How to Finance Emission Reduction using Market Based Mechanism Scheme

Study case: JCM Development in Indonesia

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Speaker profile

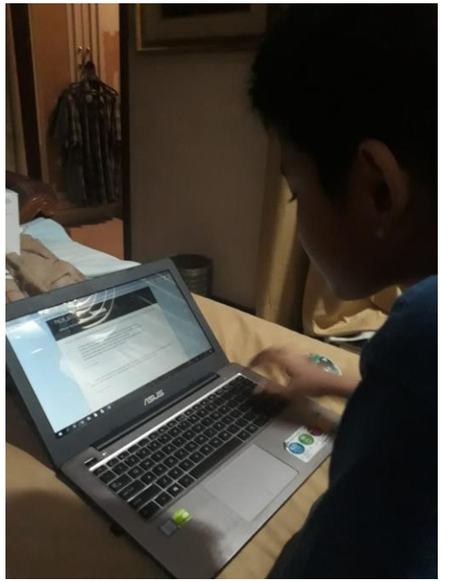
Dicky Edwin Hindarto is an Indonesia professional that works in energy and climate change issues for more than 25 years.

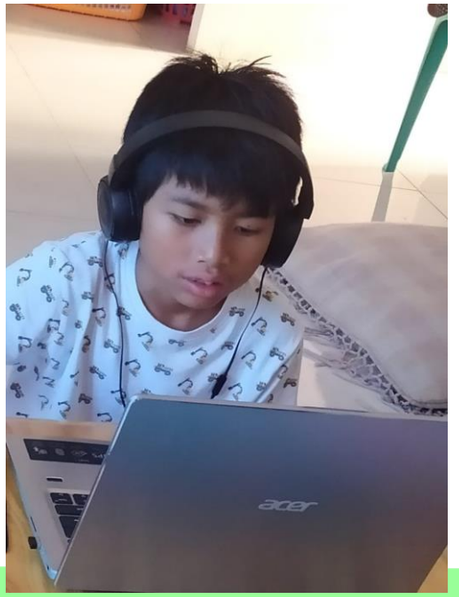
Dicky experiences are varied from UNFCC negotiation, renewable energy development, energy management implementation, to the market based mechanism. Currently he works as Indonesia Joint Crediting Mechanism implementation advisor and act as a coordinator for Indonesia Low Emission Network.

Indonesia's current standing

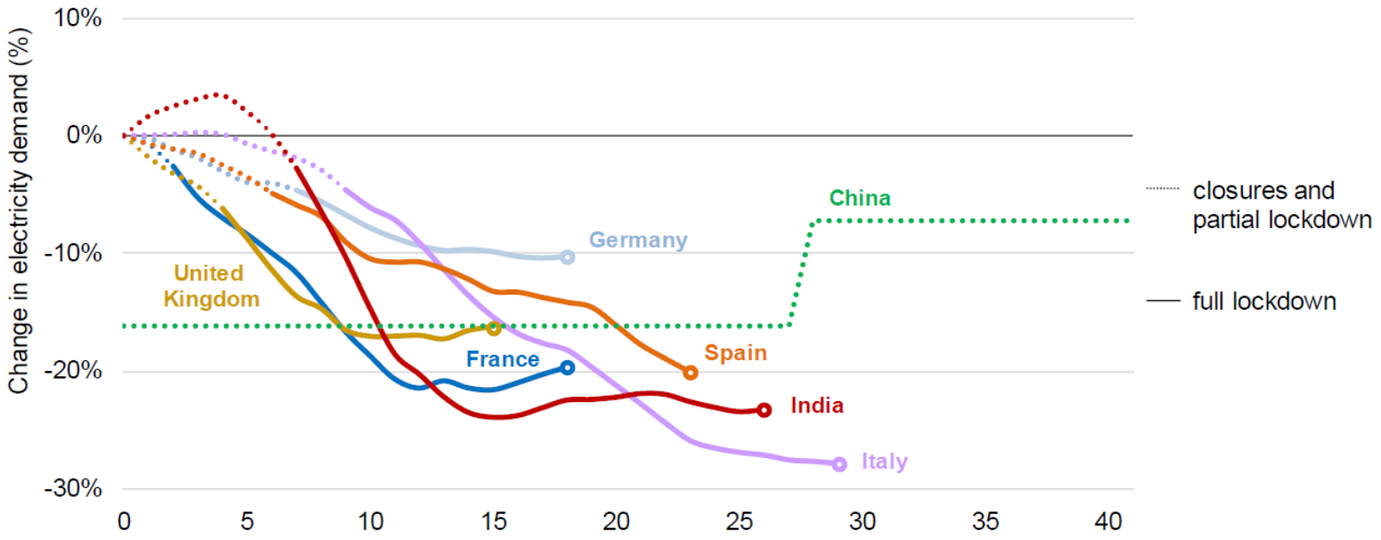
- Indonesia is one of the worlds' largest emitter of greenhouse gases, mainly due to the conversion of its forests and carbon-rich peat lands. The last forest fire in Riau and Central Kalimantan is one of the worst in our history. Indonesia is also the world's second-largest plastic polluter, with 10 billion plastic bags dumped into the environment each year
- Jakarta is said to be the fastest sinking city in the world, where parts of Jakarta are predicted to be entirely submerged by 2050 if nothing serious is done. Citarum, if not many other rivers, is the most polluted river on Earth.
- Being an archipelago located on the cross road of ancient continents surrounded by active volcanoes, Indonesia is highly prone to natural disasters, which have been aggravated by human made disasters.
- **We have developed emission reduction targets, policies, and some infrastructures to reduce the impact of the climate change.**

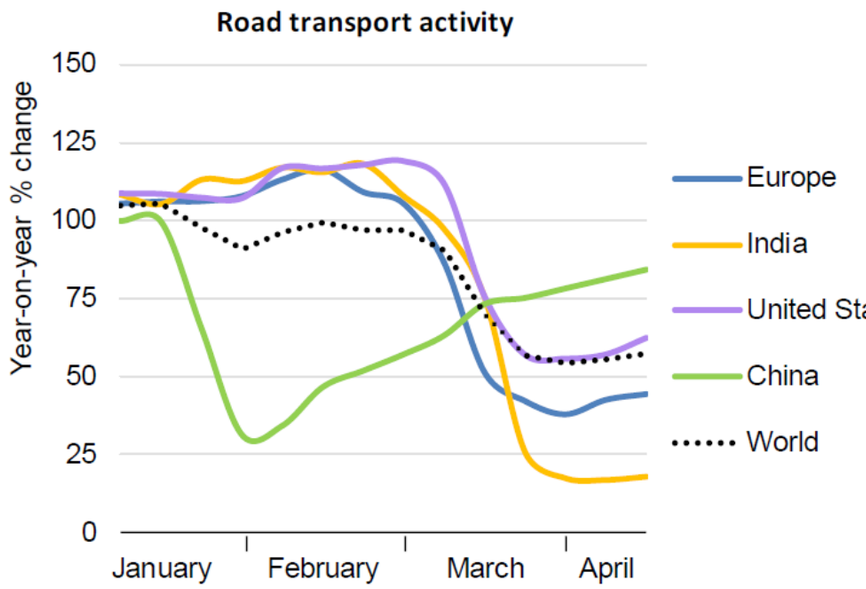
And suddenly the pandemic hit us!

