



MINISTRY OF FINANCE  
REPUBLIC OF INDONESIA

Kemenkeu Terpercaya

# Carbon Pricing in Indonesia: Balancing Growth and Sustainability

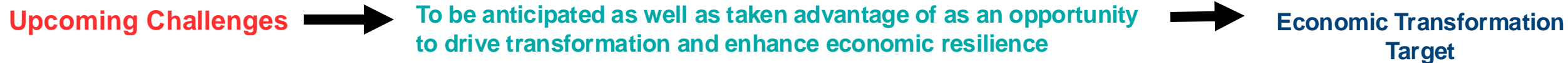
Jakarta, 3<sup>rd</sup> October 2023

**Parjiono**  
Assistant of Finance Minister for  
Macroeconomic and International Finance



# THE POST-PANDEMIC WORLD PROVIDES CHALLENGES AS WELL AS OPPORTUNITIES

## Green Economy is part of Indonesia's Economic Transformation Agenda



Climate  
Change

Geopolitical  
Changes



Supply disruptions,  
especially energy  
and food

### Increasing national economic participation in the new pattern of **global supply chains (GSC)**

*Potential Sectors:*



**Downstream natural resources**  
(including minerals, oil and gas,  
and natural products)



**Battery-based electric  
vehicle** ecosystem



**Green economic** ecosystem  
(green energy, carbon trading)



Sustainable **Digital  
Economy**

### Strengthening **the resilience of the domestic economy**

*Potential Sectors:*



**Processing of natural  
products** → food security



**Tourism** recovery →  
foreign reserve improvement



Development of  
**environmentally friendly  
energy** → energy security



**Implementation of the  
new Financial Sectors Law**  
→ financial sector stability

**High Economic  
Growth &  
Productivity**

**Accelerating the  
Improvement of  
Social Welfare**

**Competitive  
Economic  
Resilience**

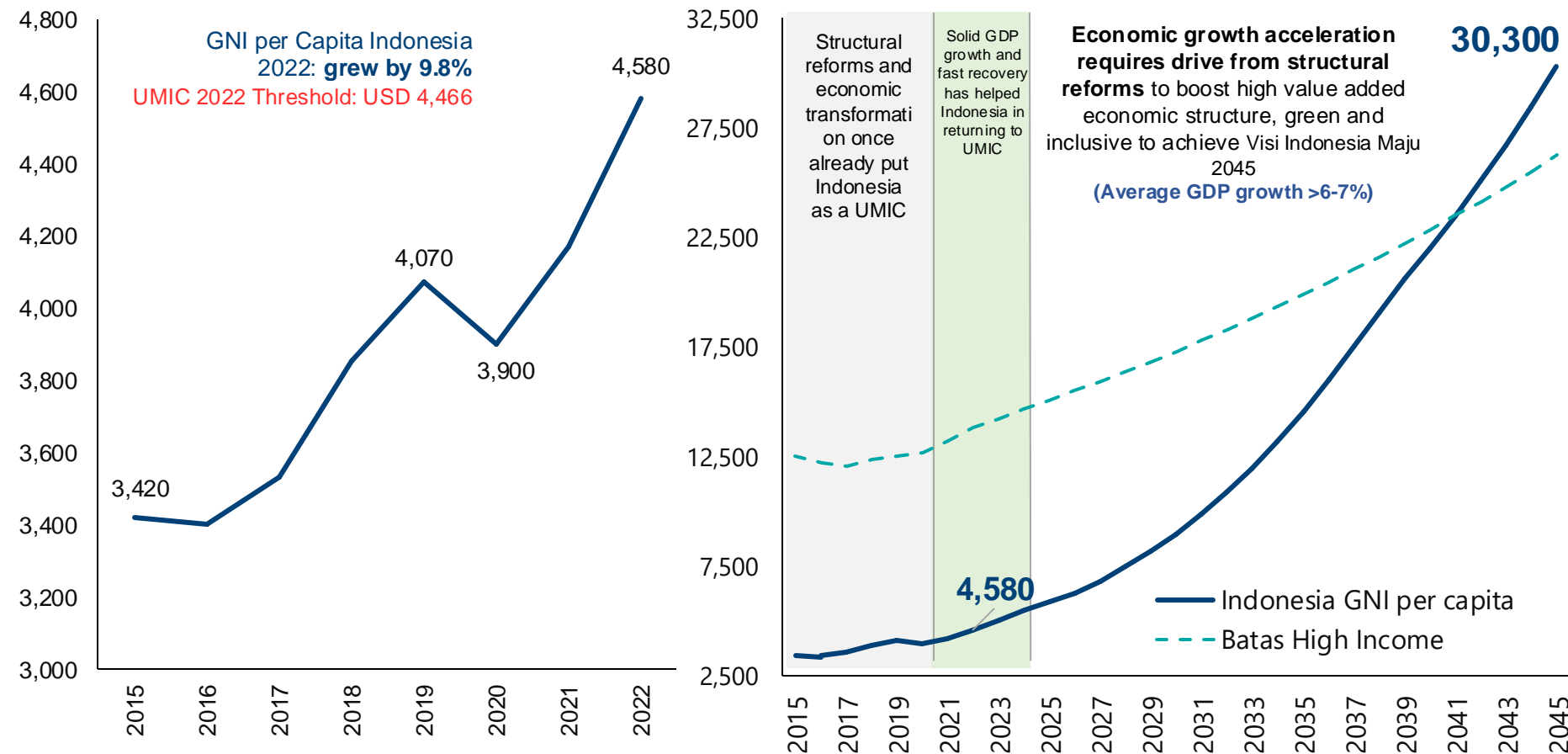


# INDONESIA HAS RETURNED AS AN UPPER MIDDLE-INCOME COUNTRY (UMIC)

A critical milestone to achieve *Visi Indonesia Maju 2045*

## GNI Per Capita (USD)

Source: World Bank, MoF estimate



# 2045

**30% manufacture sector contribution to GDP**

**80% middle-income class**

**STRUCTURAL REFORMS**  
(human capital, infrastructure, & institutional)

**ECONOMIC TRANSFORMATION**  
(industrialization, downstreaming, **green economy**, digitalization)

POTENTIAL

DRIVING FACTORS



Indonesia's emissions per capita rose from 2,3 in 2021 to 2,6 in 2022, but still **below world average** and as **third lowest** among G20 countries

Indonesia's GDP per capita pumped up by **10%** in 2022 but still **rank 19** among G20 countries

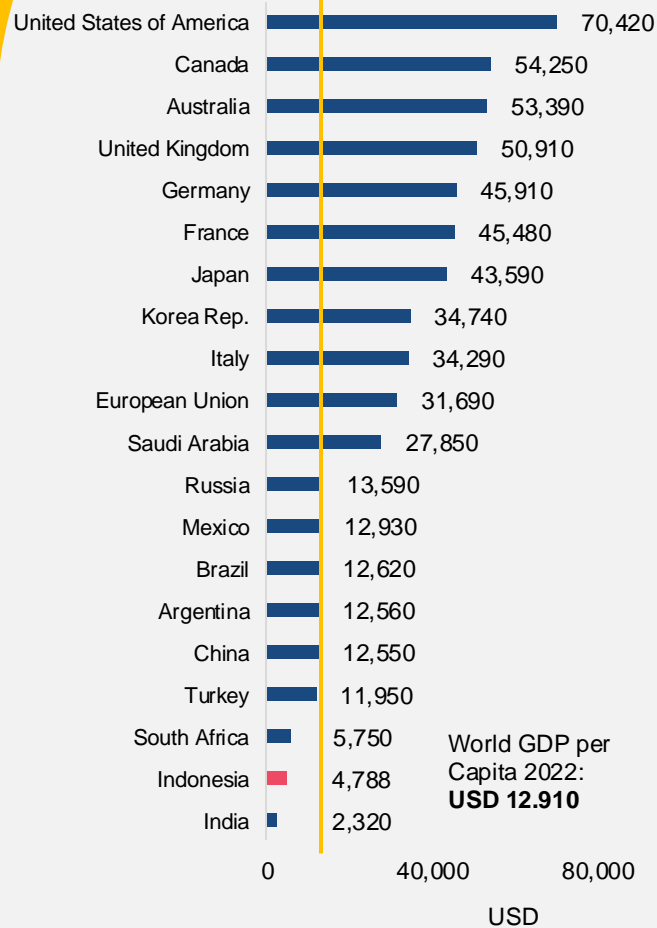
Based on annual CO2 emissions in 2022, Indonesia put place in **rank 11** with **648 ton CO2e**. This emissions only covered from fossil fuels and industries (exclude FOLU).

Government of Indonesia eyeing a robust decarbonization policy to achieve it's NDC and Net Zero Emissions agenda

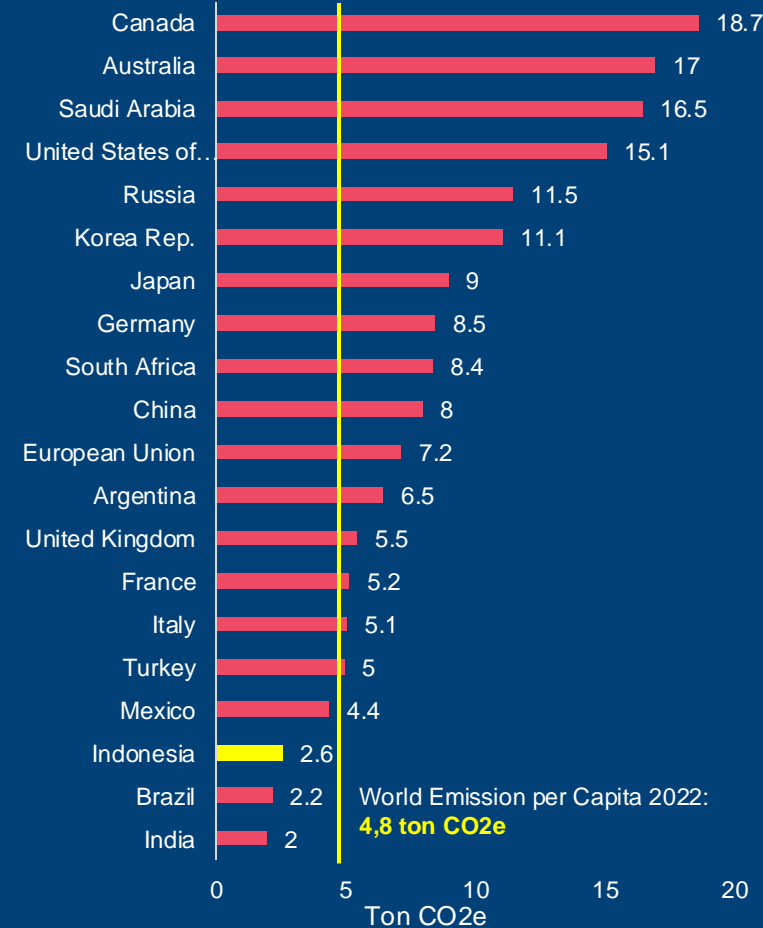
Annual CO2 Emissions 2022 (exclude FOLU) of G20 countries (In Million Ton of CO2e)



