



MINISTRY
OF ENVIRONMENT AND FORESTRY

FOLU NET SINK:

Indonesia's Climate Actions Towards 2030



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Tropical Forest of Betung Kerihun and Danau Sentarum National Park, home of high biodiversity in West Kalimantan.
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PREFACE

Indonesia's FOLU Net Sink 2030 agenda was developed at the time when the Country was taking a position of High Ambition on Climate Action, embracing 2022 as the year of Indonesia's G20 Presidency. The ambitious target of negative emission for the FOLU sector shows extraordinary but realistic determination, built on the performance for at least seven years in alignment with President Joko Widodo's central message to focus on real work "under promise, over deliver". Now, we have set the milestone for reaching FOLU Net Sink!

The legal basis for Indonesia's FOLU Net Sink 2030 agenda is the Presidential Regulation No. 98 of 2021 on the Implementation of Carbon Pricing to Achieve the Nationally Determined Contribution Target and Control Over Greenhouse Gas Emissions in the National Development, in the Article 3 Paragraph (4).

Guidelines for operation of Indonesia's FOLU Net Sink 2030 agenda are provided in the Operational Plan document stipulated by the Environment and Forestry Ministerial Decree No. 168/2022. The document outlines detailed mitigation programs and activities, spatial approaches-based operational plan, persons in charge of the activities/programs, human resource needs, facilities and infrastructure, budgeting, and national implementation timelines for 2022-2030.

The Operational Plan of Indonesia's FOLU Net Sink 2030 is directed to reach an emission level at minus 140 Mt CO₂e by 2030, and minus 304 Mt CO₂e by 2050, leading to the net emission level for all sectors in the national level of 540 Mt CO₂e or equivalent to 1.6 tonnes CO₂ per capita.

The target will be achieved through a set of strategic measures. Reducing the rate of deforestation and forest degradation is at the heart of the measures. It is coupled with the actions to develop plantation forests, implement sustainable forest management, promote social forestry and forest rehabilitation with and without rotation. Furthermore, peatlands and mangrove forests, two essential ecosystems storing high amounts of carbon stock will be highly protected and restored for those that have been degraded. Other measures include biodiversity and ecosystem conservation, law enforcement, development of various new policy instruments, as well as development of monitoring and evaluation systems.

Indonesia's FOLU Net Sink 2030 Agenda has a consequence that efforts and hard work conducted by all parties must be enhanced and aligned in a measurable and accountable manner. Collaboration and synergy amongst the relevant stakeholders, including central government, local governments, academic society, the private sector, and communities in the grassroots level play an

essential role in attaining the ambitious agenda.

Therefore, substantive climate actions carried out on the ground throughout the Country must be properly documented and systematically communicated to the public. This Book of FOLU Net Sink: Indonesia's Climate Actions Towards 2030 constitutes an important documentation, not only for communicating strategic actions to address catastrophic climate change that have been thoroughly carried out by the Country, but also providing open information about the good performance of climate change-related stakeholder collaboration.

It is delighting to see many parties taking parts in supporting Indonesia's FOLU Net Sink Agenda. There is a hope that this publication will become a legacy and reference for all of us in making Indonesia's Climate Action Towards 2030 victorious.

Jakarta, May 2023
Minister of Environment and Forestry

Siti Nurbaya



A landscape in Sebangau National Park, Central Kalimantan, one of the largest peatland ecosystems in Indonesia.
©Rahmat Hidayat

FOLU NET SINK:

Indonesia's Climate Actions Towards 2030

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Front cover: Mangrove forest in Balikpapan Bay, East Kalimantan (30 March 2023) ©Simon Onggo
Back cover: Karimunjawa National Park, Central Java. ©Hary Susanto

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A flock of birds of itik benjut (*Anas gibberifrons*) and kuntul kerbau (*Bubulcus ibis*) live in harmony in Rawa Aopa Watumohai National Park, Southeast Sulawesi. This area is the largest freshwater peat swamp in Sulawesi, as the habitat for diverse water bird species.
©Simon Onggo (2021)

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The Laut Bangko Lake, one of natural attractions in Gunung Leuser National Park, Aceh.
©Efa Wahyuni



I. INTRODUCTION

The report published by the Intergovernmental Panel on Climate Change (IPCC) in April 2022 revealed an alarming fact that Greenhouse Gas (GHG) emissions have caused the earth's average temperature to rise above 1.5° Celsius. This is critical because the inevitability of global warming may trigger catastrophic climate change-related disasters.

In Indonesia, climate change-associated disasters have frequently occurred. For instance, prolonged flooding in Kalimantan due to extreme rainfall, high intensity of forest and land fires in Sumatra due to hot weather, and the rise of sea level on the north coast of Java.

In addition to natural disasters, climate change also results in failure of food crops and can create an explosion of disease-carrying vectors such as mosquitoes and flies.

In order to curb global GHG emissions, the world acceded to the Paris Agreement in 2015. Every single country, including Indonesia, determined its own target for contributing to GHG emission reduction, in which the target was then set forth in their Nationally Determined Contribution (NDC) document. Indonesia set a

target of 29% emission reduction through its own efforts and of 41% with international support.

The climate ambition was enhanced in the Updated NDC by strengthening the commitment, which was implemented through several programs, strategies, and actions in the elements of mitigation, adaptation, transparency framework, and other supportive implementation instruments.

In September 2022, Indonesia submitted the Enhanced NDC to the UNFCCC Secretariat. The document contains the increased target of emission reduction from 29 percent to 31.89 percent unconditionally and from 41 percent to 43.20 percent conditionally. Apart from the Enhanced NDC document, the Country submitted the Long-Term Strategy for Low Carbon and Climate Resilience 2050 (LTS-LCCR) document, determining a vision to enhance national climate action ambition. The document further affirms the target of Carbon Neutrality, even more, Carbon Net Sink for the FOLU sector by 2030.

Indonesia's FOLU Net Sink 2030 means that carbon sequestration from the forestry and other land use (FOLU) sector are higher than, or at least equal to its overall emissions by 2030.

Indonesia's FOLU Net Sink affirms that GHG absorption from the forestry sector is targeted to reach minus 140 megatonnes (Mt) CO₂e by 2030 and then continue to decrease to minus 304 Mt CO₂e by 2050.

Indonesia's FOLU Net Sink 2030 serves as the backbone of Indonesia's GHG emission reduction. Referring to the LTS-LCCR, Indonesia's peak GHG emissions are predicted to reach 1,244 million tonnes of CO₂e in 2030 and then decrease to 540 million tonnes of CO₂e in 2050. Indonesia is projected to achieve Net Zero Emissions in 2060, wherein GHG absorption is higher than its emissions.

Indonesia's FOLU Net Sink 2030 was first declared to the global community at COP26 to the UNFCCC in Glasgow, the United Kingdom. Through Indonesia's FOLU Net Sink 2030, the Country takes a "leading by example" position in mitigating global climate change.

At the Special Leader's Event: Action on Forests and Land Use, President Joko Widodo conveys undeniable Indonesia's concrete achievements on forestry sector. These include the drop of forest and land fires rate, the reduction of emissions from forestry and other land use sector, and significant decrease of deforestation rate.
(Scottish Event Campus, Glasgow, Scotland, 2 November 2021)



After engaging in the series of meetings in G20 Leaders Summit 2021 in Rome from 30 to 31 October 2021, President Joko Widodo leaves Fiumicino Leonardo da Vinci International Airport, heading for Scottish city of Glasgow to join the World Leaders Summit at COP 26 UNFCCC from 1 to 2 November 2021. (Rome, Italy, 31 October 2021)



President Joko Widodo arrives at Glasgow Prestwick Airport, welcomed by Minister Siti Nurbaya and Vice-Minister Alue Dohong. The President gives directives to Minister of Environment and Forestry Siti Nurbaya and Minister of Foreign Affairs Retno Marsudi on Indonesia's position in World Leaders Summit COP 26 UNFCCC. (Glasgow, Scotland, 31 October 2021)





Among 121 Heads of State and Government of the 197 Parties to the UNFCCC, President Joko Widodo engages in the World Leaders Summit COP 26 UNFCCC chaired by British Prime Minister Boris Johnson and attended by United Nations Secretary General António Guterres. (Scottish Event Campus, Glasgow, Scotland, 1 November 2021)



On the national statement, President Joko Widodo emphasizes that solidarity, partnership, cooperation, and global collaboration are keys to address climate change issues. Indonesia continues to contribute to tackling climate change by restoring peatland ecosystems and rehabilitating forests and degraded lands, and developing carbon pricing mechanism. The President also conveys the strategic position of Indonesia in reducing emissions and increasing carbon stocks, and in contributing to carbon market for mobilizing climate finance and innovative financing. (Scottish Event Campus, Glasgow, Scotland, 1 November 2021)



The three speakers at the first part of the Special Leaders' Event Action on Forests and Land Use are British Prime Minister Boris Johnson, Colombian President Ivan Duque Marquez , and President Joko Widodo. The Event is moderated by Co-President of the Club of Rome Sandrine Dixson Declève. (Scottish Event Campus, Glasgow, Scotland, 2 November 2021)



President Joko Widodo gently reminds Heads of State and Government who are present at the COP 26 UNFCCC on the importance of market incentive mechanism for sustainable forest management to support small medium enterprises. (Scottish Event Campus, Glasgow, Scotland, 2 November 2021)

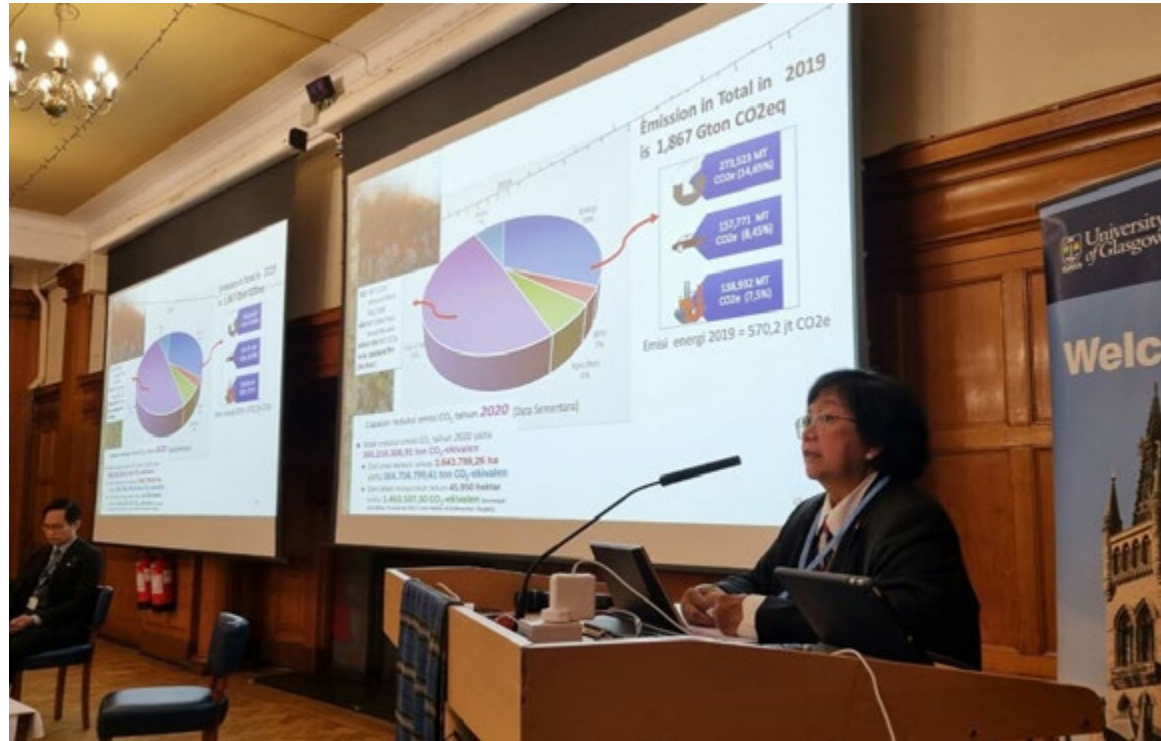




At the Bilateral Meeting with President of United States of America Joe Biden, President Joko Widodo reaffirms Indonesia's commitment to reduce greenhouse gas emissions, in particular by reducing deforestation rate, reducing forest and land fires rate, as well as rehabilitating mangrove covering 600,000 hectares (ha) within three years. (Scottish Event Campus, Glasgow, Scotland, 1 November 2021)



President Joko Widodo holds a CEOs Forum with some major British investors to accelerate green economy development and energy transition. (Turnberry, Scotland, 1 November 2021)



At the Seminar on Insight Talks on Climate Change Issues hosted by the Indonesian Student Association in Greater Glasgow, Minister Siti Nurbaya elaborates "Indonesia's Strategy in Achieving Net Zero Emissions". (University of Glasgow, Scotland, 2 November 2021)



British Minister for Pacific and the Environment at the FCDO and the Department of Environment, Food and Rural Affairs Rt Hon Lord Goldsmith (third from left side) delivers keynote speech at the "Introducing Indonesia's FOLU Net Sink 2030: Ambitious Initiative for the World" session. (Scottish Event Campus, Glasgow, Scotland, 3 November 2021)



II. COMMITMENT OF INDONESIA'S FOLU NET SINK 2030

The Intergovernmental Panel on Climate Change (IPCC) reminds that the only way to prevent climate disasters in a sustainable measure is to reduce emissions while simultaneously reducing GHG concentrations in the atmosphere.

The implementation of the Paris Agreement is therefore unavoidable. The Paris Agreement, adopted by 196 Parties at COP 21 UNFCCC in 2015, aims at restraining global temperature rise in this century to below 2° Celsius while pursuing efforts to limit the increase even further to 1.5° Celsius.

Indonesia has showed strong commitment to reducing the emissions by ratifying the Paris Agreement in Law no. 16/2016. The Paris Agreement requires state parties to define and communicate their post-2020 climate resilience actions in a document that describes climate commitments and actions from a country, referred to as the Nationally Determined Contribution (NDC). The document is communicated to the world through the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC).

Indonesia's first NDC which sets a target of an emission reduction at 29 percent through own efforts and 41 percent with necessary international assistance by 2030 was submitted in 2016. The Country then submitted an updated NDC in November 2021, which showed strengthened commitment through several improved programs, strategies, and actions in the elements of mitigation, adaptation, transparency framework, and other supportive implementation instruments. The target was further increased from 29 percent to 31.89 percent unconditionally and from 41 percent to 43.20 percent conditionally, as documented in the Enhanced NDC that was submitted to the Secretariat of the UNFCCC in September 2022.

Earlier, the Country had submitted another document, Long Term Strategy for Low Carbon and Climate Resilience 2050 (LTS-LCCR), which contains a vision to increase the national climate action ambition. The document mentions that the emission will peak at the figure of 1.244 Mt CO₂e by 2030, but then decrease to 540 Mt CO₂e by 2050. It is projected that the Country will be able to reach net zero emission in 2060, which

depicts an overall balance between greenhouse gas emissions produced and greenhouse gas emissions absorbed, even the GHG absorption can be higher than the GHG production.

The target will be achieved through a set of technological development-relevant activities in various sectors including energy, waste, IPPU, agriculture, forestry, and other relevant sectors. Of the total national emission reduction target, 60% will rely on the Forestry and Other Land Use (FOLU) sector.

The overarching objective of Indonesia's FOLU Net Sink 2030 is to reach the emission level from the Forestry and Other Land Use sector at minus 140 Mt CO₂e and further reduce to 340 Mt CO₂e by 2050.

Most of the area in Berbak Sembilang National Park (BSNP) is dominated by wetland ecosystem. As one of the largest wetland conservation areas in South East Asia, BSNP plays a major role as habitat of high biodiversity of flora, fauna and their ecosystem.
© Novian Fazli



At the COP 21 UNFCCC attended by nearly 200 heads of state and government, President Joko Widodo assures that Indonesia contributes to climate change mitigation, particularly in promoting the principle of common but differentiated responsibilities.
(Paris, France, 30 November 2015)

2.1 The Paris Agreement

The Paris Agreement is a historical milestone of the start of a new paradigm in addressing climate change issues that have been an object of international concern for the last 20 to 30 years, after the Earth Summit in 1992 in Rio de Janeiro, Brazil agreed upon the UNFCCC (United Nations Framework Convention on Climate Change) and Kyoto Protocol to the United Nations Framework Convention on Climate Change in 1997.

In 2015, when COP to the UNFCCC was held in Paris, France, a monumental global agreement was reached, the Paris Agreement, which was purposed to keeping a global temperature rise of this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. In Indonesia's national statement, President Joko Widodo stated that the Paris Agreement must reflect on equality, be fair and take into account national priorities and capabilities, so it must be legally-binding, durable, ambitious, but shall not halt the development of the developing countries.

Then, on 22 April 2016, during the High-Level Signature Ceremony for the Paris Agreement in UN Headquarters, New York, United States of America, there were 175 countries, including Indonesia, signing the Paris Agreement.

Realising the role of the environment in promoting better life for citizens, in accordance

with the principles of the 1945 Constitution, Indonesia ratified the Paris Agreement. The Parliament also gave its support on 19 October 2016 by agreeing to endorse the draft Bill on the Paris Agreement. The Law (UU) No. 16 of 2016 on Ratification of the Paris Agreement to the United Nations Framework Convention on Climate Change was later issued on 24 October 2016.

The Agreement entered into force on 4 November 2016, 30 days after the date on which at least 55 Parties to the Convention accounting in total for at least an estimated 55 percent of the total global greenhouse gas emissions have deposited their instruments of ratification, acceptance, approval or accession with the Depositary and their Nationally Determined Contribution (NDC).

Based on the Agreement, each country must contribute to the efforts to reduce global greenhouse gas (GHG) emissions, wherein their own target must be set forth in the NDC for the period 2020-2030.

In the Enhanced NDC, measures to reduce emissions in Indonesia are focused on five sectors: energy, industry, forestry, agriculture and waste, by which the forestry sector takes the largest contribution. The sector accounts for 17.4 percent of the 31.89 percent unconditional target and 25.4 percent of the 43.20 percent conditional target.