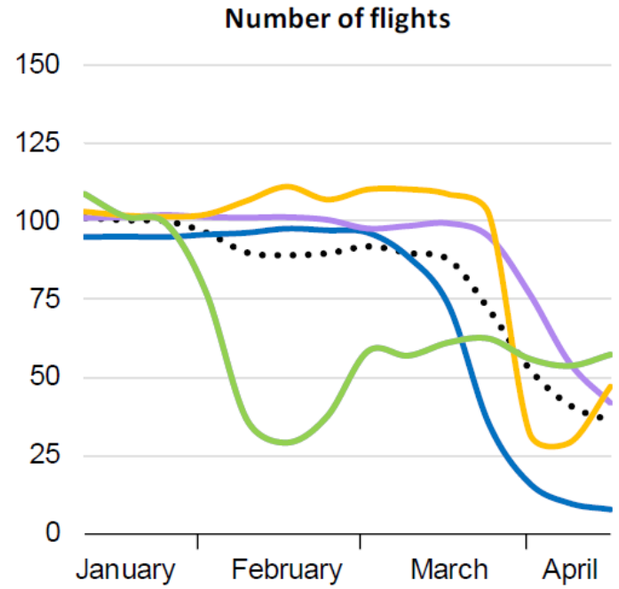




Global energy consumption declining



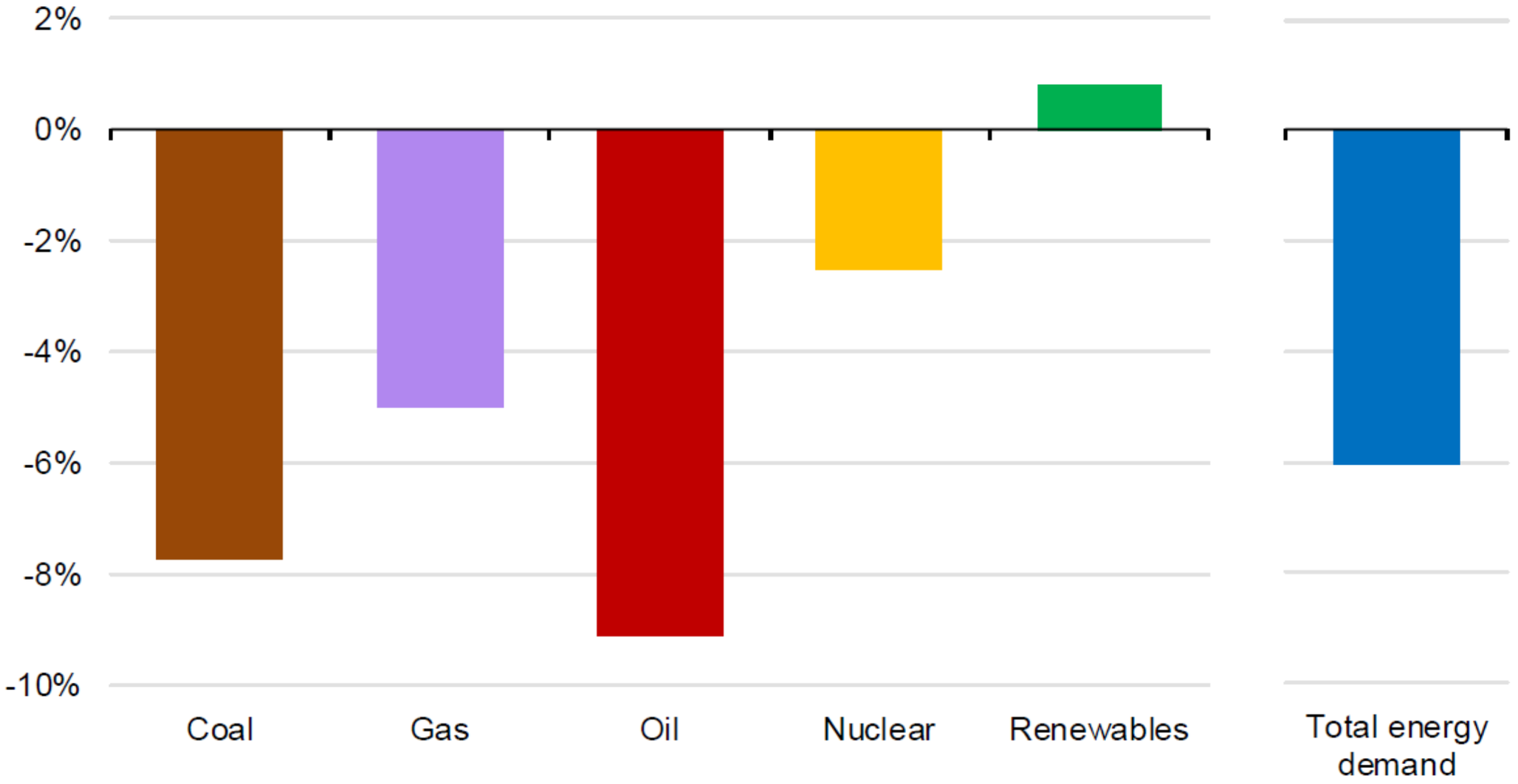




Pandemic hit economic activities and reduce energy consumption. These situation also happen in Indonesia….

Source: EIA

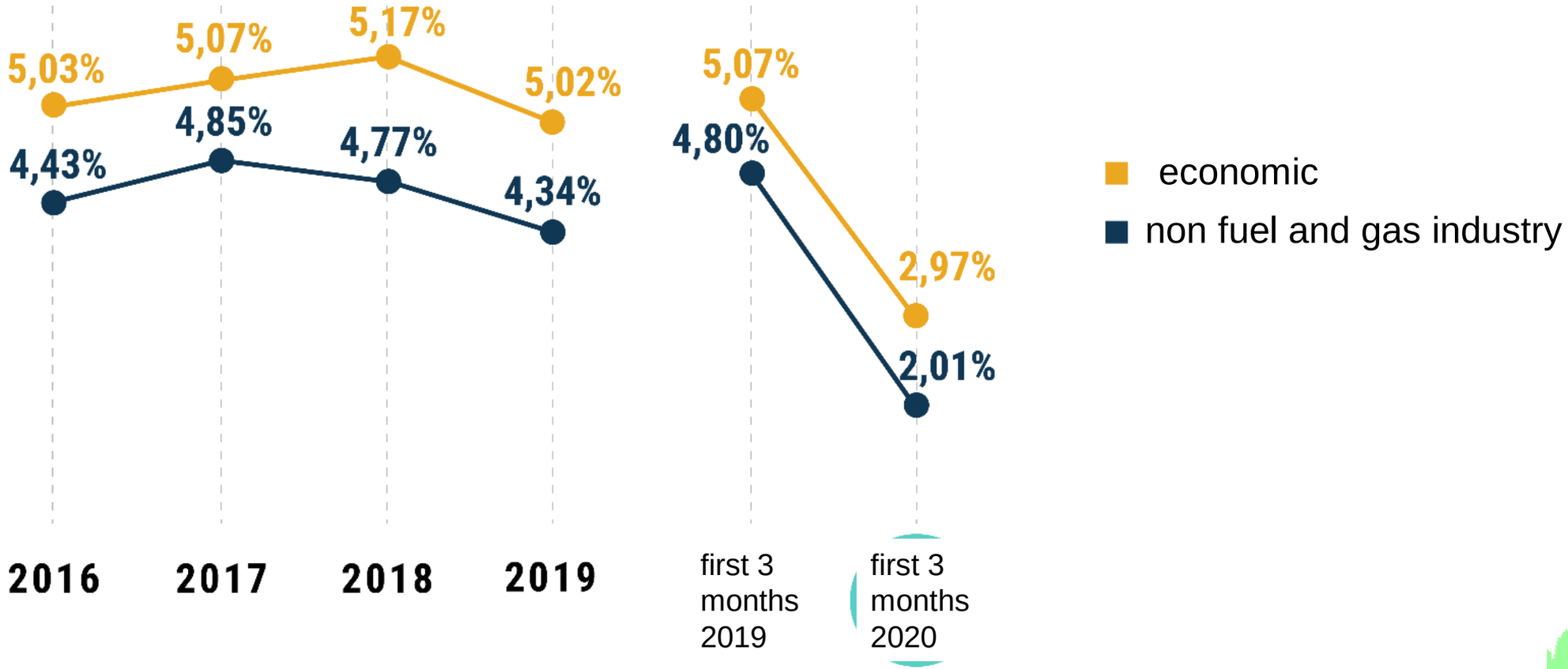
Global energy projection 2020



Source: EIA

Indonesia pandemic impact on energy consumption (3 first months)

