGE IS IMMEDIATELY CHALLENGING



Source: Standard and Poor's, 2014

Climate Change may increase the risk of hydrometeorological disasters, which currently reach **80%** of the total disasters that occurred in Indonesia.

Source: NDC, 2016

Indonesia's potential economic loss could reach **0.66% to 3.45% of GDP in 2030**.

Source: Adapted from Roadmap NDC, 2020

RISK FROM CLIMATE CHANGE

WATER SCARCITY

Rising flood rates and severe drought will exacerbate clean water scarcity.

HEALTH QUALITY DECREASE

Floods can cause the spread of vector-borne diseases and death from drowning. An increase in temperature can cause death from heat stroke.

SOIL ECOSYSTEM DAMAGE

It is scientifically predicted that there will be severe forest fires. This can lead to loss of ecosystems, biodiversity, and changes in Biomass.

MARINE ECOSYSTEM DAMAGE

Rising sea surface temperatures cause the extinction of coral reefs, seaweed, mangroves, some biodiversity and marine ecosystems.

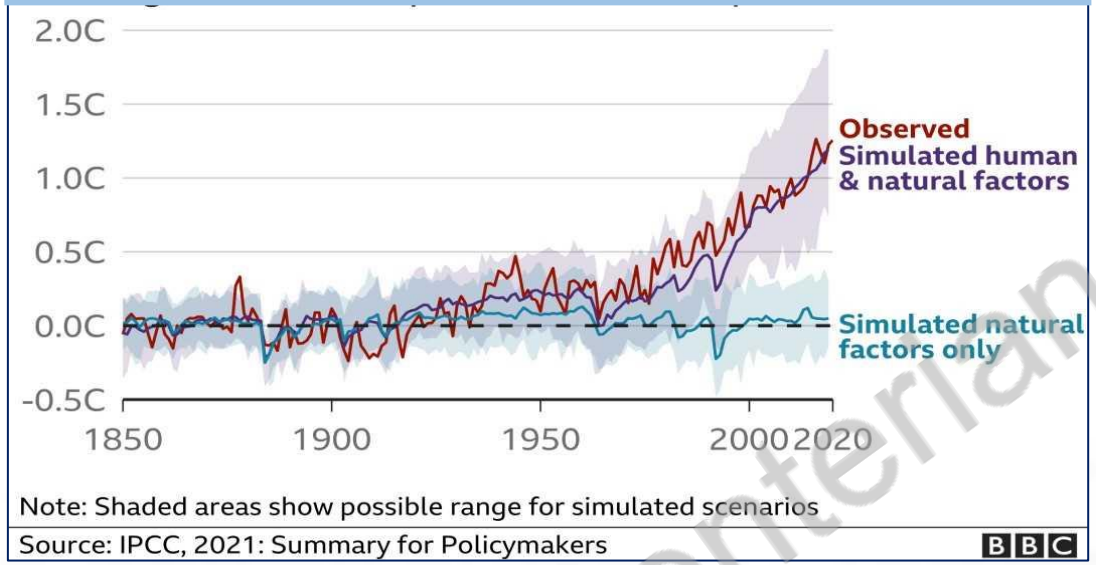
FOOD SCARCITY

Changes in the production of biomes and ecosystems can lead to food scarcity for all living things.

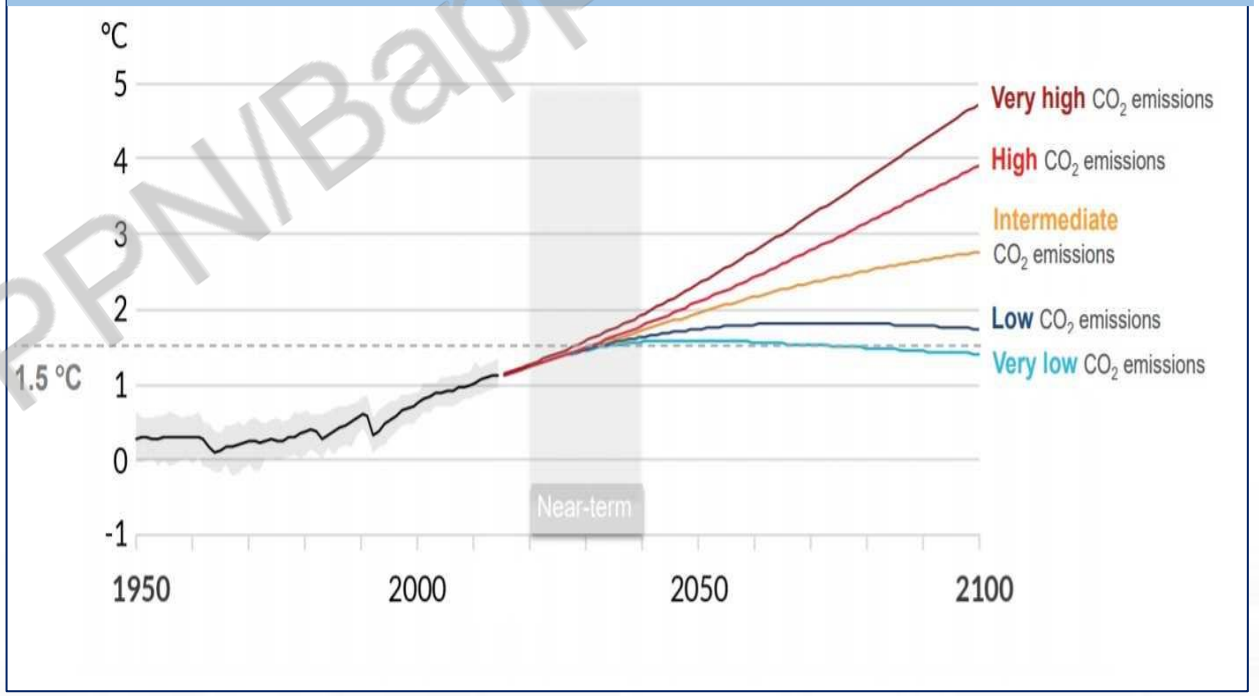
THE URGENCY OF THE TRANSITION TO GREEN GROWTH

Human influence has warmed the climate

Change in average global temperature to 1850-1900, showing observed temperatures and computer simulations



Future increases in emissions lead to additional global warming



Global temperatures were **1,090C higher** in the ten years between 2011-2020 than in 1850-1900.

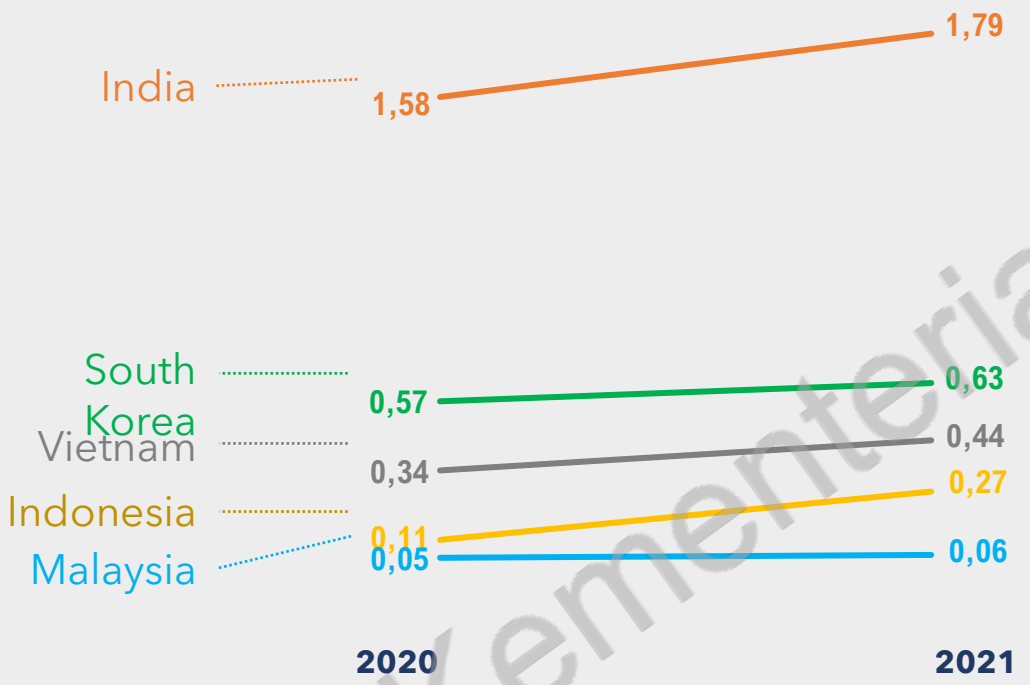
Human influence (90%) has been the main reason for melting glaciers globally since the 1990s.