GDP per capita of G20 Countries by 2022 (in USD)



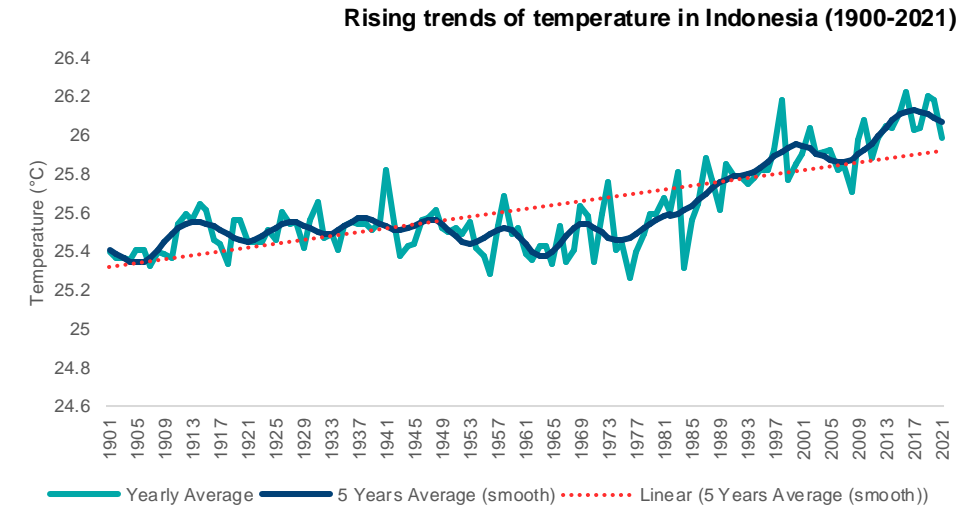
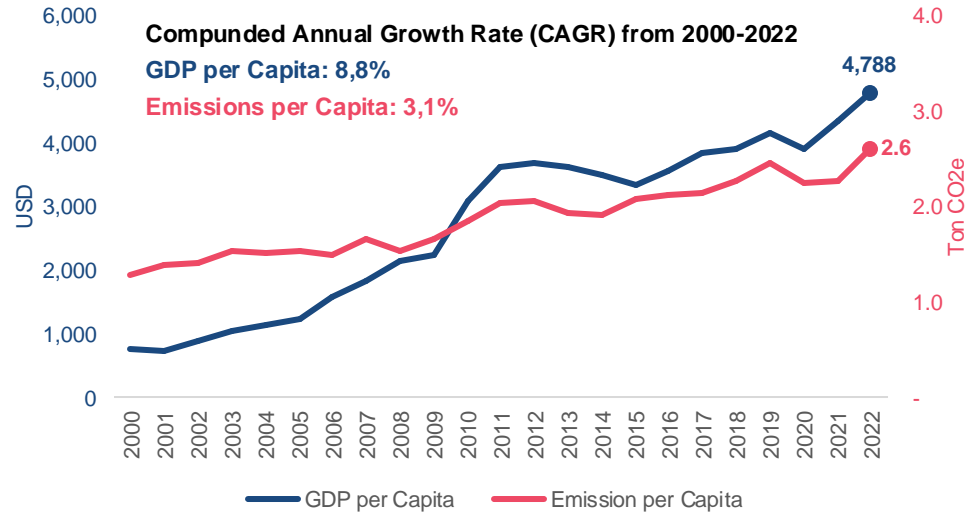
Emissions per capita of G20 countries by 2022



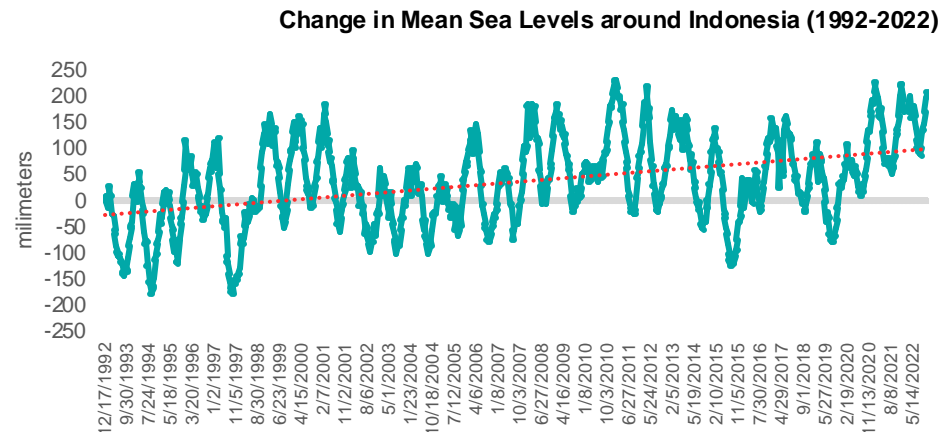


## Indonesia's Emissions per capita quite manageable despite progressive GDP per capita growth

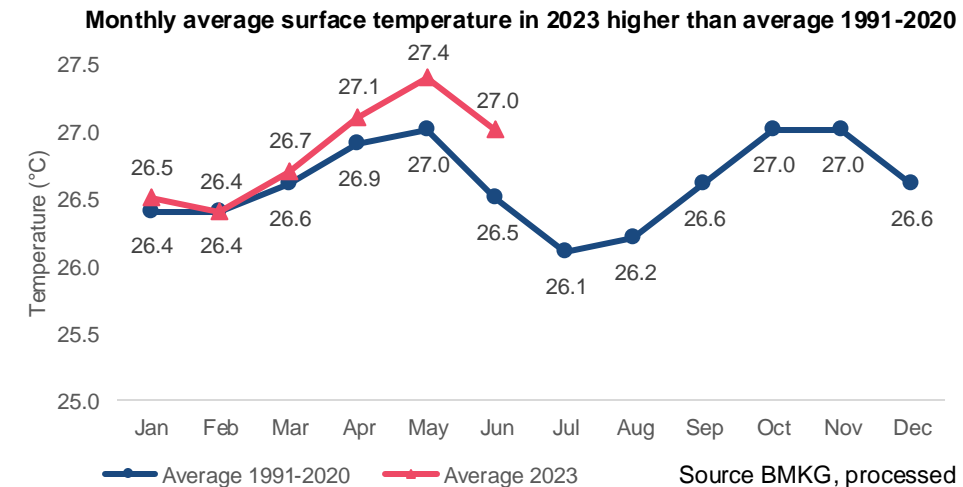
The pace of Indonesia's GDP per capita for the last two decade is higher than its emissions. It's positive work and need to be managed in the future through decarbonization policies and low-carbon development



On the other hand, we need to pay attention with an **increasing trend of mean sea levels around Indonesia**, because Indonesia is archipelagic country with more than 17 thousand islands and vulnerable to sea level rise



Indonesia also facing an **increasing of surface temperatures** and will lead to a vary of climate-related disasters occurrence and damages.







# Indonesia's Commitment to Tackle Climate Change

## 1 Indonesia is one of UNFCCC's Party

- **Law no. 6/1994** Ratification of UNFCCC
- **Law no. 17/2004** Ratification of Kyoto Protocol
- **Law no. 16/2016** Ratification of Paris Agreement
- **2016**-Submission of First NDC to UNFCCC
- **2021**-Submission of Updated NDC to UNFCCC
- **2021**-Submission of Long Term Strategy for Low Carbon and Climate Resilience 2050
- **2022**-Submission of Enhanced NDC

## 2 Mainstreaming Climate Change in National Development Plan

- **President Regulation no.61/2011**-National Action Plan on GHG Emissions Reduction (RAN-GRK)
- **2014**-National Action Plan on Climate Adaptation (RAN-API)
- **RPJMN 2020-2024**-Low Carbon Development
- **RPJMN 2020-2024**-Climate Resilience Development



## Carbon Pricing Instruments (NEK)

3

1. **President Regulation no. 98/2021** regarding Carbon Pricing Instruments
  - Carbon Trade
  - Carbon Levy
  - Result Based Payment
  - Other mechanisms that relevant alongside with science and technology development
2. **Financial Services Authority (OJK) Regulation no. 14/2023** regarding Carbon Exchange

## Climate Change Fiscal and Financial Policies

4

- **Law no. 7/2021** regarding Harmonization of Tax Regulations (introduction of carbon tax)
- **Law no. 4/2023** regarding Financial Sector Development and Enhancement (sustainable finance)
- **State Budget supports:** climate budget tagging, taxation facilities for RE, PPP scheme, Green Sukuk, and SDG Bonds



## Enhanced NDC: More Ambitious Commitment in Addressing Climate Change

In 2022, the Indonesian Government submitted an Enhanced Nationally Determined Contribution (ENDC) to the UNFCCC with a more ambitious emission reduction target by 2030.

Commitment to reduce emission

**CM 1**  
**31,89%**





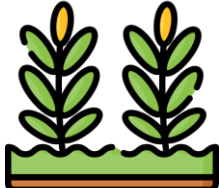
Below 2030 BAU  
emission level on own  
effort (Unconditional  
Scenario)

And

**CM 2**  
**43,20%**

Below 2030 BAU  
emission levels with  
international support  
(Conditional Scenario)










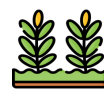
Emission Reduction Targets Based on Sector (Gigaton CO<sub>2</sub>e)

					Total
FOLU	Energy	IPPU	Waste	Agriculture	
500	358	7	40	10	915
<hr/>					
729	446	9	43,5	12	1239.5



# CLIMATE FINANCING NEEDS TO ACHIEVE NDC TARGET

Estimated financial requirements to reach **unconditional (29%) NDC target** in 2030 based on Third Biennial Update Report (BUR-3). The financial needs for Enhanced NDC still under estimation process.

