SECOND NATIONALLY DETERMINED CONTRIBUTION

REPUBLIC OF INDONESIA

2025

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SUMMARY

The Second Nationally Determined Contribution (SNDC) represents Indonesia's continued commitment, as mandated by Decision 1/CP.21 of UNFCCC, building upon a progressive series of Nationally Determined Contributions (NDCs). This trajectory began with the submission of the Intended NDC in 2015, which pledged emissions reduction of 29% through domestic efforts (unconditional) and up to 41% with international support (conditional) compared to Business-as-Usual scenario as baseline for mitigation target. It was followed by the First NDC in 2016 by enhancing clarity, transparency and understanding for both national and international interests. In recognition of evolving national priorities, the mandate of Paris Agreement Article 4 and related COP decisions, Indonesia submitted an Updated NDC in 2022 and subsequently an Enhanced NDC, which raised its ambition to 31.89% (unconditional) and 43.20% (conditional) emissions reduction. Second NOC adopts an emissions level target to better reflect Indonesia's increased ambition and the updates in methodology baseline, and scenario approaches.

Indonesia's climate target has been integrated and synergized with the President's vision and the national development plan. The preparation of Indonesia's Second NDC is guided by Asta Cita, the country's development vision, articulated in the National Medium-Term Development Plan (RPJMN) 2025-2029. Indonesia's Second NDC is fully align with the Nation's Low Emissions Development Strategies (LTS-LCCR 2050) and the Long Term Development Planning Document (RPJPN 2025-2045). This alignment ensures that Indonesia's climate ambition to achieve Net Zero Emissions by 2060 or sooner is maintained without backsliding, while also supporting national economic goals.

The Second NDC applies a 100-year Global Warming Potential (GWP) metric based on the IPCC Fifth Assessment Report and covering five key sectors:

Energy, Industrial Processes and Product Use (IPPU), Waste, Agriculture, and Forestry and Other Land Use (FOLU). It will include other non-CO_2 emissions, such as Methane (CH_4), Nitrous Oxide (N_2O), and Hydrofluorocarbon (HFC).

Under the LCCP scenarios, Indonesia is expected to achieve its peak emissions by 2030, with estimated emission levels of 1,345,707 Gg CO_2e under the LCCP_L scenario and 1,491,474 Gg CO_2e under the LCCP_H scenario. Compared to the ENDC CM2 scenario, which projects emissions of 1,632,000 Gg CO_2e in 2030, Indonesia's emissions are expected to be 8 -17.5% lower. The emissions will decline in 2035 with the projection of GHG emission levels reaching 1,257,717 Gg CO_2e under LCCP_L and 1,488,866 Gg CO_2e under LCCP_H.

The Second NDC applies 2019 as the reference year because Indonesia considers the Global Stocktake Decision (Dec.1/CMA 5) and acknowledges Indonesia's effort in climate actions with the updated GHG inventories and methodology. Furthermore, the updated reference year is expected to better inform the global communities about the Indonesian actual state.

Indonesia has taken concrete steps to implement mitigation measures across all key sectors through the enactment of several major regulations and initiatives. These include: (i) Government Regulation No. 33 of 2023 on energy conservation and management; (ii) Presidential Regulation No. 112 of 2022 on the acceleration of renewable energy development for electricity supply; (iii) Minister of Environment and Forestry Decree No. 842 of 2024 concerning the Operational Plan for Indonesia’s Zero Waste Zero Emission agenda in addressing climate change; (iv) Government Regulation No. 32 of 2019 on Marine Spatial Planning supports the advancement of sustainable marine space utilization for blue carbon reserves and conservation; and (v) Government Regulation No. 26 of 2025 on Environmental Protection and Management Planning, sets out the framework for the National Environmental Protection and Management Plan (RPPLH Nasional).

On adaptation, Indonesia is updating its policy direction through a range of strategic programs and actions aimed at strengthening resilience in economic, social, livelihood, ecosystem, and landscape systems. To further integrate adaptation and mitigation efforts, Indonesia has initiated identifying adaptation actions that also deliver greenhouse gas mitigation co-benefits, supported by research and pilot projects. In the FOLU sector, Indonesia has emphasized the importance of including Harvested Wood Products (HWP) in the measurement and reporting of NDC progress, in alignment with the Modalities, Procedures, and Guidelines (MPGs) for the Biennial Transparency Report (BTR).

Progress tracking of the NDC implementation has been enhanced through improvements in the national registry system (SRN), under the One GHGs Data Policy by integrating systems related to climate change, and the development of a national carbon registry linked to the Indonesia Stock Exchange (IDX). The SRN provides Measurable, Reportable, and Verifiable (MRV) system, which integrates: (a) National GHGs Inventory System (SIGN-SMART); (b) Safeguards Information System for REDD+ (SIS-REDD+); (c) Information Systems on vulnerability (SIDIK), (d) joint adaptation and mitigation at the village level through Program Kampung Iklim or ProKlim.

Financing remains a significant challenge. The Third Biennial Update Report (2021) estimates Indonesia will require USD 285 billion for conditional and USD 281 billion for unconditional targets between 2018 and 2030-figures focused on mitigation. Indonesia's Second NDC will require an estimated total investment of USD 472.6 billion to achieve the target, based on preliminary calculations. This financing need, allocated across four sector categories (energy, agriculture, FOLU, and waste), is likely underestimated as it does not yet account for the industrial processes and product use (IPPU).

Indonesia has also enacted Presidential Regulation No. 110/2025 on the implementation of carbon pricing instruments and national GHG emissions control, providing frameworks for carbon pricing instruments to support the implementation of NDC. In 2023, Indonesia assessed its finance, technology transfer, and development and capacity building gaps and needs, and developed a Roadmap for Means of Implementation to support both the Enhanced NDC (2021-2030) and the Second NDC (2031-2035), laying the foundation for continued progress toward its climate goals.

To support both mitigation and adaptation actions, Indonesia continues to allocate significant financial resources. Between 2020 and 2023, a total of USD 18.5 billion (IDR 304.8 trillion) was allocated for climate-related expenditures.

The Ministry of Finance also recorded a cumulative climate budget allocation of USD 36.2 billion (IDR 610.1 trillion) from 2016 to 2023, averaging IDR 76.3 trillion per year. Furthermore, Indonesia has developed innovative fiscal instruments, secured international support, and established the Environmental Fund Management Agency (BPDLH/IEF) to manage and mobilize funding for environmental and climate initiatives. Fiscal policies such as tax incentives have also been introduced to drive emission reductions and support sustainable development.

CONTENT

I. National Context

1.1 General Policies

Indonesia is a nascent yet stable democracy and the fourth most populous country in the world. Despite continuous, multi-decade economic growth, 9.03% of Indonesia's population is living below the poverty line in 2023. To lift people out of poverty, the Government of Indonesia (GOI) is promoting economic growth 5.05% in 2024 and projected to 8% in 2029 in order to reduce the poverty rate to 4.5-5% in 2029. Indonesia also anticipates both opportunities and challenges with projected population growth of 1.09% from 2020-2025 to 0.77-0.75% in 2030-2035, with projected population in 2025 is 284.55 million and in 2045 is 329.03 million. In accordance with the Indonesia's Constitution, every person shall have the right to enjoy a good and healthy environment, and climate change becomes a reality, Indonesia continues to seek a balance between its current and future development and poverty reduction priorities.

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 under the First Nationally Determined Contribution (NDC), an increased unconditional commitment compared to 2010 pledge of 26%. The National Medium-Term Development Plan (RPJMN) 2015-2019 was guided by the National Nawa Cita (Nine Priority Agendas) framework, which includes protecting Indonesia's citizens, encouraging rural and regional development, improving the quality of life, and improving productivity and global competitiveness. These core missions are consistent with the national commitment towards a low carbon and climate-resilient development path, in which climate change adaptation and mitigation constitute an integrated and cross-cutting priorities of the RPJMN 2015-2019.

The RPJMN 2020-2024 was directed to transform Indonesia to a high middle class income country with a fair and sustainable development through following seven agendas : (a) Enhancing economic resilience for quality growth, (b) Strengthening regional development to address inequality among regions, (c) Enhancing human resource quality and competitiveness, (d) Building nation values and character of citizens, (e) Advancing infrastructure to support economic development and provision of basic services, (f) Enhancing the environment and resilience to natural disaster and climate change impacts, and (g) Strengthening stability in politic, law, national security and defence and public service transformation.

With a vision of progressive Indonesia towards Golden year in 2045, the RPJMN 2025-2029 is guided by Asta Cita (Eight Missions) which encompass 17 priority programmes and 8 short-term priorities/quick wins, based on the foundation of progressive Indonesia, development sustainability in facing strategic challenges, Pancasila Principles economy, and Constitution of 1945. These Asta Cita Missions, among others, are related to (a) reinforce human rights, (b) encourage self-sufficiency in food, energy, water, creative industry, green economy and blue economy, (c) strengthen science, technology, education, health, gender equality, strengthen the role of women, youth and people with different abilities, (d) continue to develop downstream industry and industrialisation, (e). strengthen to live in harmony with environment, nature, culture and interfaith acceptance to achieve just and prosperous society.[1]

Indonesia is recognized in its role to play in combatting global climate change in view of its extensive tropical rainforests with high biodiversity, high carbon stock values, as well as energy and mineral resources. Its geographic location in the global ocean conveyor belt (thermohaline circulation), has positioned Indonesia as the largest archipelagic country with total areas of 8.3 million square kilometres. With marine area of about 77.11% of the country areas, 17,504 islands and coast line of 108,000 kilometres where most of the population and economic activities are located, Indonesia is vulnerable to natural disaster that will likely be exacerbated by climate change, especially in low-lying areas throughout the archipelago. Furthermore, Indonesia's position in the ring of fires with recurrent natural calamity, and in some cases at a high intensity of incidence which requires vast amounts of contingency resources to manage - including for rehabilitation and reconstruction, has affected national capacity in providing resources for climate change adaptation. Therefore, Indonesia views a comprehensive land-and ocean-based climate change mitigation and adaptation efforts as a critical strategic consideration in achieving climate resilience in food, water and energy.

Indonesia has taken significant steps in forestry and land use sector to reduce emissions by instituting a moratorium on the clearing of primary forests and by reducing deforestation and forest degradation, restoring ecosystem functions, as well as sustainable management of forest. The efforts include social forestry through active participation of the sub-national governments, private sector, small and medium enterprises, civil society organisations, local communities and *adat* communities (Indonesia: Masyarakat Hukum Adat), and women – in both the planning and implementation stages. A landscape-

[1] Asta Cita is elaborated in Annex I of Presidential Regulation No. 12 Year 2025 concerning National Medium-term Development Plan

scale and ecosystem management approach, emphasising the role of sub-national jurisdictions, is seen as critical to ensure greater and more enduring benefits from these initiatives.

The strategic approach of Indonesia's NDC is predicated on the following foundational principles:

1) Employing a landscape approach: Recognizing that climate change adaptation and mitigation efforts are inherently multi-sectoral in nature, Indonesia takes an integrated, landscape-scale approach covering terrestrial, coastal and marine ecosystems.

2) Highlighting existing best practices: recognizing significant strides in multi-stakeholder efforts in combating climate change, Indonesia intends to scale up the diversity of traditional wisdom as well as innovative climate change mitigation and adaptation efforts by the government, private sector, and communities.

