



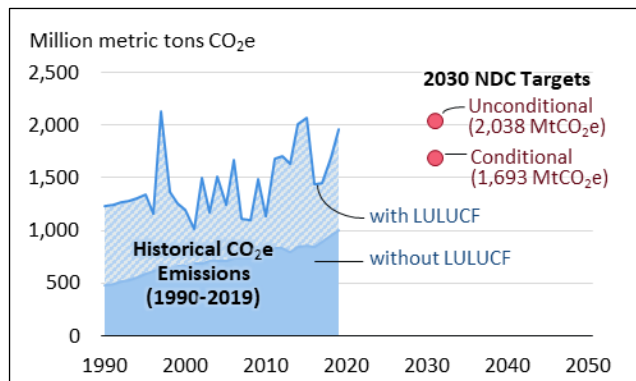
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Indonesia: GHG Emissions and Climate Change Policy

Introduction

The Republic of Indonesia faces multiple challenges related to addressing the effects of climate change and lowering greenhouse gas (GHG) emissions while also meeting its economic and development needs. Indonesia, an archipelagic nation of approximately 17,000 islands with a population of approximately 276 million, is the world’s fourth most populous nation. According to Climate Watch, Indonesia is among the world’s top emitters of GHGs, ranking fourth in 2019 after China, the United States, and India. Indonesia’s government has expressed concern about the effects of climate change on its development, biodiversity, population, and national security. For example, Indonesia’s environment minister opened the 2022 G20 Joint Environment and Climate Ministers’ Meeting by stating that climate change “would not only wipe out all development progress that has been achieved over the past decades, particularly in emerging economies, but it would also propel us over an environmental tipping point into uncharted territory where no future will be sustainable.” Congress has expressed interest in Indonesia’s commitment and actions to address climate change, which are largely tied to Indonesia’s GHG emissions from land and energy use. Congress also may be called upon by some to appropriate funds and conduct oversight of several new U.S. initiatives aimed at supporting Indonesia’s efforts to reduce emissions and mitigate the impacts of climate change.

Figure 1. Indonesia CO₂e Emissions 1990-2019



Source: Congressional Research Service (CRS) using data from World Resources Institute, Climate Watch Data, Indonesia Profile; and the Indonesian Government’s Enhanced Nationally Determined Contribution (NDC), 2022.

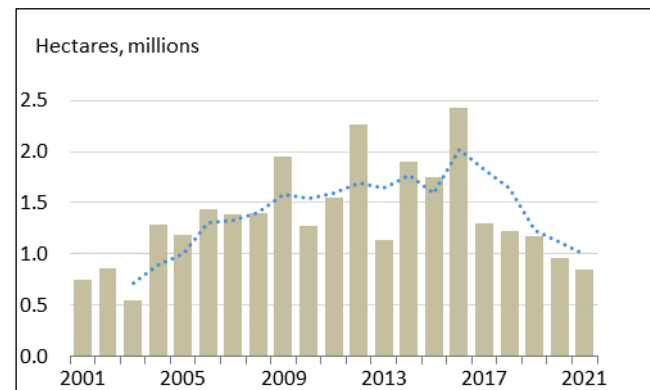
Note: MtCO₂e represents million metric tons of carbon dioxide equivalent, which represents the number of metric tons of CO₂ emissions with the same global warming potential as 1 metric ton of another greenhouse gas. The unconditional NDC target is the emissions reduction goal Indonesia has committed to reach regardless of outside assistance. The conditional NDC target is the emission reduction goal Indonesia has committed to reach upon receipt of foreign aid. NDC targets include LULUCF (see text) in their CO₂e emissions values.

Sources of Greenhouse Gas Emissions

According to the World Resources Institute (WRI), GHG emissions from energy production and land use, land-use change, and forestry (LULUCF) comprise approximately 82% of Indonesia’s total emissions (**Figure 1**). Emissions from energy largely stem from fuel use (approximately 75%, much of which is from coal-generated energy).

The LULUCF contribution to GHG emissions in Indonesia is tied to deforestation. Indonesia lost approximately 28.6 million hectares (mha) of forest cover from 2001 to 2021, of which 95% is expected to be permanent, according to some scientists. (One hectare equals about 2.5 acres.) The primary driver of forest loss is commodity-driven deforestation derived from large-scale timber and oil palm plantations, according to the WRI. The annual rate of forest cover loss in Indonesia decreased from approximately 2.4 mha in 2016 to 0.84 mha in 2021 (**Figure 2**). Scientists attribute the lower deforestation rate in part to government policies to prevent deforestation and fires.

Figure 2. Indonesia Tree Cover Loss 2001-2021



Source: CRS. Data from World Resources Institute, 2022.

Note: Dotted line is a three-year moving average.