	IDR Trillion	USD Billion	%	
 FOLU	309,01	21,86	7,77%	 FOLU
 Energy	3.500,00	245,99	87,41%	 Energy
 IPPU	0,93	0,07	0,02%	 IPPU
 Waste	185,27	12,99	4,62%	 Waste
 Agriculture	7,23	0,50	0,18%	 Agriculture
<b>TOTAL **</b>	<b>4.002,44</b>	<b>281,23</b>		

Mitigation Actions (Program Activities)

- Reducing mineral deforestation and degradation
- Reducing peatland deforestation and degradation
- Sustainable Forest Management
- Land rehabilitation (with or without rotation)
- Development of industrial plantation forest
- Peatland restoration\*
- Peat water management
- Renewable energy generator
- Non-electric renewable energy
- Low carbon coal power plant
- City gas network and LPG conversion
- Energy conservation
- Software & hardware improvements that can reduce acoustic emission (AE) frequency, duration, and over voltage
- Installation of co-processing (AFR) to reduce clinker per cement ratio to 75% by 2030
- Construction of a new factory with new or advanced technology
- Substitution and retrofit technology
- Production system repair
- Installation of secondary N2O Abatement Catalyst and Operating Costs
- Collection and transport
- Final processing
- Use of low emission varieties in rice fields (x1000 hectares)
- Application of water-efficient rice field irrigation system (x1000 hectares)
- Feed supplement improvement (x1000 livestock farm)

Notes:

\* cost of emission reduction per timber life cycle is included, as well as cost of new technologies that may occur at any stage of life cycle, and cost of peat management technologies.

\*\* Financial needs in BUR-3 is larger than reported in BUR-2 with IDR 3.461,31 trillion due to the additional of mitigation programs, differences in cost-methodology used, and longer time frame (2011-2030 for agriculture sector and 2013-2030 for forestry sector)





# Climate-Related Fiscal Policy

## STATE REVENUE



State revenue policies are directed towards maintaining the **sustainability of natural resources and environmental management**, stimulating **investment in renewable energy and clean technology**, and ensuring **a just and affordable transition**.

- Tax facilities to stimulate renewable energy, EV, and clean technology investment (VAT cut, property tax cut, tax allowance, tax holiday, luxury tax cut for EV)
- Import duty exemption on renewable energy and/or clean technology machines and equipment.
- Non-tax revenue from forestry, fishery, and geothermal management.
- Preparation of imposing carbon tax to Coal-Fired Power Plant emission trading system

## STATE EXPENDITURE



State expenditure policies also supporting **a low-carbon and climate-resilient development**, strengthening the capacity of regional expenditure through **ecological fiscal transfer**, providing fiscal buffers for **disaster financing**, and developing **green infrastructures**.

- Line Ministries mitigation and adaptation budget/spending
- Ecological Fiscal Transfer, indirect climate-related fiscal transfer such as Physical Special Allocation Fund (DAK Fisik), regional incentive fund (DID), profit sharing fund from sustainable natural resources management (DBH-DR, DBH Geothermal).
- Disaster Risk Financing

## BUDGET FINANCING



The financing policy is aimed to **greening the financing** through ESG framework and promote more sustainable innovative financing instruments through the implementation of **Green Bond/Sukuk Framework** and **SDG Government Securities Framework**.

- The issuance of Global Green Sukuk and Retail Green Sukuk
- The issuance of SDG Bond that consist of Social Focus, Green Focus, and Blue Focus.



# PROMOTING CARBON PRICING INSTRUMENTS

In 2021, Indonesia introduced the **Carbon Pricing Policy** through Presidential Regulation no.98/2021 and **Carbon Tax Policy** through Law no. 7/2021 regarding Tax Regulations Harmonization

## Carbon pricing implementation mechanism (Presidential Regulation 98/2021):

### Carbon Trade

- Emission Trading
- Carbon Offset

### Result Based Payment

Stipulated in Law no.7/2021

### Carbon Levy

- **Carbon Tax**
- Non-Tax Revenue
- Customs & Excise

### Other mechanisms\*

\*following the development in science and technology which determined by MoEF

**73** Carbon Pricing Initiatives (CPIs) implemented/scheduled

**39** National Jurisdictions are covered by CPIs

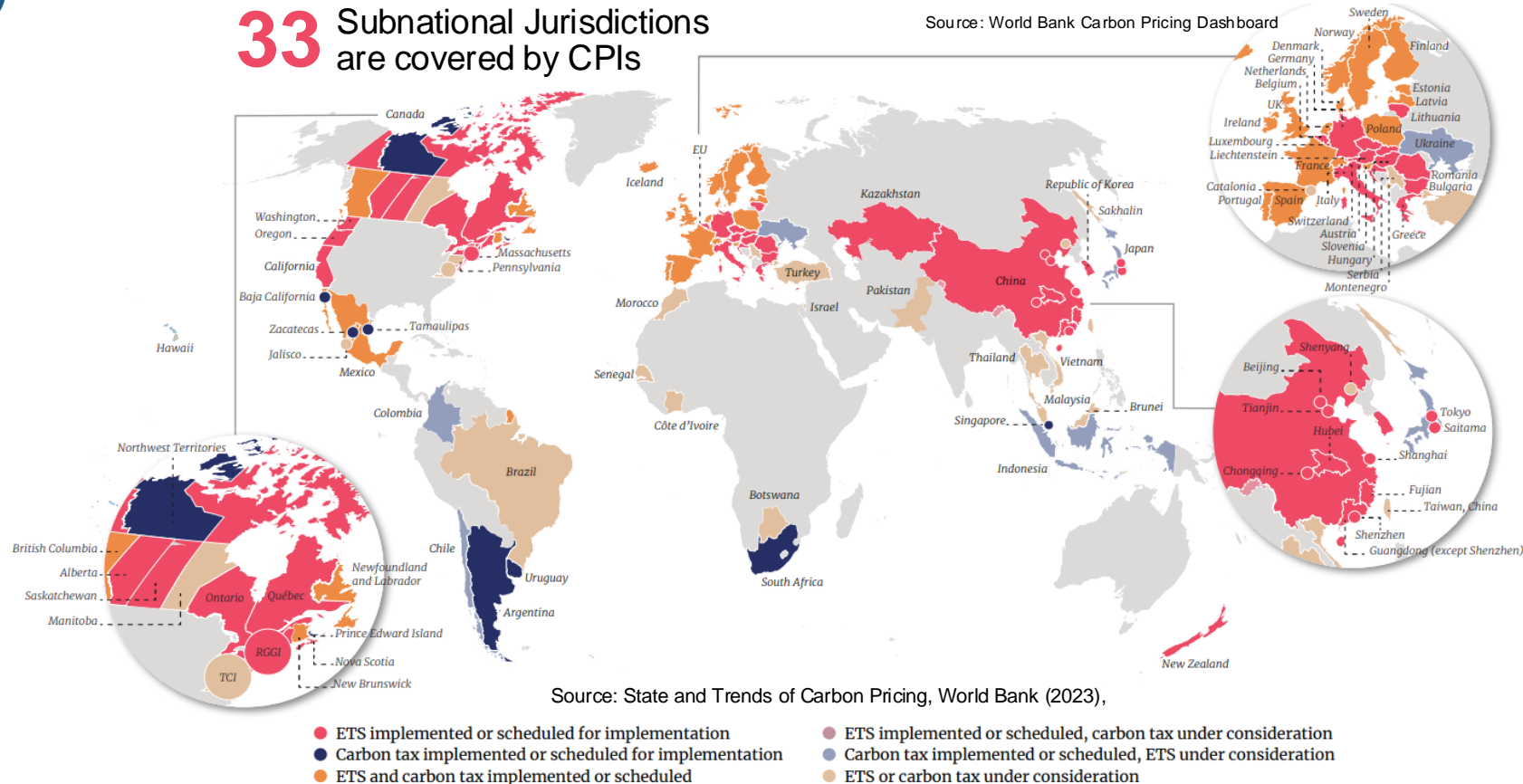
**33** Subnational Jurisdictions are covered by CPIs

## Carbon Pricing Initiatives Worldwide as of October 2023:

**37** Carbon Taxes & **36** Emission Trading Systems (ETS)

In 2022, Carbon Pricing Initiatives worldwide would cover **11,86 Gt CO<sub>2</sub>e**, representing **23,17%** of Global GHG emissions

Source: World Bank Carbon Pricing Dashboard





# Indonesia's Carbon Pricing Governance & Procedures

## CARBON PRICING GOVERNANCE & PROCEDURES

Law No. 16/2016  
Ratification of Paris  
Agreement

Indonesia's  
NDC Target

President Regulation  
no. 98/2021  
on Carbon Pricing

MoEF Regulation on NDC  
MoEF Regulation on Carbon Pricing  
MoEMR Regulation  
MoF Regulation on Carbon Tax  
Coord. MoMI Regulation on Steering  
Committee

Market Based

Carbon Trade

Emission Trading

Carbon Offset

Allowing trade  
across sectors

Domestically  
and/or  
internationally

Carbon market mechanism  
through carbon exchange  
(located in Jakarta)

Launched  
(26<sup>th</sup> Sept 2023)

Direct trading

Emissions  
trading  
procedures and  
mechanism

Related Minister's Regulations

Emissions Cap

Baseline and Target

Emissions  
reduction result

Non-Market Based

Carbon Levy

Carbon Tax,  
Non-Tax  
Revenue,  
Municipal Tax

a. Polluter pay principles  
b. Reduce GHG emissions  
c. Catalyze investments  
and innovations

Implement  
gradually and  
adhere **the just  
and affordable  
principles**

- Charged to emissions
- Minimum rates IDR30,00 / CO<sub>2</sub>e
- Subsequent implementation must refers to the Carbon Tax Roadmap and Carbon Market Roadmap

Result Based  
Payment

Other mechanisms following the  
development in science and  
technology which determined by  
MoEF

Law of Harmonized Tax, Chapter 13 (Carbon Tax)

Source: MoEF Regulation on Carbon Pricing, 2022



# Indonesia Officially Launched the Carbon Exchange

## Value Propositions

### Price Transparency

Trusted and Credible trading by Prioritizing information disclosure that is publicly accessed

### Efficiency

Fast completion carbon unit trading transactions at affordable fees

### Market Liquidity

High market liquidity to get the best price

### Accessibility

Trading infrastructure that is easily accessible to service users through innovative products and services

## Allowance Market

It is a cap-and-trade mechanism that is commonly applied to mandatory carbon trading. Selected business does determined by Government gets a cap or Persetujuan Teknis Batas Atas Emisi – Pelaku Usaha (PTBAE-PU) in the form of emission quota allocation (allowance) for a certain period. Business does who exceed the cap are capable to purchase carbon units from other business does who have unused quota (cap)

## Offset Market

Sertifikat Pengurangan Emisi – Gas Rumah Kaca (SPE-GRK), commonly known as Carbon Offset, are carbon units generated from reduction or removal of GHG by certain business and/or other activities doing climate change mitigation actions. Business does can purchase carbon units to achieve their emission reduction targets and fulfil their commitment of carbon-neutral or net-zero emissions.