The rate of **sea level rise** has recently nearly tripled compared to 1901-1971

TRANSITION TO NEW RENEWABLE ENERGY IS RELATIVELY SLOW

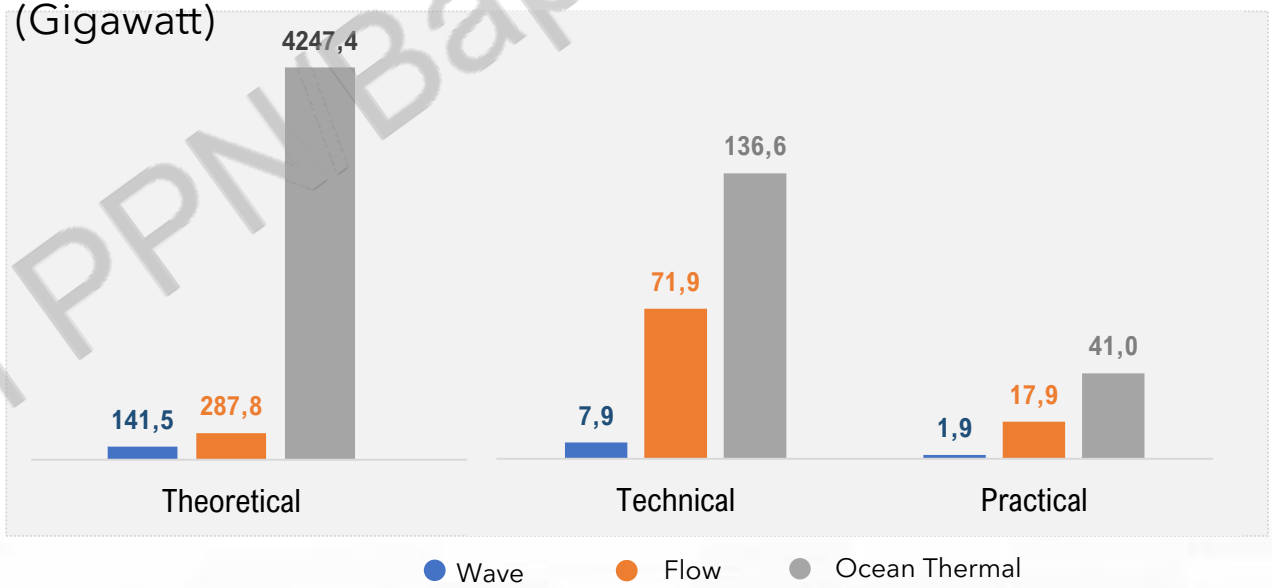
Indonesia's transition to new and renewable energy is relatively slow compared to comparable countries, only ahead of Malaysia. Utilization of the potential of EBT is still constrained by the lack of direct research between potential and practice, one of which is in the marine sector.

Renewable Energy Consumption
(Exajoules)



Source: British Pretoleum Energy (processed)

Renewable Energy Potential in Indonesia's Marine Sector
(Gigawatt)



Source: Ministry of Energy and Mineral Resources

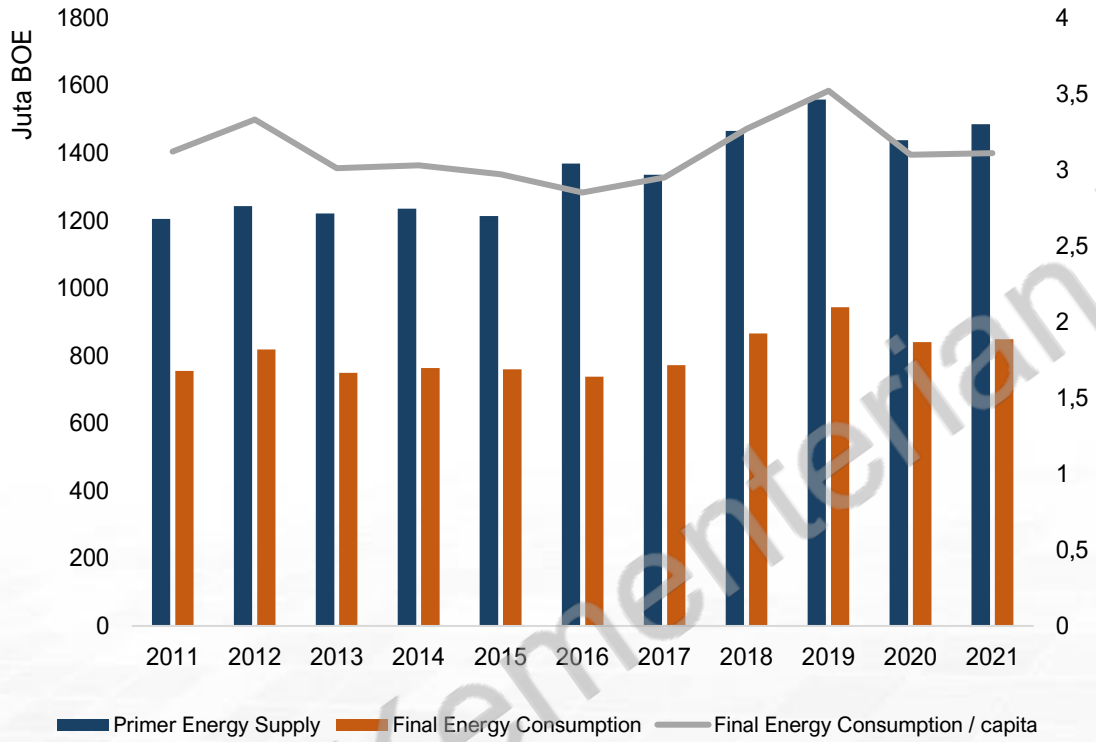
HIGHLIGHT

- Theoretically, Indonesia has **great New Renewable Energy potential**.
- However, the **technical and practical potential** is still relatively **limited**.
- The difference is due to **the level of accuracy** and **the lack of direct research** to measure the practical potential of an area.