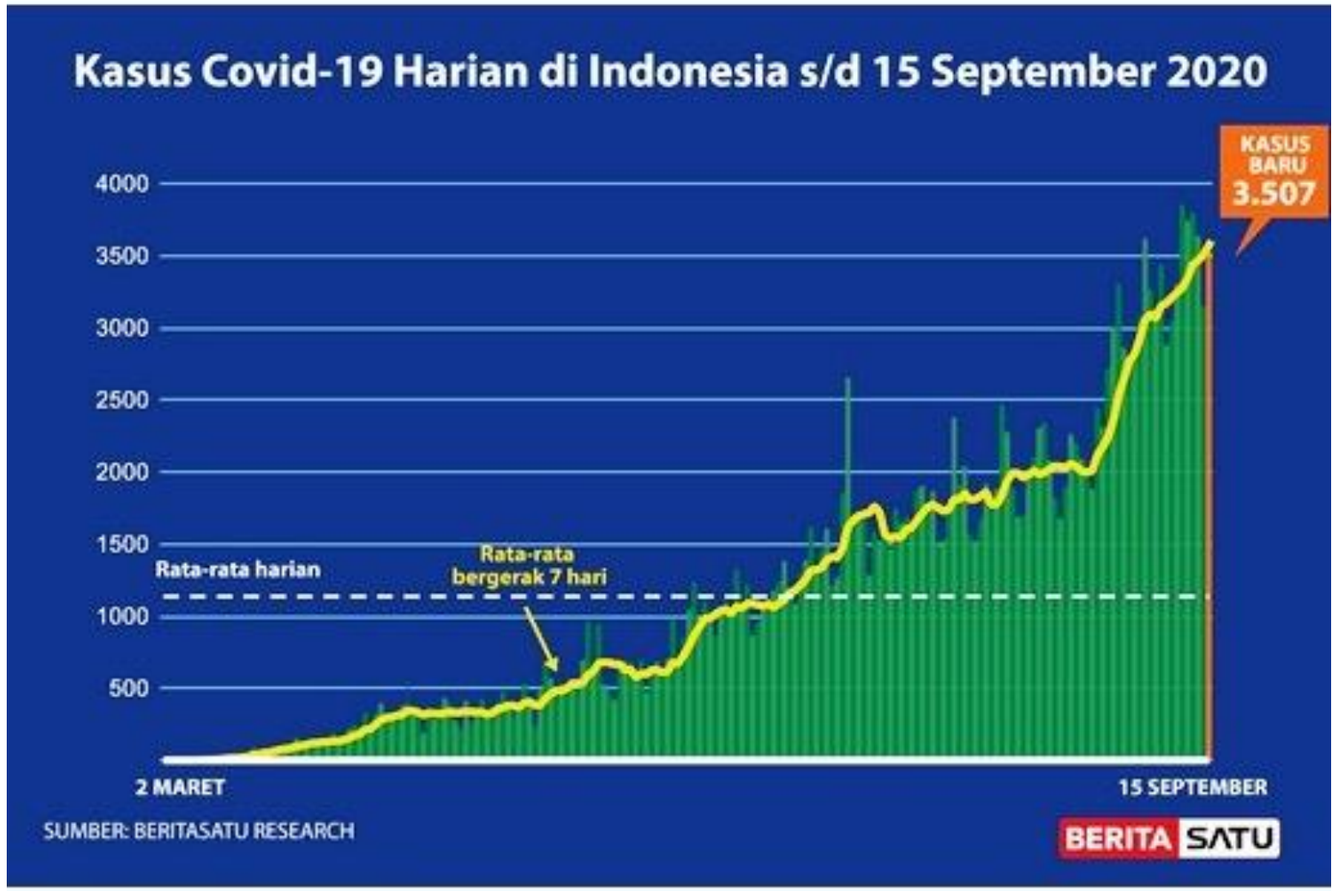
- National fuel consumption reduce 26.4%: gasoline reduce 29.8% and HSD reduce 18.7%.
- Electricity consumption reduce 9.55%.



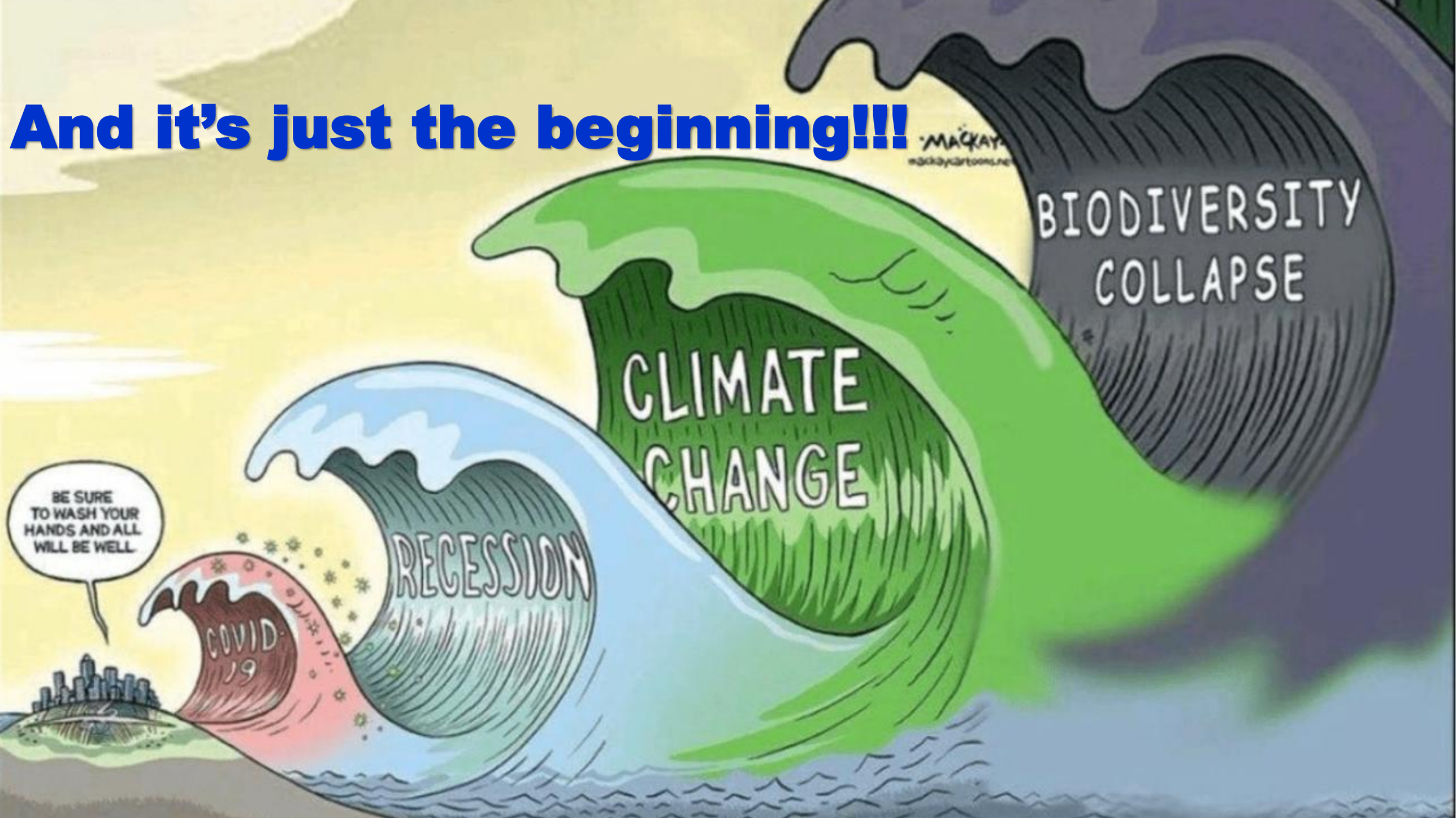
We must face the reality of the pandemic

1. Lack of government policies in direct pandemic eradication.
2. The ignorance of common people facing pandemic situation.
3. The weak implementation of covid 19 eradication caused by the weakening of economy and various political factors.

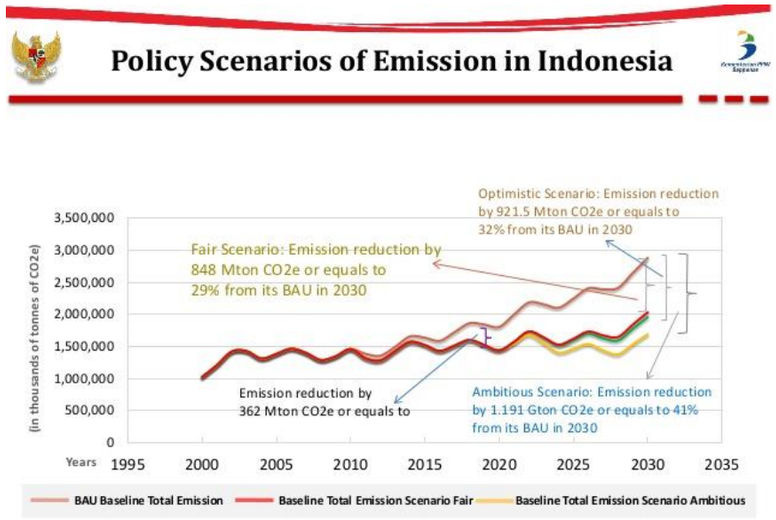
1. Increasing number of sufferers and pandemic victims.
2. The weakening of people's purchasing power.
3. Indonesia will soon enter an economic recession!



And it's just the beginning!!!



And what we have done so far IS NOT ENOUGH !