## Trading Methods



### Auction

The government or Emission Mitigation Project Owner can sell carbon units through an auction mechanism on the Carbon Exchange. Prospective carbon unit buyers submit purchase requests at the desired volume and price.



### Regular Trading

The trading is conducted by a continuous auction mechanism which all parties can submit their buy and sell offers in real time.



### Negotiated Trading

Facilitate the completion of the previously agreed trades through the IDXCarbon system transparently and securely.



### Marketplace

Emission Mitigation Project Owners can sell their carbon units at a predetermined price.

As a form of support in achieving Indonesia's NDC, the Indonesia Stock Exchange (IDX) has developed an "IDXCarbon" which accommodates the needs of carbon trading in Indonesia.







MINISTRY OF FINANCE  
REPUBLIC OF INDONESIA

# Indonesia Officially Launched the Carbon Exchange



The President of the Republic of Indonesia launched the Indonesian Carbon Exchange (IDXCarbon) on 26<sup>th</sup> September 2023

Volume Traded

**459.953**  
ton of Carbon Unit

Transactions

**27** times  
of transactions

Price

**IDR 69.900/**  
Carbon Unit  
(ID Tech-Based Solutions)

As per 26<sup>th</sup> September 2023, at 11.30 AM

**Issuer:** Pertamina New and Renewable Energy (PNRE)

**Buyer:**

1. PT Bank Central Asia Tbk
2. PT Bank CIMB Niaga Tbk
3. PT Bank DBS Indonesia
4. PT Bank Mandiri (Persero) Tbk
5. PT BNI Sekuritas
6. PT BRI Danareksa Sekuritas
7. PT CarbonX Bumi Harmoni
8. PT MMS Group Indonesia
9. PT Multi Optimal Riset dan Edukasi
10. PT Pamapersada Nusantara
11. PT Pelita Air Service
12. PT Pertamina Hulu Energi
13. PT Pertamina Patra Niaga
14. PT Truclimate Dekarbonisasi Indonesia,
15. PT Udara Untuk Semua (Fairatmos)





# THANK YOU



# THE GOVERNMENT CONTINUES ITS COMMITMENT TO IMPLEMENT REFORMS

Comprehensive structural reform to unlock growth potential, improve productivity, drive investment and export competitiveness



## Omnibus Law on Job Creation

- Launched OSS (Online Single Submission) on 2021 to speed up business licensing progress
- Acceleration on National Strategic Project (PSN)
- Energy Transition Mechanism
- Implementing Risk-Based Business Analysis to Encourage FDI
- Positive list of investment to improve priority sectors
- Establishment of Sovereign Wealth Fund (INA)



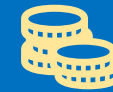
## Fiscal Reform

### Tax Reform

- Voluntary Disclosure Program completed successfully (Jan-June 2022)
- VAT rate increasing to 11% since April 1st
- Integration of ID number and taxpayer number
- Other policy changes to be anticipated:
  - Strengthening excise mechanism
  - Income tax policy change
  - Introduction of carbon tax

### Law on Intergovernmental Transfer

- Redesign the management of Transfers-to-Regions to reduce inequality
- Harmonizing of central and local government spending
- Improving the quality of local government spending
- Strengthening local taxing power



## Omnibus Law on Financial Sector Development

*Deep, innovative, efficient, inclusive, reliable, strong and stable financial sector*

- Improving Access to Financial Services
- Promoting Long-Term Sources of Finance
- Increasing Competitiveness & Efficiency
- Implementation of Sustainable Finance
- Developing Instruments & Strengthening Risk Mitigation
- Strengthening Investor & Consumer Protection



Fiscal Policy Theme 2024: **Accelerating Inclusive and Sustainable Economic Transformation.**

## Short-term Policy Focus

Inflation control (price stability)

Eradication of extreme poverty

Reduction of stunting prevalence

Increased investment

### The role of the budget policy:

Stabilization and addressing urgent issues (Stunting, extreme poverty).

## Medium – Long Policy Focus

Human Capital Gap

Infrastructure Gap

Institutional Gap

### The role of the budget policy:

Accelerating Structural Reforms.

## Economic Transformation

Productivity  
Low → High

Value Added  
Low → High

Environmental  
*Brown → clean & green*

Economic Base  
*Narrow → Broad-based & inklusif*

Vision Advancing  
Indonesia 2045



# Climate-related disasters and extreme events around the world increasingly rampant

- Climate change will lead the **severity** and **frequency** of hydrometeorological disasters and extreme events. The world facing an **increasing trend of disasters and people affected**, moreover in low-income countries was increasing rapidly
- Climate-related disasters was dominated by **floods** and **storm** with **44%** and **35%** of total climate disasters since 1900-2023.
- The rising of climate disasters and extreme events lead to a higher average damage cost. Decadal average damage cost reach **USD 166 billion** in 2011-2020.

## If the world failed to tackle climate change:



Climate change is predicted to cause around **32 to 132 million people to fall into poverty** worldwide in the next decade (*IPCC, World Bank*)



Between **4,8 and 5,7 billion people** worldwide will experience a water crisis in 2050 (*IPCC*)

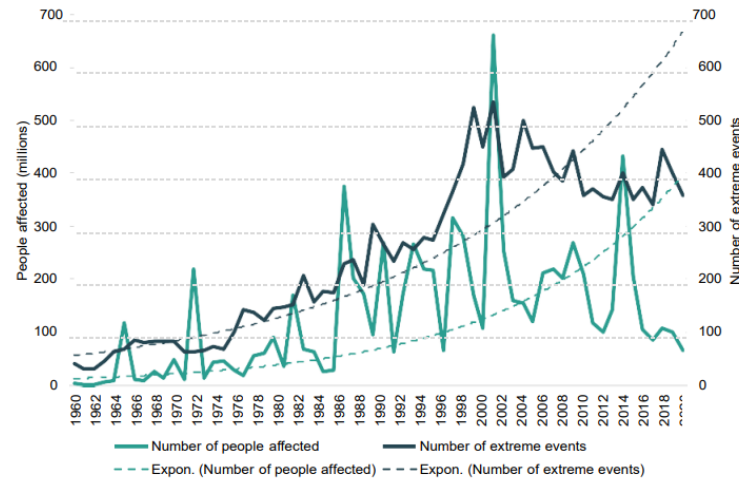


By 2030, an additional **250.000 deaths** per year will occur from heat exposure, undernutrition, malaria and diarrheal disease due to climate change. (*WHO*)



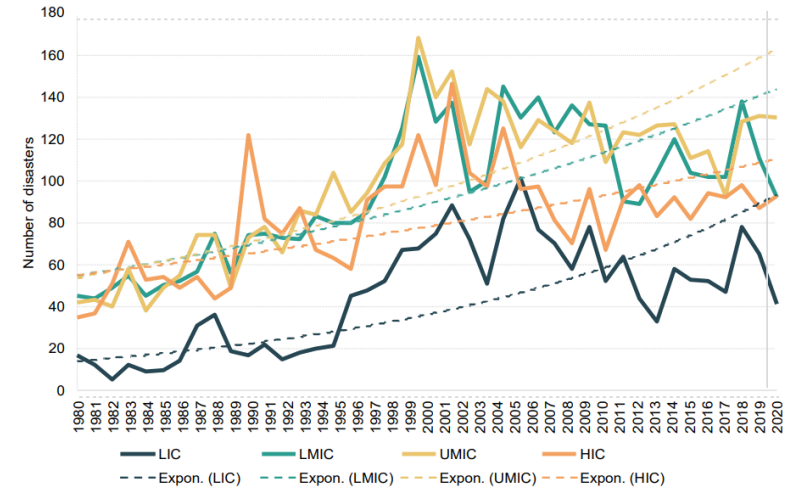
Climate change could cost the global economy **\$23 trillion per year by 2050**. The report also found that developing countries would be the hardest hit, with some countries losing up to one-third of their GDP (*Swiss Re Institute*)

Frequency of extreme events and people affected has increased over the last six decades



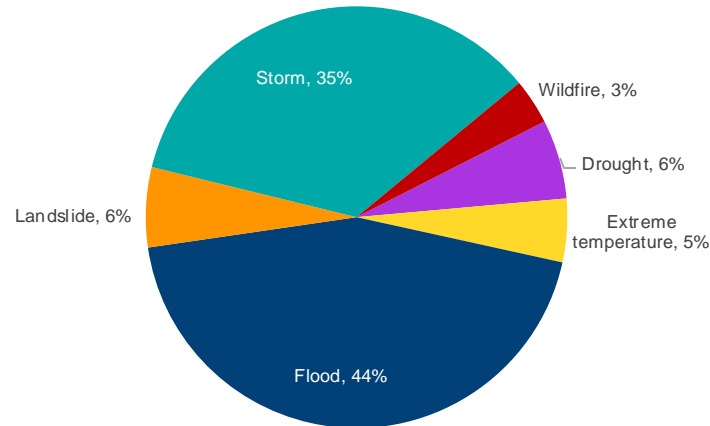
Source: EM-DAT, processed

Disasters are accelerating rapidly in low-income countries



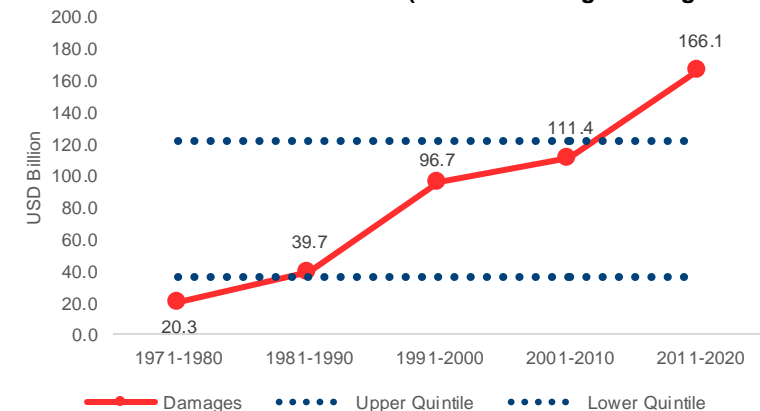
Source: EM-DAT, processed

Share of Climate-Related Disasters by Type 1900-2023 (%)