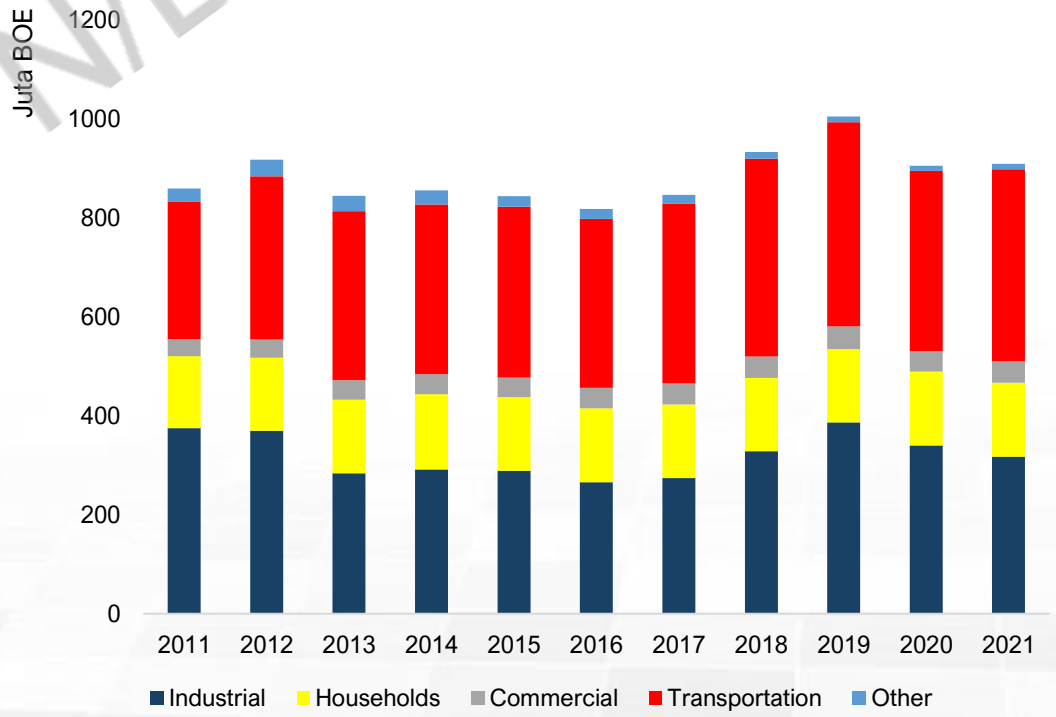
HIGH ENERGY CONSUMPTION, TRANSITION MUST MEET ENERGY DEMAND

By sector, the largest energy consumption is the industrial and transportation sectors. The energy transition needs to accommodate energy needs in crucial sectors so as not to create high inflation due to increased production costs

Energy Consumption (Barrel Oil Equivalent)



Energy Use by Sector



Source: MEMR, 2021

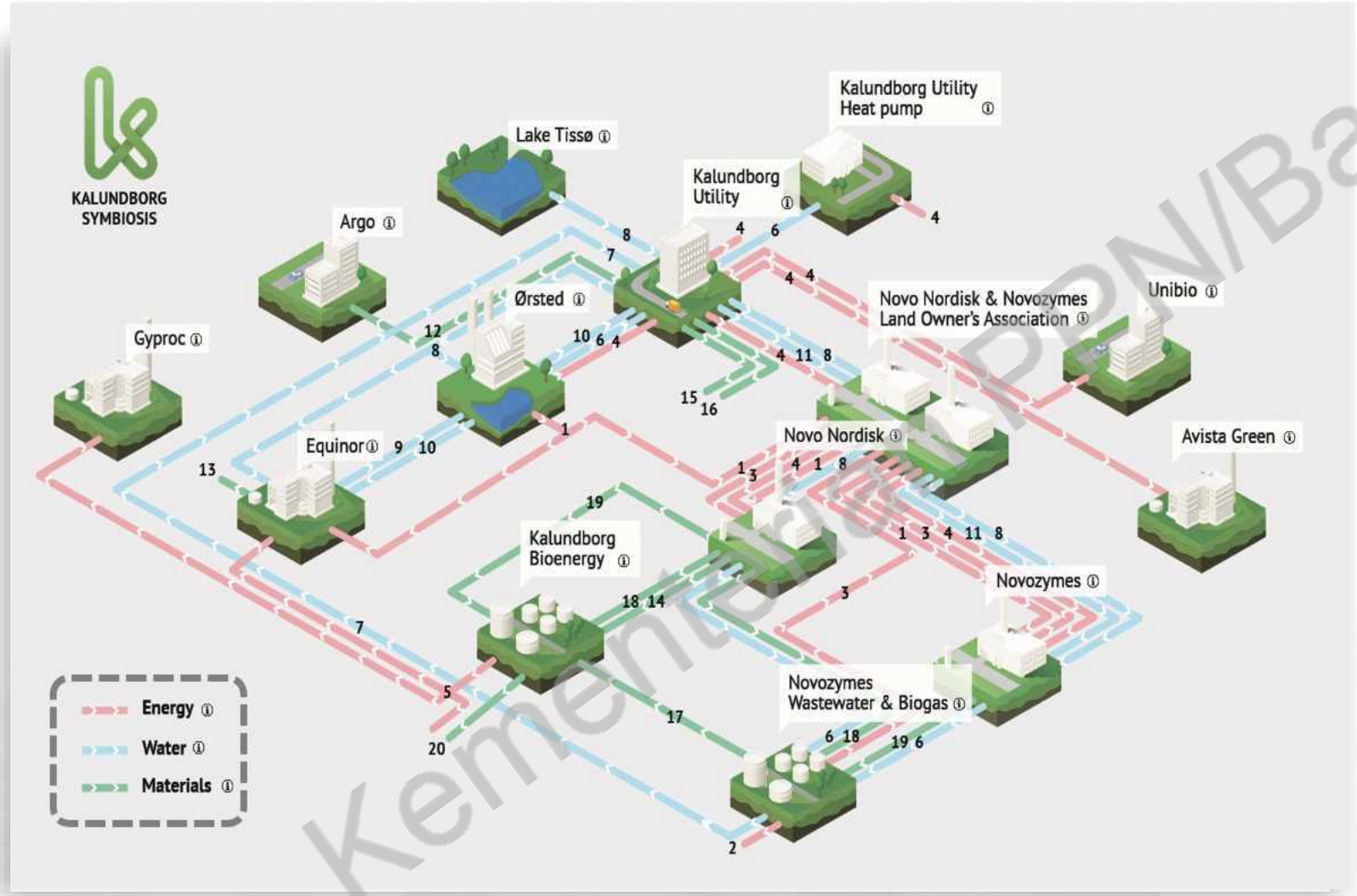
UTILIZATION OF NEW RENEWABLE ENERGY NEEDS MORE ATTENTION

Indonesia has many abundant natural resources to support the implementation of green industry, but the utilization is still minimal

Potency and Installed Capacity New Renewable Energy

Category	Potency	Installed capacity	Utilization
Geothermal	29544 MW	1438.5 MW	**4.9%**
Hydro	75091 MW	4826.7 MW	**6.4%**
Mini-Micro Hydro	19385 MW	197.4 MW	**1%**
Bioenergi	32654 MW	1671 MW	**5.1%**
Solar	207898 MW (4,8 kWh/m2/day	78.5 MW	**0.04%**
Wind	60647 MW (≥ 4m/s)	3.1 MW	**0.01%**
Ocean Wave	17989 MW	0.3 MW	**0.002%**

LESSON LEARNED: ECO-INDUSTRIAL PARK DEVELOPMENT SUCCESS STRATEGY (1/3)



Sumber: Ellen Mc Arthur Foundation, 2015

Learn from Eco-Industrial Park Kalundborg, Denmark (since 1959)

The key to success in developing eco-industrial parks is **collaboration**. Every company incorporated in the industrial area should mutually use **the rest of the company's products, share resources with one another, and put forward a common vision.**

- **635.000 ton CO_2** reduction
- **EUR 14 Juta** *Socio-economic Savings*
- **3,6 juta m^3** water saving
- **87.000 ton** *material savings*
- **100 GWh** *Energy Savings*

LESSON LEARNED: ECO-INDUSTRIAL PARK DEVELOPMENT SUCCESS STRATEGY (2/3)

Learn from Burnside Eco-industrial Park, Nova Scotia, Canada (since 1970)

One of Canada's largest and most successful industrial parks

Major concentrations of **industrial and commercial** since completion of the bridge

The construction of the **A. Murray MacKay Bridge** resulted in a **boom in development** in the area, as it **provided a quick link** to the Halifax Peninsula

Collaboration is the key to success, where companies complement each other in solve the challenges