Minister Siti Nurbaya signs the Paris Agreement at the High-level Signature Ceremony for the Paris Agreement at the UN Headquarters.
(New York, The United States of America, 22 April 2016)



Left: Ten fractions of the House of Representatives agree to endorse the draft Bill on Paris Agreement.
(Jakarta, 17 October 2016)

Right: The Bill on Paris Agreement is passed in the House of Representatives. Minister Siti Nurbaya and three speakers of the House: Taufik Kurniawan, Fadli Zon, and Agus Hermanto.
(Jakarta, 19 October 2016)



President Joko Widodo inaugurates the Rumpin Nursery, attended by several Ambassadors based in Indonesia and the World Bank Country Director. This permanent nursery has annual production capacity of 12 million seedlings for greening and rehabilitation of degraded land programs which will absorb GHG emissions. (Rumpin, Bogor District, West Java, 10 June 2022)

2.2 Indonesia's FOLU Net Sink 2030 within the Long-Term Strategy for Low Carbon and Climate Resilience

Apart from the Enhanced NDC, Indonesia also submitted a document of the Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) 2050, which contains a vision to increase the on-going ambition of national climate actions.

The document states that Indonesia's GHG emissions is predicted to peak in 2030, which is 1,244 Mt, and then decrease to 540Mt CO₂e in 2050. Furthermore, it is projected that in 2060 Indonesia will be able to achieve Net Zero Emission, a condition where greenhouse gas emissions produced and greenhouse gas emissions absorbed are equal, even more, the absorption can exceed the emission production.

The target will be achieved through a set of technological development-relevant activities in various sectors which are energy, waste, industrial processes and product use (IPPU), agriculture, forestry, and/or other relevant sectors.

Of these sectors' total emission reduction target, almost 60 percent will rely on the forestry and land use sector (FOLU). Therefore, Indonesia's FOLU Net Sink 2030 was stipulated, a commitment built to make the FOLU sector reach a net sink condition by 2030.

According to Indonesia's FOLU Net Sink 2030, FOLU sector is targeted to reach emission levels of up to minus 140 Mt CO₂e. The target continues to be increased to negative emission of 304 Mt CO₂e by 2050, a substantively great contribution to global climate change mitigation.



The Permanent Nursery of Rumpin is established under public-private partnership (KPBU) scheme involving the Ministry of Environment and Forestry, the Ministry of Public Works and Public Housing, and APRIL. This scheme becomes a model of collaboration in promoting reforestation and rehabilitation of degraded land, which will absorb GHG emissions. (Rumpin, Bogor District, West Java, 10 June 2022)



The Permanent Nursery of Rumpin produces various seedlings including albasia/sengon, eucalyptus, mangliid, teak, and mahogany which will generate income for community. (Rumpin, Bogor, West Java, 10 June 2022)



2.3 The Contribution of FOLU to the National Development and Community Welfare

Achieving Indonesia's FOLU Net Sink 2030 will not neglect national development programs and measures to improve forest and land use-based community welfare.

In fact, Indonesia still enjoys great opportunity to improve the welfare of its 270 million population which is still growing, while leading the way in reducing GHG emissions as has been demonstrated over the past 5-7 years.

In that period, Indonesia had showed robust evidence in reducing GHG emissions (leading by example) while continuing to spur the economy and welfare of its people.

This can be seen from the efforts of the Government of Indonesia to reduce deforestation to its lowest point in history, which was around 115 thousand ha in 2019. This figure was far below the peak of deforestation that occurred in Indonesia in the late 1990s which reached 3.5 million ha per year. Another performance as evidence is the reduction in the number of forest and land fires to the lowest level in the last decade.

Indonesia has taken the bold step of halting the issuance of new licenses on primary forests and peatlands. This policy covers more than 66 million ha of primary forests and peatlands. In addition, the Government has improved peatland governance including its water management which covers an area of 3.4 million ha.



Leading by example is also carried out by the Government through the efforts of forest and land rehabilitation and sustainable production forest management. On the other hand, to improve community welfare, a social forestry scheme with an agroforestry pattern had been developed and had reached 4.7 million ha by the end of 2021.

In terms of forest protection, the areas included in the High Conservation Value Forest (HCVF) within 2.7 million ha forest concession areas are sustainably maintained. In addition, law enforcement is carried out through tighter supervision and stronger regulation implementation.

These real climate actions aim to ensure that the Government of Indonesia will successfully achieve the commitment of Indonesia's FOLU Net Sink 2030.



One of President Joko Widodo's approaches in his G20 presidency is mangrove diplomacy. President Joko Widodo invites several G20 Leaders and international organization to plant mangrove at Ngurah Rai Grand Forest Park. Planting mangrove is one of concrete actions carried out by Indonesia to combat climate change. With that, President Joko Widodo invite G20 countries to engage in an inclusive green economy development. (Denpasar, Bali, 16 November 2022)



President Joko Widodo declares that Indonesian Government is aiming to rehabilitate 600,000 hectares of mangroves forest in the country by 2024. While provide income generation to community, the rehabilitation of mangrove is also part of climate mitigation and adaptation action. (Mangrove Forest in Balikpapan, East Kalimantan)



President Joko Widodo inaugurates the second phase of development of an integrated electric battery industry in the Batang Integrated Industrial Area. The electric vehicles have potential to decarbonize public transportation. (Batang District, Central Java, 8 June 2022)



President Joko Widodo inaugurates the launch of the first Ultra Fast Charging (SPKLU) in Indonesia, held at the ITDC Nusa Dua Central Parking. In developing electric vehicle with low GHG emissions ecosystem, Indonesia has prepared upstream to downstream infrastructures, from battery industries and its components to home charging and SPKLU. (Badung District, Bali, 25 March 2022)



President Joko Widodo inaugurates Waste-to-Energy Plant of Benowo Landfill in Surabaya. The spirit of the establishment of the facility is to provide low-emission energy while improving solid waste management in metropolitan cities. (Surabaya, East Java, 6 May 2021)

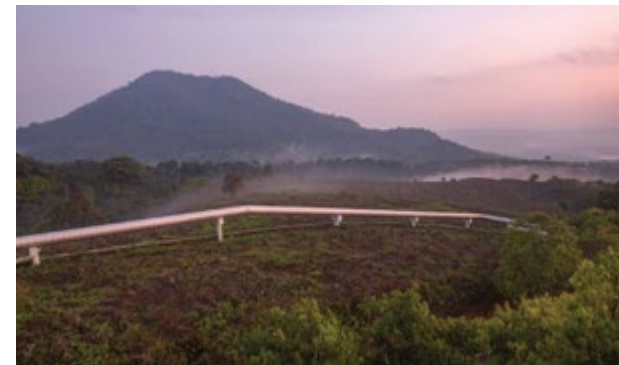




Indonesia designs permanent solution in forest and land forest fires control by involving local communities through Legal Awareness of Fire Care Community Development (MPA Paralegal).



In order to reduce GHG emissions, Indonesia carries out energy transition using new and renewable energy; one of the transition programs is biomass utilization for co-firing of Tarahan steam power plant (PLTU Tarahan), Lampung, so that coal utilization for energy can be reduced.



Geothermal utilization in Gunung Halimun Salak National Park. Geothermal is a low carbon emission energy which can be found in many conservation forests. Geothermal utilization will positively affect Indonesia's GHG emissions reduction target.

The Sidrap I wind power plant (PLTB Sidrap I) is the first commercial wind power plant in Indonesia. The power plant is the manifestation of the government's commitment to achieve new renewable energy mix target. (Sidenreng Rappang, South Sulawesi, 2 September 2019)



III. STRATEGY TO REACH INDONESIA'S FOLU NET SINK 2030

Providing a good environment and sustainably managing natural resources for the nation's welfare is the mandate of the 1945 Constitution. In particular, the mandate is emphasized in the Article 28H of the Constitution that every Indonesian citizen has the right to a decent environment. The article 33 also emphasizes that Indonesia's land and natural resources must be sustainably managed by the government for the prosperity of the people.

In practice, this mandate is further regulated by several implementing regulations including the Law on Environmental Protection and Management, the Law on Forestry, and the Law on Conservation of Natural Resources and Ecosystems.

The mandate leads Indonesia to the Paris Agreement, a global commitment to preventing climate change-associated environmental disasters. Indonesia ratified the Paris Agreement through Law No. 16 of 2016. The heart of the Paris Agreement and the achievement of its long-term goals are contained in a Nationally Determined Contribution (NDC), a non-binding national plan highlighting climate change mitigation.

To meet the commitment, Indonesia has developed an NDC Implementation Strategy and two Road maps on Mitigation and on Adaptation. In 2021 Indonesia updated the NDC, and then submitted the Enhanced NDC in September 2022. Indonesia also designed a Long-Term Strategy for Low Carbon Development and Climate Resilience (LTS-LCCR) 2050.

In the scenario of reducing emission levels, the FOLU sector was projected to contribute to almost 60% of the total national target.

Given the great contribution, the efforts of the forestry sector to control and reduce national emission level play a critical role and deserve to get support from both national and global communities. Indonesia's LTS-LCCR 2050 outlines a design of the FOLU sector which is targeted to have reached net sink since 2030. The design refers to Indonesia's FOLU Net Sink 2030.

FOLU Net Sink represents a condition of carbon neutrality, even more carbon positive which will be reached by reducing emission levels from the forestry and other land use sector.

The scenario was designed based on common performance in implementing corrective action

policies in the forestry sector, supported by the deep investigation on the forestry issues that have been going on for a dozen years or more.

Indonesia's FOLU Net Sink 2030 was translated into a detailed operational plan, which serves as a foundation for implementation of emission reducing activities. The operational plan was then also derived into a work guideline or a systematic manual for tackling forest and land uses-related issues such as forest and land fires, deforestation and forest degradation, habitat and biodiversity conservation, as well as peatland and mangrove management.

Vice President Ma'ruf Amin delivers National Statement at the High Level Segment of COP27 UNFCCC. In the occasion, the Vice President explains Indonesia's measures in reducing GHG emissions, among others by implementing Indonesia's FOLU Net Sink 2030. (Sharm El-Sheikh, Egypt, 7 November 2022)



President Joko Widodo chairs Indonesia Onward Cabinet Limited Meeting discussing instrument policies of carbon economic value or carbon pricing. The regulation is important in reducing GHG emissions and achieving NDC targets. (Jakarta, 6 July 2020)



3.1 Policy Formulation

President Joko Widodo has asserted that Indonesia will reach Net Zero Emission by 2060 or earlier, as the country's contribution to global climate change mitigation.

The statement serves as a directive for the Minister of Environment and Forestry, Siti Nurbaya, and all of Ministry of Environment and Forestry officials to formulate implementing policies as a form of guidance of the implementation. Intensive communication with other relevant ministries is built to sharpen the policy formulation, hence the policies are applicable on the ground.

To tackle climate-associated disasters, the Ministry of Environment and Forestry laid out the NDC Implementation Strategy in 2017, which was followed by the preparation of a Road Map on Mitigation in 2019. Thereafter, the existing NDC was updated in 2021. A new document of Enhanced NDC was then submitted to the Secretariat of the UNFCCC in September 2022. Furthermore, Indonesia developed a long-term strategy for low carbon and climate resilience 2050 so called LTS-LCCR 2050.

The document outlines Indonesia's FOLU Net Sink 2030, which highlights a condition of carbon positive in the forestry and land use sector by 2030.



Net sink policy does not mean zero deforestation, but diminishing deforestation to minimum level while conducting reforestation, rehabilitation, and environment recovery towards carbon positive position.

A Ministerial-level meeting discusses on accelerating the implementation of derivative regulations of Presidential Instruction No. 98 of 2021 on Carbon Economic Value to achieve the NDC target, by domestic and international carbon trades, and accelerating green energy or new renewable energy development. (Jakarta, 11 January 2022)

3.2 Legal Basis of Indonesia's FOLU Net Sink 2030

Indonesia's FOLU Net Sink 2030 is not a lip service. The Government will ensure to carry out an array of climate actions to reach FOLU Net Sink 2030, and officially attach the target as part of the Enhanced Nationally Determined Contribution and Long-Term Strategy for Low Carbon and Climate Resilience 2050 (LTS-LCCR) which have been submitted to the Secretariat of the UNFCCC.

Moreover, the Government prepared Operational Plan of Indonesia's FOLU Net Sink 2030, which was put into force through the Presidential Regulation No. 98/2021 on the Implementation of Carbon Pricing to Achieve the Nationally Determined Contribution Target and Control Over Greenhouse Gas Emissions in the National Development, and its implementing regulation of Environment and Forestry Minister Decree No. 168 of 2022.

The Operational Plan was prepared using spatial analysis-based approaches including analysis of forest quality index, high conservation value, environmental services, as well as biophysical indexes of carbon sequestration and forest and land fires. It also takes into account several modalities such as forest use direction

(RKTN) 2011-2030, institutional capacity, and existing social capital on the ground.

FOLU Net Sink 2030 outlines the following 15 mitigation actions:

1. Reducing deforestation rate on dry land forest ecosystems (mineral soil forests)
2. Reducing deforestation rate on peatland and mangrove ecosystems
3. Reducing degradation rate on dry land forest ecosystems
4. Reducing degradation rate on peatland and mangrove ecosystems
5. Establishing plantation forests
6. Managing forests in sustainable manners
7. Rehabilitating degraded land with rotation
8. Rehabilitating degraded land without rotation
9. Restoring peatlands and improving peat water management
10. Implementing mangrove rehabilitation and afforestation within post-mining areas.
11. Implementing biodiversity conservation
12. Developing social forestry
13. Introducing replication of ecosystems, urban green spaces, and eco riparian
14. Enhancing supervision and law enforcement to support forest protection
15. Establishing and enhancing Adat Forests



Minister Siti Nurbaya leads the discussion on the development of Operational Plan of Indonesia's FOLU Net Sink 2030. The document is developed using spatial analysis approach, taking into consideration Forest Areas Utilization Directives/National Forestry Plan (RKTN) 2011-2030, institutional capacity and community's social capital at site level. (Jakarta, 20 December 2021)



Director General of Sustainable Forest Management Agus Justianto, Director General of Climate Change Laksmi Dhewanthi, Senior Advisor to the Minister of Environment and Forestry Efransjah, and Director General Ad Interim of Forestry Planning and Environmental Governance Ruandha A. Sugardiman elaborate strategies in achieving Indonesia's FOLU Net Sink 2030 at the Indonesia Pavilion COP27 UNFCCC; one of the strategies is Carbon Economic Value Development policy. (Sharm El-Sheikh, Egypt, 8 November 2022)

3.3 SWOT Analysis

It is admitted that Indonesia's FOLU Net Sink is an ambitious target. Nonetheless, it is achievable, not just a wishful thinking. Indonesia's FOLU Net Sink was constructed based on deep consideration in order to support NDC implementation.

In terms of strength, Indonesia has enough capital to achieve FOLU Net Sink. It includes the reduction in deforestation and in forest and land fires as a result of improvements in forest governance that have been carried out since 2014 under the leadership of President Joko Widodo.

Indonesia's FOLU Net Sink target is measured in a systematic and scientific manner employing spatial analysis-based approaches, such as; Forest Quality Index, High Conservation Value (HCV), environmental services, and bio-geophysical Indexes of carbon sequestration and land and forest fires (IBGF). It also takes into account several modalities such as forest use direction (RKTN) 2011-2030, institutional capacity, and existing social capital on the ground.

As a newly published idea, the FOLU Net Sink must continue to be propagated so that it can be thoroughly understood by all stakeholders, particularly in the grassroots level. It also needs to be understood that science becomes a basis to tackle climate crisis, which sometimes makes terminology employed in the UNFCCC pathways unpopular.

There is still high opportunity to achieve the ambitious target. The government has conducted interactive outreach to all relevant stakeholders including grassroots communities since the target was published to the public. As a result, all relevant stakeholders such as line ministries, scientists, and non-state actors expressed great support and optimism for the implementation of Indonesia's FOLU Net Sink towards carbon positive of 140 Mt CO₂e by 2030. Furthermore, showcases, centers of excellence, and the best practices in the field are developed over all regions to ensure that Indonesia's FOLU Net Sink will be properly understood and implemented in the site level.

Details on the implementation and coordination amongst stakeholders involved could become challenging, which might hinder the accomplishment of Indonesia's FOLU Net Sink target. However, it is countered through the publication of the Operational Plan of Indonesia's FOLU Net Sink 2030 which provides detailed design in spatial approaches-based programs and mitigation actions, responsible persons, human resource needs, facilities and infrastructure, budgeting and implementation timelines for 2022-2030. The Operational Plan is further translated into a detailed work plan at the sub-national level in which the arrangement involves all stakeholders at the Provincial and District levels with assistance from FOReTIKA and the Ministry of Environment and Forestry.



Minister Siti Nurbaya emphasizes the importance of concrete implementation of Indonesia's FOLU Net Sink 2030 through all levels at the 2023 Indonesia's FOLU Net Sink 2030 Activities Plan Working Meeting. (Jakarta, 13 December 2022)





IV. BUILDING COLLABORATION

As a tremendous agenda, Indonesia's FOLU Net Sink 2030 is not only the responsibility of the Ministry of Environment and Forestry. Indonesia's FOLU Net Sink 2030 has become a national cognizance, requiring support from all components of the nation. All ministries, institutions, state-owned enterprises, private, non-governmental organizations (NGOs), the community at the site level, from men, women, to the younger generation, have their own critical role to play in achieving Indonesia's FOLU Net Sink 2030 target.

Therefore, consolidation, coordination and outreach are carried out simultaneously to build togetherness and alignment in the steps of implementing Indonesia's FOLU Net Sink agenda.

The Ministry of Environment and Forestry has accelerated its efforts to establish collaborative works with all parties in order to implement the Operational Plan of Indonesia's FOLU Net Sink 2030. Communication with the three main

implementing actors has been established since the beginning, including (i) the government and academics as the determining actors; (ii) development partners as supporting actors; and (iii) the private sector and the community as the main actors at the site level.

