DDP BIICS

Short term priorities and Critical international enablers towards Net Zero

Policy Lessons learned from (INDONESIA)

6-7th October

DDP Workshop (online)

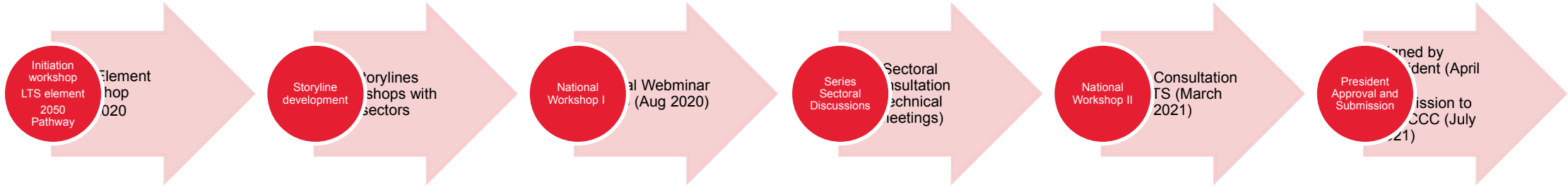
DDP DEEP DECARBONIZATION PATHWAYS

IDDRI

Introduction

- Indonesia has submitted the LTS last July 2021 to the UNFCCC.
- Foundation for the development of LTS of Indonesia is NDC, aligned with the need to increase the ambition to meet the Paris Target.
- The previous work on the DPP has been used as one of the key inputs in the process of developing the Indonesian NDC
- The continuation of the DPPP to DPP BICCS supports the process of developing the LTS of Indonesia ~ development pathway compatible with Global Commitment (Paris target) which is inline with the Deep Decarbonization Scenario (DDS) in this project

- **Stakeholder engagement**



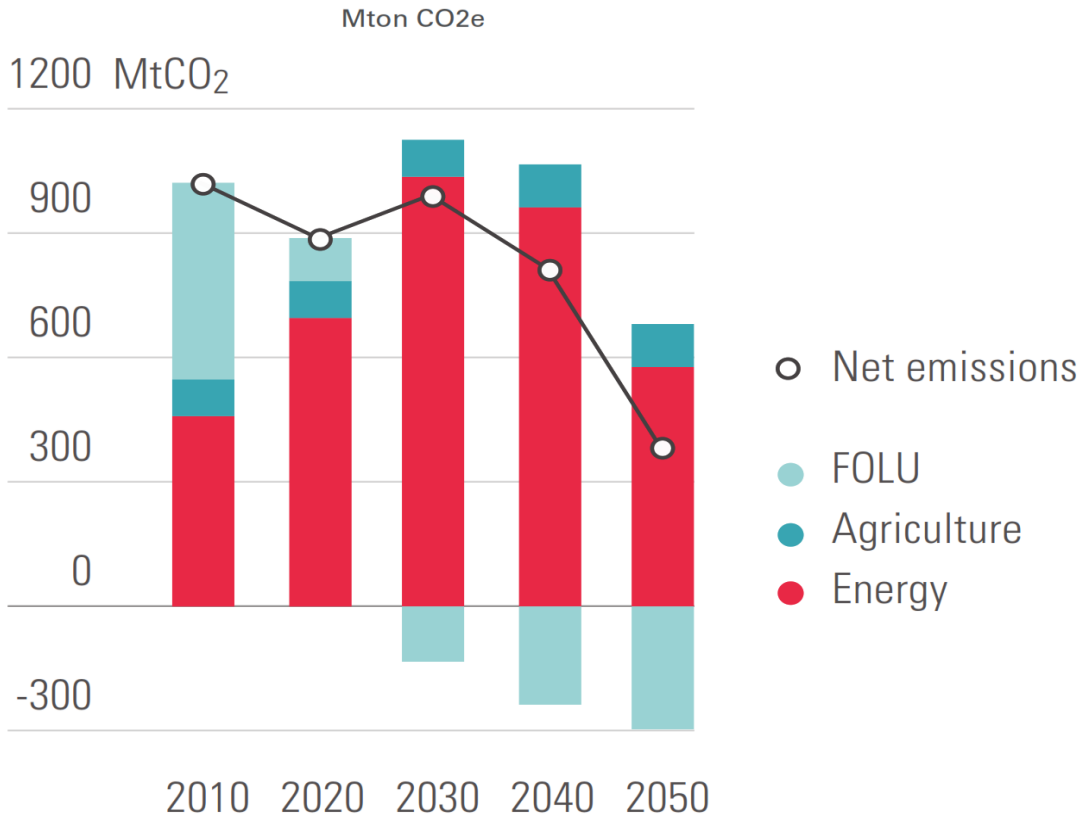
Discussion on LTS is still continuing ~ reaching NZE earlier as defined in the LTZ, and identifying required supporting policies