Source: EM-DAT, processed

Rising Extreme Events lead to increasing of Damages Cost (Decadal Average Damage Cost)



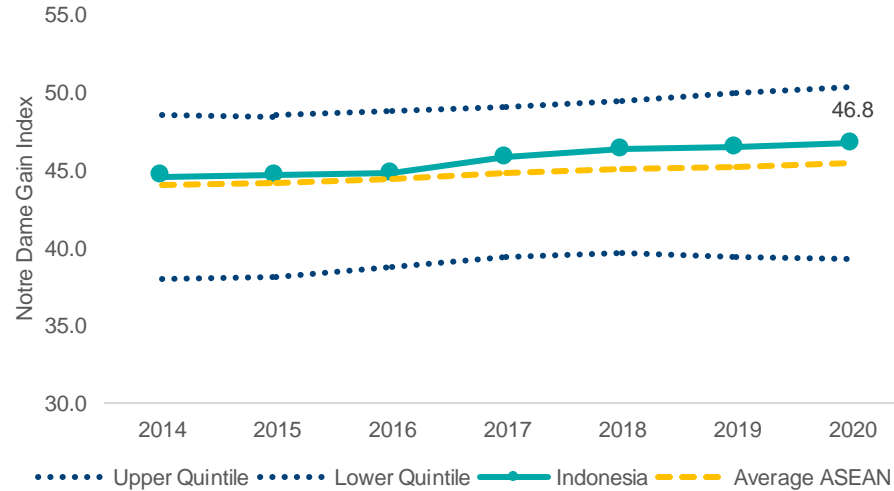
Source: EM-DAT, processed



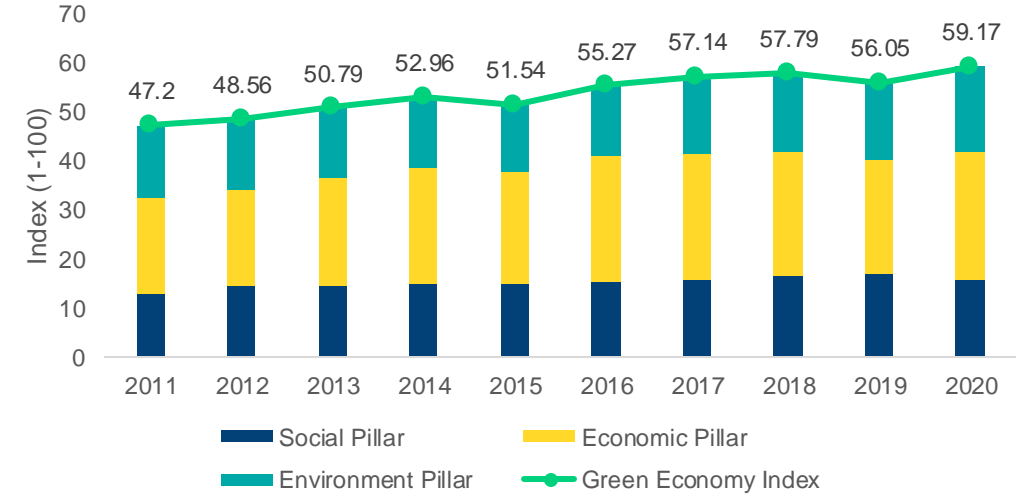
# Opportunities and Challenges Towards Indonesia's Economic Transformation

## Opportunities

Notre Dame Gain Index (ND GAIN)

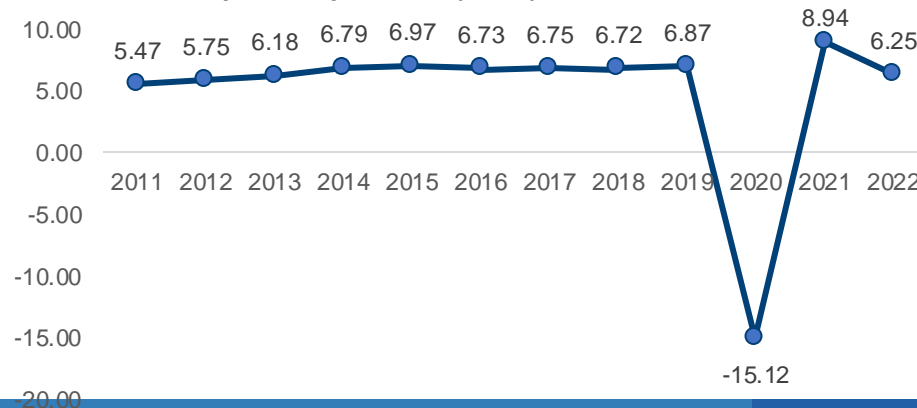


Green Economy Index (GEI)

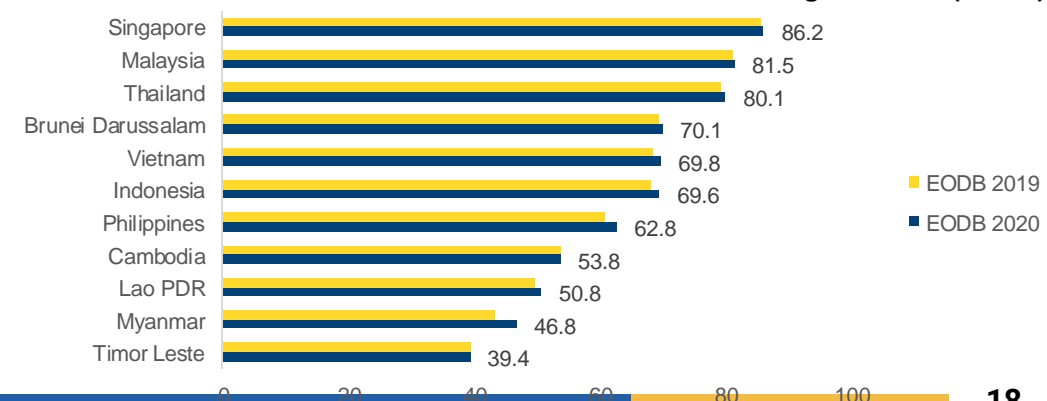


## Challenges

Incremental Capital Output Ratio (ICOR)



Ease of Doing Business (EODB)



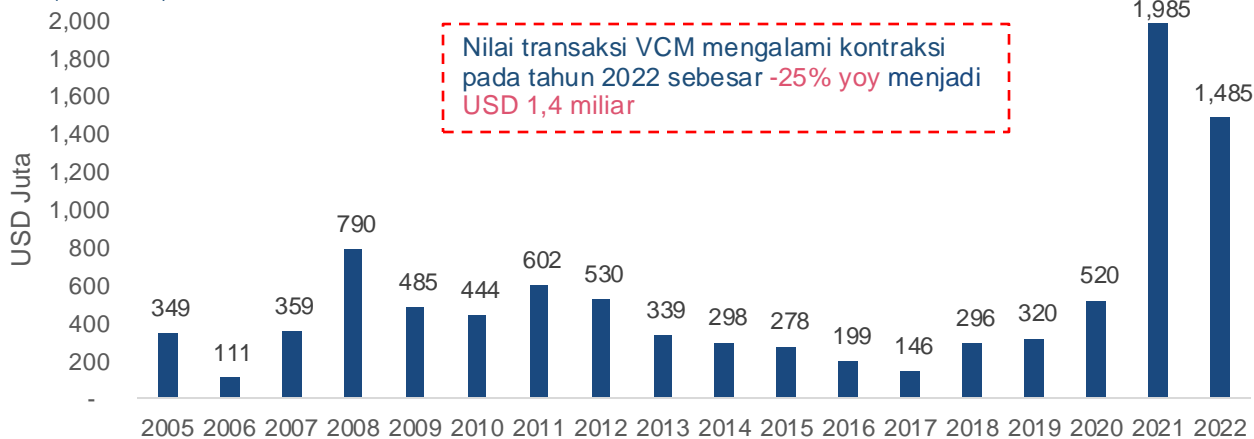




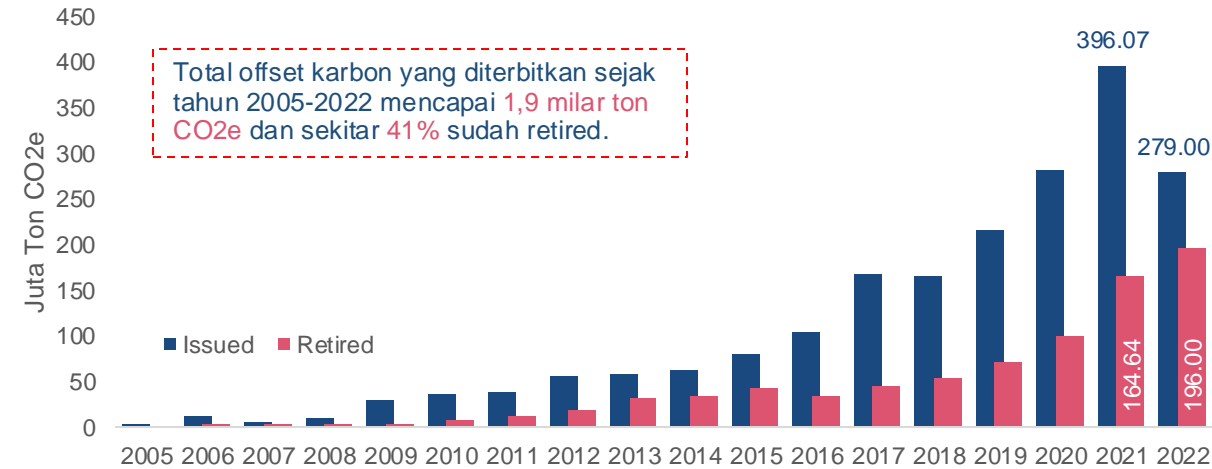
## Periode 2005-2021: VCM global mencatatkan nilai transaksi kumulatif sebesar USD 9,53 miliar

Nilai transaksi VCM di tahun 2022 yang mencapai USD 1,49 miliar hanya sekitar 0,15% dari total perdagangan karbon dunia tahun 2022

Perkembangan nilai transaksi VCM tahunan  
(USD Juta)



Nilai transaksi VCM mengalami kontraksi pada tahun 2022 sebesar -25% yoy menjadi USD 1,4 miliar