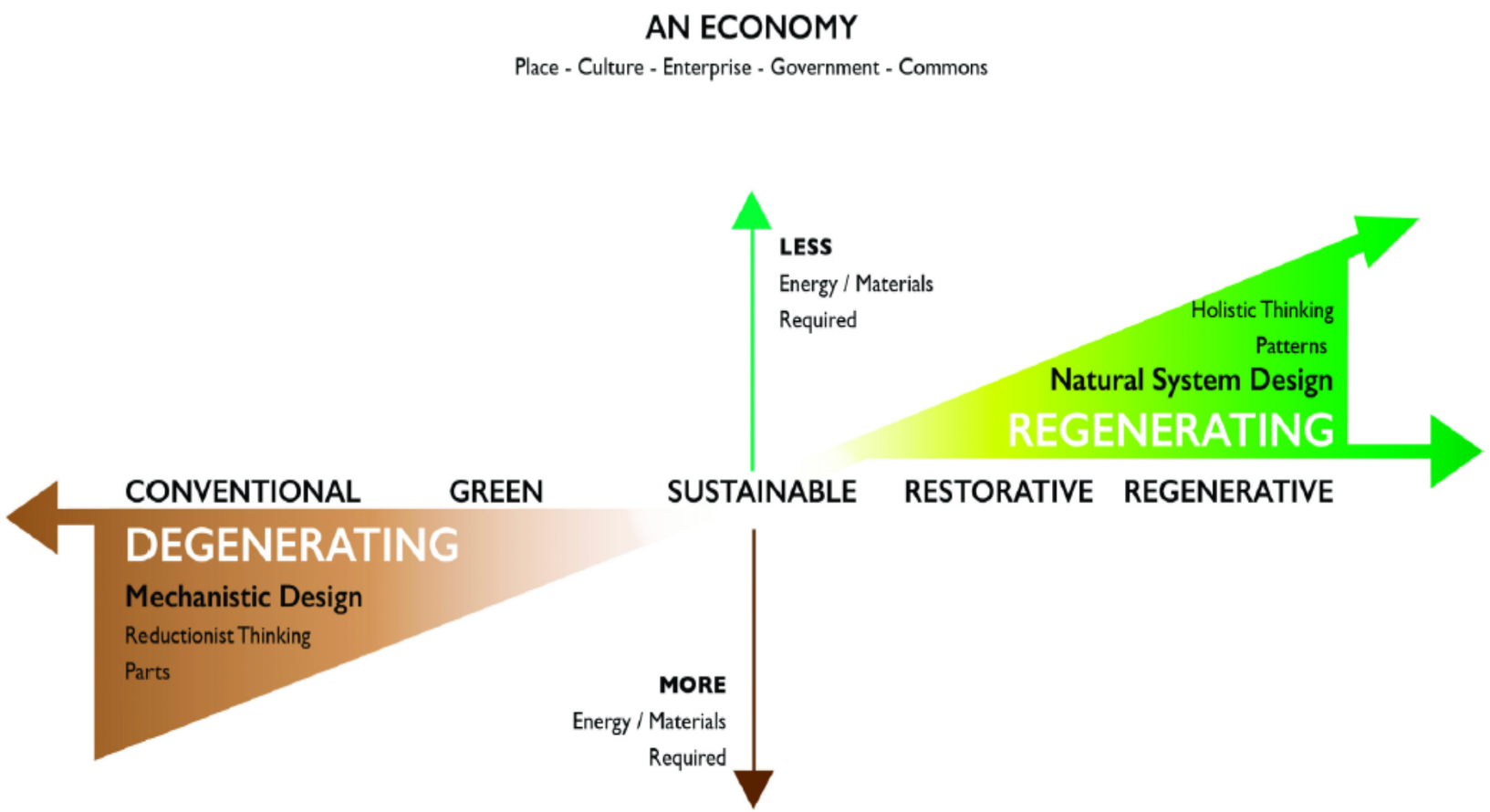


- Indonesia has ambitious target on emission reduction (NDC).
- Many initiatives have been taken by government, private sectors, NGOs, and societies, but ……..

- *Fossil Energy is still dominant and efficiency is low*
- *Forest Fire and Land Degradation from deforestation are still occurring and hard to control for complex reasons.*
- *Actions and Programs are poorly coordinated, monitored and lack of public participation*
- **And the covid-19 pandemic make everything worst!**

Is post covid-19 pandemic will be greener?

Future economic past covid-19 (Fullerton 2015)



There must be a shifting paradigm to do business that more sustainable, healthier, and more climate friendly. This is a future condition that we can create together.

Many meetings had been done during the pandemic situation to reduce the impact of pandemic in energy sector.

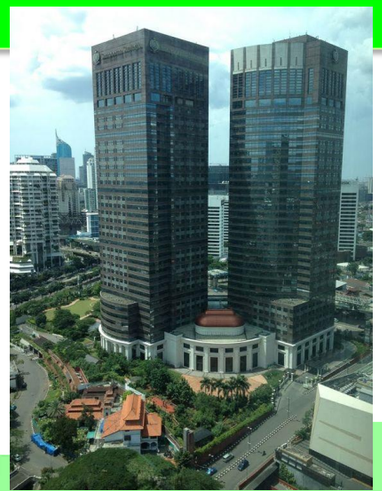
Example: shifting paradigm in commercial building

Old style commercial building

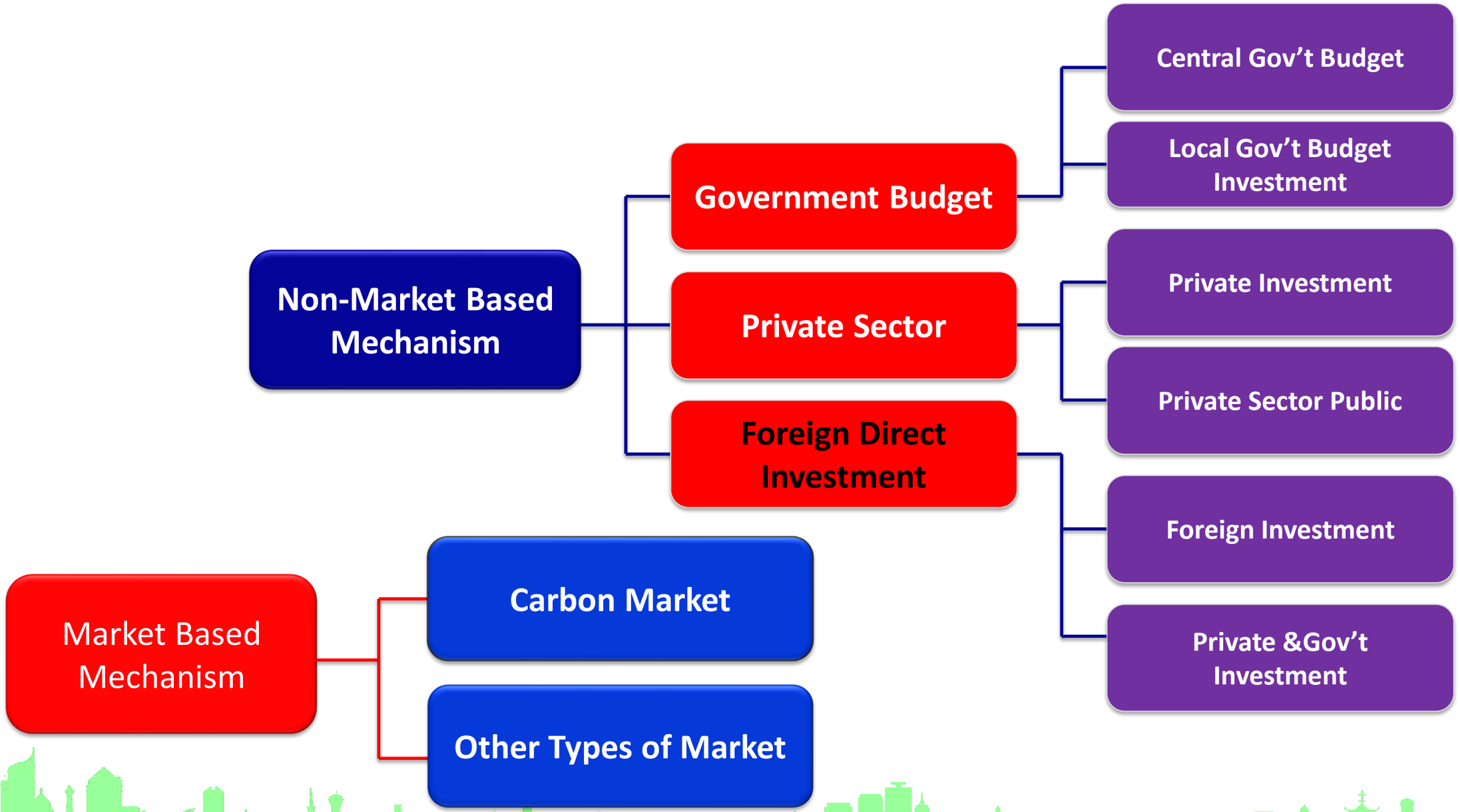
Green Building

Self Sufficient Building

Sustainable and Healthy Building



Financing is the biggest challenge!