3) Mainstreaming climate agenda into development planning: recognizing the need to integrate climate change into development and spatial planning and budgeting process, Indonesia includes key climate change indicators in formulating its development programme's targets.

4) Promoting climate resilience in food, water and energy: recognizing the importance of fulfilling the needs of a growing young population for food, water and energy, Indonesia will improve its management of natural resources to enhance climate resilience by protecting and restoring key terrestrial, coastal and marine ecosystems.

In line with the Paris Agreement, Indonesia respects, promotes and considers its obligation on human rights, the right to health, the right of adat communities (Indonesia: *Masyarakat Hukum Adat*), local communities, migrants, children, youth, elders, persons with different abilities, and people in vulnerable situations; as well as the right to development, including gender equality, empowerment of women and intergenerational equalities. Engagement of non-party stakeholders, such as local governments, private sectors, and civil societies will continuously be enhanced.

Indonesia's NDCs outlines the country's transition to a low carbon and climate resilience future. The First NDC, Updated NDC and Enhanced NDC describe the enhanced actions and the necessary enabling environment during the 2015-2019 period that has laid the foundation for more ambitious goals beyond 2020, contributing to the concerted effort to prevent 2^{o}C increase in global average temperature and to pursue efforts to limit the temperature increase to 1.5^{o}C above pre-industrial levels.

The Second NDC is formulated by alignment with LTS-LCCR 2050 under LCCP (low carbon compatible with Paris Agreement target - 1.5^{o}C scenario) and has considered the outcomes of the First GST and Indonesia's First BTR.

By 2030, Indonesia envisions achieving archipelagic climate resilience as a result of comprehensive mitigation and adaptation and disaster risk reduction strategies. Indonesia has set ambitious goals for sustainability related to production and consumption as well as self-sufficiency of food, water, and energy. These goals will be achieved by supporting empowerment and capacity building, improved provision of basic services in health and education, technological innovation, and sustainable natural resource management, in compliance with principles of good governance. Beyond 2030 NDC target, Indonesia has committed to progress towards the transformation to *long-term low carbon and climate resilience development strategy.*

The Government of Indonesia has promulgated Presidential Regulation No. 110 of 2025 concerning the implementation of carbon pricing and national greenhouse gas emissions management. The Regulation serves as a legal framework to implement NDC towards low carbon and climate resilience. It also prescribes carbon pricing, including arrangements for carbon trading, carbon levies and result based payments and national registry system. Sectoral Ministries and Agencies as the responsible institutions on the achievement of NDC's target will fully engage in the implementation of the Presidential Regulation Number 110 of 2025.

The Government of Indonesia has also promulgated Government Regulation No. 26 of 2025 on Environmental Protection and Management Planning, sets out the framework for the National Environmental Protection and Management Plan (RPPLH Nasional), The RPPLH outlines climate change adaptation and mitigation as one of its key priorities, and further elaborates on concrete policies, strategies, and programs. The climate-related policies include the implementation of decarbonization measures toward achieving net-zero emissions, the resilience enhancement to climate change impacts, and the disaster risk reduction.

In order to achieve the 2030 NDC target and expedite the transformational changes towards *low carbon and climate resilience development*, Indonesia has developed a strategy for NDC implementation, consisting of nine following programmes:

1. Building ownership and commitment among Ministries and other governmental institutions, sub-national governments, private sectors, civil

societies, and financial institutions (Party and Non-Party Stakeholders).

2. Capacity building to enhance capacity of institutions and human resources at all levels, covering all aspects of climate change, particularly on mitigation and adaptation actions, implementation of transparency framework, and climate finance.

3. Creating enabling environment to engage wider stakeholders in mitigation and adaptation as well as in resource mobilisation, through appropriate regulatory framework, policy and measures.

4. Developing framework and network for coordination and building synergy among sectors, regions and actors/stakeholders.

5. One GHGs-data policy to support the implementation of transparency framework at the national level.

6. Developing policies, planning and intervention programme for NDC implementation, including integrating mitigation in five category sectors (forestry, energy, IPPU, waste, agriculture) and adaptation (sectoral and regions) into development planning, to secure financial support (public fund) and facilitate resource mobilisation (domestic sources and international supports).

7. Developing guidance for NDC implementation to facilitate Ministries and other governmental institutions, sub-national governments and other non-party stakeholders in implementing Programme No. 6.

8. NDC implementation refers to implementation of policies, planning and intervention programmes (Programme No.6), taking into account guidance developed under Programme No. 7.

9. Monitoring and review of NDC to track progress of NDC implementation, review of NDC and adjust the NDC whenever necessary. Inter-ministerial team has been established to monitor progress and achievement of NDC implementation.

1.2. Long-Term Strategy on Low Carbon and Climate Resilience

As mandated by Article 4.19 of the Paris Agreement, Indonesia formulates a long-term low greenhouse gas emission development strategy (LTS) which defines pathways in achieving low emission development until 2050 and is expected to guide the implementation and development of the subsequent nationally determined contributions (NDCs). The Indonesia's LTS (2021)

proposes innovative pathways towards the common goal to imperatively take ambitious actions to address climate change challenges, not only through a deeper GHG emission reduction towards net-zero emissions but also through the element of climate resilience pathway, along with the commitment of NDC.

Successful mitigation actions will reduce adaptation cost and allow Indonesia to better deal with loss and damage associated with climate change impacts. Hence, the LTS will play a central role in aligning the climate goals and targets with national, sub- national and international objectives including sustainable development goals (SDGs), engaging non-party stakeholders, enhancing opportunities for innovation, and enabling communities to earn the benefits of early actions.

The LTS will strengthen the vision of One Hundred Years Indonesia (Visi Indonesia 2045) towards prosperous Indonesia based on its four following pillars: (a) human resource development and science and technology advancement, (b) sustainable economic development, (c) equitable development, and (d) strengthening national resilience and public sector governance. “Visi Indonesia 2045” has ambitious target on poverty reduction, human resource development, economic and social transformation. Therefore, Indonesia’s LTS is designed by taking into consideration the need to balance between emission reduction and economic development, and putting emission reduction, economic growth, a fair opportunity and climate resilient development as an integral part of the LTS’ goal. Conducive environment for investment, structural reform to support growth, and well-designed climate policy as prerequisites for a successful LTS have been addressed during the development process of LTS.

Under the scenario compatible with 1.5 C goals (LCCP), greenhouse gas emissions will peak in 2030 at 1,244 $MtCO_2e$ and then decline and continue to decline to reach 540 $MtCO_2e$ in 2050. It is expected that net zero emissions (NZE) will be achieved by 2060

On gender issues, Indonesia has an advanced policy relating to gender equality and gender balance. Mapping gender issues in climate change in all development sectors is crucial in implementing the policy. Enhancing role of women in development and strengthening women's capacity and leadership in climate change have been initiated and will be continued as part of the NDC implementation.

1.3 Just Transition

In line with LTS-LCCR 2050, Indonesia considers the importance of just transition for an effective and inclusive transition to low greenhouse gas

emission and climate resilient development. The following efforts will be the critical parts of the transition:

1. addressing challenges faced by sectors, cities and regions in transitioning to low carbon development and in ensuring a decent future for workers affected by the transition.
2. promoting low greenhouse gas emission and sustainable economic activities that will create quality jobs in cities and regions.
3. enhancing capacity of workforces to facilitate access to decent work and quality jobs, taking into account gender and intergenerational equalities, as well as the needs of vulnerable groups.
4. enhancing participatory public dialogue to foster high employment rates, adequate social protection, labour standards and wellbeing of workers and their communities.

Indonesia is currently in the process of preparing policy on just transition that is people-centred covering, among others, the workforce, decent works and quality jobs, gender, intergeneration, women, children, youth, elderly population, people with different abilities, adat communities and local communities, subsistence farmers, artisanal fishermen, informal workers, and people in vulnerable situations, which align with national development priorities.

In Indonesia, social and economic impacts from the transition towards low carbon development are varied among sub-nationals depend on the levels of carbon-intensive industries, different profiles of workers, diverse physical impacts from climate change, varied proportions of vulnerable communities, differing capacities to mitigate risks arising from climate change impacts and to take action in reducing emissions. As climate change is a global issue, Indonesia considers that just transition needs to be addressed not only domestically but also internationally.

II. MITIGATION

According to Indonesia's Second National Communication of 2010, national greenhouse gas (GHG) emissions were estimated to be 1.8 $GtCO_2e$ in 2005. This represents an increase of 0.4 $GtCO_2e$ compared to 2000. Most emissions (63%) are the result of land use change and peat and forest fires, with combustion of fossil fuels contributing approximately 19% of total emissions. Based on Indonesia's First Biennial Update Report (BUR) submitted to UNFCCC in January 2016, national greenhouse gas (GHG) emissions was 1.453 $GtCO_2e$ in 2012 which represent an increase of 0.452 $GtCO_2e$ from 2000 emissions. The main contributing sectors were LUCF including peat fires (47.8%) and energy (34.9%). The 2nd BUR reported a slight increase in emission level to 1.457 $GtCO_2e$ in 2016, which was dominated by emissions from LUCF including peat fires (43.59%) and energy (36.91%), respectively. The 3rd BUR reported increase in emission level to 1.845 $GtCO_2e$ in 2019, which was dominated by emissions from LUCF including peat fires (50.13%) followed by energy (34.49%), waste (6.52%) and IPPU (3.15%). The First BTR reported decrease in emission level to 1.383 $GtCO_2e$ in 2022, which was dominated by emissions from energy sector (69.01%) and LUCF including peat fires (22.58%).

Post 2020, Indonesia envisions a progression beyond its existing commitment to emission reductions. Based on the country's emissions level assessment in Third National Communication (TNC), Indonesia has set unconditional reduction target of 29% and conditional reduction target up to 41% of the Business as Usual scenario by 2030. In 2022 Indonesia has increased ambitions through Enhanced NDC for unconditional target to 31.89% and conditional target to 43.20% against Business as Usual in 2030. These targets in emission reduction are considered an ambitious step, taking into consideration its development challenges in eradicating poverty, as well as creating a better quality of life for its citizens as stipulated by 1945 Indonesia Constitution. Indonesia will continue to intensify the efforts to reduce emissions, of which the biggest contribution comes from energy and Forest and Other Land Use (FOLU) sectors.

In FOLU sector Indonesia has set up an ambitious target by 2030 in peat lands restoration around 2 million ha and rehabilitation of degraded land of 8.3 million ha. Indonesia will continue to work on Article 5 of the Paris Agreement that sends clear political signal on the recognition of the roles of forest and REDD+, in which remains as an important component of the NDC target from land use sector. Existing COP decisions have provided sufficient guidance to implement and support REDD+ implementation. As policy

approaches and positive incentives, REDD+ should be able to support the achievement of Indonesia's emission reduction target in FOLU sector.

Indonesia has gradually progressed in REDD+ implementation from readiness, transition, and has entered the full implementation for some years. REDD+ National Strategy guides the implementation of REDD+ in the context of achieving NDC target and FOLU net-sink 2030, with intended users both national stakeholders as well as international partners supporting REDD+, taking into account relevant COP decisions on REDD+ (including Warsaw Framework) and the Paris Agreement. With this Strategy, it is expected that REDD+ implementation will be able to generate both national and global benefits. Furthermore, REDD+ should also be used as a vehicle to safeguard the consistency among climate-related initiatives within the sector and with other related sectors.