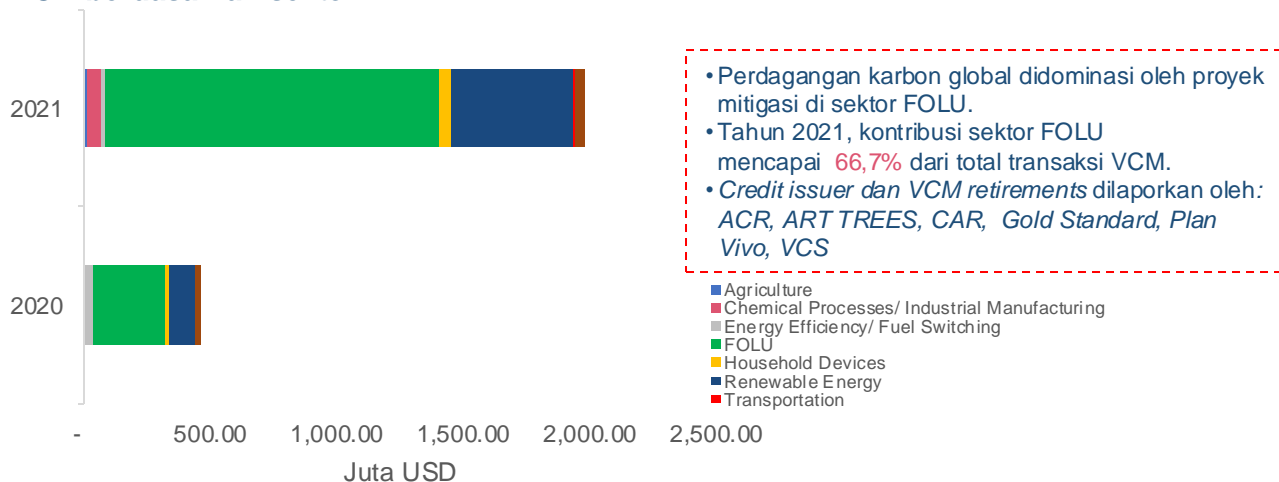


Total offset karbon yang diterbitkan sejak tahun 2005-2022 mencapai 1,9 miliar ton CO2e dan sekitar 41% sudah retired.

Sumber: Ecosystem Marketplace, Climate Focus, dan VCM Primer, data diolah

Sumber: Ecosystem Marketplace, Climate Focus, dan VCM Primer, data diolah

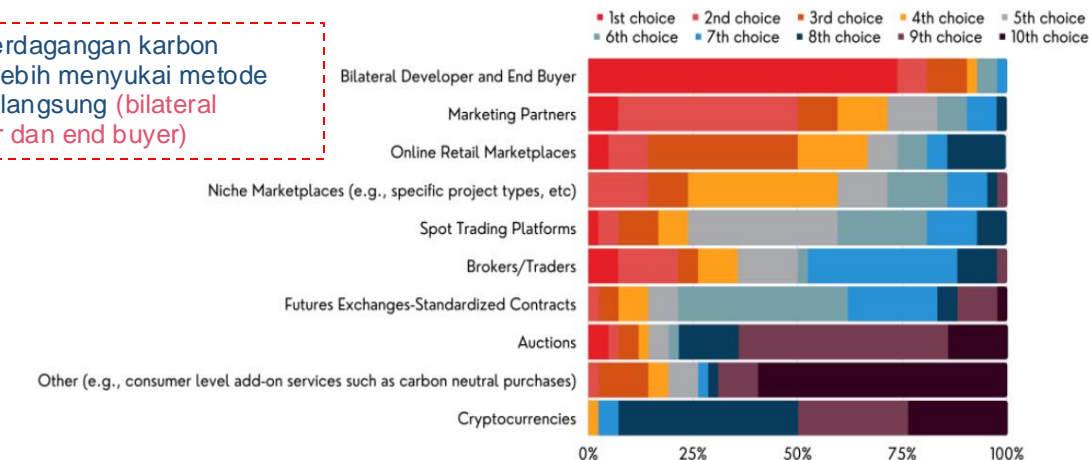
### VCM berdasarkan sektor



- Perdagangan karbon global didominasi oleh proyek mitigasi di sektor FOLU.
- Tahun 2021, kontribusi sektor FOLU mencapai 66,7% dari total transaksi VCM.
- Credit issuer dan VCM retirements dilaporkan oleh: ACR, ART TREES, CAR, Gold Standard, Plan Vivo, VCS

■ Agriculture  
■ Chemical Processes/ Industrial Manufacturing  
■ Energy Efficiency/ Fuel Switching  
■ FOLU  
■ Household Devices  
■ Renewable Energy  
■ Transportation

### Preferensi Penjual & Pembeli Offset Karbon Berdasarkan Metode Transaksi



Credit issuances dan retirements VCM dilaporkan oleh: the American Carbon Registry (ACR), ART TREES, the Climate Action Reserve (CAR), City Forest Credits, Climate Forward, Coalition for Rainforest Nations, EcoRegistry, Global Carbon Council, Gold Standard, Plan Vivo, ProClima, and Verified Carbon Standard (VCS).



## Long Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) 2050

The LTS-LCCR 2050 aligned with the national, sub-national, and international climate goals and objectives, including SDGs target. The strategy also aligned with Indonesia's 2045 Vision towards a developed and prosperous country.

Based on LTS-LCCR 2050, Indonesia needs to reduce its GHG emission rate through Low Carbon and Climate Resilient Pathway (LCCP) scenario, marked by a net sink FOLU in 2030. With LCCP scenario, Indonesia need to significantly reduce emission from energy sector near to zero and increase carbon removals through forestry and land uses.

LCCP scenario aiming peaking time in 5 sectors by **2030** with GHG emission level at **1.244 million tonnes CO<sub>2</sub>e** and by **2050** the level of GHG emission reach **540 million tonnes CO<sub>2</sub>e**.

In terms of climate adaptation, Indonesia also need to reduce the impact of climate change on national GDP by 3,45% in 2050.