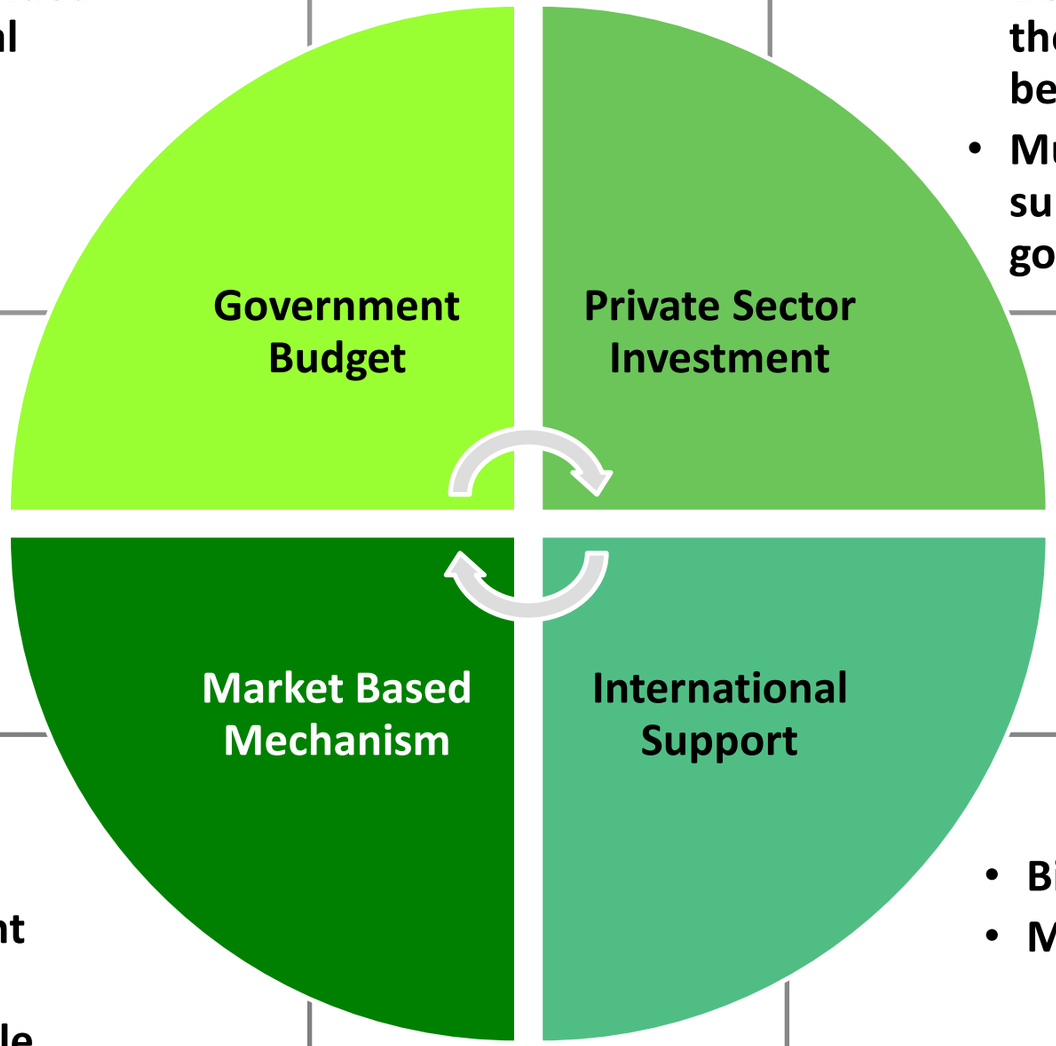
A price on a carbon is necessary

National Target	• Putting a price on a carbon will make the calculation and planning easier • Every country must reduce the emission based on their own target
Source of Revenue	• Putting the price on a carbon will generate revenue and business opportunity that can be used to implement low carbon technologies
Product and Process Efficiency	• As the emission will become cost, companies will be triggered to be more efficient in the production process
Scaling Up Private Sector Fund	• The private sector will be interested to invest in the low-carbon development as there is incentive for reducing emission
Trigger Behavior Change	• By putting price on a carbon it is likely the price of energy will get higher, thus changing behavior of the people to be more efficient (demand side management)

Green City development financing

- Very depended on national budget

- Depended on the profit and benefit
- Must be supported with good policies



- More transparent
- More accountable

- Bilateral
- Multilateral

What Indonesia need to do?

1. Increasing the cooperation among stakeholders in the covid-19 pandemic eradication
2. Flexible and adaptive in developing post-pandemic business opportunities
3. Develop activities and programs that are more sustainable, climate friendly, and healthier
4. Continuing emission reduction program
5. Develop an appropriate financing model for post pandemic situation.

Will need a strong commitment and visioner targets

Benefits of market based mechanism implementation

- Emission reduction
- Environmental quality improvement
- New possibilities of private sectors involvement
- Financial viability
- Cost saving
- Competitiveness & profitability
- Access to capital
- Technology transfer
- Capacity building enhancement

Market based mechanism in Indonesia

Mandatory

CDM
Clean
Development
Mechanism

Bilateral

JCM
JOINT CREDITING MECHANISM
INDONESIA SECRETARIAT

Domestic

ICER
Indonesia Certified
Emission Reduction

SRN
National Registry System

BPDLH
Environment
fund agency

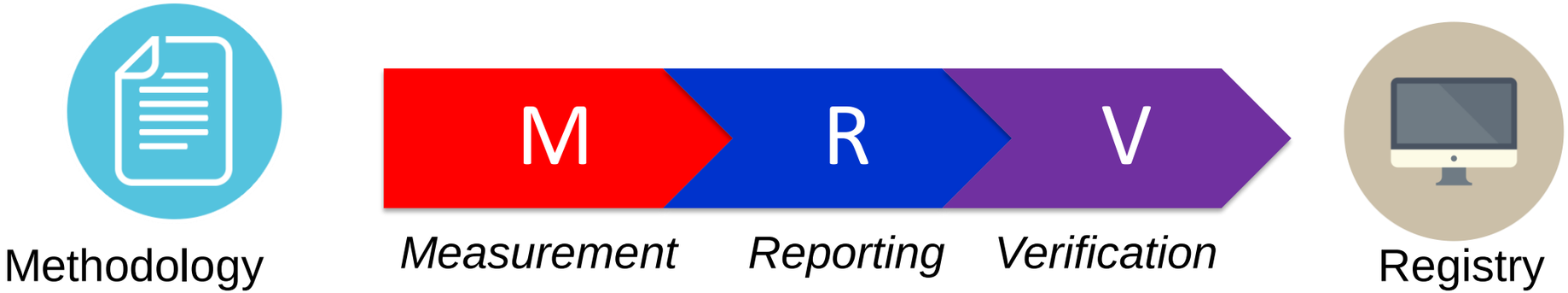
Voluntary

Gold Standard®
Climate Security & Sustainable Development

Plan Vivo

MRV is one of the market based mechanism basic requirement

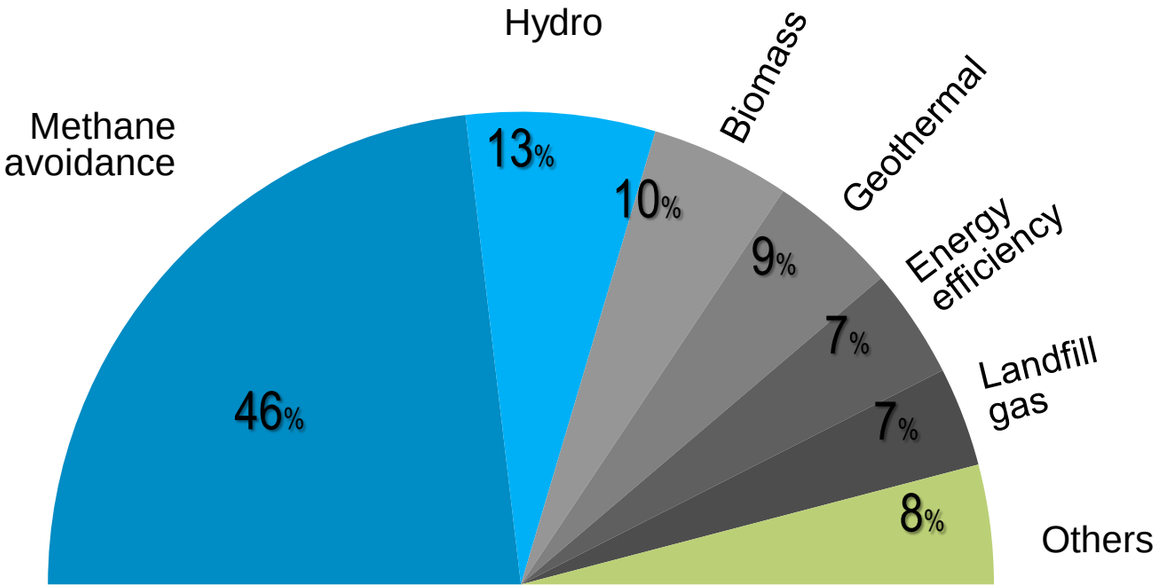
MRV is a method of measurement, reporting, and verification of the climate change or green projects