Burnside EIP's Cooperative Partners

GBBA Greater Burnside Business Association
EPRA
Dalhousie University
efficiency Nova Scotia Corporation
OERA Offshore Energy Research Association
Nova Scotia Power An Emera Company

100,000 sq. ft facility

New state of the art CNC burning, cutting and process equipment

14 acres in Burnside Industrial Park in Dartmouth

20,000 sq.ft office building

1,000 employers

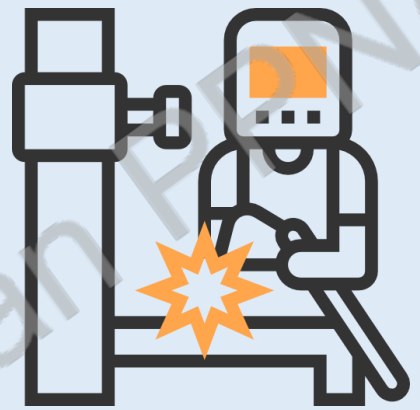
17,000 people regularly work

Source: Cherubini Group, 2023

LESSON LEARNED: MO INDUSTRIAL PARK, NORWAY (3/3)

- Powered by local hydroelectricity
- Largest recycling center for scrap steel in Norway

Recycles
400 GWh
every year



Core Business
Metallurgy and steel production

Recycling Energy, By-products, and Waste

Developed **an efficient, circular energy system** where waste heat from Elkem and carbon gas from Ferroglobe is put to use either by companies, homes, and offices.

LONG TERM STRATEGY ON LOW CARBON AND CLIMATE RESILIENCE

In 2015, the Government of Indonesia pledged to reduce emissions from 2020-2030 by **29% (unconditional) up to 41% (conditional)** against the 2030 business as usual scenario

COP 26 agreement in dealing with the impacts of climate change is **more ambitious** than the Paris Agreement

1. Enhanced ambition on adaptation as elaborated in the programmes, strategies and actions to achieve economic, social and livelihood, and ecosystem and landscape resilience
2. Enhanced clarity on mitigation by adopting the Paris Agreement rule book (Katowice Package) on information to be provided in NDC
3. National context that relates the existing condition, milestones along with national development for the period of 2020-2024 and long-term vision
4. Enhance the effectiveness and efficiency of the implementation Paris Agreement according to the rule book

LINKING TO PLANNING DOCUMENT

As an archipelagic country, Indonesia is vulnerable to climate change risks

Sea level rise 0.8-1.2 cm/year, while around 65% of the population lives in coastal areas. (Bappenas,2020)

Indonesia ranks 5th with the highest number of disasters from 2000-2019 (UN, 2020)

Indonesia's GDP could shrink 16.7–30.2% due to climate change impacts. (Swiss Re, 2021)

2000-2019, average carbon emissions increased by 1.16 million gigagrams per year (KLHK,2020)

Article 3.4 UNFCCC: All climate measures should be integrated into National Development Program

Nationally Determined Contribution (NDC) → **RPJMN 2020-2024**


FIRST NATIONALLY DETERMINED CONTRIBUTION
REPUBLIC OF INDONESIA

Through the ratification of the Paris Agreement and the submission of the NDC to the UNFCCC, Indonesia is committed to reducing greenhouse gas (GHG) emissions by:

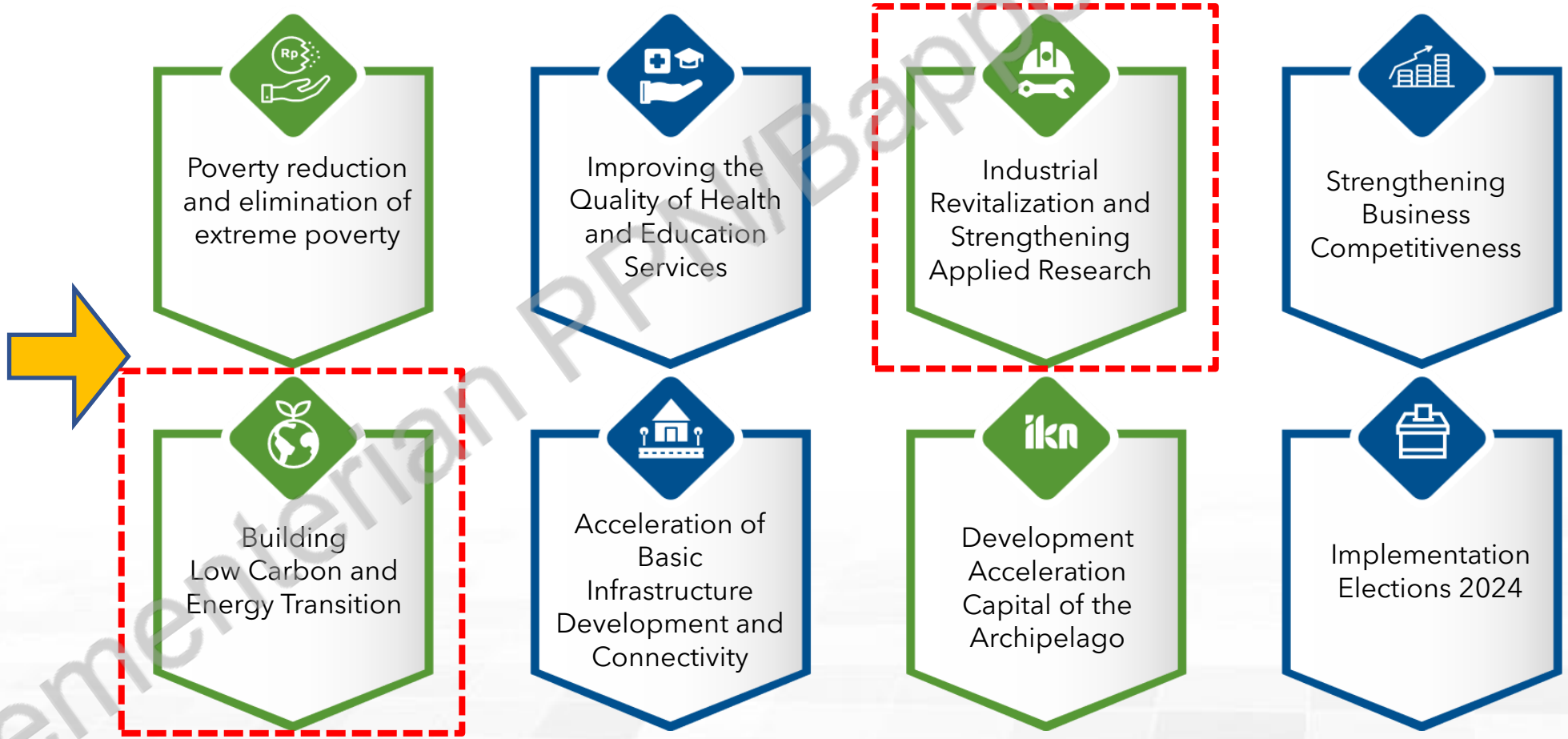
- ✓ **29 percent – Business as Usual**
- ✓ **41 percent – Not Business as Usual**

Emission Reduction Target per Sector (MTon CO2e)

	Forestry	Energy and Transportation	Waste	Agriculture	IPPU
29%	497	314	11	9	3
41%	692	446	40	4	3,25