Building collaboration aligns with the mandate of Conference of the Parties to the UNFCCC, including the Paris Agreement and the Glasgow Climate Pact, which emphasize the importance of collaboration in climate change mitigation. Communication with all parties is essential to get feedback from them for better policy and decision making, supportive of the FOLU Net Sink agenda.

The effort has theretofore got positive response. Academics through FOReTIKA have played an active role in disseminating the agenda. FOReTIKA is a Forum of Chairman of Higher Education Institutions on Forestry in Indonesia. The FOLU Net Sink Agenda has also received support from the Indonesian Chamber

of Commerce and Industry (KADIN Indonesia) which runs the Net Zero Hub and Regenerative Forest Business Sub Hub (RFBSH) programs with the aim at encouraging the implementation of Indonesia's Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR) as well as Indonesia's FOLU Net Sink 2030.

Indonesia's FOLU Net Sink 2030 agenda has been also communicated to the global community. Indonesia introduces the FOLU Net Sink Agenda to a number of partner countries through bilateral meetings and multilateral fora. It is essential since the agenda of climate change mitigation has become a common agenda but differentiated responsibilities (CBDR).

President Joko Widodo encourages the Leaders of the G20 to collaborate and cooperate in addressing climate change by observing a success story of mangrove rehabilitation in Taman Hutan Raya (Tahura, Grand Forest Park) Ngurah Rai. The 1,300-ha Tahura that once was got abrasion, after being planted and nurtured, becomes dense, home of 33 mangrove species and 130 animal species.
(Denpasar, Bali, 16 November 2022)



At the Workshop of Indonesia's FOLU Net Sink 2030 Consolidation, Minister Siti Nurbaya reaffirms that Indonesia's FOLU Net Sink 2030 will become guideline, agenda on climate change control in forestry and other land use sector in Indonesia to accelerate the reduction of greenhouse gas emissions. (Jakarta, 4 April 2022)



4.1 Consolidation

Simultaneous, parallel and integrated work constitutes a prerequisite for achieving the target of Indonesia's FOLU Net Sink 2030. Minister Siti Nurbaya, therefore, has instructed that all steps taken by each work unit under the Ministry of Environment and Forestry must be in accordance with the framework of Indonesia's FOLU Net Sink, not to build collaboration with third party beyond the FOLU Net Sink framework.

It is to bring all activities affecting Indonesia's emission level to follow the corridors of national regulations. The collaboration and harmonized steps built between the Ministry of Environment and Forestry, the Peatland and Mangrove

Restoration Agency, and all work units, both in the national and local levels continue to be strengthened through several workshops on the Consolidation of Indonesia's FOLU Net Sink 2030 Operational Plan during April 2022.

During the consolidation, the Ministry of Environment and Forestry had tirelessly continued to oversee the process to ensure all relevant

stakeholders can follow the Operational Plan. The Operational Plan builds on the principles of sustainable forest management, environmental governance, and carbon governance, as a national guideline for the implementation of climate change mitigation measures.



4.2 Coordination

In addition to consolidation, coordination with other actors at each level of government, academic society, and site-level actors has been carried out thoroughly. This step is intended to help all parties involved in the implementation of the agenda remain within the legal corridor, and to avoid discrepancy against the stipulated pathway. All teams must work in an integrated manner based on the guidelines; hence Indonesia's FOLU Net Sink 2030 can be appropriately measured in term of carbon emission reductions.

Coordination is central to the implementation of Indonesia's FOLU Net Sink 2030, given that the agenda requires enabling conditions as prerequisites to put it into effect. The enabling conditions that need to be constructed include law enforcement, an emission measurement method, as well as a monitoring, reporting, and verification (MRV) system for the achievement of Indonesia's FOLU Net Sink 2030.

In the national and global context, a common strategy and binding targets of combating climate change are the responsibility of all parties, from the government, academic, business entities, communities at the grassroots level, the young generation, women, to non-governmental organizations. The responsibility includes commitment and support for funding climate change mitigation actions. Guided by Indonesia's FOLU Net Sink 2030 Operational Plan, actions to



combat climate change in Indonesia will refer to a national common strategy, which will direct to the achievement of carbon positive by 2030.

The Ministry of Environment and Forestry has rapidly moved to build collaboration with all parties in order to implement the Operational Plan of Indonesia's FOLU Net Sink 2030. Communication with three main implementing actors has been established since the beginning, including (i) the government and academics as the determining actors; (ii) development partners as supporting actors; and (iii) the private sector and the community as the main actors at the site level.

Building collaboration aligns with the mandate of Conference of the Parties to the UNFCCC, including the Paris Agreement and the Glasgow Climate Pact, which emphasize the importance of collaboration in mitigating climate change. Communication with all parties is essential to get feedback from them for better policy and decision making, supportive to the FOLU Net Sink agenda. Therefore, the Ministry of Environment and Forestry has held a series of coordination meetings with all related stakeholders, in the event of Regional and Sub-National outreach of Indonesia's FOLU Net Sink 2030 Work Plan which

involves Local Governments (Province and City/District), academics, development partners, and the public.

From June to December 2022, the Ministry of Environment and Forestry had conducted a series of activities in order to accelerate the implementation of Indonesia's FOLU Net Sink 2030, such as: regional-level outreach; subnational-level outreach and development of subnational work plans in 12 provinces that have involved all relevant stakeholders at provincial and district levels with the FOReTIKA and the Ministry of Environment and Forestry assistance. The series of activities were concluded by a working meeting officiated by the Minister of Environment and Forestry and followed by the inauguration of FOLU Operation and Collaboration Center (FOLU COLL) which becomes the operational control center of Indonesia's FOLU Net Sink 2030, integrating development programs of high-level units of the Ministry of Environment and Forestry, line ministries and institutions, Central and Local Governments towards a common objective of achieving greenhouse gas emissions reduction using the measurement unit of CO₂e.



President of IPB University Prof. Dr. Arif Satria, suggests that efforts in addressing environmental issues, including climate change, at the global and national levels, should be carried out through governance, political economy and ecological modernization, involving technological and technocratic aspects. (Bogor, West Java, 20 June 2022)



Vice-President for Education, Teaching and Student Affairs of Universitas Gadjah Mada, Prof. Dr. Djagal Wiseso Marseno, recalls that climate change is a complex issue, thus the success of Indonesia's FOLU Net Sink 2030 depends on the collaboration between Indonesia's and international stakeholders, under the commitment to reduce greenhouse gas emissions. (Yogyakarta, 27 June 2022)



Regions of Banten, West Java, and Central Java (Bogor, West Java, 20 June 2022)

Sumatera Region (Medan, North Sumatera, 23 June 2022)

Regions of Yogyakarta, East Java, Bali, and Nusa Tenggara (Yogyakarta, 27 June 2022)

Regions of Maluku and Papua (Manokwari, West Papua, 30 June 2022)

Sulawesi Region (Makassar, South Sulawesi, 4 July 2022)

Kalimantan Region (Banjarbaru, South Kalimantan, 7 July 2022)

To build collaboration between various parties in Indonesia, Regional Outreach Activities were held in the following six regions:

- Held in IPB University for the regions of Banten, West Java, and Central Java;
- Held in University of North Sumatra for the entire Sumatera region;
- Held in Universitas Gadjah Mada for the regions of Yogyakarta, East Java, Bali, and Nusa Tenggara;
- Held in University of Papua for the regions of Maluku and Papua;
- Held in Hasanuddin University for the entire Sulawesi region;
- Held in Lambung Mangkurat University for the entire Kalimantan region;

which involved the central government, local governments (province and city/district), academics, practitioners, private sector and other relevant stakeholders.

To accelerate the implementation of Indonesia's FOLU Net Sink 2030, from June to December 2022, a series of communication outreach were conducted in 12 provinces involving all relevant stakeholders at provincial and district levels with the FOReTIKA and the Ministry of Environment and Forestry assistance. The communication outreach were held in in the Province of: North Sumatra, Central Kalimantan, South Kalimantan, East Kalimantan, North Kalimantan, Aceh, West Sumatra, West Kalimantan, Riau, Jambi, South Sumatra and Lampung.



The Province of East Kalimantan
(Samarinda, 18 July 2022)



The Province of North Kalimantan
(Tanjung Selor, 21 July 2022)



The Province of West Kalimantan
(Pontianak, 1 August 2022)



The Province of Riau
(Pekanbaru, 8 August 2022)



The Province of Jambi
(Jambi City, 10 August 2022)



The Province of Aceh
(Banda Aceh, 25 July 2022)



The Province of South Sumatra
(Padang, 27 July 2022)



The Province of Lampung
(Bandar Lampung, 23 August 2022)



The Province of South Sumatra
(Palembang, 24 August 2022)

Following the subnational-level outreach and development of sub national work plan in 12 provinces, since February 2023 similar communication outreach also have been carried out for other 22 provinces. The Kick-Off for 2023 Subnational Outreach took place in East Nusa Tenggara Province. The 34 subnational-level outreach are expected to be completed in April 2023.



At the Kick-Off of the 2023 Subnational Outreach of Indonesia's FOLU Net Sink 2030 in Labuan Bajo, West Manggarai, Minister Siti Nurbaya states that the event is the starting point of Subnational Work Plan Development in 22 provinces to translates the operational plan into GHG mitigation action targets at provincial and site levels. Governor of East Nusa Tenggara Province Viktor Bungtilu Laiskodat confirms the provincial government's readiness to support the implementation in hope of poverty alleviation in the Province. (Labuan Bajo, West Manggarai, 1 February 2023)





The Province of East Nusa Tenggara
(Labuan Bajo, 1 February 2023)



The Province of Bengkulu
(Bengkulu City, 8 February 2023)



The Province of West Sulawesi
(Mamuju, 13 February 2023)



The Province of South Sulawesi
(Makassar, 27 February 2023)



The Province of Bangka Belitung
(Pangkal Pinang, 1 March 2023)



The Province of North Sulawesi
(Manado, 6 March 2023)



The Province of West Papua
(Manokwari, 15 February 2023)



The Province of Maluku
(Ambon, 20 February 2023)



The Province of North Maluku
(Ternate, 22 February 2023)



The Province of Southeast Sulawesi
(Kendari, 8 March 2023)



The Province of Central Sulawesi
(Palu, 13 March 2023)



The Province of Gorontalo
(Gorontalo City, 15 March 2023)

4.3 Academics' Participation

Academics' participation in supporting the FOLU Net Sink Agenda is manifested in the collaboration with the Forum of Chairman of Higher Education Institutions on Forestry in Indonesia (FOReTIKA). The Forum actively carries out a series of forest policy discussions such as Forest Management Units (KPH), Forest Areas for Specific Purposes (KHDTK), Social Forestry, Natural Resources and Biodiversity Conservation, Multi-Forestry Business, Organization Structure of the Ministry of Environment and Forestry, Law No. 5/1990 and Law No 41/1999, agrarian issues and several other topics. FOReTIKA played an active role in developing coordination and communication with various parties, and hosting Regional Outreach activities which were held during June - July 2022 in the following six regions:

- Held in IPB University for the regions of Banten, West Java, and Central Java
- Held in University of South Sumatra for the entire Sumatera region
- Held in Universitas Gadjah Mada for the regions of East Java, Yogyakarta, Bali, and Nusa Tenggara
- Held in University of Papua for the regions of Maluku and Papua
- Held in Hasanuddin University for the entire Sulawesi region
- Held in Lambung Mangkurat University for the entire Kalimantan region



Dean of Faculty of Forestry and Environment of IPB University which also is the current Chairperson of Forum of Chairman of Higher Education Institutions on Forestry in Indonesia (FOReTIKA) Dr. Naresworo Nugroho states that the academic forum commits to the improvement of materials, development of standardization, reporting, measurement and verification, as well as outreach activities to all stakeholders, particularly young generation in the implementation of Indonesia's FOLU Net Sink 2030 agenda.

The Forum also serves as an expert team that provides important inputs for the streamlined implementation of the Operational Plan of Indonesia's FOLU Net Sink 2030, both in the process of consolidation and external coordination. The team members include:

- Universitas Gadjah Mada
- IPB University
- ITB University
- Nusa Bangsa University
- Kuningan University



Dean of Faculty of Forestry of Universitas Gadjah Mada Dr. Sigit Sunarta recalls for the importance of sustainable forest management and forest and land forest fires control in the implementation of Indonesia's FOLU Net Sink 2030 agenda.

- Mulawarman University
- Lambung Mangkurat University
- Palangka Raya University
- University of South Sumatra
- Lancang Kuning University
- Jambi University
- Lampung University
- Syiah Kuala University
- Mulawarman University
- Banda Aceh College of Forestry

Minister Siti Nurbaya becomes Dies Reader at the open assembly meeting, in commemoration of the 61st anniversary of Syiah Kuala University and delivers scientific oration "Indonesia's FOLU Net Sink 2030: Strengthening Landscape-based Governance and Conservation of Forest Resources". Minister conveys that Indonesia's FOLU Net Sink 2030 is expected to support in achieving the greenhouse gas emissions reduction targets, and also to accelerate the processes on the strengthening of environmental and forestry governance in Indonesia, including landscape-based conservation of forest resources. (Banda Aceh, Aceh, 15 September 2022)

Outreach was also carried out using teleconference technology in weekly online discussions "Pojoek Iklim" which were usually attended by around 70 tertiary educational institutions throughout Indonesia.

FOReTIKA actively contributes to the preparation of sub-national work plans of the FOLU Net Sink 2030 that has been undertaken in 10 provinces: East Kalimantan, North Kalimantan, Aceh, West Sumatra, West Kalimantan, Central Kalimantan, Riau, Jambi, South Sumatra, and Lampung.

To strengthen academics' participation in the implementation of Indonesia's FOLU Net Sink 2030 agenda, Minister Siti Nurbaya held a series of interactive discussions with academics. In September 2022, Minister Siti Nurbaya attended a discussion held at Syiah Kuala University and Mulawarman University.

At Syiah Kuala University, Minister Siti Nurbaya became Dies Reader at the open assembly meeting, in commemoration of the 61st Anniversary of Syiah Kuala University, in Banda Aceh, and delivered a scientific oration "Indonesia's FOLU Net Sink 2030: Strengthening Governance and Conservation of Landscape-based Forest Resources"



On this occasion, the Minister conveyed that Indonesia's FOLU Net Sink 2030 is expected not only to reach carbon neutrality, but also to play as a momentum in strengthening environmental and forestry governance in Indonesia, in terms of landscape-based forest conservation.

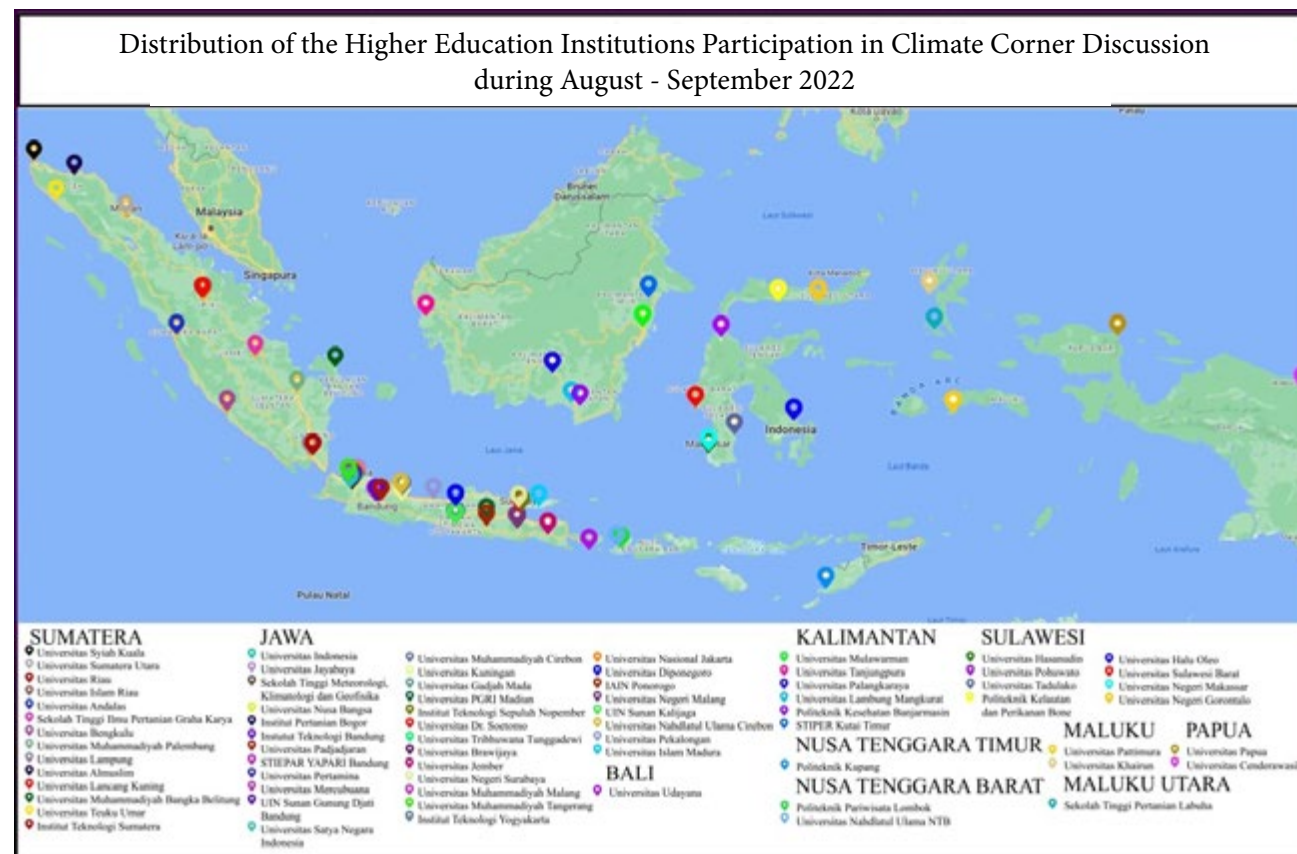
At the 60th Anniversary of Mulawarman University in September 2022, Minister Siti Nurbaya delivered a scientific oration "Building Kalimantan's Wet Tropical Forest, a Modality Towards Indonesia's FOLU Net Sink 2030". The Minister explained relatedness between the development of the new National Capital City

(IKN), the Forest City concept, and the FOLU Net Sink.