MRV ensures that emission reductions occur and the project contributes positively to sustainable development

MRV basic principles: a ton is a ton

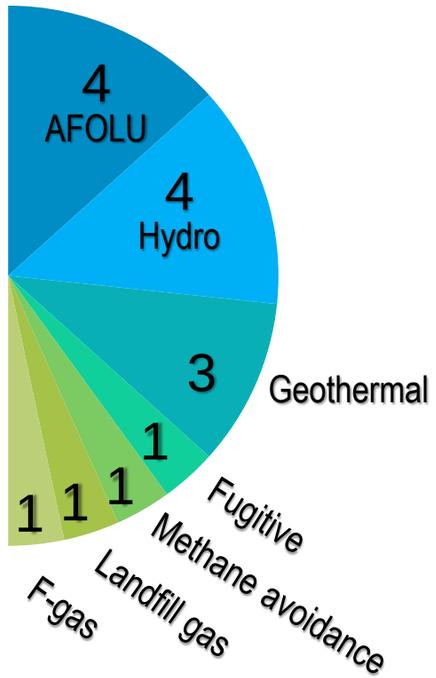
CDM development in Indonesia



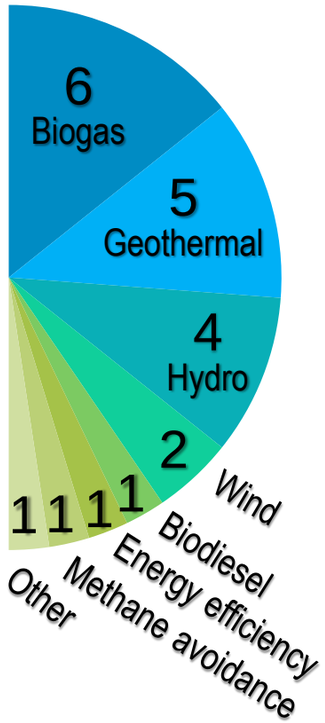
- **CDM was developed from 2008 to 2012.**
- **147 registered CDM projects and 5 projects at validation**
- **34.5 $MtCO_2e$ issued CERs from 47 projects.**
- **There is no new projects from 2012 due to the lack of demand.**

One of Indonesia CDM project, a geothermal power generation in Darajat.

VCS, Gold Standard and Plan Vivo in Indonesia



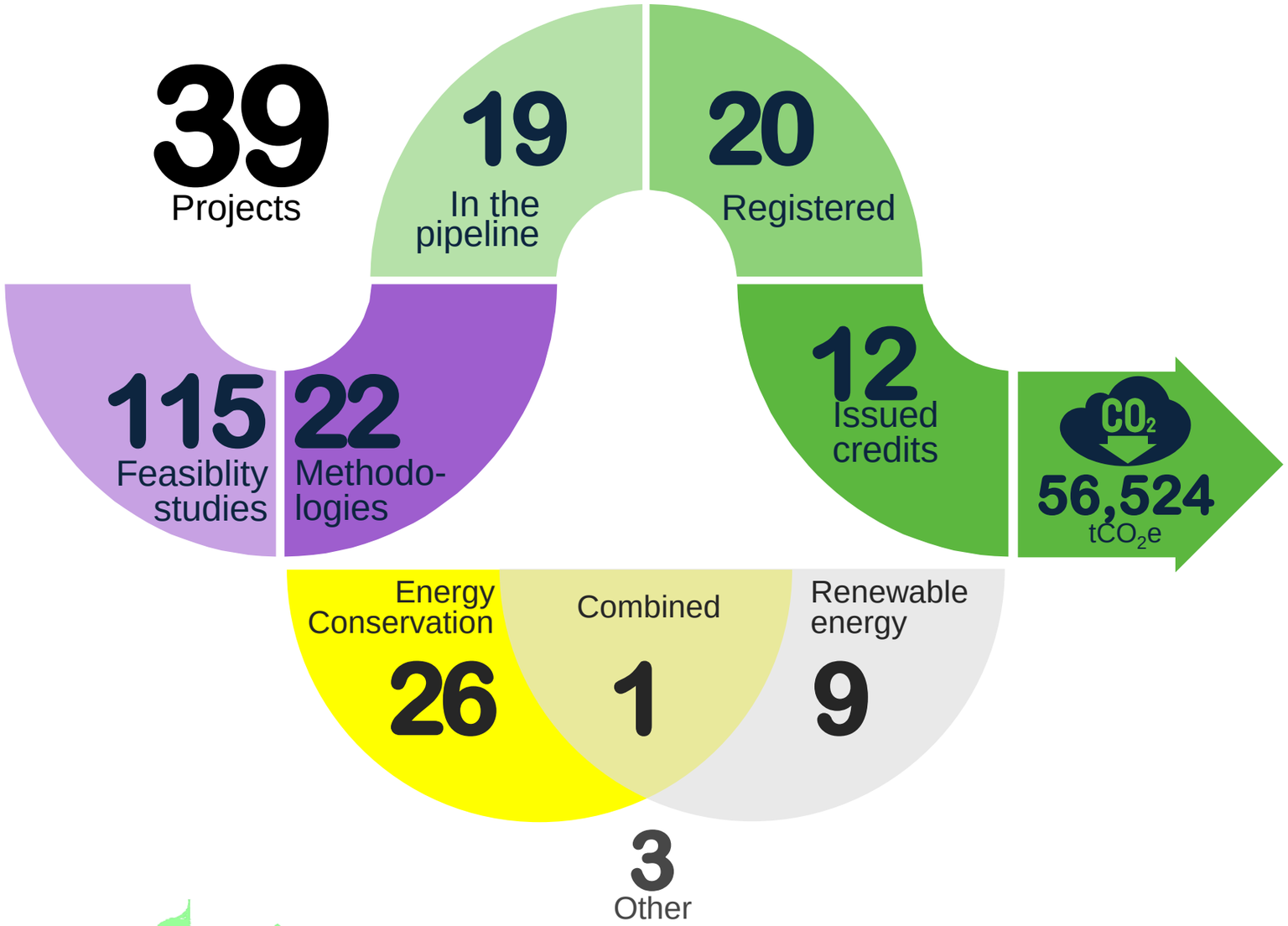
- 15 VCS projects
- 13 projects issued 63 million VCUs