As the guidance for both national stakeholders and international partners providing REDD+ supports, the National Strategy consists of substantive elements from historical background, vision and missions to be achieved, strategy pillars and directions for the strategy implementation. The strategy pillars which comprise of strengthening REDD+ architecture and institution, managing REDD+ implementation, paradigm shift, and stakeholder engagement and benefit sharing, are the basis for determining directions for the strategy implementation. Furthermore, in order to value non-carbon benefits of REDD+, Indonesia has developed 'A guidance for assessing non-carbon benefits (NCB) from REDD+ implementation'.

The First Forest Reference Emission Level (FREL) for REDD+ was submitted to the UNFCCC Secretariat in December 2015, covering deforestation and forest degradation and peat decomposition. The FREL was set at 0.568 $GtCO_2e\ yr.^{-1}$ (AGB/Above Ground Biomass), using reference period of 1990-2012 and is used as the benchmark against actual emission starting from 2013 to 2020. These figures should be used as benchmark for evaluating REDD+ performance during the implementation period (up to 2020). The 2nd FREL/FRL was submitted in January 2022, covering deforestation, forest degradation, enhancement of forest carbon stock, peat decomposition, and forest and peatland fires. The carbon pools cover: above ground biomass, below ground biomass, non-CO_2 gases, soil carbon in peat decomposition, mangrove conversion, and peat fires. The FRL was set at 0.264 $GtCO_2e\ yr^{-1}$ using reference period of 2006-2020 and is used as the benchmark against actual emission in 2021-2030. These figures will be used as benchmark for evaluating REDD+ performance during the implementation period up to 2030.

FOLU Net Sink 2030 target will be achieved through the following policy measures: reducing emissions from deforestation and forest degradation, increasing carbon sequestration capacity of natural forests, increasing carbon sequestration of land systems, reducing emissions from fires and peat decomposition, law enforcement, and provision of economic incentives and financial mechanisms.

In energy sector, Indonesia has embarked on a mixed energy use policy, that promote decarbonization. Indonesia has also established the development of clean energy sources as a national policy directive. Collectively, these policies will eventually put Indonesia on the path to decarbonization. Draft of Government Regulation on National Energy Policy as an update to the Government Regulation No. 79 Year 2014, set out the ambition to transform by 2030, 2040 and 2060, the primary energy supply mix with shares of new and renewable energy as follows: (i)19% - 23% in 2030, (ii) 36% - 40% in 2040, and (iii) 70% - 72% in 2060.

As the 14th largest economy, Indonesia is one of the pioneer countries for fossil fuel subsidy reform policy. It has succeeded in removing fossil fuel subsidies to create fiscal space for education, health, social assistance and infrastructure, including renewable energy projects and public transports.

Government Regulation No. 33 Year 2023 concerning Energy Conservation, represents a concrete step taken by the government to regulate the efficient and rational use of energy resources, energy sources, and energy usage. This regulation establishes various programmes and mechanisms to promote the implementation of energy conservation across different sectors (energy provider, industrial, transportation, building, and household). The Regulation also mandates the implementation of energy management in certain threshold of energy users and the implementation of minimum energy performance standards (MEPS) and energy efficiency labelling of appliances. This Regulation aims to encourage public and private sector participation in upscaling the implementation of energy conservation. Indonesia has enacted the Presidential Regulation No. 112 of 2022 on the Acceleration of Renewable Energy Development for Electricity Supply. It serves as a regulatory framework for attracting investment and accelerating the achievement of renewable energy shares targets in the national energy mix, including the transition in power sector, in accordance with the Draft of National Energy Policy, the National Electricity Plan (RUKN) 2025, and the reduction of greenhouse gas emissions.

In the transport sub-sector, Indonesia has stipulated a national mandatory biodiesel policy of B20 (a fuel blend containing 20% biodiesel and 80% petroleum diesel) and enhance it to B30 in 2020 — ten-years earlier than 1st NDC target. Moving forward, the Government has launched a more ambitious biofuel program by implementing B40 in 2025.

With regard to reduce its dependency towards oil and gas imports, Indonesia is developing new refineries to upscale production as well as green refineries to produce various drop-in green fuels from bio-resources and partly mixed with existing fuels in order to increase biofuel content and reduce fossil fuel consumption.

As part of the transformation towards sustainable energy transition, Indonesia has put into effect the Presidential Decree No 79 Year 2023 on Amendments to Presidential Regulation No 55 Year 2019 on Acceleration of the Battery Electric Vehicle Programme for Road Transportation

In order to provide guidance for industries, Act No. 3 Year 2014 regarding Industry development, among others, is to achieve self-sufficient, competitive and green industry. In order to implement this Act, Minister of Industry Regulation No. 51 Year 2015 regarding Green Industry outlines standard for raw material, energy, production process, product, business management, waste management and other aspects to develop green industry that has sustainable, efficient and effective use of resources in its production process to balance between industrial development and environment.

The Government of Indonesia is committed to develop a comprehensive strategy on waste management to improve policy and institutional capacity at the local level, enhance management capacity of urban solid and waste water, reduce landfill waste by promoting the “Reduce, Reuse, Recycle” and circular economy approaches, and the utilisation of waste and garbage into energy production. The Government of Indonesia is committed to further reduce emissions from the waste sector by 2020 and beyond, through comprehensive and coherent policy development, institutional strengthening, improved financial and funding mechanisms, technology innovation, and socio-cultural approaches.

Indonesia’s current policy on municipal waste management has been constituted by Presidential Decree No. 97 Year 2017 on National Policy and Strategy on Solid Waste Management, which promulgated its policies, strategies, programmes, and waste reduction target by 2025, as well as under the Presidential Regulation No. 35 Year 2018 on Acceleration of Construction of Thermal Generation Facilities for Converting Waste into Electricity Energy with Environmental Sound Technology.

Minister of Environment and Forestry Decree No. 842 Year 2024 regarding Operational Plan of Indonesia's Zero Waste Zero Emission in Climate Change has targeted to achieve zero waste in 2040 and zero emission in 2050 by landfill mining from 2025, zero open burning from 2030, full implementation of 3R (Reduce, Reuse, Recycle) and circular economy in municipal solid waste, no new landfill operation from 2030 and no landfill operation from 2040 by applying waste-to-energy technology, recycling of waste paper. In domestic liquid waste, centralised wastewater treatment plant (WWTP) will be operationalised and sludge from septic tanks will be treated in centralised wastewater treatment plant (IPLT). Communal WWTP will be equipped with bio-digester for flaring gas utilisation. In industry, sludge from WWTP will be used as alternative raw material, alternative fuel and methane capture for alternative electricity.

Mitigation actions in industrial solid waste management include utilisation of WWTP sludge and industrial solid waste through composting, reuse as raw material and use as energy. In industrial liquid waste management, mitigation actions include wastewater treatment in palm oil, pulp and paper, fruits/vegetables and juices processing, and other industries and to implement methane capture and utilisation (biogas).

Along with the global research progress on the role of ocean in climate change mitigation, research on this area has been initiated in Indonesia, including blue carbon (marine ecosystem consisting of mangroves and seagrass meadows). Mangrove has been included in the national GHGs inventory under wetland category as well as in the establishment of Forest Reference Emission Level (FREL) for REDD+ and so does in the estimation of REDD+ results (LTS-LCCR 2050). The Government of Indonesia has developed an Ocean Accounting framework that integrates comprehensive data on marine and coastal ecosystems.

On seagrass meadow, as guided by Government Regulation No. 32 of 2019 on Marine Spatial Planning supports the advancement of sustainable marine space utilization for blue carbon reserves and conservation, the government is currently in the process of updating seagrass meadow national map, develop methodology for GHG estimation and identify mitigation actions potential for integrating seagrass meadow into future NDC. Some related regulations are already in place, for examples Presidential Regulation No. 121 year 2012 regarding Rehabilitation of Coastal Areas and Small islands and Minister of Marine Affairs and Fisheries Regulation No. 47 year 2016 regarding Utilisation of Aquatic Conservation Areas. Furthermore, two other Ministerial Regulations were also enacted, namely the Minister of Marine

Affairs and Fisheries Decree No. 52 year 2024 on the Climate Change Mitigation Roadmap for the Marine and Fisheries Sector and the Minister of Marine Affairs and Fisheries Regulation No. 1 year 2025 on the Governance of Carbon Economic Value Implementation in the Marine Sector.

Indonesia is also working on expansion of marine conservation in marine protected area and the use of Marine Spatial Planning for management of marine, coastal and small islands through the following strategies : (i) strengthening regulations for the protection of blue carbon reserve areas; (ii) allocating space to maintain/increase blue carbon reservoir; (iii) improving the quality of blue carbon reserve areas; and (iv) strengthening synergy in blue carbon management of coastal areas and small islands.

III. ADAPTATION

Climate change presents significant risks for Indonesia's natural resources that will, in turn, impact the production and distribution of food, water, and energy. Therefore, the GOI considers climate adaptation and mitigation efforts as an integrated concept that is essential for building resilience in safeguarding food, water and energy resources. The GOI has made significant efforts towards developing and implementing a National Action Plan on Climate Change Adaptation which provides a framework for adaptation initiatives that has been mainstreamed into the National Development Plan.

Indonesia is currently formulating its National Adaptation Plans (NAPs) by taking into consideration of country-driven, gender-responsive, participatory and transparent approaches and community-based programme such as Proklim (Community-based Climate Action) by Ministry of Environment (MoE), Destana (Climate Disaster Resilient Village) by National Disaster Management Agency (BNPB), Kampung Nelayan Modern (Modern Fishermen's Village) and Coastal Resilience Area Development by Ministry of Marine Affairs and Fishery, and Satuan Pendidikan Aman Bencana (Disaster Safe Education Unit) by Ministry of Education and Culture.

The GOI will continue to implement enhanced actions to study and map regional vulnerabilities as the basis data for adaptation information system, and to strengthen institutional capacity and promulgation of climate change sensitive policies and regulations. Development of nationwide climate vulnerability index data information system, built on the existing system known as *SIDIK* (Vulnerability Index Data Information System), which allows public access to the information in the online system, will be strengthened. Likewise, the implementation of guideline for sub-national government to formulate and implement their own sub-national adaptation actions incorporated in the Minister of Environment and Forestry Regulation No. P.12 Year 2024, will be further enforced.

The goal of Indonesia's climate change adaptation is to reduce risks, enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change in all development sectors. This goal will be achieved through inter alia, enhanced climate literacy, local capacity strengthening, improved knowledge management, convergent policy on climate change adaptation and disaster risks reduction, and application of adaptive technology. Indonesia has developed multi hazard early warning systems namely BMKG *Signature* and Disaster Prevention Dashboard under BNPB. In addition, BMKG has developed climate information, impact-based forecasts

and water resource data centres.

In achieving the adaptation goal, Indonesia focuses on three areas of resilience, namely: economic resilience, social and livelihood resilience, and ecosystem and landscape resilience.

These three areas of resilience have been elaborated in element of adaptation in the NDC which is operationally prioritised into several fields, namely food, water, energy, health, and ecosystems, are in line with Asta Cita, particularly Priority Programme 2. For this reason, the enabling conditions will be strengthened which include: policy instruments for climate change adaptation and disaster risk reduction; integration into development planning and financial mechanisms; improved climate literacy on vulnerability and risk; landscape-based approaches, such as spatial planning, investment; strengthening local capacity on best practices; improved knowledge management systems, including reporting, monitoring and evaluation (MRV); stakeholder participation; and application of adaptive technology.