Applying the Forest City concept, which is synergized with Indonesia's FOLU Net Sink 2030 Operational Plan, development of IKN employs an approach of non-rotation rehabilitation. This approach will bounce back 58,879 ha Kalimantan's Wet Tropical Forest. Indeed, the development of IKN will have a positive impact on the actions of combating climate change in East Kalimantan, through the increased carbon sequestration from these tropical forests.



Chairman of the Advisory Board for Climate Change Policies Sarwono Kusumaatmadja and Executive Secretary of the Advisory Board for Climate Change Policies Agus Justianto are present on the site of Climate Corner Discussion "A Just Law Enforcement in the Effort of Carbon Emission Reduction". (Jakarta, 10 August 2022)



4.4 Public's Participation

The echoes of Indonesia's FOLU Net Sink 2030 are gradually expanding. Many parties showed their willingness to and participation in promoting the FOLU Net Sink agenda.

The Indonesian Chamber of Commerce and Industry (KADIN Indonesia), the umbrella organization of Indonesian business chambers and associations, is one of the parties who support the FOLU Net Sink Agenda. It set up Net Zero Hub, a pathway to encourage all business actors to support the country's target of reaching Net Zero Emissions, as determined in Indonesia's Long-Term Strategy for Low Carbon and Climate Resilience (LTS-LCCR).

Moreover, KADIN developed a Regenerative Forest Business Sub Hub (RFBSH) program to promote a multi-forestry business model in production forest management. Multi-forestry businesses will encourage sustainable forest management and become fundamental to realising Indonesia's FOLU Net Sink 2030 commitment.



At the Kick-Off Meeting of RFBSH KADIN Indonesia, Director of Forest Resources Processing and Marketing Development Krisdianto, representing Director General of Sustainable Forest Management Agus Justianto, states that the implementation of forestry multi-business will boost sustainable forest management and is important to fulfill Indonesia's FOLU Net Sink 2030 commitment. (Jakarta, 24 May 2022)

4.5 National and Sub-National Work Plans

Indonesia's FOLU Net Sink 2030 lays down systematic measures to reach carbon positive in the forestry and other land use sector. It is translated into national and sub-national work plans, which outline detailed action plans.

Overseeing the preparation process of the documents, the Ministry of Environment and Forestry held a series of workshops on the preparation of the national work plan and the preparation of 12 province sub-national work plans for streamlining the implementation of Indonesia's FOLU Net Sink 2030 agenda.

The workshops were to expose the final draft of 5 sections of the National Work Plan, which are Sustainable Forest Management, Carbon Stocks Enhancement, Conservation, Peat Ecosystem Management, as well as Instruments and Information of Indonesia's FOLU Net Sink 2030 Operational Plan.

The five sections are further presented in more detail in documents of Sub-National Work Plans, particularly in 12 provinces in Sumatera and Kalimantan Islands: (1) North Sumatra, (2) Aceh, (3) West Sumatra, (4) Riau, (5) South Sumatra, (6) Jambi, (7) Lampung, (8) West Kalimantan, (9) South Kalimantan, (10) Central Kalimantan, (11) North Kalimantan, and (12) East Kalimantan.

The work plan provides detailed explanation of: (1) achievements, targets and strategies;



(2) implementation and operation, and (3) monitoring and evaluation for 11 (eleven) forestry sector mitigation actions, namely: (a) Reducing deforestation on mineral forests; (b) Reducing deforestation on peatlands; (c) Reducing degradation of mineral lands; (d) Reducing degradation on peatlands; (e) establishment of plantation forests; (f) sustainable forest management; (g) rehabilitation with rotation; (h) non-rotational rehabilitation; (i) peatland restoration; (j) peat water management; and (k) biodiversity conservation.

The 12 Sub National Work Plans were then discussed in a working meeting officiated by Minister Siti Nurbaya on 13 December 2022. A similar process for other 22 Sub National Work Plans is on going and projected to be completed in May 2023.



At the Workshop of Indonesia's FOLU Net Sink 2030 National Work Plan and Sub-National Work Plan of 12 Provinces, Minister Siti Nurbaya chairs the discussion regarding detailed and systematic actions at national and sub-national levels to achieve the targets. (Jakarta, 27 October 2022)



Six Ministers of the Indonesia Onward Cabinet mingles with the role models and awardees of Wana Lestari Awards 2022 at Arboretum Ir. Lukito Daryadi, M.Sc., Manggala Wanabakti Complex. The fellowship represents the importance of collaboration between line ministries/institutions and non-state actors in the implementation of the ambitious Indonesia's FOLU Net Sink 2030 Agenda. (Jakarta, 16 August 2022)



Minister Siti Nurbaya inaugurates the FOLU Operation and Collaboration Center (FOLU COLL) as the command center of all operations of Indonesia's FOLU Net Sink 2030 agenda, as well as platform for communication, coordination and collaboration between national and sub-national levels to ensure the achievement of the targets. In the future, electronic-based working system will be developed so that the rapid and accountable measurement of all FOLU elements as evidence can be carried out. (Jakarta, 30 December 2022)



Secretary of the Directorate General of Forestry Planning and Environmental Governance Hanif Faisol Nurofiq reports to Minister Siti Nurbaya regarding the draft of Indonesia's FOLU Net Sink 2030 manual books which have been developed by each Echelon 1 units of the Ministry of Environment and Forestry. (Jakarta, 30 December 2022)

4.6 Promoting Indonesia's FOLU Net Sink 2030 in Bilateral and Multilateral Fora

The government has been enthusiastically promoting Indonesia's FOLU Net Sink 2030 in a number of international fora such as the 15th World Forestry Congress and the biennial United Nations Forum on Forests (UNFF). The Delegation of the Republic of Indonesia conveyed Indonesia's ambitious targets to reach FOLU Net Sink 2030 in almost all the sessions of the 15th World Forestry Congress 2022, which was held on 2–6 May 2022 in Seoul, Republic of Korea, including the event of intervention and presentation on Indonesian forestry during plenary session, side event, and bilateral meetings.

In the 17th UNFF assembly meeting on 9–13 May 2022 at the UN headquarters, New York, the Indonesian delegation presented Indonesia's FOLU Net Sink 2030 strategy during the plenary session and official UNFF side event "Forestry and Other Land Use Sector Contribution to GHG Emission Reduction". The same presentation was delivered during a bilateral forum with the UNFF Secretariat. High appreciation for Indonesia's strategic steps was conveyed by Peter Gondo, UNFF Inter-Regional Adviser, and by Juliette Biao Koudenoukpo, UNFF Director, during the side event.

The FOLU Net Sink agenda was also communicated to the Japanese community, particularly students of the Tokyo University of



Agriculture and Technology (TUAT) in the 1st Indonesia-Japan Forest Talk (IJFT-1) entitled "Next Generation for Future Research Collaboration in Forestry Sector" on 2 August 2022. During the panel discussions, the young generation represented by Andreas Ade (University of Tokyo/MIDORI), Ryu Sato (TUAT-WISE), Toru Miyata (TUAT-WISE), and Rasis Putra Ritonga (TUAT-WISE/MIDORI), delivered the vision in science and technology for forest and timber research that are relevant to the implementation of Indonesia's FOLU Net Sink 2030.

The FOLU Net Sink Agenda became a main topic discussed during the Forest Week Session of the 26th Committee on Forestry (COFO), at FAO Headquarters, Rome, Italy, on 4 October 2022.

At the bilateral meeting with Republic of Korea, Director General Agus Justianto explains Indonesia's ambition in reducing greenhouse gas emissions, then hands over the Operational Plan of Indonesia's FOLU Net Sink 2030 document to Vice-Minister of Korea Forest Service Nam Tae Hyun. (Seoul, Republic of Korea, 5 May 2022)

Minister Siti Nurbaya launched the book "State of Indonesia's Forests (SOIFO) 2022" which highlights the country's efforts towards FOLU Net Sink in 2030. The Minister invited FAO member countries to collaborate in order to reach forests carbon positive, and to prevent an increase in the global emission level.

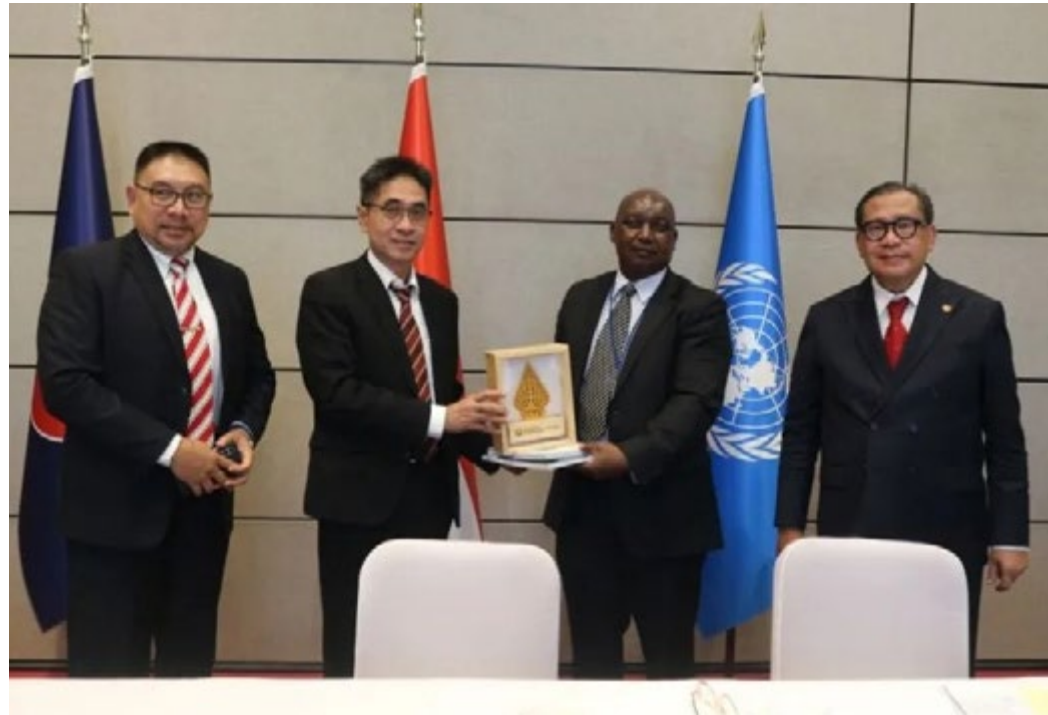
Furthermore, Vice President Ma'ruf Amin presented the national statement which promoted

strategic steps that had been taken by the Country to curb its emission level, at COP27 to the UNFCCC in Sharm El-Sheikh on 7 November 2022. The steps include creating investment schemes for the energy transition, providing innovative climate financing, and increasing the previous emission reduction target. The Vice President emphasized that the strategic measures would become the spirit of G20 summit in 2022 and following ASEAN Summits in 2023.

International support for the ambitious Indonesia's FOLU Net Sink 2030 agenda became even greater during the Indonesia Pavilion at COP 27 to the UNFCCC, 6-17 November 2022 in Sharm El Sheikh, Egypt. During the World Climate Leaders Insight session on Indonesia's FOLU Net Sink 2030, Indonesia received full support from the United States of America, Norway, and the United Kingdom, wherein they proposed collaboration and partnerships to achieve more ambitious emission reductions, particularly in the forestry and other land use sector.



Indonesia launches the State of Indonesia's Forests (SOIFO) 2022, which is a documentation of government policies on managing forests and environment during 2021-2022, during the 8th World Forest Week (WFW) 2022 in the margin of the 26th Session of the Committee on Forestry (COFO26). At the launch, Minister Siti Nurbaya also elaborates Indonesia's strategy to achieve FOLU Net Sink in 2030. (Rome, Italy, 4 October 2022)



The Delegation of Republic of Indonesia conveys the document and has a discussion on Indonesia's FOLU Net Sink 2030 during the 17th Session of the United Nations Forum on Forests (UNFF 17) at the UN Headquarters. High appreciation for Indonesia's strategic steps is conveyed by Inter-Regional Adviser of UNFF Peter Gondo (above) and Deputy Director of FAO Tina Vahanen (below). (New York, United States of America, 9-13 May 2022)

Director General of Sustainable Forest Management Agus Justianto elaborates strategy to address climate issues in Indonesia by Indonesia's FOLU Net Sink 2030 scheme at the Indonesia-Japan Forest Talks 2022. (Tokyo, Japan, 2 August 2022)



Minister Siti Nurbaya has dialogue with Lord Goldsmith, Minister of State for Overseas Territories, Commonwealth, Energy, Climate and Environment of the United Kingdom, Anne Beathe Tvinneim, Minister of International Development of Norway, and Rick Duke, Deputy Special Presidential Envoy for Climate of the United States of America. The three high-level officials states their support and are ready to collaborate to achieve Indonesia's FOLU Net Sink 2030. (Sharm El-Sheikh, Egypt, 9 November 2022)





Vice President Ma'ruf Amin is welcomed by President of Egypt Abdel Fattah el-Asisi (left) and Secretary General of the United Nations António Guterres (right) at the Opening of COP27 UNFCCC. (Sharm El-Sheikh, Egypt, 7 November 2022)



Vice President Ma'ruf Amin is accompanied by Minister Siti Nurbaya and Director General of Multilateral Cooperation Tri Tharyat to the Plenary Hall COP27 UNFCCC. (Sharm El-Sheikh, Egypt, 7 November 2022)



Leading up to the Opening session of the COP27 UNFCCC, Vice President of Indonesia Ma'ruf Amin has a short dialogue with President of United Arab Emirates Mohammed bin Zayed Al Nahyan (above). Vice President of Indonesia Ma'ruf Amin, accompanied by Minister Siti Nurbaya and Director General of Multilateral Cooperation Tri Tharyat, also has a short dialogue with President of Pakistan Arif Alvi (below). (Sharm El-Sheikh, Egypt, 7 November 2022)

4.7 Support from Partner Countries

Indonesia's FOLU Net Sink 2030 agenda has also received high attention from the international community. A number of partner countries have officially provided support for this ambitious agenda by signing a memorandum of understanding with the Indonesian government.

They are the United States of America, Norway and the United Kingdom. The European Union has also stated that it intends to build official cooperation in the framework of Indonesia's FOLU Net Sink 2030. The European Union will focus on filling the gap in the existing cooperation between Indonesia and the three partner countries. Germany also expresses their appreciation and support on the ambitious agenda.

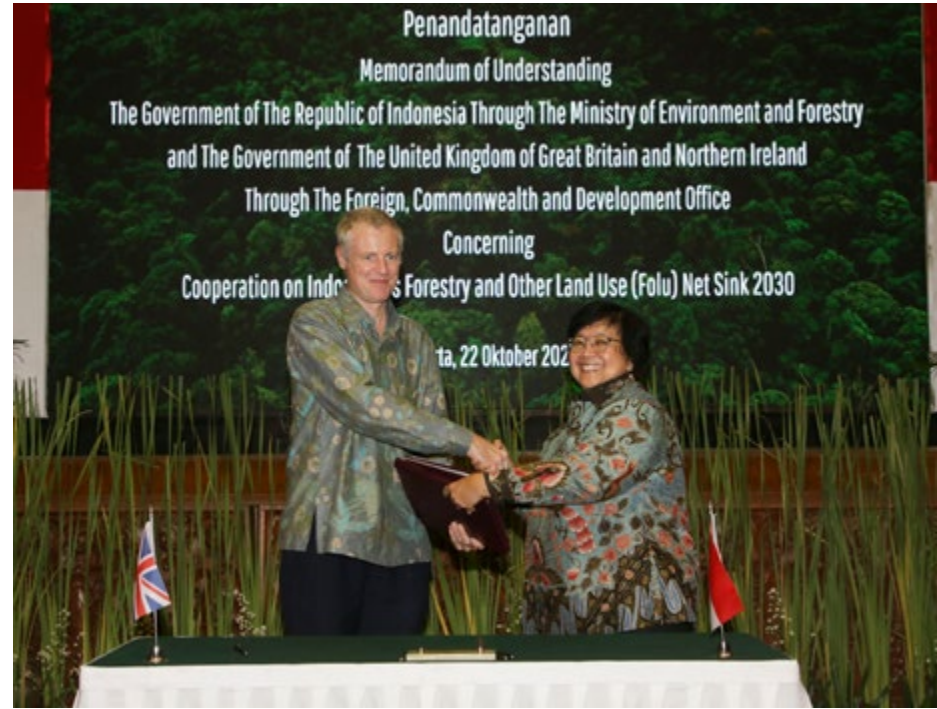
Indonesia and the United States of America agree to cooperate in supporting Indonesia's long-term vision to implement the Operational Plan of Indonesia's FOLU Net Sink 2030, which also aligns with the United States Agency for International Development (USAID) Climate Strategy 2020-2030. The cooperation is expressed on a memorandum of understanding which is signed by Secretary General of Ministry of Environment and Forestry Bambang Hendroyono and USAID Indonesian Mission Director Jeffrey P. Cohen. (Jakarta, 20 May 2022)



Indonesia and Norway build new partnership in reducing greenhouse gas emissions from forestry and other land use sector through the Memorandum of Understanding (MoU) on Partnership in Support of Indonesia's Efforts to Reduce Greenhouse Gas Emissions from Forestry and Other Land Use which is signed by Minister of Environment and Forestry of Indonesia Siti Nurbaya, and Minister of Climate and Environment of Norway Espen Barth Eide, and witnessed by Minister of Foreign Affairs of Indonesia Retno Marsudi. (Jakarta, 12 September 2022)



Following up the signing of the MoU between the Government of Indonesia and the Government of Norway, Director of the Indonesian Environment Fund (Badan Pengelola Dana Lingkungan Hidup Indonesia, BPD LH) Djoko Hendratto and Ambassador of Norway to Indonesia Rut Krüger Giverin sign the Contribution Agreement (CA) on result-based contribution to reduce emission, witnessed by Minister Siti Nurbaya. (Jakarta, 19 October 2022)



The objective of the memorandum of understanding on environment and climate between Indonesia and the United Kingdom signed by Minister of Environment and Forestry of Indonesia Siti Nurbaya and Minister of State for Asia, Energy, Climate and Environment of the United Kingdom Lord Goldsmith is to build stronger friendship, in order to deliver concrete and effective climate actions in the field, particularly the implementation of Indonesia's FOLU Net Sink 2030. (Jakarta, 22 October 2022)



As the follow-up of the MoU, Indonesia is also ready to share experience in restoring and rehabilitating peatland. (Sharm El-Sheikh, Egypt, 9 November 2022)



Director General of Sustainable Forest Management of the Ministry of Environment and Forestry Agus Justianto has a discussion with Director General for the Environment of the European Union Commission Florika Fink-Hooijer at the Indonesia Pavilion COP27 UNFCCC. At the meeting, the European Union declares their readiness to support the implementation of Indonesia's FOLU Net Sink 2030 agenda. (Sharm El-Sheikh, Egypt, 14 November 2022)



Vice Minister of Environment of Indonesia and Forestry Alue Dohong and Ambassador of Germany to Indonesia Ina Lepel discuss mutual interests and potential cooperation of both countries on climate change, mangrove and peatland rehabilitation, and environmental standards. (Jakarta, 17 March 2022)



During the bilateral meeting with Minister of Environment and Forestry of Indonesia Siti Nurbaya, State Secretary and Special Envoy for International Climate Action of Germany Jennifer Lee Morgan expresses her appreciation on Indonesia's ambitious targets in environmental sector, among others Indonesia's FOLU Net Sink 2030. (Jakarta, 10 May 2022)

4.9 Support from Civil Society Organizations

The Indonesia's FOLU Net Sink 2030 agenda has also attracted civil society organizations. The Temasek Foundation and the World Resources Institute have established cooperations with the Ministry of Environment and Forestry, each under a Memorandum of Understanding.