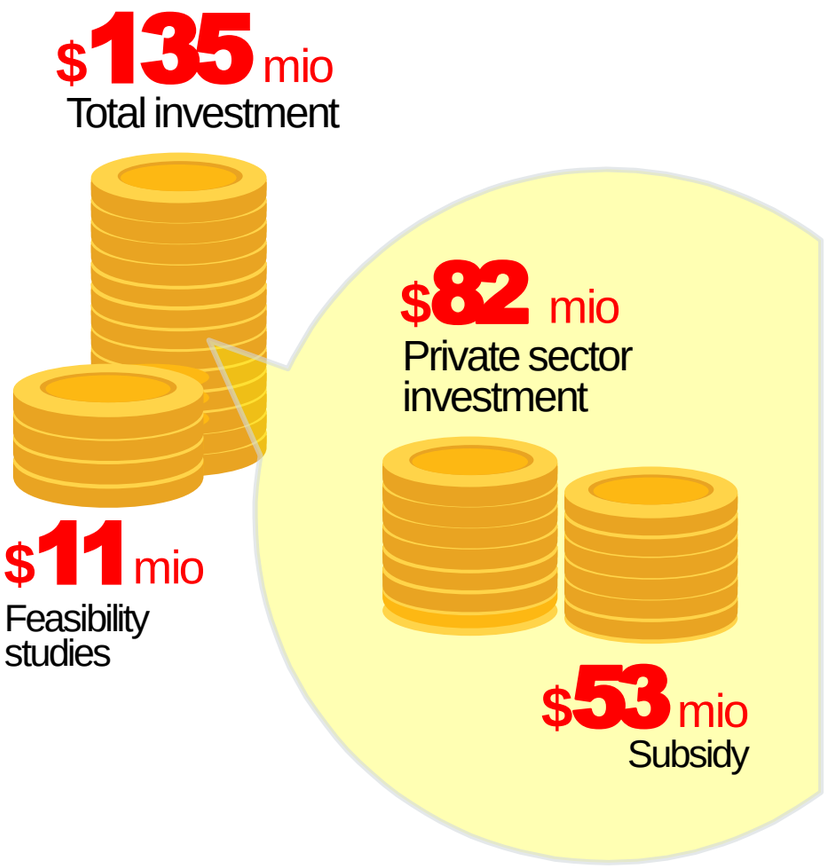


- 19 projects
- 7 projects issued 466,479 credits

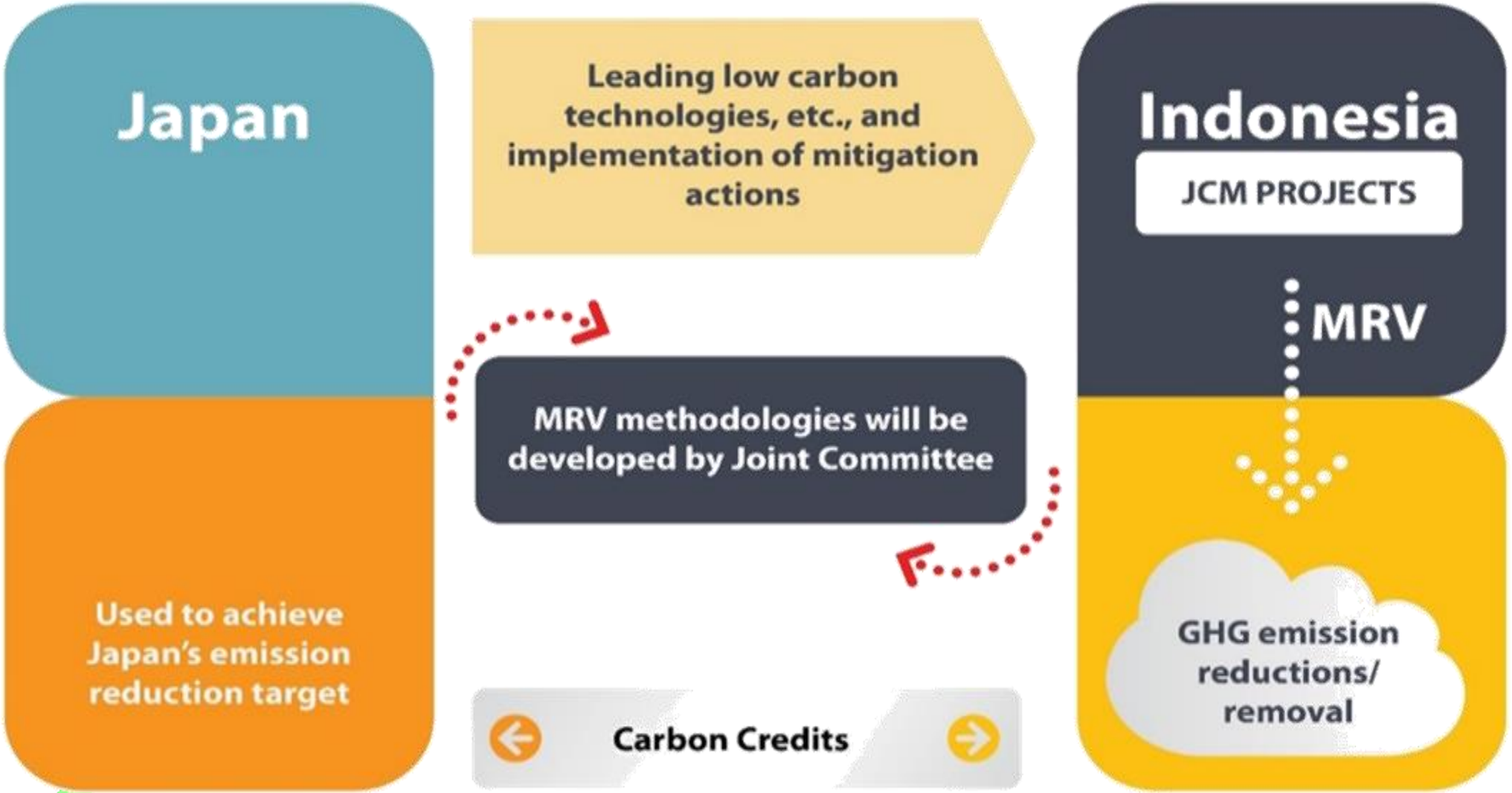
- 3 projects on forest and biodiversity protection
- 2 projects already issued 92.438 credits

JCM implementation in Indonesia





JCM:
Bilateral cooperation breakthrough for support private



JCM Infrastructure

Guideline:

1. Project Design Document
2. Proposed Methodology
3. Third Party Entity
4. Validation and Verification
5. Sustainable Development Implementation Plan and Report

Rules: 1. Rules of Implementation
2. Rules of Procedure for JC

Procedure: Project Cycle Procedure

Methodologies:
22 methodologies of energy efficiency and renewable energy have been developed

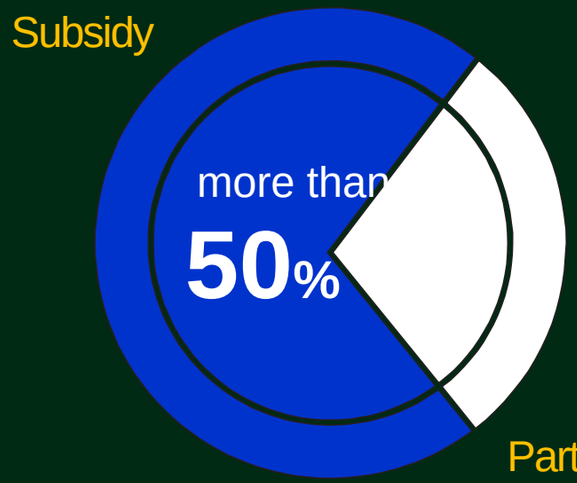
Registry system

ISO 14065 based

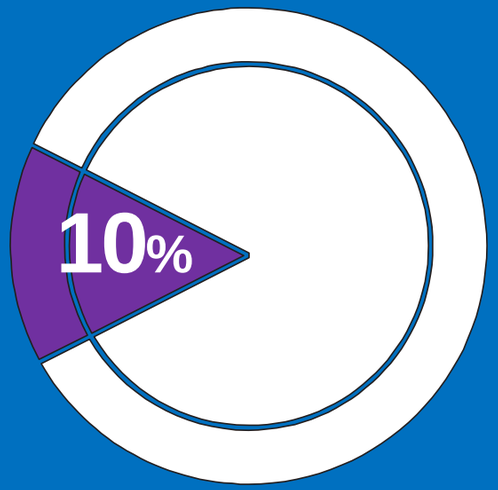
JCM financing schemes

Model Project
by MOEJ

Demonstration Project
by METI/NEDO



Japan Fund for JCM
Managed by ADB



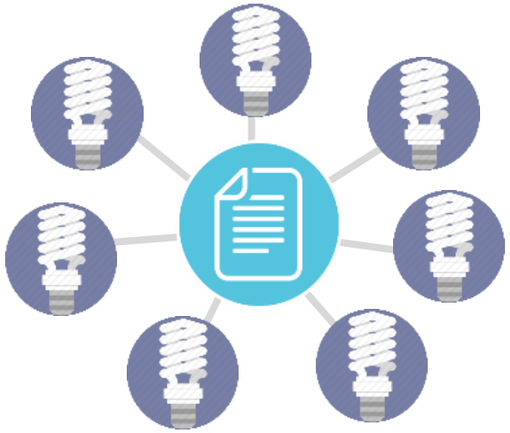
- Grant for incremental cost, max. **10** % of project cost or USD 10 mio (sovereign)
- **I**nterest subsidy for ADB's loan, max. 10% or USD 10 mio (non-sovereign loan)