### Three kinds of mitigation scenario in LTS-LCCR 2050

#### CPOS

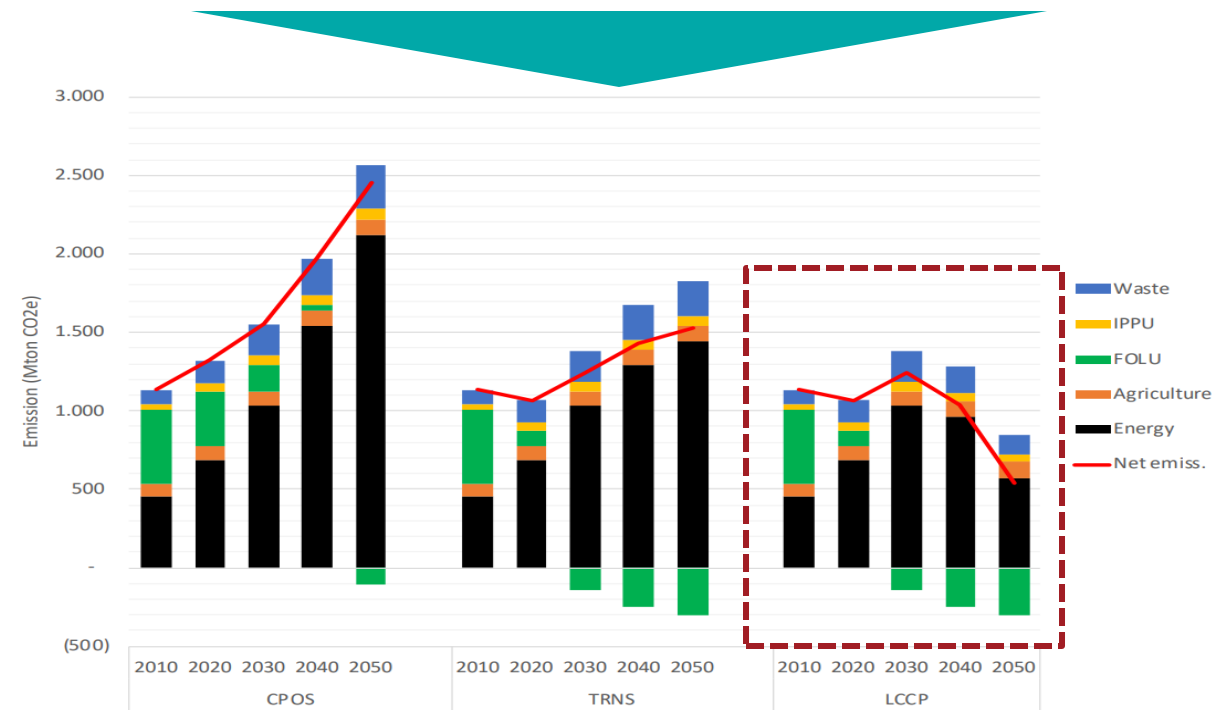
Extended NDC/  
current policy scenario

#### TRNS

Transition scenario

#### LCCP

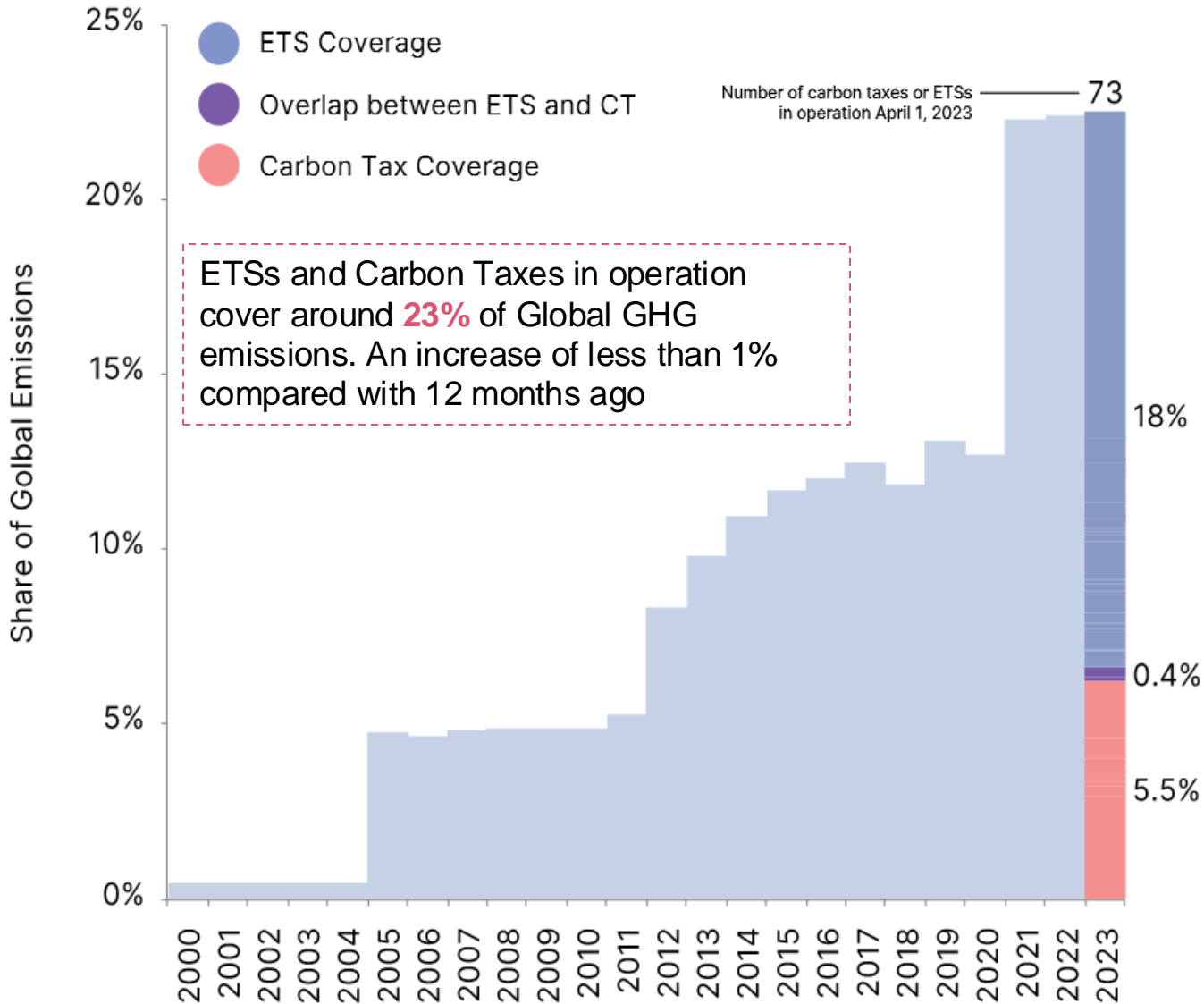
Low carbon scenario  
compatible with Paris  
Agreement target



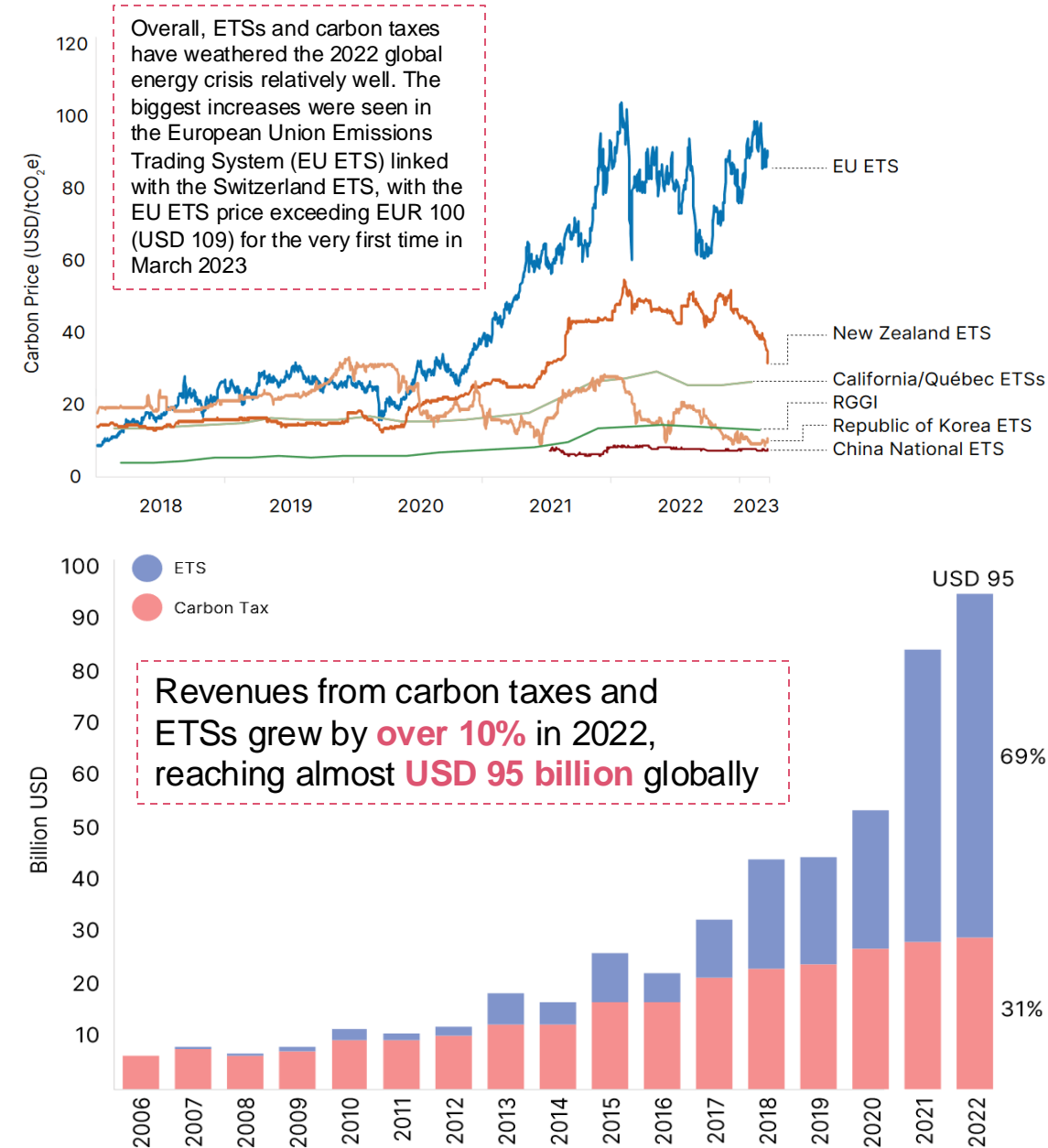
Source: MoEF (2021)



# Global Carbon Taxes and Emission Trading Systems



Source: State and Trends of Carbon Pricing, World Bank (2023),

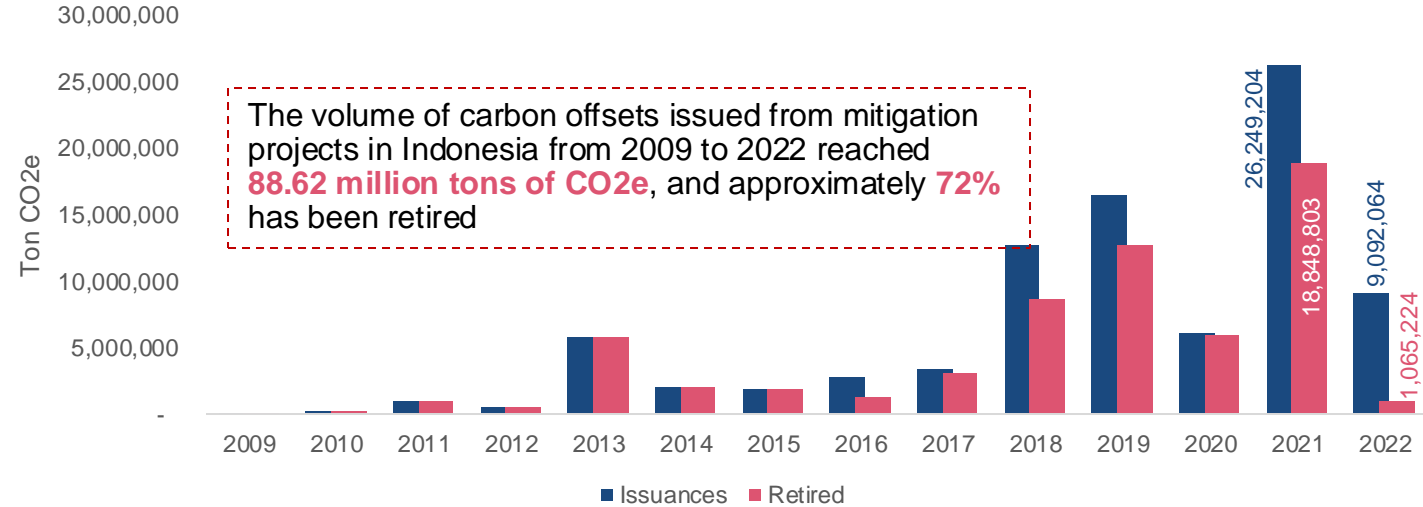
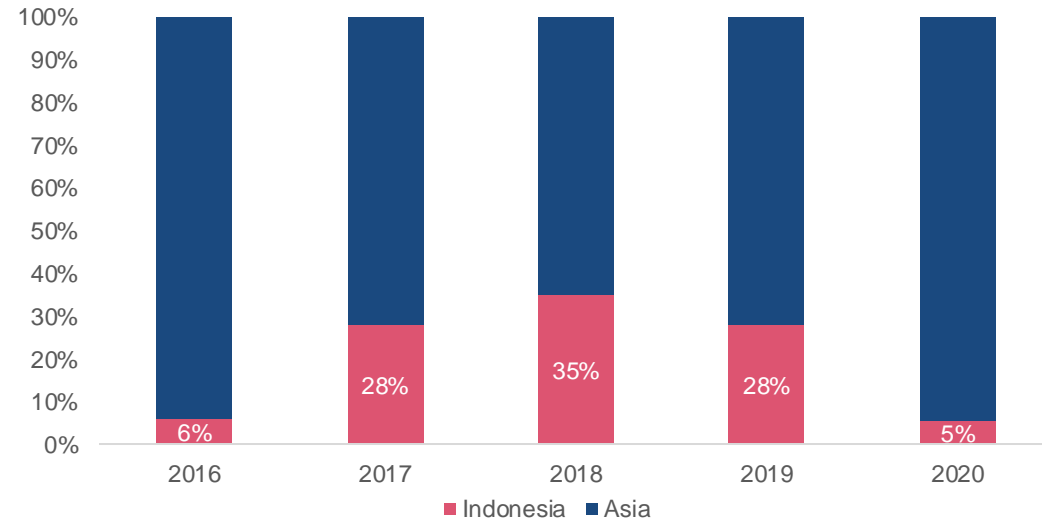




