

# Tropical Forest Carbon in Indigenous Territories:

## A Global Analysis



Organizations of Indigenous Peoples and Local Communities whose territorial forests are included in this analysis:



Mesoamerican Alliance of People and Forests



COORDINADORA DE LAS ORGANIZACIONES INDÍGENAS DE LA CUENCA AMAZÓNICA



REPALEAC



Aliansi Masyarakat Adat Nusantara



**This Global Analysis was prepared in collaboration with:**



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# **Tropical Forest Carbon in Indigenous Territories: A Global Analysis**

## **Executive Summary**

The results of a new analysis reveal that indigenous territories located in the Amazon Basin, the Mesoamerican region, the Democratic Republic of Congo (DRC) and Indonesia contain 20.1% of the carbon stored aboveground in the planet's tropical forests. This number demonstrates the historical role indigenous territories have played in conserving these forests and their potential for addressing a key challenge in the long term maintenance of climate stability: keeping those forests standing. The figure is conservative because it does not consider indigenous territories outside of Indonesia in tropical Asia or outside of the DRC in the Congo Basin. When considering only tropical forests in the regions under study, the percentage of forest carbon stored aboveground in indigenous territories nearly doubles (34%), which is significant when considering the priority these regions are given where efforts to stem the tide of deforestation are concerned. The amount of CO<sub>2</sub> that would be released to the atmosphere if the forests in these territories were lost is 168.3 Gt CO<sub>2</sub> or more than 3 times the world's emissions in 2014<sup>1</sup>. To continue to conserve the tropical forests that are essential to maintaining global climate stability, indigenous organizations need: 1. Titling of their territories as well as recognition of their rights to the vast natural resources of those territories and to the wealth of services they provide; 2. Relief from the persecution of their leaders who speak out in defense of indigenous rights and territories; 3. Recognition of the contributions of their people to climate change mitigation and adaptation and inclusion of those contributions in their governments' Intended Nationally Determined Contributions (INDCs); 4. Implementation of Free, Prior, and Informed Consent (FPIC) for forest conservation activities in indigenous territories; and 5. Direct access to climate financing for their organizations.

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<sup>1</sup> Global emissions in 2014 were 52.7 Gt CO<sub>2</sub>. The Emissions Gap Report 2015. UNEP.

# Tropical Forest Carbon in Indigenous Territories: A Global Analysis

## Genesis

This report is the result of a novel collaboration among indigenous and NGO networks, scientists, and policy experts that includes the Coordinators of the Indigenous Organizations of the Amazon Basin (COICA), Mesoamerican Alliance of Indigenous Peoples and Forests (AMPB), the Network of Indigenous Peoples and Local Communities for the Sustainable Management of Forest Ecosystems in Central Africa (REPALAC), Indigenous Peoples Alliance of the Archipelago (AMAN); Woods Hole Research Center (WHRC), and Environmental Defense Fund (EDF). The analysis builds upon a peer-reviewed Policy Forum published in late 2014 in the journal *Carbon Management* by members of the current consortium, which focused on quantifying forest carbon storage in the indigenous territories and protected natural areas of the Amazon Basin. Ford Foundation financed the current research effort.

## Results and Discussion

### *Regional*

Indigenous territories and local community forests across Mesoamerica contain at least half (49.3%) of the carbon stored aboveground in the tropical forests of the region (Fig. 1; Table 1). This estimate is considered conservative because data access precluded inclusion of all known community lands. More than one-fifth (21.7%) of the forest carbon stored in Mesoamerican indigenous territories is contained in lands claimed by indigenous peoples and local communities that lack official government recognition. This is equivalent to 3.2 Gt CO<sub>2</sub> of potential emissions – or almost half of U.S. emissions in 2013<sup>2</sup> – that are more likely to be avoided if formal land title is secured<sup>3</sup>.

In the Amazon Basin, indigenous territories contain nearly one-third (32.8%) of the forest carbon stored aboveground. Of this carbon, 22.2% is stored within territories lacking official recognition, with potential emissions on the order of 23.0 Gt CO<sub>2</sub> – equivalent to more than 12 times Brazil's emissions in 2012<sup>4</sup>.

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<sup>2</sup> U.S. emissions in 2013 were 6.673 gigatons carbon dioxide equivalents.

<http://www3.epa.gov/climatechange/science/indicators/ghg/us-ghg-emissions.html>

<sup>3</sup> Stevens et al. 2014. "Securing Rights, Combating Climate Change" World Resources Institute -

[http://www.wri.org/sites/default/files/securingrights\\_executive\\_summary.pdf](http://www.wri.org/sites/default/files/securingrights_executive_summary.pdf)

<sup>4</sup> [cait.wri.org](http://cait.wri.org)

In the case of the Democratic Republic of Congo (DRC), indigenous territories store 31.4% of the aboveground forest carbon. At the present time, 100% of these territories remain unrecognized, which is equivalent to 25.4 Gt CO<sub>2</sub> – or nearly seven times DRC's emissions in 2012.