Referring to Article 7 of the Paris Agreement, the Global Goal on Adaptation (GGA) of enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal, Indonesia has developed SIDIK (Vulnerability Index Data Information System) as a tool for adaptation planning processes. SIDIK shows two of the three elements of the GGA, namely adaptive capacity and level of vulnerability. It is used as one of the considerations in strengthening climate resilience. SIDIK provides information on vulnerability based-on administrative areas as input in determining appropriate adaptation policies, programmes and activities (adequate adaptation responses). SIDIK helps integrate climate change adaptation into development planning so that it is oriented towards increasing adaptive capacity and resilience, and reducing vulnerability. Other tools that have been developed for similar purposes are InaRisk managed by the National Disaster Management Agency and APIK (Adaptation of Climate Change on Health) operated by the Ministry of Health.

Indonesia translates the mandate of the Paris Agreement and its related decisions on non-party stakeholders' engagement into the national context through joint adaptation and mitigation programme (Climate Village Programme/ProKlim). ProKlim has been able to assess three adaptation aspects namely identification of needs, monitoring implementation process, and assessment of the effectiveness of adaptation.

ProKlim was launched in 2012 and has been transformed into a national movement since 2016. The programme encourages and facilitates active participation of multi-stakeholders, collaboration and partnership among governments, local communities, local businesses, NGOs, private sectors, academia and financial institutions to increase community resilience and reduce GHG emissions.

PROKLIM and other community-based or village-based initiatives can be strong vehicles for strengthening village economy and increasing community welfare through village-based enterprise such as *Koperasi Merah Putih.* To date, there have been 8,000 *Koperasi Merah Putih* established nationwide.

Indonesia has experienced devastating extreme climate events and natural disasters that led to loss and damage. Indonesia will identify research related needs and gaps on loss and damage, particularly in relation to slow onset events (such as the effect of sea level rise and coastal inundation to marine and fishery resources) as well as impacts of climate extreme events such as cyclones on natural systems and biodiversity loss.

Indonesia commitment under Convention on Biological Diversity (CBD), Convention to Combat Land Degradation and Desertification (UNCCD), RAMSAR convention, and Sendai Framework on Disaster Risk Reduction (SFDRR), as well as Sustainable Development Goals (SDGs) were considered to have significant potential for synergy with NDC – adaptation, for example:

a) increasing conservation areas under CBD commitment has a strong linkage with adaptation efforts particularly in achieving ecosystem and landscape resilience which will affect positively to economic resilience and social and livelihood resilience.
b) implementation of UNCCD 2018-2030 Strategic Framework that by 2030 combat desertification, restore degraded land and soil including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world and other interrelated SDGs, are closely linked with adaptation efforts in achieving social and livelihood, and positively affect economic resilience and ecosystem and landscape resilience.
c) RAMSAR convention has a strong connection with adaptation in terms of conserving and managing wetland as well as addressing the drivers of wetland loss and degradation.
d) implementation of SFDRR has strong synergy with adaptation efforts in reduction of risks and loss caused by natural disasters, through enhanced climate literacy, risk management, and disaster preparedness.

e) As the 13th goal of SDGs, implementation of climate change convention (from UNFCCC to the Paris Agreement) address all aspects of the SDGs.

The key programmes and strategy to achieve adaptation goals in NDC are elaborated into actions which contain a high national dimension, have strong linkages with international conventions/agreements which open opportunity for Indonesia to build synergy between the implementation of the Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC) and the above conventions/ agreements. Strengthening enabling conditions which is carried out based on capacity and needs referring to key programmes, strategies and actions for each area of resilience have been identified and reflected in Annex 2. In general, the key programmes, strategies and actions in Annex 2 are aimed at:

a. Reducing drivers of vulnerability to climate change impacts,
b. Responding to climate change impacts and managing risks,
c. Enhancing capacity of communities and sustainability of ecosystem services,
d. Enhancing engagement of stakeholders at all levels in building climate resilience.

In order to increase understanding on the integration of climate change adaptation and mitigation actions, Indonesia will begin to identify climate change adaptation actions that generate co-benefit of reducing greenhouse gas emissions, supported by necessary research and piloting.

IV. INFORMATION TO FACILITATE CLARITY, TRANSPARENCY AND UNDERSTANDING

4.1 Quantifiable Information on the Reference Point and Time Frames and/or Periods for Implementation

Level of Emission 2019[2]	:	1,145,037 Gg CO_2e (GHGs inventory-based net emission in 2019, contributed by five sector categories, namely: Energy, IPPU, Waste, Agriculture, and FOLU)[3].
Emission projection scenarios	:	Three scenarios are used for emission projection, namely: CPOS or CM1 of ENDC, LCCP_L, and LCCP_H. Using the same economic growth assumption in the Long-term National Development Plan (RPJPN) 2025-2045, CPOS and LCCP_L scenarios apply economic growth of 6.0% in 2030 and 6.7% in 2035. Whereas LCCP_H scenario applies higher economic growth assumption of 7.0% in 2030 and 8.3% in 2035, with aspiration on economic growth of 8.0% in 2029 as reflected in the

[2] Indonesia's SNDC uses different reference point from the one used in ENDC. The ENDC used projected BAU 2030 from the base-year 2010 with Unconditional (CM1) and Conditional (CM2) emission reduction targets for the five sector categories. The SNDC uses reference year 2019 with projected emission from each sector category and net emission for each scenario, as reflected in Table 1, with reference to Dec.1/CMA 5 (the outcome of the first global stocktake) on tracking contribution to the collective progress towards achieving the purpose and long-term goals of the Paris Agreement. Indonesia refers to the year 2019 because it reflects the most current methodologies and GHG inventory pre-COVID-19 to better inform Indonesia's actual state.

[3] Contribution of each sector category to the 2019 net GHGs emission as reflected in Table 1 can be explained as follows : (i) energy sector used GHGs inventory data in BTR-1, (ii) IPPU also used GHGs inventory data in BTR-1 with an additional GHG gas included HFCs, (iii) emission from waste sector is consistent with NZEW scenario, while (iv) the emissions for the remaining two sectors (Agriculture sector and FOLU sector) were calculated using the most recent refined data on land-use and land-use changes with the most suitable methodological approach.

National Medium-term Development Plan (RPJMN) 2025-2029. More explanation on the three emission projection scenarios as follow:

: CPOS: Projection of emission under CPOS (Current Policy Scenario) or CM1 of ENDC as scenario without additional measures. In this scenario, mitigation efforts are in accordance with domestic resource capabilities, following historical trends 2011-2020 period which increases during NDC implementation in 2021-2030 period and is extended to 2035. Economic growth is assumed at 6.00% in 2030 and 6.70% in 2035.

LCCP_L: Projection of emission under LCCP is in line with 1.5°C as scenario with additional measures to achieve the NZE target in 2060 or sooner, with economic growth is assumed to reach 6.0% in 2030 and 6.7% in 2035. In this scenario, mitigation actions increase significantly with the assumption of funding, technology and capacity building support from international sources are available.

LCCP_H: Same as LCCP_L, projection of emission under LCCP_H is in line with 1.5°C as scenario with additional measures to achieve the NZE target in 2060 or sooner with higher economic growth assumption of 7.0% in 2030 and 8.3% in 2035. While LCCP_L scenario assumes gradual increase in economic growth before 2030, the LCCP_H assumes high economic growth of 8% in 2029, 7.0% in 2030 and 8.3% in 2035. In order to maintain the peaking of emission in 2030, this scenario requires significant increase of mitigation actions even before 2030. The mitigation actions continue to increase during the SNDC period with the assumption of funding, technology and capacity building supports from international sources are available.

Start date : 2031
End date : 2035

National circumstances that allow update : The value of the reference years will be updated whenever there are change in the GWP values used, inclusion of new source categories in the inventory,

the emission of the reference year	update of the emission factors which use country-specific data, and improvement in method used in estimating the emission (increase to higher Tier).

4.2 Scope and Coverage[4]

Type	:	Level of Emission relative to reference point of year 2019.
Scope	:	Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O), Hydrofluorocarbon (HFC).
Coverage	:	Economy-wide and nation-wide with a landscape and ecosystem management approaches in both adaptation and mitigation efforts by building and strengthening sub-national jurisdictional capacity.
Source of information	:	Emission in reference year is estimated emission from the GHG Inventory using 2006 IPCC-GL.

4.3 Planning Processes

The Government of Indonesia has demonstrated its strong commitment to institutional development by establishing the Directorate General of Climate Change, under the Ministry of Environment and Forestry. Established by Presidential Regulation No. 16 Year 2015, the Directorate General serves as the National Focal Point for the United Nations Framework Convention on Climate Change to effectively facilitate ongoing relevant programmes and processes being implemented by variety of government sectors and stakeholders. Under new government, this mandate has been handed over to Ministry of Environment. Since climate change has local to national and international dimensions, coordination and synergy will continuously be

[4] Scope and Coverage for ENDC: (i) Type: Emission reductions relative to BAU; (ii) Scope: Carbon Dioxide (CO_2), Methane (CH_4), Nitrous Oxide (N_2O); (iii) Coverage: Nation-wide.

enhanced among the Ministry of Environment, National Development Planning Agency (BAPPENAS) and Ministry of Finance in the context of climate change, national development and finance, Ministry of Foreign Affairs in the context of climate change and international negotiation, line ministries, and Ministry of Home Affairs in the context of NDC implementation by sub-national actors.

In the preparation of the Second NDC, the GOI has conducted consultations with various stakeholders representing Ministries and other government institutions, academia, scientists, private sector, and civil society organizations; these consultations have included workshops and consultations organized at both the national and provincial levels, as well as bilateral meetings with key sectors

The preparation of the Second NDC has taken into account the Sustainable Development Goals (SDGs) particularly on: (i) taking urgent action to combat climate change and its impacts, (ii) promoting food security and sustainable agriculture, (iii) achieving gender equality, (iv) ensuring the availability and sustainable management of water, (v) access to affordable, reliable, and renewable energy for all, (vi) sustained, inclusive and sustainable economic growth, (vii) resilient infrastructure, (viii) sustainable consumption and production patterns, (ix) conservation and sustainable use of the oceans, seas and marine resources, (x) protecting, restoring and promoting sustainable use of terrestrial ecosystems, (xi) sustainably managing forests, (xii) combating desertification, and (xiii) halting and reversing land degradation and biodiversity loss.

4.4 Assumptions and Methodological Approaches[5]

Metric Applied	:	Global Warming Potential (GWP) on a 100-year timescale in accordance with the IPCC's 5th Assessment Report.
Methodology for Estimating Emissions	:	Models for estimating emission: - Dashboard of AFOLU for Land-Based Sector; - Back-casting approach using ExSS (Extended Snapshot) and End-use Model for energy and

[5] Assumption and Methodological Approaches used in ENDC: (i) Metric Applied: Global Warming Potential (GWP) on a 100-year timescale in accordance with the IPCC's 2nd Assessment Report; (ii) Coverage of Emission Reduction: Target for emission reduction for five sector categories namely Energy, IPPU, Waste, Agriculture, and Forest and other Land Use (FOLU), relative to BAU baseline in 2030.