- Achieving NDC Target relies very much on FOLU sectors, and the DDS FOLU is expected to reach net sink by 2030

Key decarbonization factors:

- Efficiency measures,
- Decarbonization of power: RE and coal with CCS/CCUS,
- Biofuel in transport
- Massive cut in deforestation ((future forest conversion should not be more than 2 Mha)
- Practicing sustainable use of land anf forest:
  - Increase land use efficiency-optimizing use of idle and uproductive land and crop intensifications
  - Restoration of peatland and mangrove (adopting paludiculture system)
  - Reduce food loss and food waste
  - Mixed farming system
- Green fiscal policies

Figure 2. Net emissions, energy + AFOLU



Policy recommendations (1E)

Main synergies and trade-offs with country non-climate objectives, including SDGs, with a focus on the key enablers to maximize the synergies

- Development of solar power could drive domestic solar industries (improve investment and employment) especially when international enablers help provide funding and technology transfer schemes.
- Besides synergies there is also possibility of **tradeoff** between climate objective and environment objectives. For example, EV with battery and renewable power source will be good for climate and employment creation but these development may create problems with **mining wastes and smelters** associated with solar cell production and metals (Li, Co, Ni) for battery production and also possibility of waste handling problems of **used battery disposal.**

Priority short-term policies and actions

The factors that make difference between CPS and DDS includes:

- Coal use in power generation had been dominant in the past 4 decades. In order to alter the upward trajectory of GHG emission, it is critical to phase down or phase out coal power.
- Short term policies and actions in support to this objectives are needed otherwise there will be a lock-in of coal power that in the long run would be difficult to obtain economic and social justification to stop the lock-in plants for phasing out the coal because it would be expensive.
- Fortunately, PLN (Indonesian national electric power utility) has moved toward coal phase out direction. It will retire some existing coal power plant beginning 2025. There will be no new coal power contract after 2025.

Policy recommendations (2E)

Priority short-term policies and actions

- Some that are already on schedule will remain on stream until 2028. Coal power retirement staging based on the coal technology type and age is already scheduled. The phase out will begin with subcritical technology (2025-2035), followed by super critical technology (2040-2045) and then ultra super critical (2045-2055).
- The **coal complete phase out** is expected to occur in 2055. Substitute for coal power is gas and renewable. Massive development will occur in solar power. Solar PV plus battery is expected to serve as baseload power. Other non-fossil power that will be developed is nuclear which is expected to begin on stream in 2040. PLN target to achieve carbon neutrality in 2060
- According to DDS scenario, other important mitigation actions are deployment of CCS in coal power plants and in biomass power plants (BECCS). Short term priority policy actions in support to this mitigation actions, such as **capacity building policy** for CCS technology development, need to be designed and implemented.
- Other short term policy actions that is critical in support to decarbonization is **incentives for non-utility renewable** power such solar rooftop. An example of incentive is to provide **attractive feed-in-tariff and power purchase guaranty**.
- In the transport sector the main component of decarbonization is through massive substitution of oil fuels by biofuels. **Critical short term policy** action that is need in biofuel development is the incentives to biofuel production through special funding for biofuel feed development especially replanting and biofuel production technology.