Secretary General of the Ministry of Environment and Forestry Bambang Hendroyono and CEO of Temasek Foundation Ng Boon Heong sign an MoU to promote a cooperation in support of the implementation of Indonesia's FOLU Net Sink 2030. The implementation of the cooperation activities will be located in South Sumatra Province and focusing in piloting innovations and sustainable models. (Jakarta, 14 December 2022)



Minister Siti Nurbaya and President/CEO of the World Resources Institute Ani Dasgupta signed an MOU to establish a technical partnership in support of Indonesia's FOLU Net Sink 2030. The partnership will involve technical dialogue on FOLU monitoring systems; exchange of knowledge and experience to strengthen the technical alignment of FOLU monitoring systems; and collaboration in international fora on issues of mutual interest. (Jakarta, 17 February 2023).



The Inauguration of Siti Nurbaya as Honorary Professor on Natural Resources Management Science of the Faculty of Agriculture, Brawijaya University. On her oration, Siti Nurbaya elaborates Indonesia's FOLU Net Sink 2030 agenda that offers novelty of the use of same indicator and measurement unit for all program activities in environment and forestry sectors namely CO₂e (carbon dioxide equivalent). (Malang, East Java, 25 June 2022)

V. A LONG WAY TO REACH INDONESIA'S FOLU NET SINK

Indonesia's FOLU Net Sink 2030 has propelled Indonesia to be a global leader in climate change actions. On the other hand, national development still enjoys enough space to flourish, undisturbed by the agenda.

The FOLU Net Sink agenda which was constructed based on the Low Carbon Scenario Compatible with the Paris Agreement, introduces a new concept to mitigation actions in the FOLU sector, no longer about zero deforestation. The paradigm of zero deforestation is only campaigned and adopted by several countries that have been a in a net-zero population growth.

The FOLU Net Sink also offers a novelty in environmental and forestry management. The novelty is in the form of a common standardized indicator applied for measuring performance of all activities in the environment and forestry sector, namely CO₂e level (carbon dioxide equivalent).

In the past, the performance was measured using different indicators including hectares (ha), cubic meter, ton, or Indonesian rupiah (IDR).

This novelty brings the designer of Indonesia's FOLU Net Sink 2030, Siti Nurbaya to be inaugurated as Honorary Professor in the Natural Resource Management at the Faculty of Agriculture, Brawijaya University, decided in the

open assembly meeting of the University Academic Senate, Saturday, 25 June 2022. Creation of the FOLU Net Sink design went through a long journey that Siti Nurbaya had to pass. It started with her appointment as the Minister of Environment and Forestry in the 2014 Working Cabinet under the Joko Widodo administration.

A challenging task, Siti Nurbaya had to synergize two landmark issues, green and brown, which were previously managed under two different ministries.

The first female leader who led two merged ministries, Siti Nurbaya carried out an array of corrective actions, some of them were even revolutionary.

For instance, enhancement of community-based forest management and recognition of Adat forests. Other actions include peatland and mangrove restoration as well as forest and land fires control. She also intensively conducted environment recovery and pollution prevention projects.

The role of Indonesia's environment and forestry sector grows to become more strategic in the global world. Leading by example was demonstrated in various international dialogues and agreements aimed at creating a greener

world and providing a better support for future generations.

Siti Nurbaya was appointed for the second time as the Minister of Environment and Forestry because of her impressive corrective actions and achievements in synchronizing the environmental programs (brown issues) and forestry (green issues), which were fundamental for overall sustainable development.

Tougher challenges plagued over the second period of her leadership along with the COVID-19 pandemic and stronger threat of climate change disasters. The challenges have been countered by a novelty that will become a legacy for the nation, in the form of Indonesia's FOLU Net Sink 2030.

5.1 Synergizing Two Issues

The Ministry of Environment and Forestry is the embodiment of the unity of the environment and forestry.

Unifying two ministries with different work cultures, the Ministry of Environment and the Ministry of Forestry was not an easy task.

Moreover, not only did the merger process cover institutional arrangement, but it also sought

to synergize green and brown issues, which have critical impacts on humanity.

With her long experiences in the bureaucracy and academic justification, Minister Siti Nurbaya developed synergy and harmony within the Ministry of Environment and Forestry, enhancing the institution existence both at the national level and in the global world.



Minister Siti Nurbaya and Vice-Minister Alue Dohong mingle with environment and forestry outreach workers during Preparedness Ceremony of Outreach Workers at Ir. Soedjono Suryo Plaza, Manggala Wanabakti Complex. In addition to the concrete implementation of outreach workers role in the readiness and contribution to improve the quality of environment and function of forests, and responding to climate change issues, the ceremony also builds solidarity, strengthens esprit de corps of the Ministry of Environment and Forestry. (Jakarta, 15 June 2022)

5.2 Providing Access for Communities

Indonesia's FOLU Net Sink 2030 agenda can be achieved with the support of the wider community. This aligns and is consistent with the changing configuration of forest management in Indonesia.

The Social Forestry Policy implemented by Minister Siti Nurbaya as a corrective action in forest management has made the forests managed by the community even wider. As of August 2022, the social forestry area reached 5,030,736.09 Ha, stipulated by 7,650 ministerial decrees and involving more than 1,113,234 Heads of Families.

Not only providing management access to communities, the social forestry policy also improves communities' institutional capacity by encouraging the establishment of Social Forestry Business Groups (KUPS), which by the end of 2021 had reached more than 600 units.

The establishment of KUPS is directed at the business of utilizing non-timber forest products and environmental services, which aligns with Indonesia's FOLU Net Sink 2030 agenda.



President Joko Widodo, accompanied by Minister of Environment and Forestry Siti Nurbaya and Minister of Home Affairs Tjahjjo Kumolo hands over a decree on the recognition of Adat Forests to the representative of Adat law community at the State Palace. (Jakarta, 16 December 2016)



President Joko Widodo hands over Social Forestry licenses in forest areas in Central Java and East Java, consists of: 13 permits on Community Forest Management in forest areas with special management of Blora District, 4 decrees on the transformation of Social Forestry Utilization License (IPHPS) to Community Forest Management Permit, 1 decree on Forestry Partnership with Perhutani (state-owned forestry enterprise) in 4 districts, and 1 decree that indicates social forestry groups in 7 districts.
(Gabusan Village Social Forestry Area, Blora District, Central Java, 10 March 2023)



President Joko Widodo hands over Social Forestry licenses, consists of: 514 decrees on Social Forestry and 19 decrees on the recognition of Adat Forests in Kalimantan Region.
(Bamboo Tourism Forest, Balikpapan, East Kalimantan, 22 February 2023)



At the PeSoNa Agroforestry Coffee Festival, Vice-Chairperson of People's Consultative Assembly of Republic of Indonesia Lestari Moerdijat appreciates entrepreneurs who has proven that coffee can be excellent commodity for economic growth and revival.
(Jakarta, 25 January 2022)



One of the examples of forest utilization with social forestry scheme is agroforestry by planting various high-value commodities, such as porang (*Amorphophallus muelleri*), under tree stands.
(Bekasi, West Java, 2022)

5.3 Developing Multi-forestry Business

Corrective actions carried out by the Minister of Environment and Forestry, Siti Nurbaya, changed the orientation of production forest management. Apart from timber, holders of forest business licenses (PBPH) may use non-timber forest products (NTFPs) such as honey, environmental services, and even ecotourism through a multi-forestry business scheme.

The scheme encourages forest business license holders to contribute to climate actions in the forestry sector. They are encouraged to operate forest management system that aligns with emission reduction measures, carbon sequestration enhancement, or carbon stock conservation.

Multi-forestry businesses open up opportunities for the license holders to develop agroforestry, an approach to increase forest cover while improving communities' welfare.

The scheme plays a critical role in sustainable forest management. It offers solutions to a number of forestry issues, such as conflict resolution and food security. The scheme also allows the forest license holders to take advantage of NTFPs, environmental services, agroforestry, silvofishery, silvopasture, as well as ecotourism.



The new orientation of multi-forestry business has been regulated in Law No. 11 of 2020 on Job Creation, and the Government Regulation No. 23 of 2021 on Forest Administration including its implementing regulations.

Minister Siti Nurbaya promotes honey as one of non-timber forest products (NTFPs) which has high economic value and benefit for the community at the Auditorium Dr. Soedjarwo Manggala Wanabakti. In promoting the NTFPs, Ministry of Environment and Forestry collaborates with online marketplaces. (Jakarta, 10 May 2019)



The utilization of forest area below tree stands for agricultural crops (agroforestry) results in the increase of food security and reducing greenhouse gas emissions to achieve Indonesia's FOLU Net Sink 2030. (Blora, Central Java, 7 March 2019)





In his visit to Self-Sufficient Sugarcane Agroforestry (Agroforestry Tebu Mandiri, ATM) area in Jombang Perum Perhutani Forest Management Unit (Kesatuan Pemangkuan Hutan), Director General of Sustainable Forest Management Agus Justianto conveys that ATM activities can be promoted as highly recommended multi business activities in forestry sector which involve active participation of local community. (Jombang District, East Java, 14 January 2022)



Through forestry multi-business activities, the holders of Forest Utilization Business License are expected to develop business activities that can increase forest cover involving local community which can result to their welfare improvement, such as forest utilization based on non-timber forest products, ecosystem services, ecotourism, agroforestry, silvofishery and silvopasture.



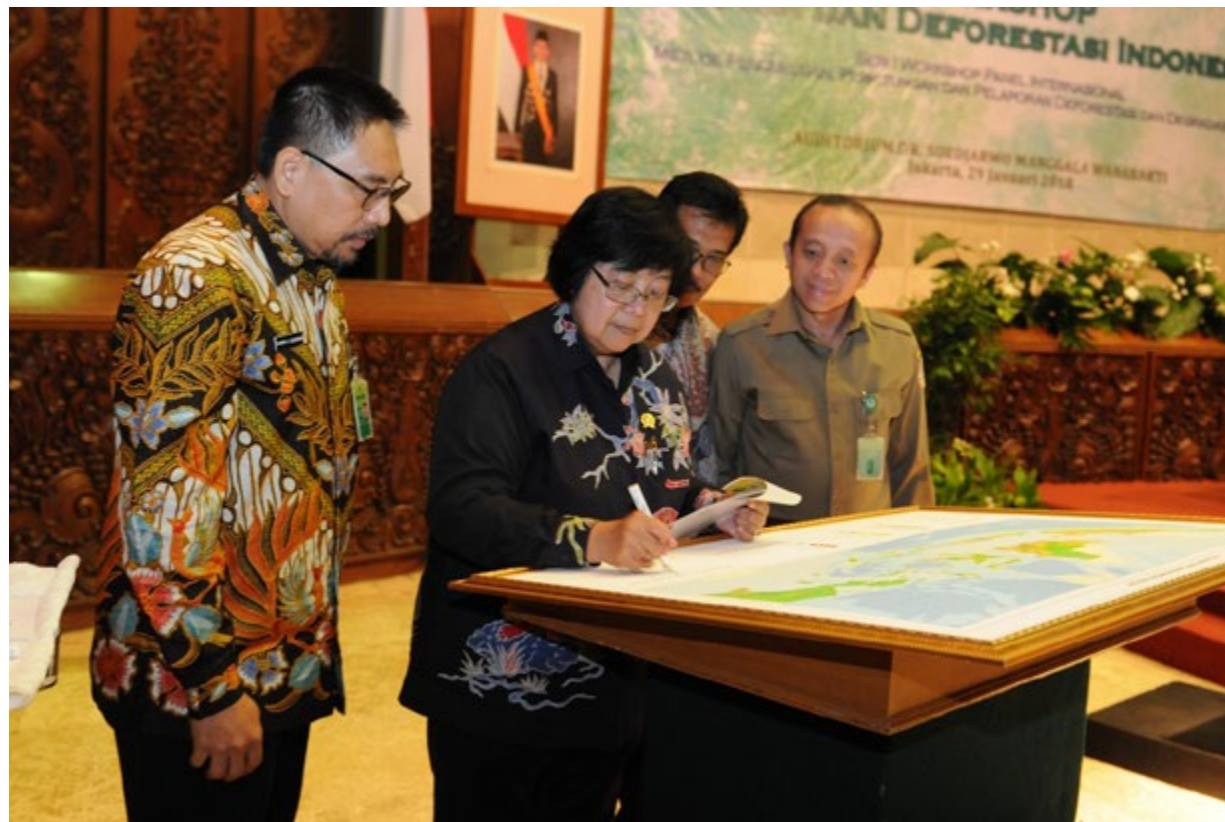
5.4 Curbing the Rate of Deforestation

Indonesia's FOLU Net Sink 2030 will be reached once emission levels from the forestry and other land use sector has been properly managed. Curbing the rate of deforestation makes up a way to reduce the emission level. Data from the National Forest Monitoring System (SIMONTANA) show that Indonesia's deforestation rate has continued to decline during President Joko Widodo's administration.

During 2019-2020, the Country made good performance in curbing the rate of deforestation to the lowest point in history. It was 115.46 thousand ha, down by 75.03 percent against the 2018-2019 deforestation rate which reached 462.46 thousand ha.

The corrective actions that have been taken by Minister of Environment and Forestry Siti Nurbaya since 2014 have undeniably had an impact on the performance.

One landmark corrective action is permanent moratorium on new forest concessions in primary forests and peatlands. The policy was previously to postpone new forest concession, and then it was upgraded to permanent moratorium through the Presidential Instruction No. 5 of 2019 on Termination of the Issuance of New Licenses and Governance Improvement of Primary Forests and Peatlands.



Siti Nurbaya signs a forest cover map as a result of the National Forest Monitoring System (SIMONTANA) at the Auditorium Dr. Soedjarwo, Manggala Wanabakti. Referring to SIMONTANA, national deforestation continues to decrease as a result of various government policies including moratorium on primary forests and peatland permits; moratorium on new oil palm plantation permits; and the gazettement of forest area. (Jakarta, 29 January 2018)

5.5 Building Sustainable Peatland Ecosystems

Another corrective action that has been carried out since 2014 by Minister of Environment and Forestry Siti Nurbaya is sustainable peatland management.

Since peatlands are the world's largest natural carbon store on land and a vital nature-based solution to climate change, Minister Siti Nurbaya place them as one of main pillars in Indonesia's FOLU Net Sink 2030.

Drained and extracted peatlands for farming or forestry has increased the risk of carbon emissions; on the other hand, well managed peatlands will expand vegetation cover and increase carbon

sequestration, which in turn will affect the nation's economy and welfare.

Consistent enforcement of the Government Regulation (PP) No. 71 of 2014 amended by PP No. 57 of 2016, on the Protection and Management of Peat Ecosystems or so-called PP Gambut, followed up by the issuance of its implementing regulations are critical to sustainable peatland management.

The regulations provide guidance for the sustainable use of peatlands. Peat domes within peatland ecosystems has to be protected, or if it has been damaged it has to be restored, particularly its vital role in regulating water balance. Production activities are still allowable within the cultivation



President Joko Widodo inspects the canal blockages constructed by local communities in Sungai Tohor village, Tebing Tinggi Subdistrict. The canal blockages are able to prevent peatlands from draining process, thereby reducing the risk of fires. (Meranti, Riau, 27 November 2014)

areas with water levels lower than 0.4 meters from the ground surface.

As a result, as of September 2021 approximately 3.6 million ha of peatlands within concession areas and 45,950 ha within community lands had been successfully restored.

The measures of peatland restoration are getting stronger with close collaboration between the Ministry of Environment and Forestry (KLHK) and the Peatland and Mangrove Restoration Agency (BRGM).

Indonesia shares experiences and lessons learned on peatlands restoration to the representatives of 14 countries and various international institutions at the International Workshop on Protection and Management of Peatland Ecosystem. Indonesia becomes global center of attention for the success in those carbon rich land protection and management during the last few years. (Pekanbaru, Riau, 13 December 2022)

5.6 Preventing Forest and Land Fires

The risk of forest and land fires continues to increase across the world including in Indonesia. For this reason, Indonesia has developed a permanent solution to prevent catastrophic fires.

Suppression and prevention of forest and land fires are a critical strategy to reach Indonesia's FOLU Net Sink 2030 since they can prevent the release of carbon into the atmosphere.