IPPU;

- Growth model for waste sector.

Coverage of Emission Reduction : Target for emissions reduction covers five sectors namely Energy, IPPU, Waste, Agriculture, and Forest and other Land Use (FOLU), relative to reference year of 2019. In 2030, level of emission under CPOS will be 55,5% above the reference emission, under LCCP_L, and LCCP_H emission level will be 17.5% and 30.3% above the reference year respectively. In 2035, the level of emission under CPOS will be 56.1% above the reference year and under LCCP_L, and LCCP_H will be 9.8% and 30.0% above the reference year respectively. With additional measures, the peak of national emission will occur in 2030.

With the reference year of 2019 and assumption used for projection scenario 2025-2035 and alignment with Net-Zero Emission target in 2060 or sooner (see Figure 1), the projected level of emission in 2030 and 2035 under no additional measures or CM1 of ENDC, low and high economic growth in comparison to the level of emission in 2019, are as in the Table 1 with more elaborated mitigation measures for each sector can be seen in the Annex 1.

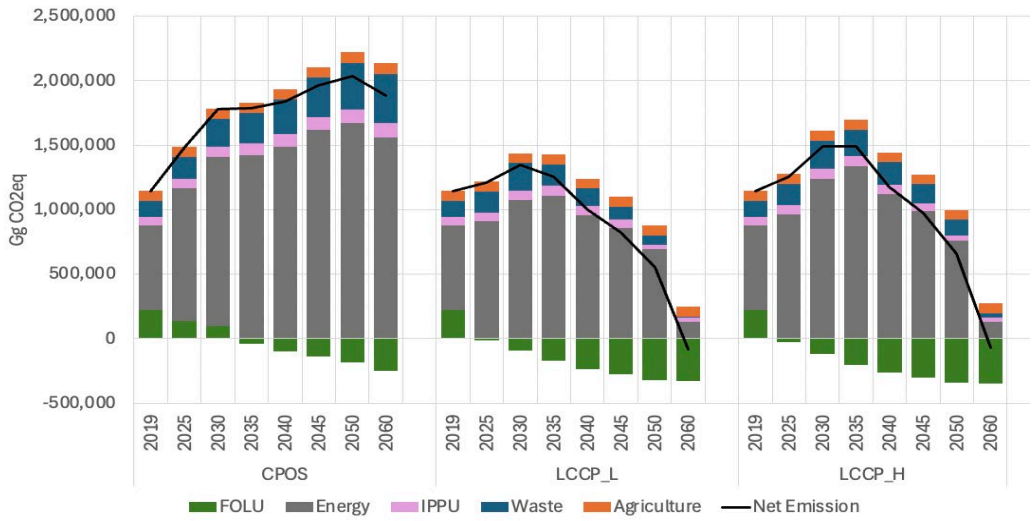

Figure 1. Projected Emission from Each Sector Category, aligned with LTS-LCCR 2050 and NZE 2060.

Table 1. Reference Point and Projected Emission from Each Sector Category and Net Emission for Each Scenario (Gg CO_2e)

Scenario	Sector	2019	2025	2030	2035	2060
CPOS	Energy	655,568	1,032,127	1,310,969	1,419,126	1,561,764
	IPPU	63,729	74,658	79,465	93,580	109,397
	Waste	124,360	164,933	215,924	238,017	379,674
	Agriculture	79,996	79,572	79,457	79,634	83,504
	FOLU	221,384	133,675	94,635	-43,354	-247,434
	Net Emission	1,145,037	1,484,966	1,780,450	1,787,004	1,886,905

Scenario	Sector	2019	2025	2030	2035	2060
LCCP_L	Energy	655,568	909,629	1,071,841	1,109,800	129,000
	IPPU	63,729	68,042	74,147	73,115	34,243
	Waste	124,360	164,905	215,750	168,477	9,069
	Agriculture	79,996	77,843	76,193	74,738	76,503
	FOLU	221,384	-12,886	-92,224	-168,412	-329,703
	Net Emission	1,145,037	1,207,533	1,345,707	1,257,717	-80,889

Scenario	Sector	2019	2025	2030	2035	2060
LCCP_H	Energy	655,568	964,610	1,239,463	1,336,312	129,000
	IPPU	63,729	70,656	78,960	78,304	34,375
	Waste	124,360	164,540	215,928	205,695	34,705
	Agriculture	79,996	77,570	75,708	75,452	78,307
	FOLU	221,384	-25,729	-118,585	-206,897	-347,540
	Net Emission	1,145,037	1,251,648	1,491,474	1,488,866	-71,154

4.5 Fair and Ambitious in the Light of National Circumstances

Indonesia GDP growth rate has slowed down between 2010-2015, from 6.2-6.5% per annum to only 4.0% (first quarter 2015). Indonesia's population has increased at an average rate of 1.49% during the period of 2000-2010, posing challenges for Indonesia in fulfilling energy demand, ensuring food security, and fulfilling livelihood needs. At the same time, poverty alleviation remains a

challenge for Indonesia, with 10.96% of the population living in poverty in 2014, and the unemployment rate at 5.9%. The above data was used as a basis in setting up Indonesia's target for reducing greenhouse gas emission under the unconditional and conditional scenarios of First NDC (CM1 and CM2 scenarios).

There has been an increase in the average growth rate of GDP during the period of 2015- 2019 of 5.03% compared to 4.0 % at the first quarter 2015, with the highest growth rate of 5.17% in 2018 and the lowest one of 4.88% in 2015. The 2019 GDP growth rate was also high (5.02%) although slightly lower than the growth rate in 2018. However, the COVID-19 pandemic which has brought about a global crisis not only on health, but also on social and economic aspects, has negatively affected Indonesia's economy. During the COVID-19 pandemic, Indonesia experienced economic contraction with a GDP growth rate of minus 5.3% in the second quarter 2020.

Indonesia recovers its economic growth to 5.05 % in 2024. It is projected that the economic growth will reach 6.0% in 2030 and 6.7% in 2035 for the LCCP_L scenario, and 7.0% in 2030 and 8.3% in 2035 for the LCCP_H scenario with aspiration of 8 % economic growth in 2029.

Indonesia is committed to transforming its development pathway towards low-carbon and climate resilience, aiming for a more ambitious climate target. This commitment stands even as the projected economic growth for the Second NOC period (2031-2035) is higher than that of the previous period (Enhanced NDC).

The fair and ambitious scenario under national circumstances indicates that the climate targets in the 2031-2035 SNDC are more ambitious than those in the previous period of the ENDC. This is demonstrated by the absolute emissions figures for 2030 under the SNDC's LCCP_L scenario (1,345,707 GgCO2e) and LCCP_H scenario (1,491,474 GgCO2e), which are lower than the absolute emissions figure of 1,632,000 GgCO2e under the CM2 scenario in the Enhanced NDC document.

This will ensure SNDC is consistent with the Paris Agreement to achieve 1.5^0 C target (article 3), ensuring no backsliding in terms of the climate target (article 3) and the Indonesia Long Term Strategy (article 4.19).

4.6. Indonesia's NDC Contributes towards Achieving the Objective of the Convention as Set Out in Its Article 2

Indonesia's NDC will contribute towards achieving the objective of the Convention as set out in its Article 2 through its climate change related policies

by reducing greenhouse gas emission and enhancing climate resilience which will lead to sustainable economic development.

Climate change policies will align with sustainable economic development through reduced GHGs emission and enhanced climate resilience. Sustainable economic development needs a conducive environment for investment, fair international trade, and industrial-based economic growth. Climate change policies require low carbon and climate resilient development, supported by domestic and international resources.

Under the LCCP scenario, Indonesia is projected to achieve the peaking of national GHG emIssIons by 2030 primarily due to a Net-Sink in the Forestry and Other Land Use (FOLU) sector. Subsequently, the GHG emissions are expected to steadily decrease towards Net Zero by 2060

Paris Agreement target (LCCP), Indonesia foresees reaching the peaking of GHGs emissions with net sink in FOLU sector in 2030, and to progress towards net-zero emission in 2060 or sooner.

In FOLU sector, Indonesia noted the importance of including harvested wood products (HWP) in the reporting of NDC achievement as reflected in the Modalities, Procedures and Guidelines (MPGs) for the preparation of Biennial Transparency Report (BTR). In this regard, Indonesia foresees the importance of managing a complex inter-ministerial coordination for HWP data collection and management.

V. NATIONAL REGISTRY SYSTEM AS THE BACKBONE OF ENHANCED TRANSPARENCY FRAMEWORK

As part of the implementation of Article 13 of the Paris Agreement, Indonesia has an Integrated National Transparency framework, through National Registry System or *Sistem Registry Nasional* (SRN) for mitigation, adaptation and means of implementation both from national and international sources which are Measurable, Reportable, and Verifiable (MRV), which integrates various systems among others : (a) National GHGs Inventory System (SIGN-SMART); (b) Safeguards Information System for REDD+ (SIS-REDD+); (c) Information Systems on vulnerability (SIDIK), (d) joint adaptation and mitigation at the village level through Program Kampung Iklim or ProKlim.

The SRN was established in 2016 as a web-based system for managing data and information on mitigation and adaptation, carbon pricing and means of implementation (finance, capacity building, and technology transfer and development). Public access through website allows stakeholders to obtain data and information on mitigation, adaptation and means of implementation registered in the system.

The SRN has the following functions:

a) registration of mitigation and adaptation actions, achievement and resources to support actions (finance, capacity, technology);
b) tracking progress of NDC implementation;
c) provision of information for awarding government recognition to mitigation and adaptation contribution of various actors;
d) provision of public access to data and information on actions and resources;
e) data base management to support policy analysis and formulation;
f) avoiding double counting of mitigation achievement and safeguarding carbon transfer.

Indonesia recognizes the need to improve the SRN over time to enable the system optimally functioning to support climate change actions, resource mobilization and the implementation of carbon pricing. Hence, Indonesia will use domestic funding and mobilize international funding sources, including opportunities under capacity building initiatives for transparency framework mandated by Decision.1/CP.21 and the Paris Agreement.

As part of implementation strategy of NDC mandated by Presidential Regulation No. 110 year 2025, the SRN will play a strategic role in the implementation of One GHGs Data Policy and the implementation of carbon

pricing as well as other strategies. Therefore, SRN will be further enhanced through:

i. Reviewing SRN Road Map and develop strategy for enhancing SRN to progress towards SRN full functioning by 2030;
ii. Improving the registration process and reporting mechanisms of climate actions and resources;
iii. Equip SRN with reporting format for Article 6 implementation to accommodate the needs of agreed electronic format by UNFCCC; Strengthening implementation of One GHGs Data Policy by integrating systems related to climate change.
iv. Strengthening implementation of One GHGs Data Policy by integrating systems related to to climate change.

The SRN enhancement will take into account experience and lessons drawn from operationalization of SRN, and international development in transparency framework.

VI. MEANS OF IMPLEMENTATION

Article 3 of the Paris Agreement stated that as nationally determined contributions to the global response to climate change, all Parties are to undertake and communicate ambitious efforts as defined in Articles 4, 7, 9, 10, 11 and 13 with the view to achieving the purpose of this Agreement as set out in Article 2. The efforts of all Parties will represent a progression over time, while recognizing the need to support developing country Parties for the effective implementation of this Agreement.