## Indonesia would become major supplier of global carbon credit

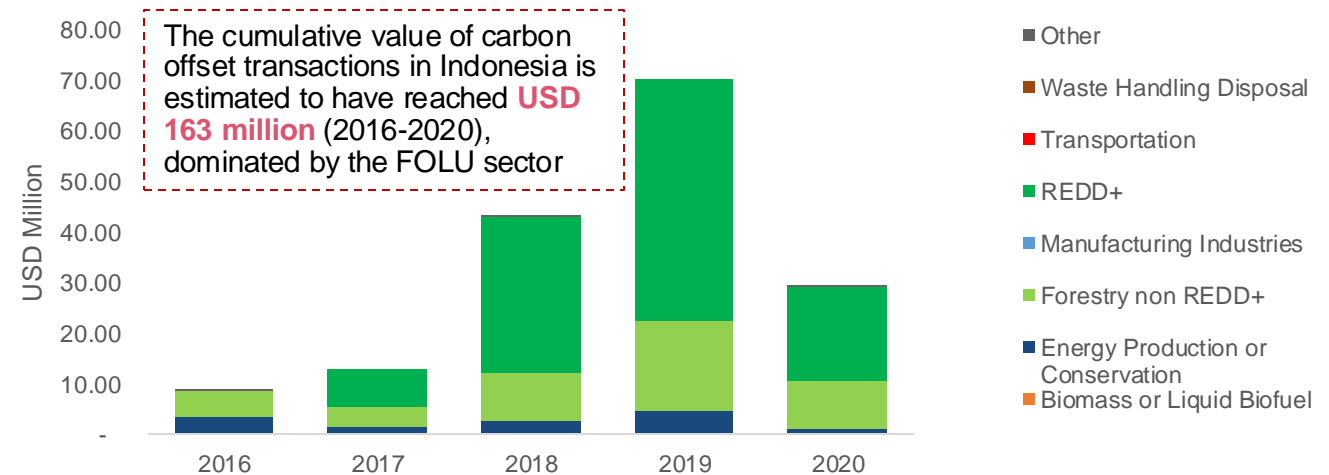
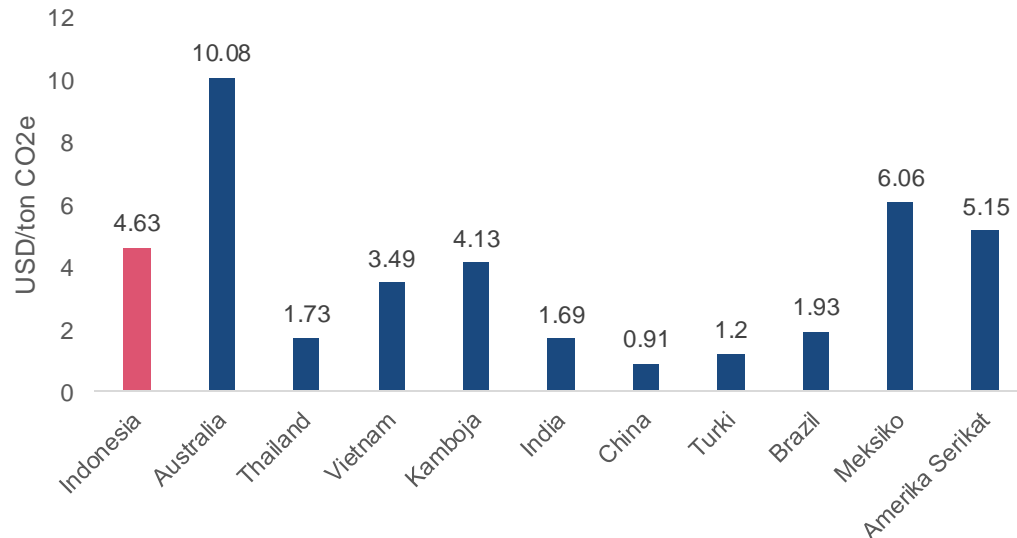
During the period of 2016-2020, Indonesia's contribution to the Asian Voluntary Carbon Market (VCM) reached **15% (31.7 million tons of CO<sub>2</sub>e)**, with an estimated carbon offset transaction value of **USD 163 million**, predominantly in the FOLU sector.

Share of Indonesia's Retired Carbon Credit in Asia (2016-2020)



Source: Ecosystem Marketplace, Climate Focus, dan VCM Primer, data processed (cutoff Indonesia August 2022)

The comparison of the average carbon offset prices in 2019

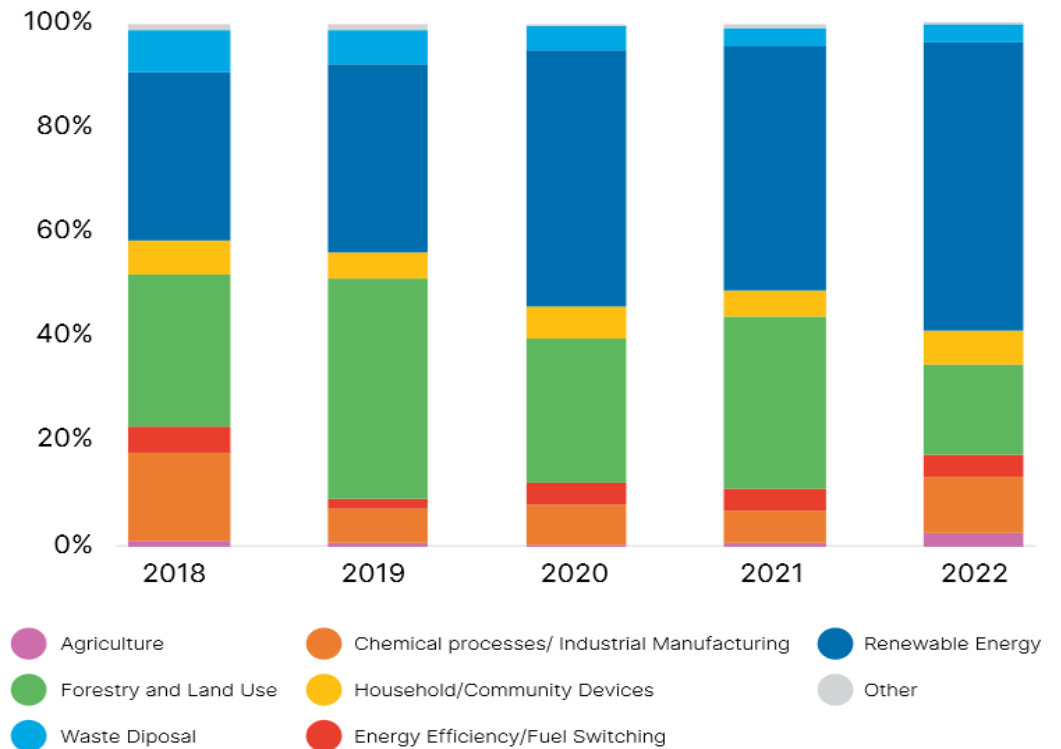
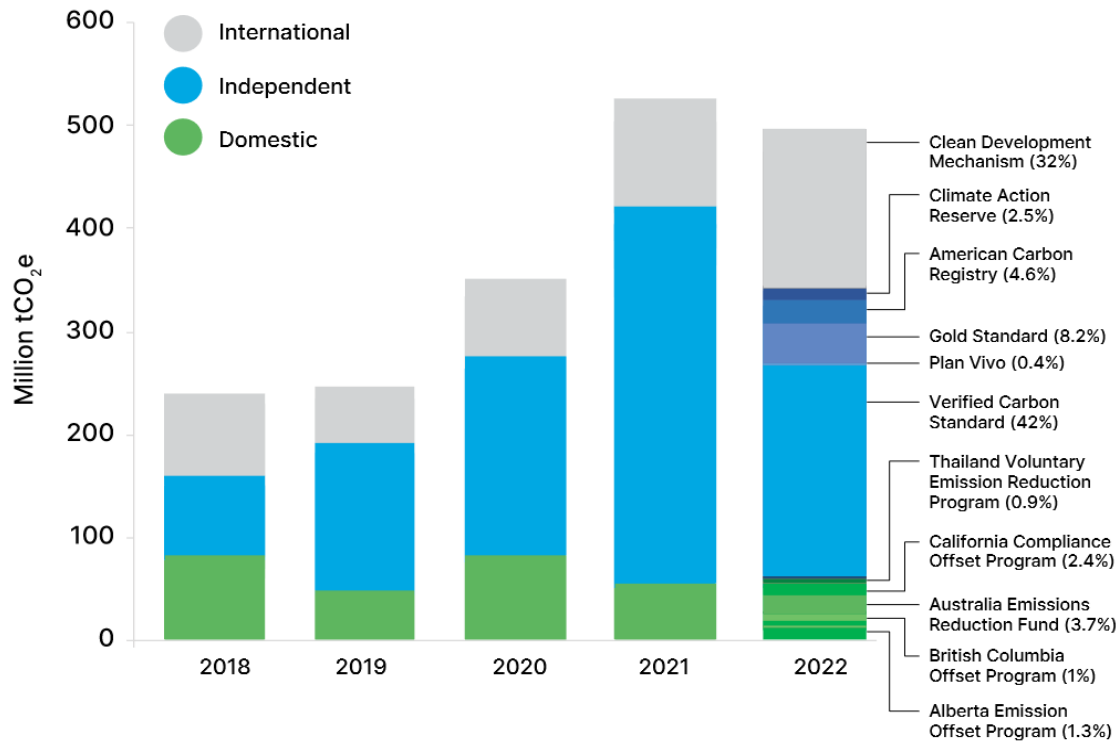


Source: Ecosystem Marketplace, data processed

\*The results of the assessment by the Ministry of Finance based on the estimated retired carbon credits in Indonesia (seller) with the weighted average global price per project type per year.



# Global Carbon Crediting Markets and Mechanisms



Independent crediting mechanisms and standards again issued the most carbon credits but saw volumes drop in 2022. Independent crediting mechanisms issued **275 million credits**, which accounted for **58% of the 475 million credits issued in 2022**. This represented a drop of 22% in credits issued compared with 2021.

- Current supply is still concentrated on crediting from renewable energy activities, but nature-based sources may become increasingly important.
- Based on carbon crediting mechanism registry data compiled by Ecosystem Marketplace, the percentage of issuances of credit from renewable energy activities has generally been increasing since 2018, reaching 55% of credits issued in 2022