



INDONESIA’S MORATORIUM ON NEW FOREST CONCESSIONS: KEY FINDINGS AND NEXT STEPS

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SUMMARY

The Indonesian moratorium on the award of new licenses in primary natural forests and peat lands, announced in May 2011, is an important step for improving management of forest resources by “pausing” business-as-usual and allowing time to implement reforms.

To quantify the moratorium’s coverage, exemptions, encroachments, and additionality (i.e., whether the moratorium extends protection to land not already protected), the World Resources Institute (WRI) analyzed the indicative moratorium map released by the Ministry of Forestry in July 2011. The objective of the analysis was to better characterize the moratorium’s potential impacts and identify opportunities for improvement.

The analysis concluded that the moratorium in its current state will not contribute to Indonesia’s greenhouse gas emission reduction goal of 26 percent by 2020. Although there are 43.3 million hectares (ha) of primary forests and peat lands and significant carbon stocks within the boundaries of the indicative moratorium map (IMM), the questionable status of secondary forests, the exemption of existing concessions, and the limited enforcement of the moratorium boundaries may result in gains being negated by other land-use emissions. Nonetheless, long-term positive impacts can still be achieved if significant governance reforms are accomplished during the moratorium period.

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In late 2009, Indonesia announced a bold commitment to reduce its greenhouse gas emissions by 26 percent (or 41 percent with international assistance) by 2020, compared to business as usual (Fogarty 2009). The nation aims to achieve 87 percent of this goal by reducing emissions from deforestation and peat land conversion (Dewan Nasional Perubahan Iklim 2010). At the same time, Indonesia aims to increase agricultural production of 15 major crops, including, for example, doubling palm oil production by 2020 from 2009 levels (Maulia 2010). Achieving these production goals will require planting more land, even after expected increases in yields.

In a step toward reconciling these goals, Indonesia put into effect a two-year moratorium on the award of new concessions for the exploitation of primary natural forests and peat lands in May 2011. This moratorium is designed to allow time for the government—with participation from industry and civil society—to develop improved processes for land-use planning and permitting, to strengthen data collection and information systems, and to build institutions necessary to achieve Indonesia’s low emission development goals (Gingold et al. 2011).

An “Indicative Map for Suspension on New Licenses,” referred to as the Indicative Moratorium Map (IMM), was published by the Ministry of Forestry in July 2011 (Ministry of Forestry 2011). This map is required to be revised every six months, and the Ministry of Forestry has extended an open invitation for review and critical analysis of the map. In November 2011, a revised and updated version of the IMM was published.

KEY FINDINGS

WRI analyzed data provided by the Indonesian Ministry of Forestry on the boundaries of the moratorium, existing concessions, and forest types (Ministry of Forestry 2011, 2010, and 2009). The analysis quantified the area and estimated above- and below-ground carbon stocks of different forest types within and outside the IMM boundaries (Saatchi et al. 2011). The analysis also examined forest cover change within the moratorium in the first three months of its implementation (Hammer and Kraft 2011). A more complete discussion of the methodology is provided in Appendix 1. Key findings are as follows:

- There are 43.3 million hectares (ha) of primary forest and peat land included in the moratorium, including 28.4 million ha of primary forests (not including peat) and 14.8 million ha of peat lands.¹ As a result of the inclusion of these peat and primary forests, an estimated total of 25.3 gigatons (1 billion metric tons- Gt) of carbon are protected by the moratorium for the two-year period. This is equivalent to 92.8 Gt CO₂e if released to the atmosphere, or almost three times annual global greenhouse gas emissions (Boden et al. 2011).
- Although significant forest and carbon resources are protected by the moratorium, the initiative alone may not support intended greenhouse gas emission reduction goals for the following reasons:
 - **Exemptions:** The moratorium’s exceptions for existing concessions result in 3.5 million ha of primary and peat forests inside the IMM not being protected. This results in 4.0 Gt of carbon, or 14.6 Gt CO₂, at risk of emission. This is almost seven times the total annual carbon dioxide emis-

1. These numbers are consistent with previous findings from the Center for International Forestry Research (CIFOR) (Murdiyarso et al. 2011). Differences may be due to variances in the land cover data used by the two studies, in the imagery pre-processing steps completed prior to analysis, or in the projection used. The data included corruptions that resulted in dropping of polygons in the conversion process from shapefile to geodatabase, which may have been fixed in different ways.