Policy recommendations (3E)

Investments patterns for Paris-compatible pathways

- There will some changes in investment patterns for DDS. The shift of development trend in power sector especially PLN, which is moving away from coal power, is partly driven by consideration that financing for dirty power plant would be very difficult.
- Although investment may be made from domestic funds, PLN is aware that domestic financial institutions are not independent from international ones. It is expected that under Paris compatible pathways, international pressure for green financing is not only by preventing/disincentivizing carbon intensive investments but also to provide incentives for green financing- made it easier to obtain loan/financing for low carbon power plant investments.
- Similar change of investment pattern will also occur in sectors such as transport (**more investment in biofuel and EV**) and industry sector. Investment in EV component, especially battery, is expected to increase in the future as the government will continue to pursue higher local content in many development sectors.

Policy recommendations (4E)

Key international enablers and accelerators of domestic transitions

- Other large coal use also occurs in some industries such as cement, pulp and paper, iron-steel and petrochemicals. These industries are known to be hard-to-decarbonize industries.
- Some international pressures for decarbonization through carbon-footprint criteria may be applied for some export-oriented industry such as pulp and paper.
- Cement industry primarily supplies domestic market and cannot be encouraged to decarbonize by carbon-footprint mechanism. Besides, there is a limited option for cement decarbonization technologies.
- International enablers (carbon footprint requirement, investment financing, technology transfer), beside providing support to the achievement of decarbonization objectives, it also will positively impact the Indonesian socio-economy (GDP growth, employment creation, improved access to basic services, poverty alleviation, improved environment quality).

Main synergies and trade-offs

- Most of mitigation actions in the AFOLU sector are in synergy with the SDGs
  - Optimizing use of unproductive land through mixed farming practices in the forest area through social forestry program (SDG1, SDG2, SDG5, SDG6, SDG15, SDG17)
  - Biomass energy – competition on land with food and may have tradeoff

Priority short-term policies and actions

The factors that make difference between CPS and DDS includes:

- Reaching for AFOLU net-sink demands a massive-scale paradigm change to perceive forest and a carbon-rich ecosystem as part of a nature-based solution.
- In the AFOLU sector, Indonesia's land-based policies have been growing remarkably and aligned with Indonesia's vision for the DDS scenario. The only thing that distinguishes the existing policies and the ambitious DDS scenario is the implementation rate of the policies, which includes all the enablers and implementation schemes.
- Transformative policies for Indonesia's AFOLU sector
  - Social forestry
  - Multi permit scheme
  - Moratorium policies
  - Mandatory domestic certification policies
  - Incentive policies

Priority short-term policies and actions

- Social forestry as a scheme aimed to allocate forest area legally for the community and to provide an access to incentive and/or capacity building programs to increase land productivity (targeted by 12 Mha in 2030)
- Multi-permit scheme that allows any entities to have multiple business activities and partner with communities, particularly in the disputed land (under profit-sharing mechanism), to establish mixed farming
- Ecosystem-based Fiscal Transfer, PES

Policy recommendations (4EF)

Key international enablers and accelerators of domestic transitions

- Application of emission standards/carbon footprint to internationally traded products. Such standards are expected to drive producers to manufacture products with lower carbon footprint.
- Some high impact technologies such as **CCS is very expensive** and when implemented will require significant additional investment. For such cases, international enabler in the form of **financial support/low interest loan is needed**.
- PV development under Paris-compatible pathway will involve installation up to 100 GW in 2050. Therefore, it is reasonable to expect that **local manufacturer** of solar PV cell and support systems would be required.
- To accelerate local manufacturing capacity, international enablers in the form of **investment financing and technology transfer** would be required.
- International flows finance from for non-Annex 1 countries (e.g. finance tools in UFCCC such as GCF-RBP) and financial scheme for green investment for the private

Reflections, improvements and challenges

- Huge investment is needed to meet NZE
  - Finance from for non-Annex 1 countries from the Annex 1 countries
- Modelling and quantifying the co-benefit (SDGs) of climate actions, implication of labor and change in workforce
- Technology transfers is in the area of low carbon technology (e.g. efficient solar cell manufacturing).
- International cooperation on research on agriculture technologies (boosting productivities)
- Integration of adaptation and mitigation

Thank you

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