INDUSTRY AND GREEN DEVELOPMENT ASPECTS ARE INCLUDED IN THE 2024 RKP POLICY DIRECTIONS

POLICY DIRECTION OF RKP IN 2024

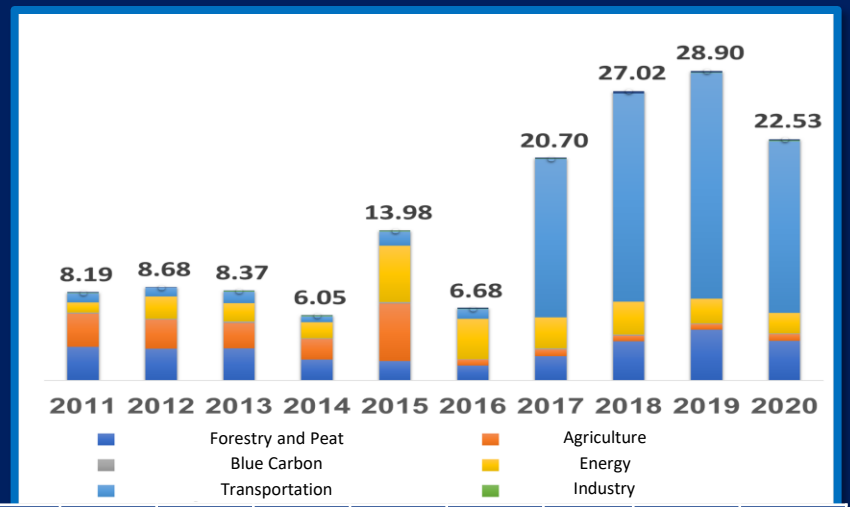


Source: Indonesian Economic Transformation Redesign Plan (Ministry of National Development Planning/Bappenas, 2021)

STATE BUDGET FUNDING AND CLIMATE FINANCING SCHEMES

Kementerian PPN/ Bappenas

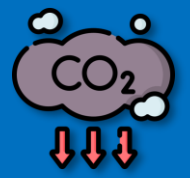
Sectoral Budget for Low Carbon Development (Trillion Rupiah)



Assumption	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Exchange rate (IDR/USD), average	8.768	9.373	10.420	11.850	13.394	13.307	13.384	14.247	14.146	14.577

± 70%

of the total CRP budget allocated for the transportation subsector



4,06 Gt CO_2eq

cumulative emission reduction in a decade

Alternative Green Public Fund Management Scheme

Green PPP - Public Private Partnership (PPP)

A form of development cooperation between the Government and the private sector in providing infrastructure facilities or public services in order to address the issue of climate change

SDG Financing Hub

Platform managed by BAPPENAS to develop funding for SDG projects through various schemes such as PPP, blended finance, equity financing etc

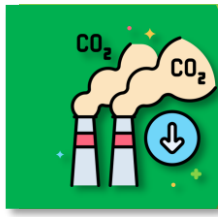
Ecology-Based Budget Transfer (TANE/TAPE/TAKE)

Public fund allocation schemes from the National, Provincial, to District/Village levels that have agreed on ecological performance indicators to implement low-carbon development

HIGHLIGHT : CARBON TAX POLICY TO SUPPORTS A GREEN ECONOMY

Application Purpose

1. 
   Changing behavior to switch to low-carbon green economic activities.

2. 

   Support GHG emission reduction targets in the medium and long term

3. 
   Encouraging the development of carbon markets, technological innovations, and investments that are more efficient, low-carbon and environmentally friendly

Carbon Tax Roadmap

2021	2022	2025
Piloting of carbon trading (cap & trade) in the power sector by the Ministry of Energy and Mineral Resources, with an average price of Rp. 30.000/ton CO2eq	The application of a carbon tax (cap & tax) on coal-fired power plants, with a tariff of Rp. 30,000/ton CO2eq, the amount of which will be evaluated periodically with world carbon prices	Expansion of the carbon trading sector (cap & trade) and carbon tax (cap & tax), as well as the full implementation of carbon trading through the carbon exchange

Source: BKF, 2022

HIGHLIGHT : FISCAL INCENTIVES AND INVESTMENT FACILITIES FOR GREEN INVESTMENT

Tax Allowance	Provision of net Income Tax (PPh) reduction for 6 years by 5% per year or 30% of the investment value (PP No. 18 of 2015 j.o PP ESDM No. 16 of 2015)
Import Duty Exemption	Incentives in the form of 2 years of exemption from import duty on raw materials if the company uses local production of 30% (PMK No. 176 of 2009)
Tax Holiday	Tax relief for 5-20 years with a minimum investment value of Rp. 500 billion (PMK No. 35 of 2011 and BKPM Regulation)
Application of 0% PPnBM for EV	Applies to motorized vehicles that use battery electric vehicle (BEV) or fuel electric cell vehicle technology (PP No. 74 of 2021)
Bulk tariff incentives for Public Electric Vehicle Charging Stations (SPKLU)	In order to accelerate the construction of public electric vehicle charging (SPKLU) infrastructure, a bulk incentive of Rp. 715/kWh for SPKLU Business Entities, with a maximum sales rate of Rp. 2.467/kWh

GREEN INDUSTRY DEVELOPMENT TARGETS IN RPJMN 2020-2024

Sustainable Energy Development

19,5%
The share of new and renewable energy in the national energy mix

0,8 SBM/M Rp
Final energy intensity decrease

133,8 SBM/M Rp
Primary energy intensity

Sustainable Land Recovery

1,6 million ha
Area of degraded peatland restored

2,1 million ha
Nationally increased forest cover area

100%
LP2B area for agricultural land needs

Green Industry Development

10% **Medium and large manufacturing companies certified by the Green Industry standard (SIH) (%)**

Low Carbon Coastal and Marine

50.000 ha
Total Area of Mangrove Forest Rehabilitation (ha)

Waste Management & implementation of circular economy

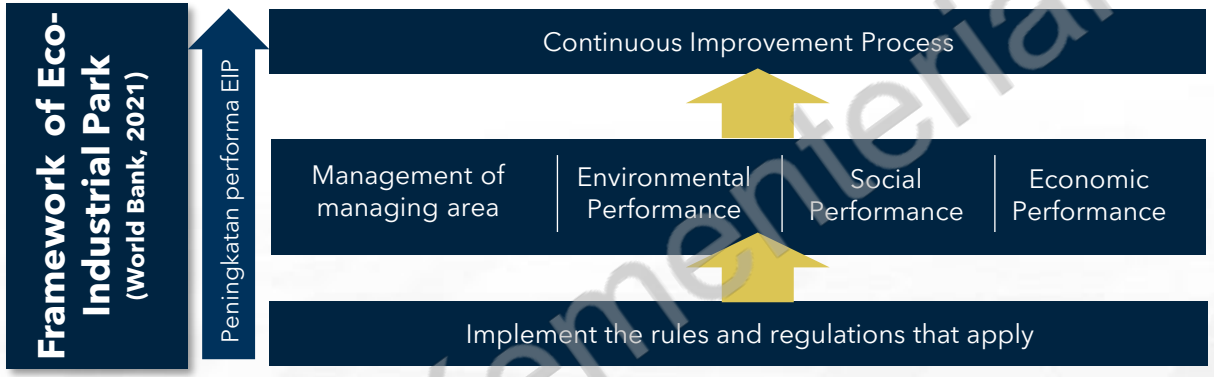
69,8 million ton
Amount of Waste that is managed nationally

409.078 HH
served by Reduce, Reuse, Recycle

494.152 HH
served by Integrated Waste Disposal Site

3.885.755 KK
Served by landfill with Sanitary Landfill Standards

INDONESIA DEVELOPS GREEN INDUSTRIAL AREA FOR IMPLEMENTING GREEN AND CIRCULAR ECONOMY



The 11 National Priority Industrial Areas have the potential to implement the concept of a green industry/eco-industrial park. However, comprehensive planning is needed, also integrated from upstream to downstream, and involving all parties to implement this concept, especially industry as the main subject in this matter.

Green Industrial Area Development Policy/Eco-Industrial Park

- Promote cleaner production processes in industry so that materials can be reused.
- Guarantee the quality of production and increase the economic value of the material.
- Encouraging sustainable green products through accelerating the process of exchanging waste and resources.
- The implementation of industrial estate management that pays attention to economic, social and environmental aspects simultaneously.