SOURCE	AREA INSIDE IMM (MHA)	PRIMARY FOREST INSIDE IMM (MHA)	PEAT INSIDE IMM (MHA)
CIFOR	66.4	30.0	14.3
WRI	68.7	28.4	14.8

sions from Indonesia from all sources (Dewan Nasional Perubahan Iklim 2010). Further, in a recent study examining the November 2011 updated version of the IMM, Daemeter Consulting found that the inclusion of preexisting licenses not accounted for in the July 2011 IMM results in an additional 3.6 million ha exempted from the moratorium (Wells et al. 2011).

The moratorium provides an opportunity for the government to strengthen the governance of forests and embark on a low emission development pathway

- **Additionality of protection:** Once existing mechanisms for protecting forests are taken into account [e.g., legal conservation status, steep slopes and peat >3m deep (United Nations Environment Programme/GRID-Arendal 2011)], the IMM protects an additional 11.3 million ha of primary and peat forests. Thus, 26 percent of the area in the IMM is provided additional legal protection.²
- **Exclusion of secondary forests:** 15.6 million ha of secondary forests are included inside the IMM. However, these secondary forests have unclear status because the presidential instruction to set up the moratorium did not explicitly

include secondary forests. It is unclear why they were included in the indicative map, but their carbon stocks may be at risk of conversion if the letter of the presidential instruction is followed instead of the indicative map.

- **Encroachments:** Recent research finds that there have been 103 clearings in forests included in the moratorium (and not in existing concessions) in the first three months since its establishment in May 2011 (Hammer et al. 2009, Hammer and Kraft 2011).
- The two-year moratorium provides an opportunity for the government and other stakeholders to strengthen the governance of forests and embark on a low emission development pathway. Whether the moratorium has long-term positive impacts depends on whether the Indonesian Government—with the participation of industry and civil society—takes the necessary steps to ensure that needed governance reforms are accomplished.

These preliminary results were presented and discussed with stakeholders during the United Nations Framework Convention on Climate Change (UNFCCC) conference in Durban, South Africa. Included in the discussion were the broader challenges faced by the government of Indonesia, industry, and civil society in implementing the moratorium, including data transparency and capacity gaps.

NEXT STEPS

The moratorium is an important initiative for improving management of forest resources by “pausing” business-as-usual patterns to give the government and other stakeholders time to take actions needed for low-emission development. However, in order to ensure effectiveness, the government needs to address the issues identified by this analysis and by participants at the UNFCCC Durban workshop. WRI proposes the following next steps:

1. **Improve data quality and transparency.** The government of Indonesia has developed and made publicly available a map of the moratorium coverage, facilitating review and enforcement. Although releasing the current map was a landmark step

2. The finding of 11.3 million ha of additional protection for peat and primary forests is lower than in a previous study from CIFOR, which found 22.5 million ha of additional protection. The CIFOR study used a map of areas designated for conservation and protection by the Ministry of Forestry to set the baseline against which to estimate additional protection. When we replicated this method for setting the baseline, we found that 20.0 M ha are additional to existing protection. When we also included steep slopes and deep peat in the baseline, which also confer protection according to Indonesian law (United Nations Environment Programme/GRID-Arendal 2011), we found that only 11.3 million ha are afforded additional protection. Further, there are other legal mechanisms for protection of forests in Indonesia, including buffer areas around waterways, and elevations greater than 2000 meters, which were not taken into account. Doing so would further reduce the estimate for additional protection.

toward improved transparency, the additional data provided were incomplete, did not include metadata,³ were difficult to download, and were not up to date. As a result, it was not possible to determine with high levels of accuracy what is covered by the moratorium. For example, without accurate data on forestry and other permits, there is no way of telling whether forest change detected within the boundaries of the moratorium is due to legal or illegal activities. Technically sound, legally accurate, and up-to-date spatial data, including license and permit data, should be made available. Improved transparency should be linked to capacity building in the government for improved spatial analysis so that information on forests can be shared, independently reviewed, maintained, and continuously improved.