Methodology under JCM

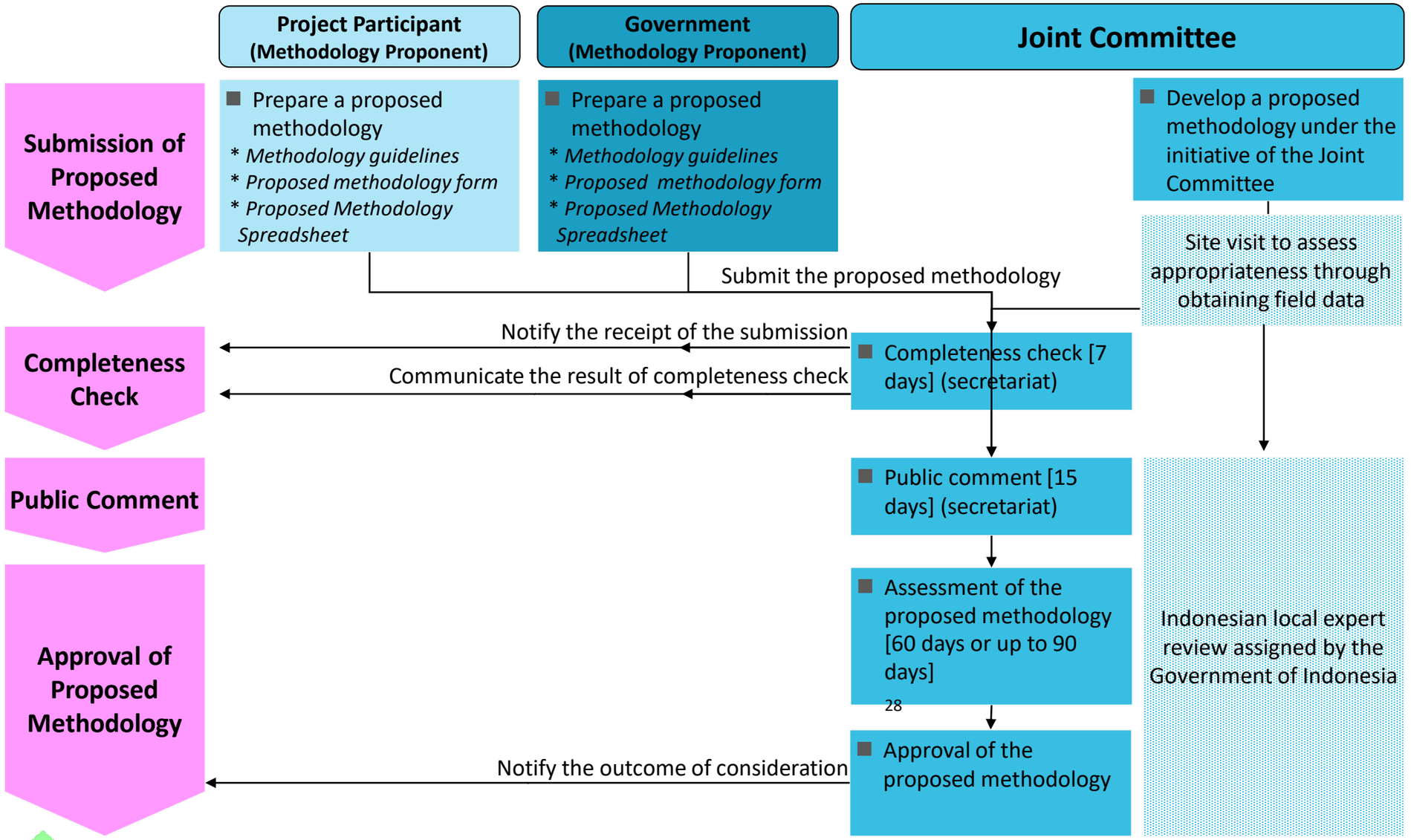
JCM methodologies should cover at least these 3 elements:

Eligibility criteria	Monitoring method	Emission reduction measurement method

- **The methodology is designed according to the type of applied technology**
- **ISO 14080 use JCM methodology steps for methodology development requirements**



JCM Methodology Development in Indonesia



City-to-City cooperation

- **Surabaya & Kitakyushu**
  - Energy management in buildings
  - Waste management
- **Semarang & Toyama**
  - Bus rapid transit
  - Mini hydro
  - Solar PV
- **Jakarta & Kawasaki**
  - Green building & green industry
  - Solid waste
  - Solar PV in remote areas
- **Bandung & Kawasaki**
  - Energy management in buildings
  - Waste management
  - Street lamps
- **Batam & Yokohama**
  - Energy efficiency in airport
  - Energy efficiency in waste water treatment
  - Biomass energy

Project Example 1

Introduction of CNG-Diesel Hybrid Equipment to Public Bus

BLU UPTD Semarang & Hokusan Co., Ltd.

Semarang

1,870 tCO2/year

- 72 diesel buses owned by Trans Semarang are retrofitted from diesel engine to hybrid engine with CNG system available.
- These buses are considered more cost-effective through fuel switching.

Project example 2

Solar PV Power Plant Project in Jakabaring Sport City

PDPDE Sumsel & Sharp Corp.

Jakabaring, Palembang

1,303 tCO2/year

- This solar power installed in Jakabaring sport center is able to generate electricity of 2 MW.
- The clean energy generated has supported the Asian Games 2018 and promotes green sport event in South Sumatera.
- PDPDE plans to build a 10 MW solar pv in Bangka Belitung beyond JCM scheme using the same technology

Project Example 3

Energy Saving for Air-Conditioning at Shopping Mall with High Efficiency Centrifugal Chiller

PT. Pakuwon Jati and NTT Facilities

Surabaya

966 tCO2/year

- NTT Facilities dan PT. Pakuwon Jati Tbk, worked together to implement a highly efficient chiller (centrifugal chiller).
- The chillers are able to reduce electricity usage of 1.136 MW/year. This chiller is utilised for the shopping center air-conditioner operational usage.

Project Example 4

Installation of Gas Co-generation System for Automobile Manufacturing Plant

PT. Toyota MMI & Toyota Tsusho

Karawang

20,310 tCO2/year

- 8 MW cogeneration system at PT. Toyota Motor Manufacturing Indonesia (TMMIN).
- This cogeneration system is able to deliver 30% of the total factory electricity demand and also replaces the needs of utilizing the other two boilers.
- PLN Batam has conducted a benchmark to TMMIN and plans to adopt co-generation system

Project Example 5

Power generation by waste heat recovery

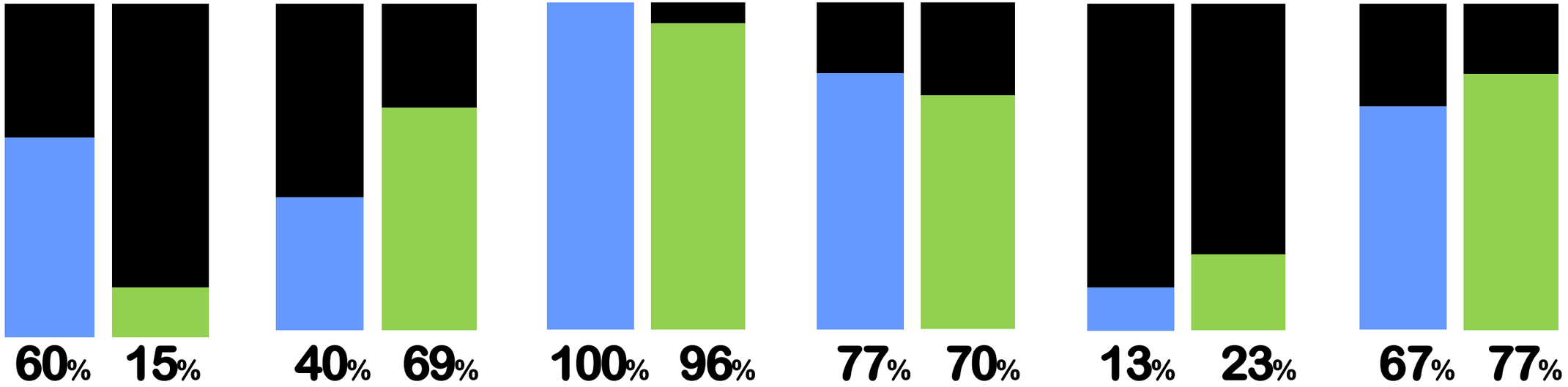
PT. Semen Indonesia & JFE Engineering Co.

PT. Semen Indonesia, Tuban Factory

149,063 tCO2/year

- The waste heat recovery (WHR) system utilizes unused waste heat currently emitted from 4 kiln plant at the cement factory.
- System will generate steam using the waste heat exhausted from the cement plant, and the steam is fed to the steam turbine generator to generate electricity.

Survey of JCM impact



JCM Contribution on NDC achievement

Direct emission reduction that came from credited and non credited emission reduction

Replication of implemented proven JCM technologies

Green technologies knowledge transfer, including capacity building through the implementation of RE and EE

Fund mobilization, including feasibilities study of green technologies development

Accelerate local and regional low carbon development implementation through city to city implementation

Terima kasih!

Thank you!

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