Green Investment

+

Green Industrial Area Development Policy/Eco-Industrial Park

Industrial areas supported by green investment are able to encourage the creation of a sustainable Green Industry

Green Economy dan Green Investment dapat diarahkan untuk

1. Development and use of environmentally friendly materials
2. Application of the concepts of reuse, reduction and recovery
3. Utilization of low carbon technology
4. Skilled workforce with resource efficiency knowledge
5. Alternative energy use

GOVERNMENT AS REGULATOR MAKES A PROGRESS IN ARRANGING STANDARD OF GREEN INDUSTRY IMPLEMENTATION

Assessment of the Green Industry Standard (SIH) by the Ministry of Industry

Based on Law No. 3/2014 concerning industry

1032 **Companies have received the green industry award from 2010 - 2021**

Implementation of the Green Industry in 2019 had saved :

Energy up to IDR 3.5 trillion

Water up to Idr 228.9 billion

Production Process (Weight: 70%)	Waste/Emission Management (Weight: 20%)	Company Management (Weight: 10%)

**Source: Green Industry Award, 2019*

1 28 types of Industry already have a Green Industry Standard that can be used as a reference

1. Green Industry Standard For Instant Coffee Processing
2. Plastic and Bioplastic Shopping Bags or Bags Industry
3. Toughened Safety Glass Industry
4. Coated Safety Glass Industry
5. Organic Solvent Based Paint Industry
6. Solid Nitrogen, Phosphorus and Potassium Fertilizer Industry
7. Corrugated Paper and Paperboard Industry
8. Glass Packaging Industry
9. Mineral Water Industry
10. Ceramic Home Appliance Industry
11. Industrial Vehicle Parts and Accessories for Four or More Wheel Motorized Vehicles
12. Flat Glass Industry
13. Biscuits and Other Pastry Products Industry
14. Ceramic Sanitary Equipment Industry
15. White Crystal Sugar Industry
16. Cooking Oil from Palm Oil
17. Cultural Paper Industry
18. Batik Industry
19. Water Based Paint Industry
20. Tanning Industry of Cows, Buffaloes, Sheep and Goats
21. Textile Dyeing, Stamping and Finishing Industry
22. Ceramic Tile Industry
23. Pulp Industry and Paper Pulp Industry Integrated
24. Rubber Suctioning Industry in the Form of Ribbed Smoked Sheet Rubber
25. Crumb Rubber Industry
26. Industry of Urea Fertilizer, SP-36 Fertilizer, And Ammonium Sulfate Fertilizer
27. Milk Powder Processing Industry
28. Portland Cement Industry

2 12 other Green Industry Standard are being developed and/or reviewed

1. Basic oleochemical industry sourced from vegetable oil
2. Manufacture of other goods of glass
3. Wheat flour industry
4. Home rubber industry (crum rubber)
5. Rubber smoking industry in the form of ribbed smoked sheet rubber
6. Snack product industry
7. Manufacture of spare parts and accessories for four or more wheeled motor vehicles
8. Leather preservation industry from cows, buffaloes, sheep and goats
9. Goods refinement industry
10. Textile printing, dyeing and finishing (review) industry
11. Ceramic tile industry (review)
12. Portland cement industry (review)

Indonesia's Long Term Development Agenda:
The Vision of Golden Indonesia 2045

2045 Vision:
A Sovereign, Advanced and Sustainable Archipelagic Nation

Negara Nusantara

Negara kepulauan yang memiliki ketangguhan politik, ekonomi, keamanan nasional, dan budaya/peradaban bahari sebagai poros maritim dunia

Berdaulat

Ketahanan, Kesatuan, Mandiri, Aman

Maju

Berdaya, Modern, Tangguh, Inovatif, Adil

Berkelanjutan

Lestari dan seimbang antara pembangunan ekonomi, sosial, dan lingkungan

8 Agenda of Indonesia's Transformation towards 2045

Transforming Indonesia

1. Social Transformation
2. Economic Transformation
3. Governance Transformation

Foundation of Transformation

4. Law, Stability and Diplomacy
5. Social Culture and Ecological Resilience

Implementation of Transformation

6. Just and Quality Regional Development
7. Sustainable Infrastructure Development
8. Sustained Development

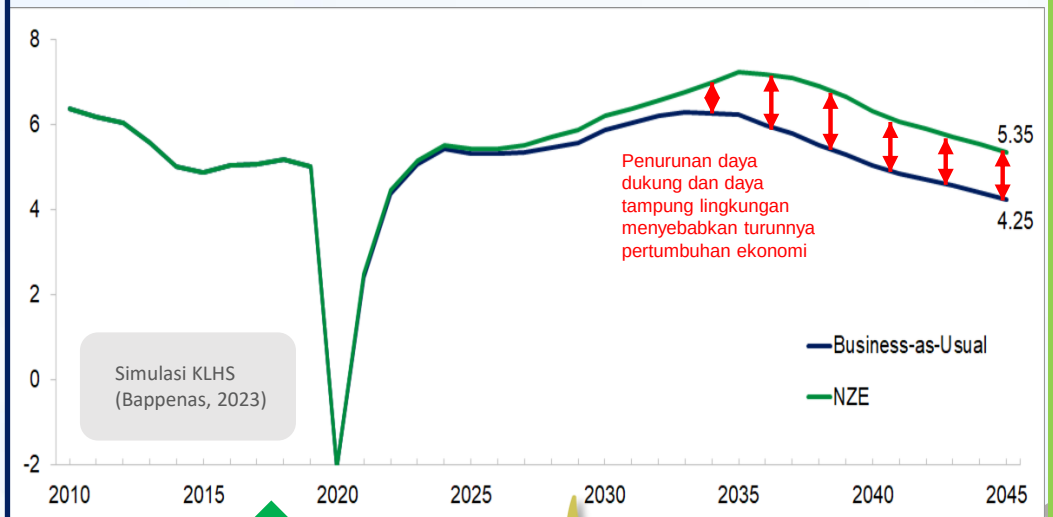
Sumber: Rancangan Awal RPJPN 2025-2045

5 Targets of Golden Indonesia 2045…

Reducing the GHG Emission Intensity towards Net Zero Emissions (NZE)

Kementerian PPN/ Bappenas

Pertumbuhan Ekonomi (persen)

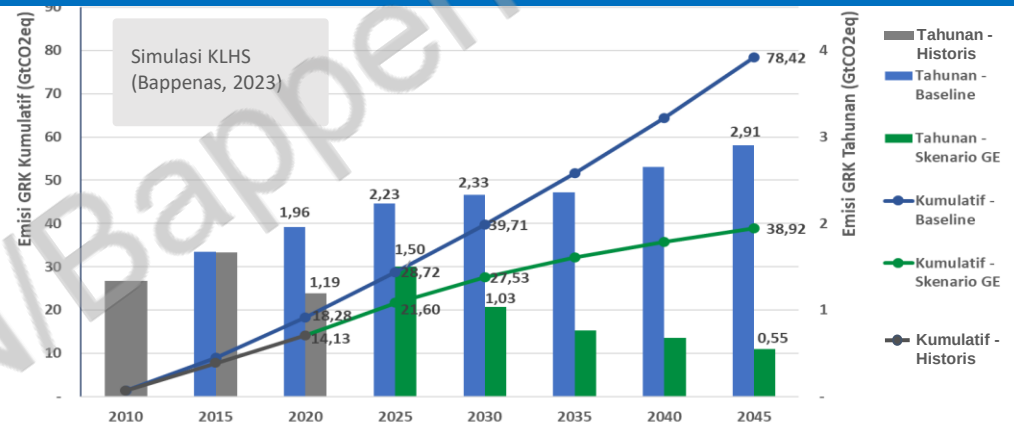


PDB nasional

Emisi GRK

Intensitas emisi adalah banyaknya emisi GRK yang dihasilkan per satuan output aktivitas ekonomi