- 2. Reform governance.** The moratorium decree includes instructions to agencies regarding improving governance, a vital step if the root causes of Indonesia’s high rates of forest loss are to be addressed. For example, the moratorium decree instructs the Ministry of Forestry to improve the process of issuing permits, and requires the National Spatial Planning Coordinating Agency to accelerate the spatial plan revision process. Whether the moratorium has long-term positive impacts depends on whether the Indonesian Government—with the participation of industry and civil society—implements these instructions.
- 3. Ensure enforcement.** Although rare, deforestation within the moratorium area is still being observed by remote sensing and verified on the ground. Monitoring and enforcement will need to improve if the potential benefits of the moratorium are to be realized. In particular, improved communication of the moratorium boundaries and their significance to the local branches of key enforcement agencies is urgently needed. Local governments are additionally responsible for licensing and enforcement of conversion concessions; their compliance with the moratorium is critical. Further, updated penalties for noncompliance should be integrated into the design of the moratorium.

Figure 1 | **Area Inside Indonesia’s Moratorium**

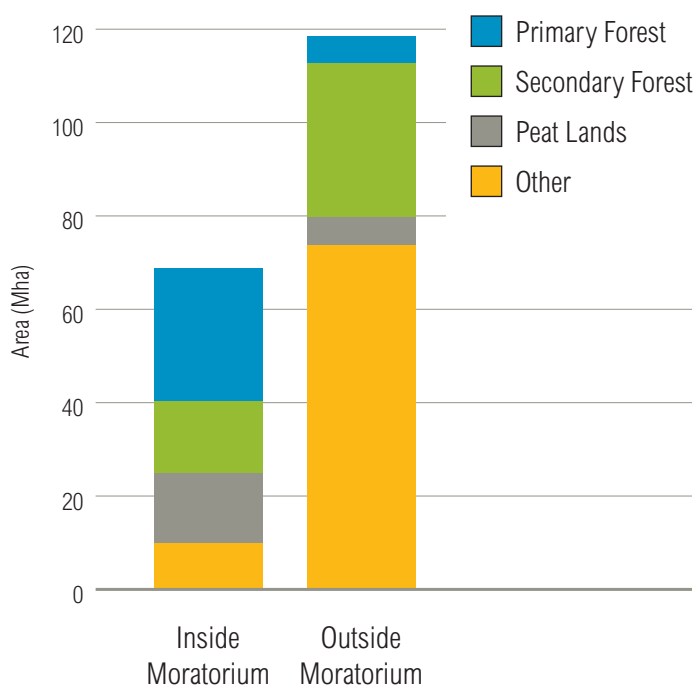
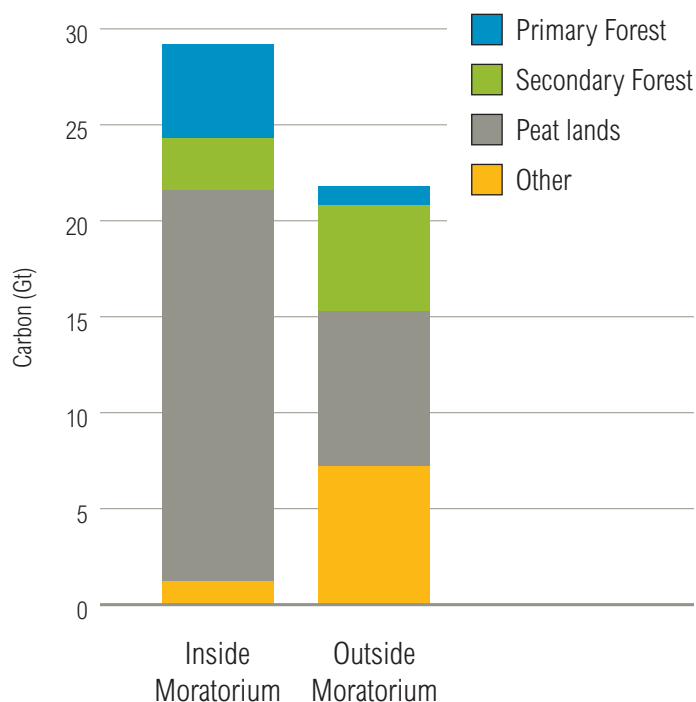


Table 1 | **Area Inside Indonesia’s Moratorium**

LAND TYPE	INSIDE MORATORIUM (MHA)	OUTSIDE MORATORIUM (MHA)
Primary Forest	28.4	5.7
Secondary Forest	15.6	33.1
Peat Lands	14.9	6.0
Other	9.9	73.7

3. Metadata is additional information associated with geospatial data that provides information about the data content, including, for example, when the image was created, who created it, and how the data were collected.