Article 9, 10 and 11 of the Paris Agreement specifically refers to Means of Implementation. The key elements of the Means of Implementation -- finance, technology development and transfer, and capacity building -- are integral parts of the Agreement. To enhance the effectiveness and efficiency of means of implementation, finance, technology and capacity building should be coherently provided through cooperative and coordinated linkages among relevant entities.

In order to enable Indonesia increase ambition of mitigation and adaptation and to align NDC target with LTS-LCCR 2050, there is necessity of increasing support on climate finance, technology development and transfer, and capacity building including for the implementation of just transition, NAPs, global goal on adaptation, averting, minimizing, and addressing loss and damage, and enhancement of National Registry System (SRN).

In the First BTR Indonesia reported that from 2021 and 2022, Indonesia received USD 1,782.31 million financial support for programmes addressing mitigation, adaptation, and cross-cutting sectors. Of this amount, 46% (USD 732.12 million for adaptation, USD 82.83 million for mitigation, and USD 9.89 million for cross-cutting initiatives) was directly aligned with achieving Enhanced NDC targets. The remaining 54% (USD 929.71 million for adaptation and USD 27.76 million for mitigation) was categorized as "may lead" to contributing toward Enhanced NDC targets. Some supports for technology and capacity building activities have been included in financial support.

6.1 Finance

Consistent with Article 9 of the Paris Agreement, developed country parties are requested to provide financial resources to assist mitigation and adaptation in developing countries, and take the lead in mobilizing climate finance from a variety of sources, instruments and channels.

At the national level, Indonesia has progressively institutionalized climate-related expenditures through its Climate Budget Tagging (CBT) system, which initially focused on mitigation in 2016 with IDR 52.42 trillion (USD 3.18 billion) and rose sharply to IDR 85.01 trillion (USD 15.15 billion) in 2017, before expanding to cover both mitigation and adaptation across multiple ministries. Between 2018 and 2024, total allocations reached IDR 523.63 trillion (USD 31.74 billion), averaging IDR 74.8 trillion (USD 4.5 billion) annually, financing a broad range of initiatives from greenhouse gas reduction and climate resilience measures to cross-sectoral programs aimed at strengthening systemic adaptation capacity.

At the sub-national level, provincial governments in Indonesia have increasingly assumed a critical role in advancing climate finance, reflecting the country's gradual shift toward a decentralized model of climate governance. Between 2022 and 2023, their combined expenditures for climate-related initiatives amounted to approximately IDR 47.44 trillion (USD 2.88 billion), signaling not only a significant financial commitment but also a growing recognition that climate action must be embedded within local development agendas. These expenditures have been directed toward diverse programs, ranging from disaster risk reduction and climate-resilient infrastructure to sustainable land use and community-based adaptation projects, thereby complementing national policies with place-specific interventions.

Indonesia has also developed innovative fiscal instruments, in 2018-2023 namely Global Green Sukuk of USD 6 billion, domestic retail green sukuk of USD 2.09 billion and project-based green sukuk of USD 1.5 billion, million, Blue Bond of JPY 20.7 billion and SDG Bond of USD 1.26 billion. The Green sukuk fund has been distributed for wastewater management (73.99%), climate change resilience (24.78%), sustainable transportation (0.5%), natural resource management (0.43%), green building (0.17%), new and renewable energy (0.07%) and energy efficiency (0.06%).

Indonesia also receives international support through multilateral channels (such as GEF, FCPF Readiness Fund, FIP, UNREDD, FCPF Carbon Fund, BioCarbon Fund, GCF, and other financial institutions) and bilateral channels.

In order to strengthen climate financing, Indonesia has established Environment Fund Management Agency (IEF/BPDLH). BPDLH is mandated to manage and mobilize finance for the environment and allowed to mobilize climate finance from various sources both national and international sources, private and public sources, bilateral and multilateral channels. Since its establishment in October 2019, BPDLH has managed funding around USD 1.72 billion, including reforestation fund from domestic sources about USD 283.9 million (forest levy-revolving fund) and USD 500 million (endowment fund) for disaster pooling fund as well as REDD+ result-based payment of USD 439.8 million, energy sector of USD 1.6 million from international sources, and loan for mangrove of USD 400 million.

Indonesia also implements policies on tax incentives to reduce emissions and promote sustainable development, among others, tax holiday, tax allowance, import duty exemption. From 2019 to 2024, the Government had provided up to IDR 36 trillion for sectors that support climate actions. Indonesia also continues to create enabling environment to mobilise private sector involvement for sustainable development. These efforts including, among others, the establishment of Indonesia's Taxonomy for Sustainable Finance and Sustainable Reporting for financial institutions. Furthermore, on Debt Securities and Sukuk Financing, Financial Services Authority (Otoritas Jasa Keuangan) Regulation No. 18 year 2023 sends clearer signals for private financiers to mainstream sustainability, including climate change related, within their investment coverage, as well as social and sustainability aspects.

Indonesia's Low Carbon Compatible with Paris Agreement (LCCP) Low and High scenarios commitment in achieving the quantified target of GHGs emission reduction reflects the need for domestic and international sources of finance.

Projection of needs as a basis for developing financing strategy for the whole period of NDC implementation remains challenging. For example, Indonesia communicated through its 2nd Biennial Update Report (2nd BUR - 2018) an initial estimated finance needs from 2018-2030 of about USD 247 billion. In 2019, Indonesia carried out another estimation of finance needs of about IDR 4,520 trillion (~ USD 322.86 billion) for the implementation of mitigation actions in the NDC roadmap. The later estimated finance needs covered only mitigation actions (actions which directly generate emission reduction, it has not included the costs for creating enabling environments).

Indonesia's Second NDC will require an estimated total investment of IDR 7,552.5 trillion (USD 472.6 billion) to achieve its climate targets, based on preliminary calculations. This financing need, allocated across four sector categories (energy, agriculture, FOLU, and waste), is likely underestimated,

as it does not yet account for the industrial processes and product use (IPPU) sector.

Constraints have also been faced in estimating support needs, in particular in relation to methodological approaches used to assess finance needs for mitigation and adaptation, data availability and reliability, and diverse perceptions of stakeholders on NDC financing.

Financial needs is required to support the implementation of Indonesia's Second Nationally Determined Contribution as mandated by Article 4.5 and Article 9.1 of the Paris Agreement and takes into account of national circumstances and priorities. With the current trajectory of domestic macroeconomic conditions, Indonesia will require significant international financial and non-financial support as a conditionality to achieving national climate targets in the Second NDC.

Indonesia welcomes bilateral, regional and international cooperation in the NDC implementation as recognized under Article 5 and Article 6 of the Paris Agreement, that facilitate and expedite technology development and transfer, payment for performance, technical cooperation, and access to financial resources to support Indonesia's climate mitigation and adaptation efforts towards a climate resilient future, including for the implementation of Global Goal on Adaptation and averting loss and damage caused by climate change, national action plans on adaptation, sustainable cities, and strengthening national registry system.

Presidential Regulation No. 110 Year 2025 provides guidance on NDC implementation and allows mobilization of finance from both domestic and international sources, including the use of Article 5 and Article 6 of the Paris Agreement to support NDC target achievement. Furthermore, in the effort of ensuring environmental integrity of both compliant and voluntary markets and its national benefits as well as international commitment, Indonesia is in the process of inter-ministerial and multistakeholder consultations on Voluntary Carbon Market (VCM).

Indonesia recognizes that addressing climate change requires not only public sector leadership but also the active participation and strengthening of the private sector as a critical partner in financing the transition toward a low-carbon and climate-resilient economy. To this end, the government has sought to create enabling conditions that encourage private investment in climate-related projects by expanding sustainable financial instruments, improving regulatory certainty, and reducing investment risks through blended finance mechanisms, guarantees, and fiscal incentives.

6.2 Technology Development and Transfer

Indonesia acknowledges the central role of science, innovation, and technology in tackling climate change. Together with human resource development, science and technology advancement has been set as one of the four pillars of “Visi Indonesia 2045”. Climate technology development will be aligned with this vision and guided by Law on National System for Science and Technology (Law No. 11 Year 2019).

Article 10 of the Paris Agreement recognizes the importance of technology for the implementation of mitigation and adaptation, and the needs of developing countries for support, including for strengthening cooperation on technology development and transfer at different stages of the technology cycle.

Needs Assessment is an integral part of technology development and transfer. Indonesia embarked on First Technology Needs Assessment (TNA) in 2010 focusing on mitigation, then followed by the 2nd TNA in 2012 covering both mitigation and adaptation. In 2019, Indonesia developed CBTNA to assess capacity gaps for both mitigation and adaptation, and the need for technology transfer and development including technology related capacity-building.

In 2023, Indonesia identified existing technology related to climate change, gaps and needs as the basis for developing strategy and programme for technology development and transfer. Four following strategies were developed: i) Improving effectiveness of technology development and transfer; ii) Creating enabling environment for technology development and innovation; iii) Strengthening international collaboration on research and technology development; and iv) Building synergy between technology development and transfer (TDT) for climate mitigation and adaptation and TDT towards developed Indonesia (Indonesia Maju) 2045.

The role of endogenous technology, local wisdom and best practices will continue to be strengthened. Indonesia also calls for international support and collaboration in research, development and demonstration (RD & D) of innovative technologies. International support on technology development and transfer will also be directed to address possible risks of the selected technology and constraints in the implementation process of technology transfer and collaboration.

6.3 Capacity Building

Capacity building on climate change has been carried out for many years by government institutions, international organizations, NGOs, and private sectors. Nevertheless, collecting data and information on the areas of capacity building and its progress, experiences and lessons remains challenging, and those gaps and overlaps in capacity building activities have been unavoidable. The main challenges in capacity building, include:

a) Diversity in regional circumstances, progress in development, culture and literacy which need considerable process both in tailoring programme and approach in implementation;
b) Lack of coordination among capacity programmes and activities, including the ones with international supports;
c) Dispersed data and information on capacity building programmes and implementation, and that difficult to draw experiences and lessons as well as gaps and overlaps.

Capacity building programme on climate change will be aligned with Indonesia vision on education which will focus on: (i) human resources development to build strong character, (ii) regulatory reform to increase effectiveness and efficiency of capacity building programmes and activities, (iii) Increase investment in human resource development, including revitalization of vocational education, (iv) creation of employment and business opportunities, and (v) use of technology to increase efficiency in capacity building.

Capacity building programme and activities on climate change is one among a number of approaches to address just transition and decent work issues in mitigation and adaptation, including gender and inter-generational needs as well as the needs of vulnerable groups. A preliminary assessment on capacity building needs was done in 2018-2019 as part of national capacity building and technology needs assessment (CBTNA), which can be enhanced as part of the capacity building road map.

Two interrelated instruments of capacity building will be used to support NDC implementation. The first instrument (General Instrument) will focus on integrating climate change into the national system on education, training, and other forms of capacity building, while the second instrument (Technical Instrument) will focus on capacity building programmes for various actors in mitigation and adaptation.

The General Instrument covers, inter alia, the following efforts:

a) Increase public awareness through outreach and campaign;

b) Improve provision of information accessible for the public with different levels of knowledge on climate change;
c) Enhance stakeholder engagement in climate policy formulation and actions;
d) Enhance collaboration and network at the local, national and international levels.
e) Strengthening the capacity of sub-national governments

The Technical Instrument specifically deals with capacity building programmes for both institutions carrying out capacity building on climate change and actors (state and non-state) implementing climate change mitigation and adaptation both at the national and sub-national levels. Depending on the target groups of capacity building, the programme aims at capacity enhancement at least in planning and implementation of mitigation and adaptation including climate financing strategy, access to finance and technology, GHGs inventory, and MRV of actions and supports or in a broader scope for the implementation of the transparency framework mandated by Article 13 of the Paris Agreement.