There are three permanent solutions that have been introduced. The first is real-time weather and climate observation. Weather modification interventions will be immediately operated as soon as the weather becomes much drier. The main intervention is to moisten the land so that the risk of fires can be lessened.

The second is more prepared fire management operation. It is applied through enhancement of an integrated task force, law enforcement, and fire-care community empowerment.

The third is landscape management to ensure forests and land remain productive.

Forest and land fire control has been conducted in collaboration between the Ministry of Environment and Forestry, the Indonesian Armed Forces, the Indonesian National Police, the National Agency for Disaster Management, provincial task forces, business actors, and the community at the local level.

The collaboration has made good performance. In recent years, there have been no large-scale



Ministerial-level Special Coordination Meeting strengthen synergy among the Ministry of Environment and Forestry, the Indonesian National Armed Forces (TNI), the Indonesian National Police (Polri), the National Agency for Disaster Management (BNPB), the National Research and Innovation Agency (BRIN), line ministries/institutions and local governments, to implement permanent solution on forest and land fires control. (Jakarta, 9 February 2021)

forest and land fire incidents that have an impact on transboundary haze. The extent of burnt areas continues to show a decline which strengthen the country's confidence to achieve Indonesia's FOLU Net Sink 2030 commitment.

Based on the data from the Information System of Forest and Land Fires (Sipongi), the burnt area in 2019 reached 1.6 million ha.

The extent then reduced drastically in the following year. In 2020 the forest and land fires only covered an area of 296 thousand ha while in 2021 they covered an area of 358 thousand ha. As of June 2022, forest and land fires occurred in an area of 46,844 ha and it was predicted not to reach up to 100 thousand ha.



The airplane of the Indonesian National Air Force is prepared to carry out the Weather Modification Technology. The Ministry of Environment and Forestry collaborates with the Meteorological, Climatological and Geophysical Agency, the National Research and Innovation Agency, the National Agency for Disaster Management, the Peatland and Mangrove Restoration Agency and the Ministry of Agriculture to anticipate forest and land fire by implementing Weather Modification Technology. (Pontianak, West Kalimantan, 11 March 2021)

5.7 Implementing Ecosystem Conservation

Indonesia is home to some of the highest levels of terrestrial biodiversity in the world, taking the second position after Brazil. If it includes marine biodiversity, Indonesia will be the richest country in terms of biodiversity (LIPI 2020). A number of biodiversity studies mention that Indonesia is the center of global agro-biodiversity with 10% of total species in the world being present in the country. As for fauna, Indonesia is home to 720 species of mammals (13% of the total species of the world), 1,605 species of birds (16% of species of the world), 723 species of reptiles, 1,900 species of butterflies, 1,248 species of freshwater fish, and 3,476 species of sea fish, as well as various types of invertebrates such as shrimp, crabs, spiders, and other insects.

The Country has carried out various measures to prudentially manage and protect the mega biodiversity. The Ministry of Environment and Forestry has fostered the biodiversity in 552 conservation areas of approximately 27.1 million ha throughout Indonesia, and designated the areas as essential ecosystem areas.

Several conservation efforts include field security patrols in conservation areas, wildlife rescue programs, wildlife translocation, wildlife rehabilitation, wildlife and human conflict prevention, as well as strengthening law enforcement of illegal wildlife traffic.

As a result, the population of a number of priority species was significantly increased,



such as the javan and sumatran rhinoceros, bali starling, and sumatran tiger. Moreover, the corrective actions in the conservation areas carried out by Minister of Environment and Forestry Siti Nurbaya have improved the value of conservation activities, leading to strengthened livelihood of the community, especially those living around the forests. By November 2021, a Conservation Partnership scheme applied in conservation forests had covered 176,588 ha, through 347 collaboration agreements made with 55 work units in 69 units of conservation areas. It involved 261 villages, 246 partners, and 12,621 households.

Apart from conservation partnerships, community-based economic business development was carried out to create positive relationships between communities and conservation areas. In the period 2020-2021, this community empowerment activity had created 1,359 units of productive economic enterprises in 644 villages, involving 965 groups and 26,157 group members. This action will directly impact the sustainability of conservation areas which in turn will support Indonesia's FOLU Net Sink 2030 agenda.



Conservation partnership program for community empowerment that opens the access for local community to conservation area in the form of non-timber forest products collection, such as honey.

5.8 Climate Village Program (ProKlim)

Launched in 2011, Climate Village Program (ProKlim) translates global and national climate change policies into local actions.

ProKlim has transformed into a community-based national movement program on climate change at site level, which is a response to climate change impacts at site level.

The program encourages community's and stakeholders' participation to carry out capacity building on climate change adaptation and greenhouse gas emissions reduction, as well as acknowledges climate change adaptation and mitigation efforts which improve community welfare at a local level in accordance with their area's condition.

From 2012 until now, ProKlim has been implemented in 4,200 sites, which shows great enthusiasm from the community. In comparison, there were 1,092 proposals of ProKlim sites, but only 434 sites were viable for verification. By 2024, ProKlim should reach to 20,000 sites.

By ProKlim, the Indonesia's FOLU Net Sink 2030 agenda can be carried out locally by the community, such as tree planting around houses, solid waste and household waste management, saving energy consumption and urban farming. Those activities can contribute to greenhouse gas emissions reduction and improve carbon absorption and storage.



The 2022 inventory in 424 ProKlim sites exhibits the greenhouse gas emissions reduction of 301,144.2 tonnes carbon dioxide equivalent (CO₂e).

Minister Siti Nurbaya hands over the award on Climate Village Program (Program Kampung Iklim, ProKlim) to the actors who conduct concrete actions to develop climate-resilient and low-greenhouse gas emissions Indonesia at site level. ProKlim is a part of Indonesia's commitments and contributions to global climate change control efforts by involving non-party stakeholders such as local government, private sector and community. (Jakarta, 28 October 2022)



The Climate Village is a good manifestation of the concept of "think globally, act locally", action at the local level ensures that all discussions at the global level can be implemented by the community to manage the place where they live in an environmentally friendly, low-emission way, and results in increased carbon sequestration and storage, through activities such as tree planting, prevention and suppression of forest and land fires, and increased food security.



Minister Siti Nurbaya visits RW 01 Sunter Jaya, Tanjung Priok, North Jakarta that is a pilot for Climate Village Program (ProKlim) in DKI Jakarta. ProKlim sites are encouraged to carry out networking or being connected with each other so that they can learn and take example from each site towards better management because each site has its own methods and characteristics. (Jakarta, 18 May 2021)

5.9 Enhancing Law Enforcement

During the 2015-2021 period, the Ministry of Environment and Forestry handled 6,143 complaints, issued 2,185 administrative sanctions, and prosecuted 214 forest dispute cases outside the court. Meanwhile, out of 31 civil lawsuits that were handled, 14 lawsuits had permanent legal force (*inkracht van gewijsde*), with a total lawsuit value of IDR 20.7 trillion as compensation for environmental and forestry restoration. The criminal case lawsuits that had met P.21 regulation, meaning all required files have been complete and ready to go to the court, were 1,156 cases. In addition, the Ministry had carried out 417 operations of illegal wildlife circulations, 671 operations of illegal logging, and 653 operations of encroachment. The record proved that Minister Siti Nurbaya thoroughly made corrective actions to achieve environmental justice.

With the transformation of the justice system and structure in Indonesia, the law enforcement on environment and forestry is now directed to provide restorative justice. Without ignoring the criminal aspect, the law enforcement on the environment and forestry does not only aim to create a deterrent for violators, but how to recover or restore losses to the environment/ecosystem, society and the country. The extensive loss caused by environment and forest crimes has made them as extraordinary crimes.

Therefore, the elements of restorative law are strengthened. First, strengthening preventative



approaches through safeguarding in one order. Second, the application of administrative coercive sanctions in the form of environmental restoration orders, coupled with the imposition of fines. Third, dispute resolution in the form of compensation for or obligation to restore the damage and/or pollution. Fourth, additional criminal law enforcement in the form of recovering environmental quality. Fifth, multidoor law enforcement approaches including money laundering to strengthen the deterrent effect and regain state losses.

Investigating team of the Sulawesi Region Law Enforcement Office of Ministry of Environment and Forestry hands over the suspect of illegal nickel mining in Limited Production Forest area in Lamondowo Village, Andowia Sub-district, North Konawe District, Southeast Sulawesi Province, to the public prosecutors of the Southeast Sulawesi High Prosecutor's Office. The evidence include 3 excavators and 3 dump trucks. Supports from various law enforcement institutions, such as Prosecutor Office are needed to combat environmental and forestry crimes that cause state financial loss, and threaten community safety caused by disaster due to ecological damage. (Kendari, Southeast Sulawesi, 10 March 2022)



5.10 Gaining International Recognition

Corrective actions carried out by Minister Siti Nurbaya have received recognition from domestic and international societies. It is because these actions have an essential impact on a reduction in the global GHG emissions.

The first recognition came from the Global Fire Monitoring Center (GFMC) which granted the 2019 Global Landscape Fire Award. The award was to appreciate the government's performance in controlling forest and land fires after the devastating fire events in 2015.

This award was handed over by GFMC Coordinator Johann Georg Goldammer to Minister

Siti Nurbaya, for her successful comprehensive corrective measures in reducing the forest and land fires-caused negative impacts on the global environment and humanity.

The Global Fire Monitoring Center is a global voluntary network that provides policy advice, and science and technology transfer to enable nations to reduce the negative impacts of landscape fires on the environment and humanity.

The GFMC's performance was recognized by the UN International Strategy for Disaster Reduction (UNISDR) and the UN Office for Disaster Risk Reduction (UNDRR).

Another award was the 2020 Asia Environmental Enforcement Awards (AEEA) from the United Nations Environment Program (UNEP).



Left: Minister Siti Nurbaya observes the Center of Intelligence that was built in 2017. The Center becomes one of infrastructures in environmental and forestry law enforcement that obtained an international award from UNEP in 2019. (Jakarta, 2 May 2019)

Right: Siti Nurbaya receives Global Landscape Fire Award presented by Johann Georg Goldammer, the Coordinator of the Global Fire Monitoring Center. (Jakarta, 11 September 2019)

The 2020 AEEA award was delivered by UNEP in collaboration with UNDP, CITES, WCO and Interpol. The award was granted to the Ministry of Environment and Forestry and the Indonesian National Police for the cross-country collaboration in fighting cross-border environmental crimes.

5.11 Environmental Funding

Indonesia's commitment in climate action and environmental protection is carried out in the form of policies and concrete actions. Field activities are implemented by environmental rehabilitation, tree planting, large-scale nursery establishment, mangrove planting, wildlife habitat management, peatland restoration, ecosystem replication, etc.

Regarding those efforts, the Government Regulation No. 46 of 2017 on Environmental Economy Instruments is purposed as a set of economy policies to encourage central government, local government and individuals towards environmental preservation. Furthermore, the Environmental Fund Management Agency (BPD LH) has been established by the Presidential Regulation No. 77 of 2018 on Environment Fund Management and the Finance Ministerial Regulation No. 137 of 2019 on Organization and Work Procedures of BPD LH.

The presence of BPD LH meets the funding needs to implement Indonesia's commitment in climate action and environmental protection, in particular Indonesia's FOLU Net Sink 2030. To support Indonesia's FOLU Net Sink 2030, a minimum investment of 14 billion US dollars is needed for four main activities, namely halting deforestation and forest degradation, establishing plantation forests, enhancing carbon stock including mitigation actions in sustainable forest



Minister Siti Nurbaya highlights the importance of local governments, through the improvement of the role and capacity of local governments as benefactors and collaborators in environmental fund management. Collaboration between local governments and ministries/institutions as the stakeholders is necessary to internalize programs and implementation by the financial support from the Indonesian Environment Fund. (Jakarta, 21 December 2022)

management, and restoring and managing peatland ecosystems.

The BPD LH raises environmental protection funds systematically coming from public and private funds in the country and at international level; that includes support from bilateral cooperation, international institutions, the private sector, and philanthropy under blended-finance mechanism. The supply orientation will cover small grant activities, green investment and capacity

building for community and government officials.

The Government gives an assurance that all funds invested by partners to BPD LH will be managed in effective, transparent and accountable manners. By December 2022, the BPD LH has managed the funds of 968.6 million US dollars.



At the opening of the 2022 National Working Meeting of the Indonesian Environment Fund, President Joko Widodo emphasizes that the fund from the Indonesian Environment Fund (BPD LH) shall be allocated to concrete activities related to environment. According to the President, there are a lot of environmental activities that need to be carried out, from waste issues, animal conservation, flora conservation, mangrove rehabilitation, tropical rainforest rehabilitation, to peatland restoration. (Jakarta, 21 December 2022)



VI. MAJOR BREAKTHROUGHS UNTIL MARCH 2023

Indonesia's FOLU Net Sink 2030 agenda outlines the following nine mitigation actions:

- Reduction in Deforestation and Forest Degradation
- Development of Plantation forests
- Sustainable Forest Management
- Forest and Land Rehabilitation
- Management of Peatland and Mangrove Ecosystems
- Enhancement of the role of Biodiversity Conservation
- Strengthening of Social Forestry and Adat Forests
- Development of Urban Green Spaces and Eco Riparian
- Law Enforcement

Some pioneering actions on the ground have flourished that encourage the operation of Indonesia's FOLU Net Sink 2030 agenda at the site level. For instance, sustainable forest management is implemented more broadly through the implementation of Intensive Silviculture (SILIN),

Reduced Impact Logging Carbon (RIL-C), and Enhanced Natural Regeneration. Forest Business License Holders (PBPH) are encouraged to develop a multi-forestry business model. With this business model, the license holders can take advantages of the forest resources for various different purposes for greater benefits.

Furthermore, forest and land rehabilitation will be heightened. Noting that during the period 2015-2020 forest and land rehabilitation had reached 574,556 ha. It will be further expanded by involving the role of stakeholders to rehabilitate degraded land along rivers within a watershed.

The measures to achieve forest carbon positive by 2030 are expected to be more aligned since the Ministry of Environment and Forestry has developed various modalities or supporting systems to ensure the agenda is achievable.

These supporting systems include the Strategy and Roadmaps for Climate Change Mitigation and Adaptation, an inventory system of National Greenhouse Gases, National Registry System

(SRN), The Information System for Vulnerability Index Data (SIDIK), Climate Village Program (Proklam), and other supporting systems.

This publication is expected to provide a clear guideline, particularly for the forestry and other land use sector in Indonesia, to boost the ongoing GHG emission reduction actions. For this reason, the government has formulated program and policy strategies for up to 2060.

One of forest management activities in one of Forest Utilization Business License (Perizinan Berusaha Pemanfaatan Hutan, PBPH) areas. Ministry of Environment and Forestry directs PBPH holders to implement management techniques that can halt the release of greenhouse gas emissions in order to support Indonesia's FOLU Net Sink 2030.

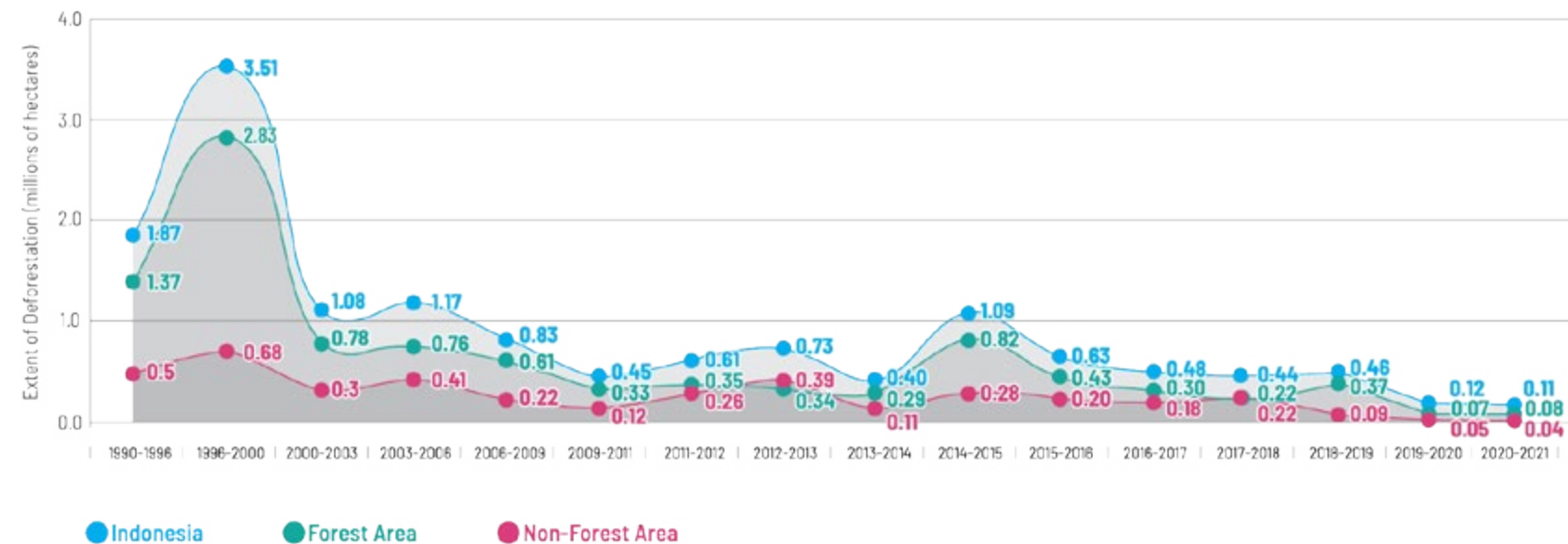
6.1 Reduction in Deforestation and Forest Degradation

Deforestation and forest degradation are of major concern to many developing countries, including Indonesia. To address worsening forest conditions and disappearing forest covers, several measures have been taken by the Government. One of them is instructing moratorium on the issuance of new permits in primary forests and peatlands through a presidential instruction in

2011 which was valid for two years. After being extended three times, the moratorium was made permanent in 2019. In April 2022, the Ministry of Environment and Forestry published an Indicative Map for the Termination of the Issuance of Business Licenses (PIPIB) for the first period of 2022, covering 66,511,600 hectares of primary forests and peatlands, a slight increase of 372,417 ha compared to the end of 2021.