Figure 2 | Carbon Inside Indonesia's Moratorium



- 4. Fix the boundaries of the moratorium.** The original IMM was published in May 2011 and an updated version was published in November 2011. Although it is important to improve the IMM as better data become available and government agencies continue to coordinate, at some point it will be necessary to define a stable moratorium boundary against which progress can be tracked. Without this, enforcement challenges could be exacerbated.
- 5. Define and track metrics of success.** Many of the goals of the moratorium cannot be tracked via satellite-based monitoring. These goals include improved processes for land-use planning and permitting and strengthened data collection and information systems. A clear definition of success, including interim progress indicators, should be defined by the government of Indonesia and tracked over time.

Table 2 | Carbon Inside Indonesia's Moratorium

LAND TYPE	INSIDE MORATORIUM (GTC)	OUTSIDE MORATORIUM (GTC)
Primary Forest	4.9	1.0
Secondary Forest	2.7	5.5
Peat Lands	20.4	8.1
Other	1.2	7.2

The moratorium creates incentives for increased productivity and the use of low carbon degraded land for agricultural and forestry expansion

- 6. Step up coordination.** Different government ministries and agencies have been working together on the development of the moratorium. This has required data sharing and improved coordination among these entities. An important step toward the necessary coordination required for improved forest management and climate-compatible development goals will be continued coordination of national government agencies and ministries. Additionally, coordination and cooperation with regional and district governments will be critical.
- 7. Implement climate-compatible development.** The moratorium creates incentives for increased productivity and the use of low carbon degraded land, rather than forests or peat lands, as a viable alternative for agricultural and forest plantation expansion. Any agricultural expansion should be confined to those deforested, non-peat lands that are low in carbon and biodiversity values and implemented in a manner that fully respects the rights of indigenous peoples and local communities (Gingold 2010). Other analysis by WRI as part of Project POTICO shows the extraordinary potential for shifting palm oil production to degraded land, rather than clearing forests (Gingold 2010).

APPENDIX

Methods

This study used spatial data and carbon estimates from the following sources:

- The IMM, administrative forest zones, selective logging concessions, palm oil concessions, and industrial plantation concessions were downloaded from <http://appgis.dephut.go.id/appgis/kml.aspx>, www.dephut.go.id/files/Buku_pemanfaatan_2010.pdf and <http://webgis.dephut.go.id/ditplanjs/index.html>.
- Coal mining concessions were from the Coal Map of Kalimantan and Sumatra prepared by the Indonesian Coal Mining Association (Indonesia Coal Mining Association 2009).
- Land cover data for this analysis were compiled by the Ministry of Forestry (Ministry of Forestry 2009).
- Areas with slopes in excess of 40 percent were closely approximated by calculating slope $>20^\circ$ using 90m Digital Elevation Model (DEM) data from the Shuttle Radar Topography Mission (SRTM).
- Above- and below-ground biomass carbon stocks, excluding soil carbon, are from Saatchi et al. 2011.
- Carbon stocks in peat were estimated by multiplying mid-range peat thickness (Wetlands International 2003, 2004, 2006) with the average carbon density of peat (59.5 kg/m³ Wahyunto et al. 2010).
- Information on forest cover change inside the moratorium boundaries was developed by WRI staff using MODIS satellite data at monthly intervals for June, July, August, and September 2011 (Hammer et al. 2009). These data products were validated with on-the-ground field surveys at 20 sites, confirming 95 percent of the observed forest cover change.

ArcGIS was used to process all the data for the analysis. The input data layers, integrated map products, and output tables will be posted online at www.wri.org.

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