Article 11 of the Paris Agreement encourages collaboration in capacity enhancement of developing countries in implementing the agreement, with developed country parties providing support for the capacity building. The Paris Agreement and its relevant decisions also emphasize the needs of developing countries for capacity building in implementing transparency framework. Indonesia will use domestic resources and mobilize international support to enhance its capacity to support NDC implementation, including for further development of the national system on transparency framework and to progress with transformational changes in capacity building.

Indonesia has received support to strengthen institutional capacity to comply with transparency requirements of the Paris Agreement. The support covers 3 following areas: (i) institutional capacity strengthening for climate transparency, (ii) development of robust systems for GHG inventory, MRV of GHG emission reduction, and (iii) strengthened NDC implementation and tracking progress. Since the start of the programme until 2024 there have been 6,825 persons who were engaged in the capacity building, covering 2,834 persons representing party stakeholders and 3,988 persons representing non-party stakeholders, 3,898 persons among them were women.

6.4. Indonesia's Road Map for Means of Implementation

In the effort of strengthening mobilization of resources to support NDC implementation, Indonesia has developed a Road Map of Means of Implementation (MoI) to support ENDC implementation (2021-2030). The Road Map which contains three components (finance, technology, capacity building) provides overview on the status of MoI at the global level (climate negotiation processes) and at the national level, as well as identifies gaps and needs at both levels. Guided by the Theory of Change and taking into account the conditions which were identified under status, gaps and needs for the MoI, the strategies and programmes were determined to reflect the pathways to make the provided and mobilized MoI contribute significantly to the ENDC target achievement. Implementation of this Road Map during this period will shed light on better assessment of the needs for MoI to support the implementation of SNDC (2031-2035).

VII. REVIEW AND ADJUSTMENT

The Second NDC reflects the most recent data and information, analysis, and projection scenarios by the Government of Indonesia. As a developing country, Indonesia will likely experience dynamic changes due to national and global economic changes.

Accordingly, the NDC will be reviewed and adjusted, as necessary, taking into account national circumstances, capacity and capability, and the provisions of the Paris Agreement.

ANNEX 1. MITIGATION

Source of Emissions and Mitigation Measures for all sector categories (Energy, Waste, IPPU, Agriculture, and FOLU)

1. ENERGY

Source of Emissions	Mitigation Measures
Power	Energy efficiency: energy management
	High-efficient and low-emission technology power plant *)
	Renewable energy: Geothermal, Hydro, Solar, Wind, Bioenergy-Biomass and other RE
	Use of low carbon fuels **)
Petroleum refining	Energy efficiency, energy management
Coal processing and upstream oil & gas	Energy efficiency, energy management
Industry manufacture	Energy efficiency: energy management and energy-efficient technology
	Renewable energy in industry
	Use of low-carbon fuels
	Electrification
Transport	Energy efficiency: energy management, energy efficiency in transport facilities and infrastructure, electric vehicles
	Biofuel
	Mass public transportation
	Use of low-carbon fuels
	Renewable energy in transport infrastructure
Buildings	Energy efficiency: energy management and energy-efficient appliances
	Renewable energy in household and commercial buildings ***)
	Use of low carbon emission fuels: city gas
Fugitive	Flaring and venting reduction in upstream oil and gas
	Reduction of fugitive emissions of mineral and coal mining

Note:
*) including the utilisation of super-critical and ultra-supercritical Clean Coal Technology (CCT), but not including CCS/CCUS technology
**) for example, natural gas is used for energy transition
***) for example, solar PV and biogas

2. INDUSTRIAL PROCESS AND PRODUCT USE (IPPU)

Source of Emissions		Mitigation Measures
Industrial Process	Cement Industry	Increase blended cement by increasing the portion of alternative material for reducing clinker to cement ratio
	Ammonia Plant	Projects for ammonia plant revitalisation to reduce natural gas consumption intensity
		Revamping of ammonia plants (increase plant efficiency & reduce IPPU emissions)
		CO_2 utilisation
	Other Industries	Maintain improved plants operation (automation of feeding system / hardware improvement from CWPB to bar-brake tech) for aluminium industry
		Technology improvement and installation of non-selective catalyst reduction (NSCR) for N_2O destruction for nitric acid industry
		Improvement of smelter processes and scrap utilisation for iron and steel industry
Product Uses	F-Gases	Reducing HFC by limiting the number of imports and converting to an alternative refrigerant with a lower GWP level

3. WASTE

Source of Emissions	Mitigation Measures
Domestic Solid Waste	Rehabilitation of 'open dumping landfill' into 'sanitary landfill' equipped with LFG recovery for utilization/energy.
	Composting and 3R paper (reuse/recycle) through various treatment/processing facilities.
	Implementation of: - Waste to energy through PLTSa*; - Solid Recovered Fuels (SRF); - Refuse Derived Fuels (RDF).
	Implementation of municipal waste management, through: - MSW sorting at the sources to facilitate the use of waste for recycled materials or energy in order to avoid landfill disposal (MSW facilities with no emission; - Implementation of practices Black Soldier Fly/Maggot; - MSW pellet for energy; - Other related mitigation measures.
	Landfill Mining
Domestic Liquid Waste	Implementation of domestic liquid waste management through IPAL (communal/ integrated/ centralized/ regional) with lower emission intensity than septic tanks to serve more population.
	Biodigester for domestic liquid waste equipped with methane capture and utilization and other related mitigation measures.
	Implementation of black water treatment facilities (IPLT).
Industrial Waste	Waste Water Treatment Plant (WWTP) Biogas (methane recovery) and other related mitigation measures.
	Waste Water Treatment Plant (WWTP) sludge removal/recovery for utilization (energy or material), and other related mitigation measures.
	Utilization of empty fruit bunch (EFB).

*) PLTSa (*Waste to Energy :* Pembangkit Listrik Tenaga Sampah)

4. AGRICULTURE

Source of Emissions	Mitigation Measures
CH4 Emission from rice cultivation	Use of low emission varieties and implementation of water use efficiency (intermittent irrigation)
CH4 from enteric fermentation	Use of feed supplement for livestock
CH4 from manure management	Use of manure for biogas production
N2O emissions	Increasing use of organic fertiliser to reduce the use of nitrogen fertilisers

5. FORESTRY AND OTHER LAND USE (FOLU)

Source of Emissions	Mitigation Measures
Conversion of forest land to Lands (non-forested): (FL-L)*	Addressing drivers of deforestation through various means e.g: • moratorium on the issuance of new permits for the conversion of primary natural forests and peatlands, • policies for conserving of high conservation value, • strengthening forest management units, • mandatory certification for plantation forest and natural forest, • social forestry, • one map policy, • mandates the protection and restoration of peatland ecosystems, • economic incentives and financial mechanisms.
Degradation of forest land remaining forest land (FL-FL)	Strengthening forest governance through: • implementation of mandatory certification for forest concessionaires (PHPL) to implement sustainable production forest management, • social forestry, • economic incentives and financial mechanisms.
Sink Enhancement in Lands converted to Forest Land (L-FL)	• Land rehabilitation (reforestation and afforestation), • peat restoration through rewetting and revegetation, • mangrove rehabilitation, • establishment of forest plantation in unproductive land.
Sink Enhancement in Crop Land remaining Crop land (CL-CL)	Use of unproductive land for establishment of agriculture plantation
Emission from soil carbon	• Peat restoration through rewetting and revegetation, • Mangrove restoration.
Emission from peat fire	• Peat restoration through rewetting and revegetation

Note: Other indirect measures to reduce deforestation caused by increasing land demand for development include utilizing unproductive or idle land to meet development needs (e.g., for agricultural expansion), improving crop productivity and planting intensity, minimizing the conversion of productive agricultural land to non-agricultural uses, and reducing food loss and waste

ANNEX 2. ADAPTATION

As a follow-up to achieving economic, social and livelihood, ecosystem and landscape resilience, Indonesia is updating the direction of action in the ENDC.

Economic Resilience

Climate change has an impact on increasing extreme climate events and natural disasters that lead to loss and damage to priority sectors (food, air, energy, health, ecosystems, and disasters). These losses and damages can reduce Indonesia's GDP and affect people's welfare. Therefore, Indonesia plans to build economic resilience through the following key programmes, strategies, and actions.

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
Sustainable agriculture and plantations	Mainstreaming / integrating climate change adaptation into agricultural sector, especially for strategic commodities.	Identification, development and implementation of best practices for farmers' economic empowerment.	Food	Potential synergy with implementation of UNCCD Potential co-benefit to mitigation in AFOLU
		Enhancing management and provision of ecosystem services in agricultural sector	Food, ecosystem	
		Knowledge management development for the application of appropriate technologies for strategic commodity-based adaptation.	Food	
		Development of financing scheme for agriculture.	Food	
		Strengthening agricultural financing schemes based on climate risk and regional resilience	Food	
	Development and implementation of climate adaptive technologies for sustainable production of	Improve agricultural crops protection from pests and diseases.	Food	
		R & D to produce high quality (genetically improved) seeds and cultural techniques to increase productivity.	Food	

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
	agricultural crops and plantations.	Development of climate information services and multi-hazard early warning systems for agriculture	Food	
		Improved water management systems for increasing resilience to climate change.		
		Application of integrated cropping calendar	Food, ecosystem	
		Utilization of systematic observation climate information services.	Food	
Integrated watershed management	Enhancing synergy across sectors and regions in watershed management.	Implementation of integrated upstream and downstream approach in forest rehabilitation and restoration, watershed management planning, and protection of terrestrial water resources.	Water, ecosystem	Potential synergy with implementation of UNCCD
		Creating enabling environment for integrating of Natural Disaster Risk Management into business models and practices	Water, ecosystem, disaster	
		Integration of watershed ecosystem management into the implementation of spatial planning	Water, ecosystem	
	Mainstreaming/Integrating climate change adaptation in watershed management to reduce risks/loss as a result of climate-related natural disasters.	Development of ecosystem services in watershed management.	Water, ecosystem	
		Development of information services, and monitoring, evaluation and learning (MEL) systems for the implementation of adaptation best practices in protecting ecosystem services and managing watershed to reduce risks/losses due to climate related disasters	Water, ecosystem	
		Identification, development and implementation of best practices in watershed management.	Water	

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
		Integrating watershed management into Local Spatial Planning	Water, ecosystem	
Reduction of deforestation and forest degradation	Mainstreaming/ Integrating climate change adaptation in forest management to support mitigation actions and enhancement of economic resilience of communities living in/surrounding forests.	Strengthening implementation of deforestation reduction efforts,	Ecosystem	Potential co-benefit to mitigation in AFOLU
		Strengthening monitoring, evaluation and learning in efforts to reduce deforestation	Ecosystem	
		Sustainable utilization of non-wood products by local and adat communities.	Ecosystem	
		Identification, development and implementation of best practices and local wisdom in utilization of natural forest resources.	Ecosystem	
		Involving community participations consider gender-responsive approach	Ecosystem	
	Development and implementation of environmentally friendly technologies (EFT) in production forest management.	Creating enabling environment for EFT.	Ecosystem	
		Facilitate, oversight, enforcement and compliance on the implementation of EFT.	Ecosystem	
Land conservation	Avoiding conversion of productive lands for other uses.	Integrated rehabilitation of degraded land and soil and water conservation.	Water, ecosystem Ecosystem	Potential synergy with implementation of UNCCD
		Updates on impact, vulnerability and risk assessments, as well as the development of climate information services and evaluation systems to support the acceleration of integrated rehabilitation of degraded land and soil and water conservation.	Ecosystem	
		Facilitate, oversight, enforcement and compliance to spatial plan.	Ecosystem	