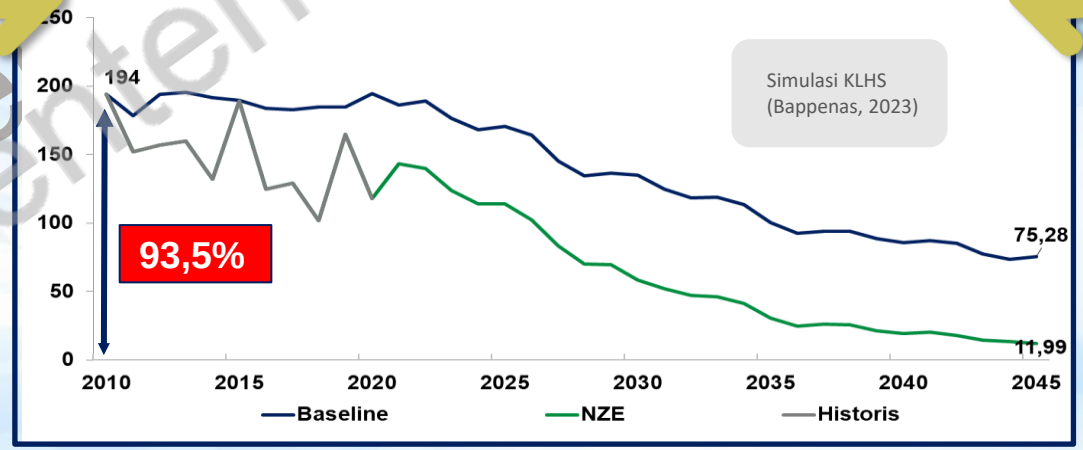
Penurunan Emisi GRK ($GtCO_2eq$)



Penurunan Emisi GRK	Capaian (2020)	*Base year* (2025)	Target 2030	Target 2045
Kumulatif	26,44%	28,12%	32,60%	51,51%
Tahunan	39,05%	32,65%	55,65%	80,98%

Intervensi Ekonomi Hijau dengan Pembangunan Rendah Karbon akan meningkatkan daya dukung lingkungan dan menurunkan emisi GRK seiring mendorong pertumbuhan **PDB rata-rata Indonesia tahun 2025-2045 mencapai 6,22%.**

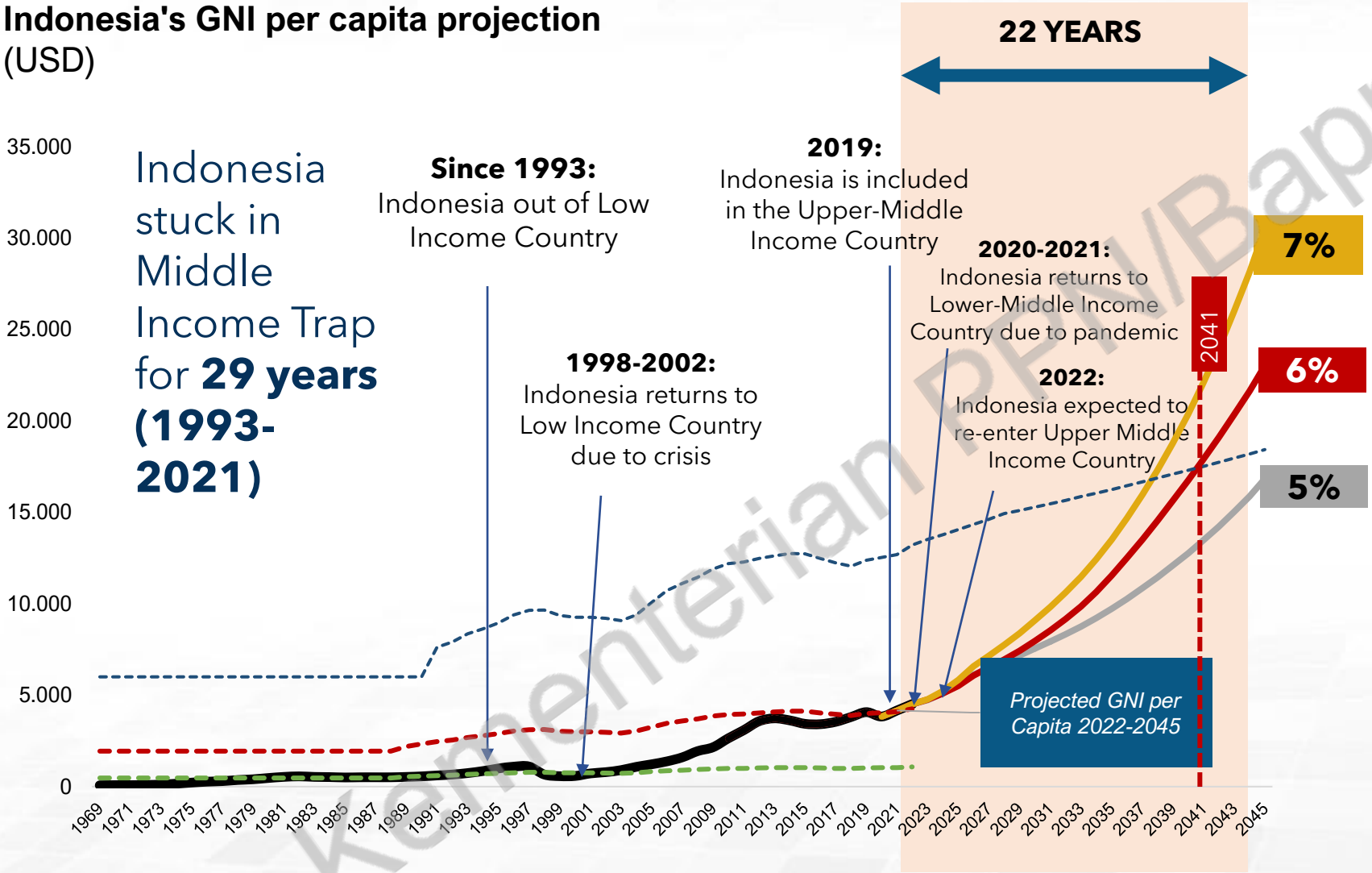
Penurunan Intensitas emisi



Emisi GRK diharapkan menurun sebesar 51,51% secara kumulatif tahun 2010-2045, atau secara tahunan sebesar 80,98% (di tahun 2045) di bawah skenario *Business as Usual,* untuk dapat menuju *Net Zero Emissions* di tahun 2060.
Hal ini akan berdampak pada **penurunan intensitas emisi sebesar 93,5% di tahun 2045 dibawah level 2010**

.... SUSTAINABLE ECONOMIC DEVELOPMENT IS ONE OF PILLARS TO ACHIEVE INDONESIA VISION 2045

Indonesia's GNI per capita projection
(USD)



Economic growth of at **least 6-7 percent per year** is needed to get out of the Middle Income Trap and become a high-income country before 2045

Indonesian Development Pillars 2045

- **Human Development and acquisition of knowledge and technology**
- **Development of Sustainable Economy**
- **Equitable Development**
- **Assurance for National Defense and Governance**

GREEN ECONOMY AS ONE OF GAME CHANGERS FOR INDONESIA'S INCLUSIVE & SUSTAINABLE ECONOMIC TRANSFORMATION

"Build forward better with SDGs as main instruments"

7 "game changers" towards Indonesia 2045

#1 Strategy
Competitive & Prosperous Human Resources
- Healthcare system
- Education (education system & character building)
- Social protection
- Research & innovation

#3 Strategy
Green Economy
- Low carbon economy
- Energy transition
- Circular economy
- Green Transportation

#5 Strategy
Domestic Economic Integration (*economic powerhouse)*
- Connectivity infrastructure: superhub, marine hubs, airline hubs
- Economic zones/corridors
- Domestic value chain
- Logistics