The landmark policy has led to a sharp reduction in the rate of deforestation in Indonesia.

In the period 1996-2000, the deforestation rate reached 3.5 million ha per year, then it continued to decline. In the 2019-2020 period, deforestation was recorded at only 115 thousand ha, while in the 2020-2021 period the deforestation rate was recorded at 113.5 thousand ha, which is the lowest in history.



At the Bhumandala Award 2022, the Ministry of Environment and Forestry has been awarded Bhumandala Kanaka (gold medal) on the category of ministry/institution with the best network node, for its Geospatial Information System (SIGAP) which has been developed independently and working well, including its institutional and data quality aspects. The geospatial database of SIGAP KLHK is utilized for the Forestry Information System on the activities of planning, management, implementation and development control, as well as monitoring of forest areas, land covers and other activities at national and sub-national levels.

The Bhumandala Award 2022 is an award ceremony on best network nodes hosted by the Geospatial Information Agency to encourage ministries/institutions and local governments to develop network nodes which provide geospatial data and information that are reliable, up-to-date, valid, accountable and accessible. (Jakarta, 25 November 2022)



Border Demarcation Process by Palangkaraya XXI Forest Area Consolidation and Environmental Governance Office (Kapuas District, August 2020)



Loban Papua Limited Production Forest by Pontianak III Forest Area Consolidation and Environmental Governance Office (Kapuas Hulu District, West Kalimantan, 2014)

The installation of forest area boundary poles are carried out by traveling through swamp, gorge, steep cliffs and other areas with high difficulty level. Indonesia has Forest Area of 125,795,306 hectares with border line of 373,828.44 kilometers. The border line consists of 284,032.3-kilometer outer border and 89,796.1-kilometer forest area function border. Until December 2022, a total of 332,184.0-kilometer border line has been demarcated (88.88%). It consists of the demarcation: of 242,387.8-kilometer (65%) forest outer border; and 89,796.1-kilometer (24%) forest area function border.

Until December 2022, the stipulation of 99,659,996 hectare-forest area has been carried out by the issuance of 2,328 forest area stipulation decrees. In 2022, as the concrete form of the acceleration of forest area gazettement completion, a total of 10,005,244 hectare forest area has been stipulated by 178 decrees. The spike of forest area stipulation over the last 10 years has been occurred to the 79.2% of Indonesia's forest area. The forest area of 26,137,830 hectares will be stipulated in 2023.

The forest area boundary management towards forest area stipulation that is projected to be completed in 2023 plays important role in Indonesia's FOLU Net Sink 2030 agenda.



Border Demarcation Process by Palangkaraya III Forest Area Consolidation and Environmental Governance Office (Seruyan District, June 2022)

To accelerate forest area gazettement, the Ministry of Environment and Forestry follow updates on science and technology by using satellite-based remote sensing. The method can tackle border demarcation process in areas with high difficulty level. Satellite-based border demarcation process has been carried out by Samarinda IV Forest Area Consolidation and Environmental Governance Office in New Capital City of Nusantara. (Sepaku, North Penajam Paser, East Kalimantan, 2022)



At the launch of “Completion of Forest Area Boundary Management Towards 100% Forest Area Gazettement in 2023”, Minister Siti Nurbaya emphasizes that the heavy task of forest area gazettelement emerges as the strong foundation for sustainable forest management and forestry governance, in order to establish clarity of community’s rights and duties, and concrete assistance for the community. Moreover, the forest area gazettelement process becomes Indonesia’s response at international level as one of the most powerful tropical forests countries in the world. (Jakarta, 30 January, 2023)



The 2020 Indonesia’s forest areas monitoring result shows that there are 95.6 million ha of forested land areas in Indonesia or 50.9% of Indonesia’s land areas. Of the 95.6 million ha of forested land areas, 92.5% or 88.4 million ha are in the stipulated forest area.



6.2 Development of Plantation Forests

Carbon sequestration is critical to the Indonesia's FOLU Net Sink 2030 agenda. The Ministry of Environment and Forestry, therefore, is rousing investment in plantation forest development, particularly in degraded land and forests.

Supervision is provided for forest business license holders to lead them to optimum operation. The Ministry of Environment and Forestry will issue warnings and even a revocation if existing permits do not operate.

Investment in plantation forest development will increase forest carbon sequestration and will have a multiplier effect on the economy as plantation forests supply logs for various wood processing industries such as plywood, carpentry wood, pulp, paper, and textiles. The economic



value generated from the industries in 2021 reached USD 13.5 billion.

There have currently been 568 units of forest business licenses covering an area of 30,434,445 ha. Of which, 298 units have invested in plantation forests with an area of 11,265,354 ha. As of 2022, the forest business license holders had successfully planted 436,223.35 ha of plantation forest areas, slightly exceeding their target of 403,000 ha (108.24%).



Plantation forests are developed in degraded land with mosaic patterns to keep High Conservation Value Forest (HCVF) areas. By this approach, plantation forests can increase the greenhouse gas emissions absorption and material suppliers for forestry industries.

6.3 Sustainable Forest Management

Sustainable forest management is the core of the FOLU Net Sink 2030 agenda. Current forest management techniques are encouraged to secure and increase carbon stock, while preventing degradation and deforestation to reduce forest emission level.

An intensive silvicultural technique (SILIN) is applied to rehabilitate forests and improve natural forest productivity in forest concession areas through selective logging and gap planting or Selective Cutting and Line Planting. The techniques include plantation area modification, tree improvement, and pest and disease control. These techniques may produce logs 3-4 times higher than conventional forest operation, or around 90-120 m³ per harvest cycle. There have hitherto been 119 units of PBPH that have applied the SILIN technique with the areas being impacted of 164,730 ha.

On the other hand, the technique of reduced impact logging for lower emission (RIL-C) is able to improve efficiency of forest operation, hence increase forest productivity up to 10%. RIL-C is able to almost double carbon sequestration and carbon stock of forests. While conventional logging will leave carbon stock of forest biomass of only 45%, RIL-C can augment the carbon stock up to 77%.

Of the 257 natural forest concessionaires, 30 units have applied RIL-C with an area of 103,596.56 ha. Research findings show that RIL-C can reduce the release of carbon emissions by up to 50% compared to conventional logging.

To ensure that the processed wood is legally and sustainably harvested, the Country has developed a Forest Legality and Sustainability Assurance System (SVLK) that applies the principles of transparency and accountability by involving all elements of society in its implementation, including civil society organizations as an observer.

The forest concessionaires that have been granted sustainable forest management certification (S-PHL) and timber legality certifications (VLK) include:

- Natural forests: 178 units (154 units of S-PHL; 24 units of VLK)
- Plantation forests: 152 units (128 units of S-PHL; 24 units of VLK)



Indonesia has developed Forest Legality and Sustainability Assurance System (Sistem Verifikasi Legalitas dan Kelestarian) that applies principles of transparency and accountability to ensure every harvested timber can be traced to its sources which are legal and sustainable forests.



Implementation of Intensive Silviculture in Forest Utilization Business License areas will increase timber productivity of natural forests and greenhouse gas emissions absorption through sustainable forest management.



Intensive Silviculture (Silvikultur Intensif, SILIN) technique is carried out carefully by planting areas modification, tree improvement, use of superior seeds, and integrated pests and diseases control. The results are 3-4 time increase of timber productivity of natural forests, to 90-120 cubic meter per harvesting cycle and able to increase carbon absorption and storage.

The view of a Forest Utilization Business License area that implements Intensive Silviculture. The implementation can increase forest productivity and greenhouse gas emissions absorption to support in achieving Indonesia's FOLU Net Sink 2030.

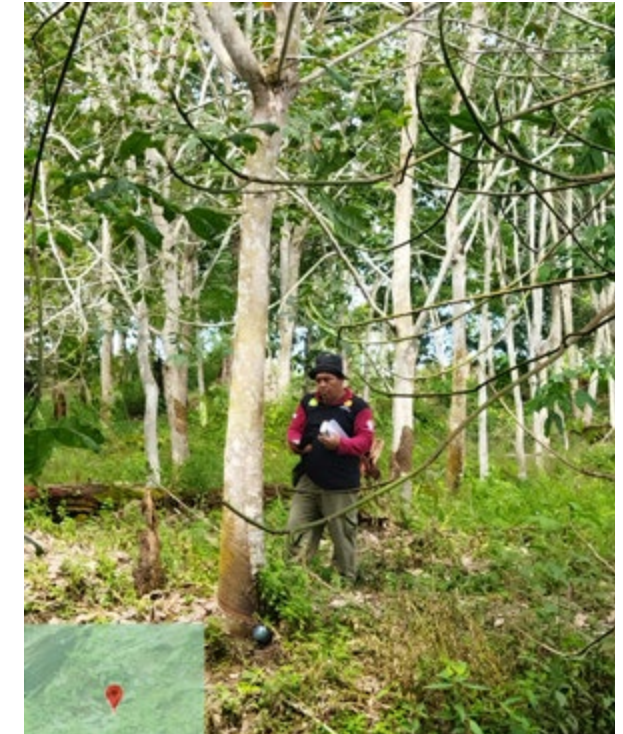
In sustainable forest management, the holders of forest business license (PBPH) are also encouraged to share space with communities within and outside the forest area by implementing Social Forestry under Forestry Partnership scheme.

The Forestry Partnership scheme is implemented in accordance with Environmental and Forestry Ministerial Regulations No. 8 of 2021 and No. 9 of 2021. The Scheme becomes a way for community empowerment by providing access to manage land in forest areas under PBPH licenses while also maintaining sustainable forest management principles.

The Scheme also assures that community will receive assistance from PBPH holders, thus equal and mutual benefit collaboration will be achieved. Until December 2022, there were 51 PBPH units that have carried out Forestry Partnership under 322 MoU documents in the forest area of +/- 188,065 ha and engaged with 29,125 people.



Honey bee cultivation with Forestry Partnership scheme in an Forest Utilization Business License area. The implementation of Forestry Partnership is started by conducting social study in accordance with government regulations and series of dialogue with stakeholders. The community involved in Forest Farmer Groups will obtain supports in form of superior seeds, fertilizers, agricultural tools, technology transfer and assistance, so that they can cultivate high-value commodities.



Utilization of latex in living plants block of PT Lestari Asri Jaya Forest Utilization Business Area with Forestry Partnership scheme

6.4 Forest and Land Rehabilitation

Forest and land rehabilitation is carried out to enhance carbon sequestration in the framework of Indonesia's FOLU Net Sink 2030. In 2021, forest and land rehabilitation activities were carried out in collaboration between the Ministry of Environment and Forestry and the Peatland and Mangrove Restoration Agency in an area of 203,386.58 ha, consisting of 46,752 ha of forest rehabilitation and 35,881 ha of mangrove rehabilitation. Land rehabilitation was also conducted in 7,138.73 ha of community-owned land.

To support the activities, 54 permanent nurseries spread across Indonesia supply up to 50 million seedlings per year. A part from that, there are community-owned and village-owned nurseries where communities can use them to rehabilitate their lands.

Rehabilitation of degraded land and forests continues to be augmented through the establishment of permanent in each province using a public private partnership (KPBU) scheme. The scheme is one of the forms of responsibilities and collective contribution of the private sector in environmental and forestry restoration.

The nursery establishment under the KPBU scheme has been carried out in Bogor (in collaboration with APRIL), Penajam Paser Utara (in collaboration with PT Indo Tambangraya Megah Tbk), Banjarbaru (in collaboration with PT. Adaro Energy Indonesia Tbk), and Banyuasin (in



President Joko Widodo with partner countries Ambassadors to Indonesia, Country Director World Bank Jakarta, and local community in Bebatu Village, Sesayap Hilir Subdistrict, Tana Tidung District, plant mangrove. (North Kalimantan, 19 October 2021)



collaboration with Sinar Mas). Each nursery has annual production capacity of up to 15 million seedlings.

Furthermore, holders of Mining and Non-Mining Business Permits with Lease Business Permits (IPPKH) are required to rehabilitate watersheds outside their concession areas in accordance with the Government Regulation. As of 2021, IPPKH holders had replanted 11,709 hectares of degraded land and forests.



President Joko Widodo observes mangrove nursery in Ngurah Rai Grand Forest Park that can produce up to 6 million seedlings per year to support mangrove rehabilitation. (Badung, Bali, 16 November 2022)



The Rumpin Permanent Nursery is established in collaboration among the Ministry of Environment and Forestry, the Ministry of Public Works and Housing, and APRIL under a Public-Private Partnership scheme. The Nursery, that has an annual production capacity of 12 million tree seedlings, is one of the concrete evidence of Indonesia's commitment to address climate change issues. Following the establishment of the Rumpin Nursery, the Government continues to develop nurseries in other parts of Indonesia. By replicating and expanding this model, Indonesia has unlocked the potential of nurseries and encouraged reforestation and rehabilitation of degraded lands to achieve the Indonesia's FOLU Net Sink 2030 target. (Bogor District, West Java, 10 June 2022)



The Kick-Off of Mentawir Nursery Establishment in New Capital City of Nusantara (IKN) as the seedlings supplier for land reahabilitation and environmental restoration in IKN. The Nursery is able to produce up to 15 million seedlings per year and developed under Public-Private Partnership scheme among the Ministry of Environment and Forestry, the Ministry of Public Works and Public Housing, and PT Indo Tambangraya Megah (Tbk). (Jakarta, 18 May 2022)



The Signing of Memorandum of Understanding between the Ministry of Environment and Forestry and PT. Adaro Energy Indonesia Tbk on the establishment of nursery center under Public-Private Partnership scheme in Liang Anggang Subdistrict, Banjarbaru City, South Kalimantan with the capacity from 10 to 12 million seedlings per year. The large-scale nursery development is a part of Indonesia's FOLU Net Sink 2030 agenda that shows climate action ambition in the implementation of activities through more structured and systematic approaches. (Jakarta, 4 August 2022)



The Signing of Memorandum of Understanding between the Ministry of Environment and Forestry and Sinar Mas on the establishment of the Sriwijaya Kemampo Nursery Center under Public-Private Partnership scheme. The Kemampo Nursery is built on an area of around 6 ha in Kemampo Forest Area/Special Purpose Forest Area, Banyuasin District, South Sumatra. The Nursery is expected to produce up to 10 million seedlings annually. The seedlings are from various species, including endemic Multi Purpose Tree Species, aesthetic plants and non-timber forest products plants. (Jakarta, 6 August 2022)



President Joko Widodo, accompanied by Coordinating Minister of Maritime Affairs and Investment Luhut Binsar Pandjaitan, Minister of Public Works and Public Housing Basuki Hadimuljono, Minister of Foreign Affairs Retno Marsudi, Vice-Minister of Environment and Forestry Alue Dohong, and Director General of Watershed Management and Forest Rehabilitation Dyah Murtiningsih observe Ngurah Rai Grand Forest Park Bali, including nursery that are planned to produce six million seedlings per year. (left) (Badung, Bali, 6 October 2022)



Vice-Chairperson of Commission IV of the House of Representatives of Indonesia (DPR RI) Anggia Erma Rini, accompanied by Director General of Watershed Management and Forest Rehabilitation Dyah Murtiningsih, and the Members of Commission IV of DPR RI during Specific Working Visit to Rumpin Nursery. Until August 2022, Rumpin Nursery has produced 5.14 million seedlings and distributed 2.74 million seedlings. (Bogor District, West Java, 26 August 2022)

A mangrove nursery observation in Ngurah Rai Grand Forest Park by senior officials of Ministry of Environment and Forestry and experts from various higher education institutions. The observation result becomes a reference to develop G20 Mangrove follow-up plan. (Badung, Bali, 2 December 2022)



6.5 Management of Peatland and Mangrove Ecosystems

Storing a vast amount of carbon, peatlands and mangroves are critical to Indonesia's FOLU Net Sink 2030 agenda and becoming a vital nature-based solution to climate change. Moreover, vegetation in blue carbon ecosystems, including mangrove forests and seagrass meadows, can store 3 to 5 times more carbon than terrestrial vegetation. Mangrove store carbon in sediments and biomass (woods, leaf litters). Having huge capacity in carbon storage enables mangrove to become global climate regulator.

Peatland restoration has been carried out in a more structured manner since the issuance of Government Regulation (PP) No. 71 of 2014, which was amended by PP No. 57 of 2016 on protection and management of peat ecosystems. The regulation is followed by a set of implementing environment and forestry ministerial regulations to guide the implementation on the ground.

According to these regulations, degraded peatlands must be restored. The restoration is applied through various approaches, including construction of canal blocking to raise the peat water level, groundwater monitoring stations, and replanting of burnt areas. Implementing these approaches, the Country has hitherto succeeded in restoring 3.6 million ha of degraded peatlands.

A thorough calculation proves that the peatland restoration that has been carried out in



the forest concession area of 3.6 million ha and in 49,874 ha of community-owned land has resulted in a GHG emission reduction by 271 Mt CO₂e.

Furthermore, Indonesia's mangrove forests cover around 3.4 million ha spread along the coastline and account for more than 20 percent of the mangrove forests in the world. This ecosystem is of concern for restoration measures. Considerable efforts to protect and rehabilitate the mangrove ecosystem have been taken by the Country. While the Country sets a target to rehabilitate 600 thousand ha of mangroves by 2024, the rehabilitated mangroves in 2021 had covered an area of 35,881 ha.

To accelerate efforts to rehabilitate peatlands and mangroves, the Government has expanded the tasks and responsibility of the Peatland Restoration Agency to include Mangrove

Co-chair of the second meeting of the 2022 G20 Environment Deputies Meeting and Climate Sustainability Working Group, Director General of Pollution and Environmental Degradation Control, Sigit Reliantoro, conveys that Indonesia is ready to share lesson learned and best practices in peatland restoration. (Jakarta, 21 June 2022)



Indonesia aims to rehabilitate mangrove up to 600 thousand ha until 2024. In the implementation, mangrove rehabilitation involves local communities which will increase the communities income.