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
		Strengthening implementation of regulations relating to Spatial Planning	Ecosystem	
		Aligning National Adaptation Plans (NAPs) with spatial planning regulatory framework		
	Development and implementation of climate adaptive technologies to support sustainable land management practices.	Application of soil and water conservation technology using mechanic and vegetation methods.	Water, ecosystem	
		Identification, development and implementation of best practices in land utilization and management.	Ecosystem	
		Strengthening cooperation with stakeholders to support the implementation of climate adaptive technologies and best practices	Ecosystem	
Utilization of degraded land for renewable energy	Integrated programme on rehabilitation of degraded land and development of biomass energy	Rehabilitation of degraded land with species suitable for energy.	Energy, ecosystem	Potential synergy with implementation of UNCCD Potential co-benefit to mitigation in AFOLU
		R & D to support sustainable biomass energy plantations and the bio-energy industries.	Energy, ecosystem	
Improved energy efficiency and consumption patterns	Enhance awareness of all stakeholders on the adaptation benefits of mitigation through improved energy efficiency and consumption patterns	Energy efficiency campaign.	Energy Health, ecosystem	Potential synergy with implementation of UNCCD
		Waste management to improve the community's economy		

Social and livelihood resilience

Climate change also affects the day-to-day lives of all Indonesians, but most severely Indonesia's most vulnerable populations. Climate change-induced natural disasters will impact a greater number of people living below the poverty line, preventing asset accumulation. Rising food, water and energy prices, which often follow drought, floods, and other disasters, will drive the poor further into poverty. Socio-economic disparity will potentially contribute to political instability in regions most affected by climate change. To prevent

further disparity, Indonesia plans to build social and livelihood resilience through the following key programmes, strategies, and actions:

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
Enhancement of adaptive capacity.	Reducing vulnerability through improved capacity on social-economy and livelihood.	Development of Early Warning System (EWS).	Disaster	Potential synergy with implementation of SFDRR
		Integration of early warning systems into multi-hazard early warning systems (MHEWS)	Water, health, ecosystem, disaster Disaster	
		Capacity enhancement for all stakeholders in responding EWS.	Disaster	
		Awareness campaign, education and training	Water, health,	
		Literacy improvement related to MHEWS	ecosystem, disaster	
	Responding to climate change impacts and managing risks including health.	Addressing drivers of vulnerability to climate change impacts.	Health	
		Updates on assessments of climate change impacts, vulnerabilities and risks, and the development of simultaneous climate systematic observation information services	Health	
		Enhance stakeholder participation at all levels in building climate resilience, including in health protection and waste management	Health	
		Enhance Community capacity in reducing Climate Change impact on health	Health	
		Improving the capacity of stakeholders related to health outcomes, health services, and health systems.	Health	
Development of community capacity and participation in local planning processes, to secure access to key natural resources;	Enhancing community capacity in natural resource management as a source of income, including capacity in risk management and sustainable utilization of natural resources.	Awareness campaign, education and training.	Ecosystem	Potential Sinergy with implementation of CBD, UNCCD, and SFDRR
		Development of information services for natural resource management	Ecosystem	
		Identification, development and implementation of best practices	Ecosystem	
		Development of monitoring, evaluation and learning systems for best practices implementation	Ecosystem	

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
	Strengthening community engagement in development planning process at all levels, taking into account gender participation, gender equity and gender balance and vulnerable groups, cross inter-generational needs	Development and implementation of appropriate mechanisms for community participation, taking into account gender participation, gender equity and gender balance and vulnerable groups (diffable, children and elders), and cross intergenerational needs	Ecosystem	
		Facilitate and oversight to ensure community interests, including gender, are accommodated in development plan.	Ecosystem	
Ramping up disaster preparedness programmes for natural disaster risk reduction;	Increase effectiveness of natural disaster preparedness and post disaster recovery programme.	Development and maintenance of natural disaster control infrastructures.	Disaster	Potential synergy with Sendai Framework DRR
		Revitalization of climate related natural disaster control infrastructures based on climate change analysis.	Disaster	
		Incorporate climate risk aspects into infrastructure development planning	Disaster	
		Protection of cultural and historical sites	Disaster	
		Increase efforts to reduce the impact of climate change on cultural and historical sites	Disaster	
	Empowering communities in natural disaster preparedness and post disaster recovery.	Awareness campaign, education and training	Disaster	
		Community empowerment to reduce the potential loss and damage	Disaster	
Identification of highly vulnerable areas in local spatial and land use planning efforts.	Development and utilization of information system and data provision on vulnerability, risks, and impacts of climate change.	Strengthening Information System on vulnerability index (Id. Sistem Informasi Data Indeks Kerentanan/ SIDIK)	Ecosystem, disaster	Potential synergy with Sendai Framework DRR and UNCCD
		Integration SIDIK with other related systems regarding vulnerability, risk and impacts of climate change	Ecosystem, disaster	

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
		Improve interconnectivity and interoperability of the Vulnerability Index Data Information System (SIDIK)	Ecosystem, disaster	
Improvement of human settlements, provision of basic services, and climate resilient infrastructure development.	Mainstreaming adaptation into spatial planning and strengthening compliance in the implementation of spatial plan.	Climate awareness campaign, standard enforcement and oversight in human settlement development, including building and environmental health.	Health, ecosystem, disaster	Potential synergy with Sendai Framework DRR
	Integrating adaptation in infrastructure development and maintenance.	Increase compliance to carrying capacity related regulations in infrastructure development.	Energy, disaster	
		Improve water resource management including soil water, measures to deal with disaster emergency.	Water, ecosystem	
		Development and operationalization of monitoring, evaluation and learning systems for regulatory compliance related to infrastructure carrying capacity.	Ecosystem, disaster	
Conflict prevention and resolution.	Strengthening coordination and communication in policy formulation and implementation.	Implementation of complain and redress mechanisms.	Disaster	

Ecosystem and Landscape Resilience

As an archipelagic country with high biodiversity, Indonesia's highly diverse ecosystems and landscapes provide various environmental services such as watershed protection, carbon sequestration and conservation, and disaster risk reduction. In order to build climate resilience, Indonesia protects and sustain these environmental services by taking an integrated, landscape-based approach in managing its terrestrial, coastal and marine ecosystems through the following key programmes, strategies, and actions:

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
Social forestry	Enhance engagement of local and adat communities in social	Awareness campaign on the important role of forest and forest areas in ecosystem resilience.	Ecosystem	Potential synergy with CBD and UNCCD

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
	forestry development process.	Development of information services, training and assistance to local and local communities in sustainable social forestry management. Consider gender participation, gender balance and gender equity.	Ecosystem	
	Strengthening implementation of landscape approach in social forestry	Facilitate, oversight and compliance to sustainable principles applied to each scheme of social forestry	Ecosystem	
	Implementation of EFT in social forestry.	Creating enabling environment for EFT.	Ecosystem	
		Identification, development and implementation of best practices applicable for social forestry	Ecosystem	
Ocean and Coastal zone protection	Mainstreaming adaptation into policies and programmes on coastal zone and ocean.	Implementation of ecosystem-based adaptation in coastal zone and marine development.	Ecosystem	Potential synergy with implementatio-n of Ramsar Convention, CBD, Sendai Framework DRR, and UNCCD
		Implementation of integrated management of mangrove and marine ecosystem		
		Management of potential risks of loss and damage in coastal and marine area development	Disaster	
		Enhance coastal zone and ocean pollution control, including marine litter and plastic debris.	Ecosystem	
		Integrated management of climate-adaptive coastal and marine ecosystems	Ecosystem, disaster	
	Development of climate resilient ocean and coastal zone.	Increase communication, Education and Public Awareness (CEPA) on the important role of coastal and marine ecosystem protection in natural disaster impact reduction	Ecosystem, disaster	
		Development of Communication, Education and Public Awareness/ Communication Information and	Ecosystem, disaster	

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
		Education (CEPA/CIE) on reducing loss and damage due to climate change		
		Restoration of degraded coastal zone as essential ecosystem.	Water, ecosystem	
		Improve livelihood of communities living in or depending on ocean ,coastal areas and small islands, consider gender participation, gender balance and gender equity.	Ecosystem	
Ecosystem conservation and restoration	Enhance ecosystem, species and genetic conservation, consider gender participation, gender balance and gender equity.	Establishment, development and implementation of in situ and ex situ conservation.	Ecosystem	Potential synergy with implementatio-n of Ramsar Convention, CBD, Sendai Framework DRR, and UNCCD
		Implementation of ecosystem restoration in conservation areas that are degraded and/or affected by climate change	Ecosystem	
		Effective management of marine conservation areas	Ecosystem	
		Increase species and genetics conservation toward climate change resilience of aquatic and marine biota	Ecosystem	
		Prevention, control and eradication of invasive alien species.	Ecosystem	
		Protection of existing and development of new marine protected areas.	Ecosystem	
	Improve functionality of integrated ecosystem to ensure improvement of essential services.	Restoration and rehabilitation of degraded mangroves, sea grass meadows, coral reefs and peatland	Ecosystem	Potential synergy with implementatio-n of CBD, Sendai Framework DRR, and UNCCD
		Aligning NAPs with strategies and policies on environment and ecosystem services	Ecosystem	
		Enhance conservation education, including engaging customary law and local communities for local knowledge.	Ecosystem	
		Strengthening policy and law enforcement through legal protection and economic incentives	Ecosystem	

KEY PROGRAMME	STRATEGY	ACTION	PRIORITY FIELD	NOTE
		Sustainable management of biodiversity and ecosystems	Ecosystem	
Integrated watershed management	Developing climate resilient watershed ecosystem management.	Improve watershed management planning by taking into account climate vulnerability, risks and impacts.	Water, ecosystem, disaster	Potential synergy with implementatio-n of Ramsar Convention, CBD, Sendai Framework DRR, and UNCCD
		Developing policy instruments and tools to assess climate vulnerability, risks, and impacts to national priority watersheds.	Water, ecosystem, disaster	
Climate resilient cities.	Promote development of climate proof cities, consider gender participation, gender balance and gender equity.	Awareness campaign on the importance of integrating climate vulnerability, risks and impacts in city planning and development.	Ecosystem, disaster	Potential synergy with implementatio-n of Sendai Framework DRR
		Capacity building and institutional strengthening	Disaster	
		Capacity building on loss and damage management for sustainable urban management	Energy Disaster	
		Revitalization of city infrastructure to increase adaptive capacity and resilience to climate change impacts.	Ecosystem, disaster	
		Increase urban forest area and other green open spaces	Energy, disaster	
		Urban waste management	Water, health, ecosystem	

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SECOND NATIONALLY DETERMINED CONTRIBUTION

REPUBLIC OF INDONESIA

2025