#2 Strategy
Economic Sector Productivity
- Industrialization
- MSMEs productivity
- Agriculture modernization
- Services sector modernization
- **Blue Economy**

#4 Strategy
Digital Transformation
- Human resources
- Digital infrastructure
- Digital development
- Digital utilization

#6 Strategy
Capital City and New Cities Development
- New sources of growth
- Dissipating regional disparities

#7 Strategy - Enabling Environment:
Macroeconomic stability, Financial system, Competitive markets, Bureaucratic Reforms

INDONESIA'S GREEN STRATEGIES

Energy Transition

1. Improvement of electricity investment regulations
2. Increase technical and financial capacity of the renewable energy power plan project
3. Improvement of funding schemes and sustainability of technology research and development

Clean Transportation

1. Provision of motorized vehicle units and infrastructure
2. Increased production of biofuels through regulation improvement
3. Transportation system efficiency through integrated transportation mode

Sustainable Farming and Food Security

1. Sustainable agricultural development
2. Strengthening food security
3. Strengthening ICT System
4. Agriculture market development

Sustainable Forest

1. Acceleration of restoration and conservation of forest resources
2. Strengthening monitoring system to establish sustainable forest
3. Forest use to stimulate local economic development

Sustainable Water Resource

1. Water pollution reduction program
2. Establish integrated management system of river, lake, and groundwater
3. Improvement of water access through pipes and quality of water services

Sustainable Coastal and Marine

1. Sustainable and integrated coastal and marine management system
2. Ecotourism development
3. Improvement of marine spatial planning and coastal zoning
4. Improvement welfare of small-scale fishermen

Circular Economy

1. Strengthening community participation for waste sorting
2. Integrated regional waste management system development
3. Financing with incentive schemes
4. Development of circular economy in industry and industrial estates

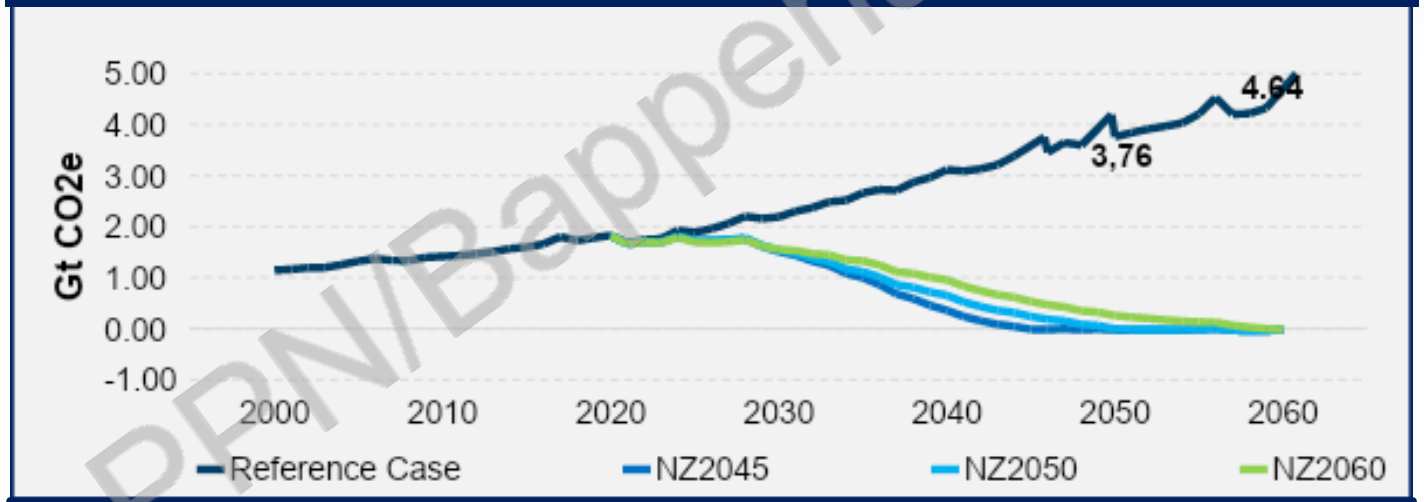
ACHIEVING NET ZERO EMISSIONS WITH LOW CARBON DEVELOPMENT

Net Zero Emission Strategy

2045	2050	2060

- Scenarios are defined based on scientific and holistic process with consideration in political, technical and institutional aspects
- Scenarios consist of similar low carbon development strategies, with different level of acceleration on target achievement
- Scenarios are aligned with the government efforts in GHG emission reduction

Annual GHG Emissions



With Net Zero Emissions policy implementation, GHG peak emissions will happen in 2024 (1,8Gt CO_2e), then decreased gradually.
In period of 2021–2060, NZE scenario will decrease emissions 87-98 Gt CO_2e.

Low Carbon Development Policies to support NZE

Energy	• **Declining energy intensity (by energy efficiency implementation) 1% - 6% per year gradually** • **Close to 100% renewable energy by 2060** • **Transition to electric vehicle (up to 95%)**	**Waste**	• **Resource efficiency in production and waste management through circular economy** • **Decrease on liquid waste up to zero by 2060**
Land	• **Reforestation up to 250 thousand hectare per year** • **Peatland restoration and mangrove rehabilitation** • **Prevent deforestation from land conversion** • **Increase potential carbon sequestration in cities**	**Fiscal**	• **Energy subsidy elimination by 2030** • **Implementation of carbon tax policy**

GREEN INDUSTRY DEVELOPMENT WILL BE AMONG THE MOST IMPORTANT ASPECT FOR THE VISION 2045

Green Industry development can bring out multiple benefits:

CATALYZE INVESTMENT

In February 2018, the **Indonesian government raised $1.25 billion** from "green" Islamic-compliant bond, or sukuk, to finance environmentally friendly government projects.

Efficiency & Economic Competitiveness

JOB CREATION

11.3 million jobs worldwide in renewable energy, 62% in Asia (IRENA, 2017)

ADVANCED TECHNOLOGY

Robust local green markets will bring latest technologies appropriate for local.

Source: World Bank

WHAT BENEFITS WILL INDONESIA GAIN FROM GREEN INDUSTRY?

87-96 billion tonnes CO_2e GHG emissions saved over 2021-2060

Average GDP growth of 6.1-6-5% Per year until 2050

Almost 68% reduction in emission intensity by 2045

Reaching Net Zero Emissions by 2060 or sooner

25-34% higher Gross National Income (GNI) by 2045

1.8 million additional green jobs in 2030

INDONESIA'S TRANSITION TOWARDS GREEN ECONOMY REQUIRES MULTI-STAKEHOLDERS COLLABORATION AND SUPPORT

Government

- Harmonization of regulations to support the application of green industries.
- Encouraging the implementation of green investment and green economy thereby encouraging the provision of fiscal incentives.
- Collaborating with the central and regional Ministries/Agencies to promote sustainable development.

Industry

- Applying up to green industry certification.
- Conducting R&D to improve the efficiency of production processes, raw materials, and energy.
- Prepare for the development of an integrated and collaborative Green Industrial Estate.

Practitioners and Academics

- Increasing environmentally friendly technological innovations: electric vehicles, renewable energy (solar panels).
- Production process innovation for energy and resource efficiency.
- Technology and digital integration through the development of data science, machine learning, simulation, engineering systems and robotics.

Society

- Increase awareness of the importance of using environmentally friendly products and products produced from environmentally friendly processes.
- Participate in protecting the surrounding environment by supporting industry and green industrial areas.

The Future is not Projected Neither Forecasted,
But We are Shaping Our Future

Lets Shape the Future of Golden Indonesia 2045

To become: *A Sovereign, Advanced, and **Sustainable** Archipelagic Nation*

http://indonesia2045.go.id

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Thank You