Restoration. The Agency has transformed to be the Peatland and Mangrove Restoration Agency (BRGM), stipulated by the Presidential Decree no. 120 of 2020. Indonesia's FOLU Net Sink 2030 agenda also carries out rehabilitation of the degraded mangrove forests and restoration of peatland.



Coordinating Minister of Maritime Affairs and Investment Luhut Binsar Pandjaitan with Minister of Environment and Forestry Siti Nurbaya, Head of Peatland and Mangrove Restoration Agency Hartono, and Head of Geospatial Information Agency Aris Marfai launch 2021 National Mangrove Map. The Map is a part of efforts to improve mangrove management and rehabilitation. (Angke Kapuk Nature Recreation Park, Jakarta, 13 October 2021)



President Joko Widodo gives directives to Head of Peatland and Mangrove Restoration Agency (BRGM) Hartono to carry out mangrove rehabilitation in Indonesia. The Government adds duty of Peatland Restoration Agency to BRGM in accordance with Presidential Regulation No. 120 of 2020 to accelerate peatland ecosystems and mangrove rehabilitation efforts. (Cilacap, Central Java, 23 September 2021)



Minister of Marine Affairs and Fisheries Sakti Wahyu Trenggono states that blue carbon management in the context of climate change is the essential part of the two out of five Blue Economy policies which has been initiated by the Ministry of Marine Affairs and Fisheries, namely the expansion of marine conservation areas to 30% in 2045 and coastal and small islands sustainable management. By expanding the conservation areas to 30%, the seagrass and mangrove ecosystems are expected to absorb around 188 million ton CO₂e.

At the seminar “Ekosistem Karbon Biru sebagai Critical Natural Capital: Blue Carbon Ecosystem Governance di Indonesia” (Blue Carbon Ecosystem as Critical Natural Capital: Blue Carbon Ecosystem Governance in Indonesia) Minister Siti Nurbaya shows that in the perspective of ecosystem-based paradigm, the study results on Blue Carbon Ecosystem by Indonesia Ocean Justice Initiative (IOJI) are relevant with Indonesia’s FOLU Net Sink 2030 agenda. The study has integrated marine ecosystem which covers mangrove forests, estuary or brackish swamps/saltwater swamps and coral reefs; it has elaborated huge potential of blue carbon ecosystem as carbon sequestration and storage, that plays important role in climate change mitigation. (Jakarta, 30 January 2023)



Indonesia waters has 14 out of 72 global seagrass species. Nine out of the 14 seagrass species are found in Kepulauan Seribu National Park, which are dominated by species of *Thalassia hemprichii* and *Enhalus acoroides*. (Kepulauan Seribu District, Jakarta, 2019)



Kepulauan Togean National Park has seagrass meadows ecosystem that plays important role for organisms in shallow coastal waters ecosystem. The seagrass species found in the National Park are *Cymodocea serulata*, *Cymodocea rotundata*, *Halodule uninervis*, *Syringodium isofoium*, *Enhalus acroides*, and *Thalassia hemprichii*. (Tojo Una-Una District, Central Sulawesi, July 2022)

6.6 Enhancement of the Role of Biodiversity Conservation

Properly managed biodiversity promotes increased forest carbon sequestration that is an essential part of Indonesia's FOLU Net Sink 2030 Agenda. Therefore, 514 units of conservation areas covering about 27.14 million ha will significantly contribute to the measures of achieving carbon neutrality and even more carbon positive by 2030.

The Ministry of Environment and Forestry embraces the people who live in and around conservation areas to strengthen the conservation efforts, including ecosystem restoration. Of the 200 thousand ha target for the 2020-2024 period,

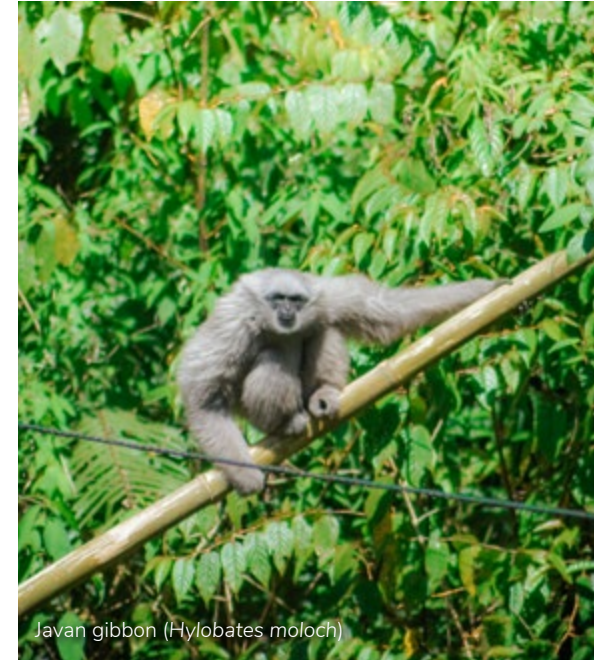
ecosystem restoration had reached 50,251 ha by 2021.

In order to protect and enhance the wildlife population, the government has taken various efforts. One of these efforts is wildlife rescue through rehabilitation and release of wildlife illegally held in captivity. The releases of wildlife during 2019-2021 were 106,304 individuals, 241,542 individuals, and 27,292 individuals respectively.

Moreover, the births of wildlife continued to increase. In 2021, the births of a number of wildlife species were recorded at 2,790 individuals, from Sumatran tigers to orangutans, rhinos, and the Javanese eagle.



Sumatran tiger (*Panthera tigris sumatrae*)



Javan gibbon (*Hylobates moloch*)



Javan hawk-eagle (*Nisaetus bartelsi*)



A Sumatran rhino (*Dicerorhinus sumatrensis*) individual was born in Sumatran Rhino Sanctuary of Way Kambas National Park (SRS TNWK), from a rhino mother named Rosa. The birth of Sumatran rhino or other flagship species continues to grow which shows positive impact of conservation carried out by Indonesia. (Way Kambas National Park, Lampung, 24 March 2022)

6.7 Strengthening Social Forestry and Adat Forests

Indonesia's FOLU Net Sink 2030 definitely needs active participation of communities, which the Country has enhanced through development of social forestry and Adat forest programs. Many local wisdoms applied by the communities can significantly contribute to the emission reduction as targeted in the FOLU Net Sink agenda.

One of the cases, Kasepuhan Adat Ciptagelar in West Java designated Leuweung Tutupan as a protection area, Leuweung Titipan as a conservation area, and Leuweung Garapan as a production area including for carbon stock enhancement.

This underlies the government's determination to promote social forestry and Adat forest programs. There are at least 12.7 million ha of forest areas specifically allocated for social forestry in the forms of Community Forestry, Community Plantation Forests, Village Forests, Private Forests, Forestry Partnerships and Adat Forests.

As of August 1, 2022, the social forestry permits that had been issued reached 5.03 million ha through 7,650 decree units for 1.1 million households. In particular for Adat Forests, 14,488 ha of Adat Forests had been designated for 105 Adat communities with an indicative extent of Adat forest of 1.09 million ha.



Minister Siti Nurbaya inspects the preparation of the location for Social Forestry decrees distribution that will be handed over by President Joko Widodo to the community in Ir. H. Djuanda Grand Forest Park. (Bandung, West Java, 10 November 2018)



Various agroforestry-based businesses, such as plants utilization below tree stands, honey harvesting, palm sugar processing can be carried out in social forestry areas. In addition to gaining forest utilization access, the community who holds social forestry license will gain access for assistance and financial support.





6.8 Development of Urban Green Spaces and Eco Riparian

Urban communities also play a role in helping out the implementation of Indonesia's FOLU Net Sink 2030. Their activities are expected to support climate change mitigation; some of them are the development of urban green spaces and eco riparian.

Riparian is a transitional area between land and a river that shows characteristics between these two ecosystems. Meanwhile eco riparian is a program of river revitalization in order to reduce pollution loads, especially from domestic waste and garbage. Eco riparian zones can be

used as green spaces or a community based-environmental educational tourism area without changing critical functions of the ecosystem.

Within eco riparian zones, there may be a domestic wastewater management installation and an organic waste processing site which will have an impact on carbon emissions reduction in the waste sector. The area may also serve as a place to develop nurseries, reforestation, organic farming, or other activities that will have an impact on carbon sequestration and storage.

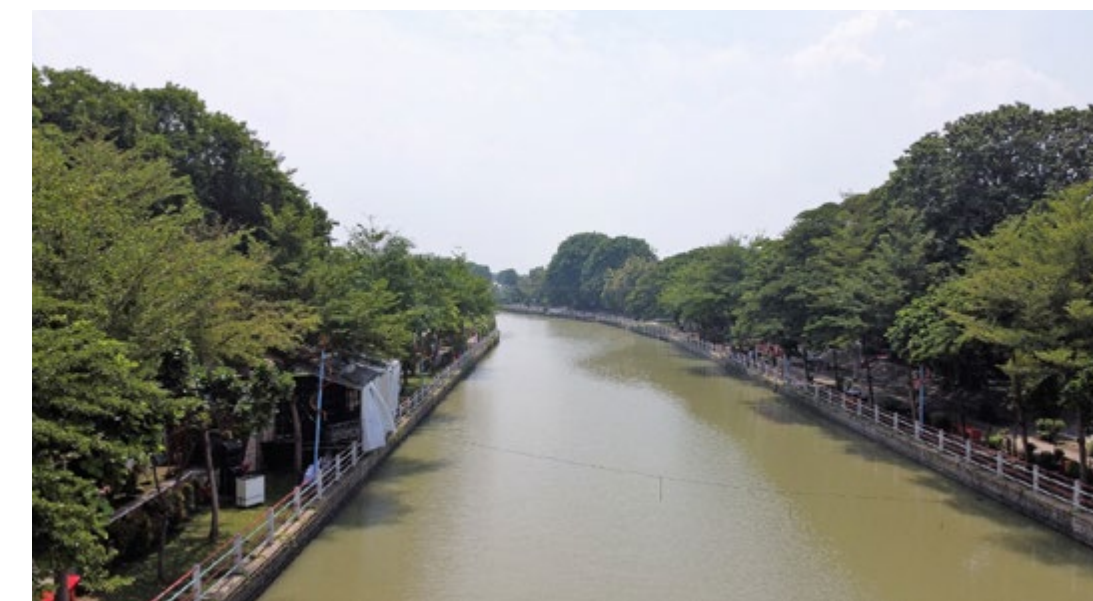
There have been nine eco riparian zones built by the Ministry of Environment and Forestry since 2017, and they serve as demonstration models that are possible to be replicated in other regions.

One of them is eco riparian Perumahan Bintang Alam, Karawang Regency, West Java. The area offers productive plant cultivation activities including medicinal plants such as ginger, kaempferia galangal, and turmeric. This area is connected to a 3R waste management facility. To increase its vegetation coverage, replanting is carried out along the Citarum River.

Another project is eco riparian Taman Sekartaji Jebres, Surakarta City, Central Java. This 1,200 m² area has a 150 m² waste water treatment plant with a capacity of 80 m³ to treat domestic wastewater from 1,000 households.



Minister Siti Nurbaya inaugurates Tjimanoeek Lama Biodiversity Park and Eco-riparian located on Cimanuk Riverbank which is established under Public-Private Partnership scheme. The Park is established for educational purpose and good example in addressing climate change issues and environmental pollution in Indonesia. (Indramayu, West Java, 13 December 2021)



6.9 Law Enforcement

Law enforcement against forest and environment-related crimes is intended to create a deterrent and improve compliance culture. Improved compliance culture will in turn have a positive impact on emission reduction and the achievement of FOLU Net Sink 2030.

Since its establishment, the Ministry of Environment and Forestry has determined a strong commitment to law enforcement against forest and environment-related crimes. Therefore, the Ministry established the strategic Directorate General of Law Enforcement to combat any crime in the environment and forestry sector.

There are three interrelated instruments imposed on forest and environment-related crime cases consisting of administrative sanctions, civil lawsuits, and criminal charges.

Since 2014, the Government has executed 1,884 law enforcement operations, imposed 2,484 administrative sanctions on violators, handled 1,296 criminal cases, 31 civil lawsuits, and 230 out of court settlements.

As a result, several cases had permanent legal force with a total value of USD 1.32 billion for civil lawsuits, USD 10.8 million for out-of-court settlements, and USD 8.5 million for administrative sanction.

It is undeniable that the reduction in the rate of deforestation and in hotspots for forest and land

fires is one of the positive impacts of a strong law enforcement policy.

This was highlighted in the session of The Role of Law Enforcement for Stronger Commitments in Climate Actions at the Indonesian Pavilion COP27 to the UNFCCC on 11 November 2022.

Furthermore, cooperation between related parties is highly needed, especially between the Parliament as the legislative authority, the Corruption Eradication Commission (KPK) which handles corruption cases, and the Ministry of Environment and Forestry as the executive authority in forest and environment cases. The three institutions have agreed to develop close collaboration in law enforcement against forest and environment-related crimes.

Strong and consistent law enforcement will create not only a good and healthy environment but also sustainable forest management. In addition, it will become an effective instrument for controlling carbon emissions from the forestry sector and other land uses sector, which aligns with Indonesia's FOLU Net Sink 2030 agenda.

For these efforts, the Ministry of Environment and Forestry received international appreciation at the 2022 Asia Environmental Enforcement Awards. The award was granted for excellence and outstanding leadership in the enforcement of national laws to combat transboundary environmental crimes. The winner was assessed by the expert committees from various agencies

under the United Nations, namely the United Nations Office on Drugs and Crime (UNODC), the United Nations Environment Program (UNEP), the United Nations Development Program (UNDP), the Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the International Criminal Police Organization (INTERPOL), the World Customs Organization (WCO), and the Secretariat of the Basel Convention. In the occasion, Neneng Kurniasih, a Civil Servant Investigator from the Ministry of Environment and Forestry, received an award in the Gender Leadership and Women's Empowerment category. Apart from investigating domestic crimes, Neneng also participated in cross-border crime investigations.



Vice-Minister of Environment and Forestry Alue Dohong (right) has dialogue with Vice-Chairman of Corruption Eradication Commission (KPK) Nurul Ghufon (left), Chairperson of Commission IV of the House of Representatives of Indonesia (DPR RI) Sudin (second from right) and Director General of Environmental and Forestry Law Enforcement Rasio Ridho Sani (second from left) after panel discussion at the Indonesia Pavilion COP27 UNFCCC. Environmental and forestry law enforcement gains supports from related stakeholders DPR RI and KPK which can prevent repeat violations and affect greenhouse gas emissions reduction. (Sharm El-Sheikh, Egypt, 11 November 2022)



Vice-Chairman of KPK Nurul Ghufon elaborates that corruption brings more damage to environment and forests than environmental and forestry crimes in the field. Thus, KPK uses approaches not to suspects in the field, but to bribers and abuse of authority in licensing process. (Sharm El-Sheikh, Egypt, 11 November 2022)

Neneng Kurniasih receives an award on Gender Leadership and Women's Empowerment category handed by UNEP's Asia-Pacific Director Dechen Tsering at the Asia Environmental Enforcement Awards 2022. (Bangkok, Thailand, 30 November 2022)



The presence of Neneng Kurniasih in the midst of male-centric environmental and forestry criminal investigators show the efforts of Ministry of Environment and Forestry in gender equality. (Bekasi, West Java, 25 October 2022)



Guarding and securing forest areas from encroachment, illegal logging and hunting and trades of protected wildlife is a fundamental basis to achieve Indonesia's FOLU Net Sink 2030. Forest rangers (Polhut) are the front liners in protecting forest areas. The role and tasks of Polhut are carried out not only by men, but also women. Minister Siti Nurbaya consistently gives directives and supports to Polhut so that they are always professional and swift in action.



Minister Siti Nurbaya pays high attention to forest rangers, the front liners in forest areas protection. The Minister inaugurates 57 members of Quick Response Forest Ranger Team (SPORC) who will be stationed at 16 SPORC Brigades across Indonesia. Previously, they have gone through training at the Office Development School of Indonesian National Police Education and Training Institution (Setukpa Lemdiklat Polri) for 45 days. (Pelabuhan Ratu, Sukabumi, West Java, 11 December 2021)



VII. EPILOGUE

The milestones to manifest Indonesia's FOLU Net Sink 2030 have been planted. The agenda to achieve a condition in which the level of GHG absorption of forestry and other land use sector is lower than or at least balance with its emissions has been started.

It is not an easy task. With hard work, nonetheless, the commitment is achievable. The detailed and target-oriented Operational Plan provides guidelines to all relevant stakeholders on how to achieve the emission level of minus 140 Mt CO₂e, an ambitious target determined in Indonesia's FOLU Net Sink 2030.

Empirical experience proves that the actions taken by the Country have successfully reduced national GHG emissions while increasing GHG sequestration and storage. Indonesia has sharply reduced the rate of deforestation, significantly suppressed forest and land fires, and improved

the governance of primary forests and peatlands. The Country has also succeeded in boosting forest and land rehabilitation and enhancing community-based forest management with the Social Forestry scheme. Corrective regulations and law enforcement are central to all of the effort. These achievements become fundamental modalities for the Country to reach the ambitious Indonesia's FOLU Net Sink 2030 target.

Moreover, efforts to echo Indonesia's FOLU Net Sink 2030 at the National and Sub-National levels have captured support from various elements, from ministerial level to local governments, academics, business actors, NGOs, and the community at the grassroots level.

Support for Indonesia's FOLU Net Sink 2030 continues to grow, either from domestic and international communities in the framework of bilateral and multilateral cooperation. In particular,

the countries that have expressed their support include the United States of America, the United Kingdom, Norway, and Germany, while the European Union has declared its readiness to facilitate implementation of the agenda.

Support from all stakeholders both inside and outside the Country raises optimism to reach Indonesia's FOLU Net Sink 2030. Through this commitment, Indonesia will significantly contribute to combating the global climate change while ensuring the environment and forests remain healthy and productive for better future generations. Sustainable Forest, Healthy Environment, Prosperous Community.

The peak of a mountain in Kepulauan Karimata Marine Strict Nature Reserve, West Kalimantan.





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