Projected Effects of Climate Change

According to a February 2022 report by the Intergovernmental Panel on Climate Change (IPCC), Indonesia is likely to experience increasing temperatures, increasing frequency and intensity of heavy rainfall events, and increasing duration of heat waves by the 2050s. Other projected conditions in Indonesia include rising sea levels relative to subsiding land, increased salinization of coastal aquifers, increased incidence of waterborne disease, decreased marine fish yields, and increased risk of forest fire. Indonesia has the longest coastline in the world, and many of Indonesia’s small, low-lying (less than 10 meters above sea level) islands are threatened with land loss from sea level rise and subsidence by mid-century. Its coastal population is one of the highest in the world, and coastal communities are at increased exposure to flooding events,

according to the IPCC. Climate change also may affect food production; a 1° Celsius increase in temperature could significantly reduce rice production and fish stocks in Indonesia.

Selected Indonesian Policies on Climate Change

Indonesia is planning and implementing actions to address climate change. In the energy sector, roughly 60% of Indonesia's electricity comes from coal. In 2021, Indonesia pledged not to construct new coal plants; this promise does not affect coal plants already under construction (an estimated additional 13.8 gigawatts of capacity). President Widodo pledged to shut all coal plants by 2056; his second and final term in office is scheduled to end in early 2024.

At the 2022 G20 Summit, Indonesia, the United States, and several other countries formed a Just Energy Transition Partnership (JETP). The JETP includes a financing package to help Indonesia transition away from coal, increase renewable energy production, and commit to net-zero emissions in its power sector by 2050. Net-zero means Indonesia would emit no more GHG into the atmosphere than it removes. The JETP is expected to invest an initial \$20 billion over the next three to five years to accelerate Indonesia's energy transition. An October 2022 Planning Ministry study estimates Indonesia would need between \$150 billion and \$200 billion per year over the next nine years to reach net-zero emissions by 2060. Under JETP, Indonesia is to reach its peak emissions and increase its renewable energy target to 34% of all power generation by 2030. As part of the partnership, Indonesia pledged to cap carbon dioxide emissions from its power sector at 290 MtCO_{2e} by 2030, down from a baseline of 357 MtCO_{2e}.

Indonesia also signed an agreement with Brazil and the Democratic Republic of Congo to preserve the three countries' forests (approximately half of the world's tropical forests). The agreement calls for a funding mechanism to provide payments to reduce deforestation.

Nationally Determined Contribution

In September 2022, Indonesia submitted an Enhanced Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC). This NDC communicates the country's emission reduction targets and other actions intended to contribute to meeting the collective goals of the Paris Agreement. In its NDC, Indonesia commits to reducing GHG emissions by 31.9% (unconditionally) relative to its business-as-usual (BAU) scenario by 2030 and, conditional upon the receipt of foreign aid, commits to reducing GHG emissions by 43.2% relative to BAU. **Figure 1** illustrates these targets compared with Indonesia's historical GHG emissions. (The percentage reductions for unconditional and conditional actions are based on the estimated BAU in 2030.)

Indonesia's NDC identifies LULUCF—including peat fires—and energy as the two main sectors contributing to its GHG emissions. The NDC specifies a target of restoring 2 mha of peatland and rehabilitating 12 mha of degraded land by 2030 in an effort to reduce emissions. Indonesia plans to continue to implement Reducing Emissions from

Deforestation and Forest Degradation (REDD+) strategies to achieve its emission reduction targets. The NDC further identifies specific mitigation efforts in the energy sector.

Cooperation with the United States

The United States provides development assistance to Indonesia that focuses in part on promoting sustainable livelihoods, conserving terrestrial and marine resources, and reducing emissions from LULUCF. All of these initiatives address climate change concerns directly or indirectly. For example, the U.S. Agency for International Development (USAID) supports the Sustainable Environmental Governance Across Regions program, which aims to improve environmental governance and land use practices. In Indonesia by 2026, USAID aims to bring 7 mha of tropical forest and peatland under improved management, reduce 55 million metric tons of CO₂ emissions, and mobilize up to \$45 million in public and private investments.

In addition, USAID is planning a new climate partnership with Indonesia to support carbon sequestration in forests and the conservation of biodiversity, including orangutans, elephants, tigers, and rhinoceroses in Sumatra and Kalimantan. Other countries also are addressing land-use issues in Indonesia; for example, Norway has agreed to pay Indonesia for keeping selected forests intact.

In the energy sector, the United States and Indonesia signed a memorandum of understanding (MOU) to support Indonesia's plan for low-emissions development. The MOU would allow USAID to share information and exchange knowledge, develop and implement projects, and collaborate on research and activities with Indonesia. (The United States also contributed to the finance deal under the JETP.) In a public-private partnership, ExxonMobil and Indonesian state-owned energy company Pertamina signed a \$2.5 billion agreement to develop a carbon capture and sequestration hub in Indonesia.

The Millennium Challenge Corporation (MCC; a U.S. agency that provides grants to countries to promote economic growth, reduce poverty, and strengthen institutions) concluded talks with Indonesia in 2021 to launch a \$698 million MCC compact with \$649 million from the United States and the rest from Indonesia. The MCC implemented an earlier \$500 million compact with Indonesia from 2013 to 2018, with over \$300 million allocated for efforts to promote green growth—simultaneously fostering economic development and preserving natural resources. The new compact aims to support climate-conscious transportation infrastructure in five provinces, help mobilize international capital in support of Indonesia's development goals, support coal plant decommissioning as part of the JETP, and increase access to finance for Indonesia's women-owned businesses.

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