In Indonesia, indigenous territories contain 36% of the carbon stored aboveground in the country's tropical forests. A very small percentage (ca. 2%) of the land claimed by indigenous peoples is titled, which leaves some 24.3 Gt CO<sub>2</sub> at risk of being emitted or the equivalent of nearly 13 times Indonesia's emissions in 2012<sup>5</sup>. According to a recent analysis conducted by AMAN, an additional 26 Gt CO<sub>2</sub> are stored in indigenous territories found on highly threatened peat ecosystems where large, vulnerable stocks of carbon are stored belowground.

### ***Pantropical***

Indigenous territories account for more than one-third (34.0%) of aboveground carbon in the tropical forests in the four regions analyzed (Fig. 1; Table 1). Considering global tropical forests as a whole, indigenous territories in Mesoamerica, Amazonia, DRC and Indonesia store approximately one-fifth (20.1%) of the aboveground forest carbon, which is equivalent to 168.3 Gt CO<sub>2</sub> or more than three times the CO<sub>2</sub> (52.7 Gt) emitted globally in 2014<sup>6</sup>. These numbers illustrate the historic importance of indigenous territories in conserving tropical forest carbon stocks at a global level. Ensuring that these forests remain intact is essential to climate stability.

## **Recommendations**

The central role that indigenous people and their territories have to play in conserving tropical forests is not yet reflected in the vast sums already committed to tropical forest conservation. What if these indigenous territories were to receive a third – or even a tenth – of the \$9.8 billion USD<sup>7</sup> committed to the climate mitigation policy now being negotiated to Reduce Emissions from Deforestation and forest Degradation (REDD+)? This analysis makes clear the need for a reallocation and more direct channeling of funds to indigenous peoples organizations in order to ensure that the tropical forests in their territories – and the carbon these forests contain – remain intact and undisturbed into the future.

A strategic opportunity exists for these funds to be used to support the formal titling of indigenous territories. Our analysis reveals that 9.1% of the tropical forest carbon stored across Mesoamerica, Amazonia, DRC, and Indonesia is found within indigenous territories

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<sup>5</sup> *ibid*

<sup>6</sup> UNEP Emissions Gap Report from EDGAR and PRIMAP data.

<sup>7</sup> Norman, Marigold, and Smita Nakhooda. 2014. "The State of REDD+ Finance." CGD Working Paper 378. Washington, DC: Center for Global Development. <http://www.cgdev.org/publication/state-redd-finance-working-paper-378>

lacking official recognition. This figure represents 76.4 Gt CO<sub>2</sub> of potential emissions, equivalent to nearly 1.5 times the global greenhouse gas emissions in 2014.

While climate change is already impacting many indigenous territories, and protecting the forests within them is critical to maintaining climate stability, these forests are far more than just large carbon storehouses. They provide multiple social, cultural, and ecological co-benefits and are integral to indigenous peoples' cultural identity and their traditional ways of life. Any policy that leads to the conservation of tropical forests on the basis of climate mitigation must also take into consideration the potential social and environmental impacts to the people living in these forests.

The indigenous organizations that contributed to this analysis propose five policy interventions necessary to ensure the continued and long-term conservation of tropical forests in their territories:

1. **Title all currently unrecognized indigenous territories:** Recognition of the rights of indigenous peoples and forest communities to land tenure is widely understood to be a viable strategy for mitigating climate change. Nevertheless, progress on the recognition of these rights worldwide has slowed recently, so it is urgent that efforts to title unrecognized territories be redoubled.
2. **End the persecution of indigenous leaders:** Indigenous leaders are criminalized for defending their basic human rights to their territorial lands and this practice must end. These rights are fundamental to their ability to secure their forests against all manner of threats.
3. **Recognition of indigenous peoples' contributions to climate change mitigation and adaptation in the context of Intended Nationally Determined Contributions (INDCs):** Indigenous knowledge and tradition is essential to mitigating climate change, especially in the case of forests. Governments must recognize the role of indigenous peoples as part of their INDCs and ensure adequate support – both financial and political.
4. **Implement the use of Free, Prior, and Informed Consent (FPIC):** This principle is fundamental to reaching working operational frameworks of governance supported by mutual consensus between local and external actors. Moreover, it is key to ensure that the considerable investments in climate change initiatives are not lost due to the denial of consent by indigenous peoples.
5. **Direct access to climate financing for indigenous peoples organizations:** Despite significant efforts by indigenous peoples to defend and preserve their territories, they have yet to receive adequate recognition from climate financing mechanisms. The vast majority of current support is channeled to governments and NGOs where administrative and other expenses not directly related to forest conservation limit the resources available. Therefore, more balanced and direct funding for indigenous peoples is necessary in order to protect the forests that are critical to long-term climate stabilization.





# Tropical Forest Carbon in Indigenous Territories: A Global Analysis

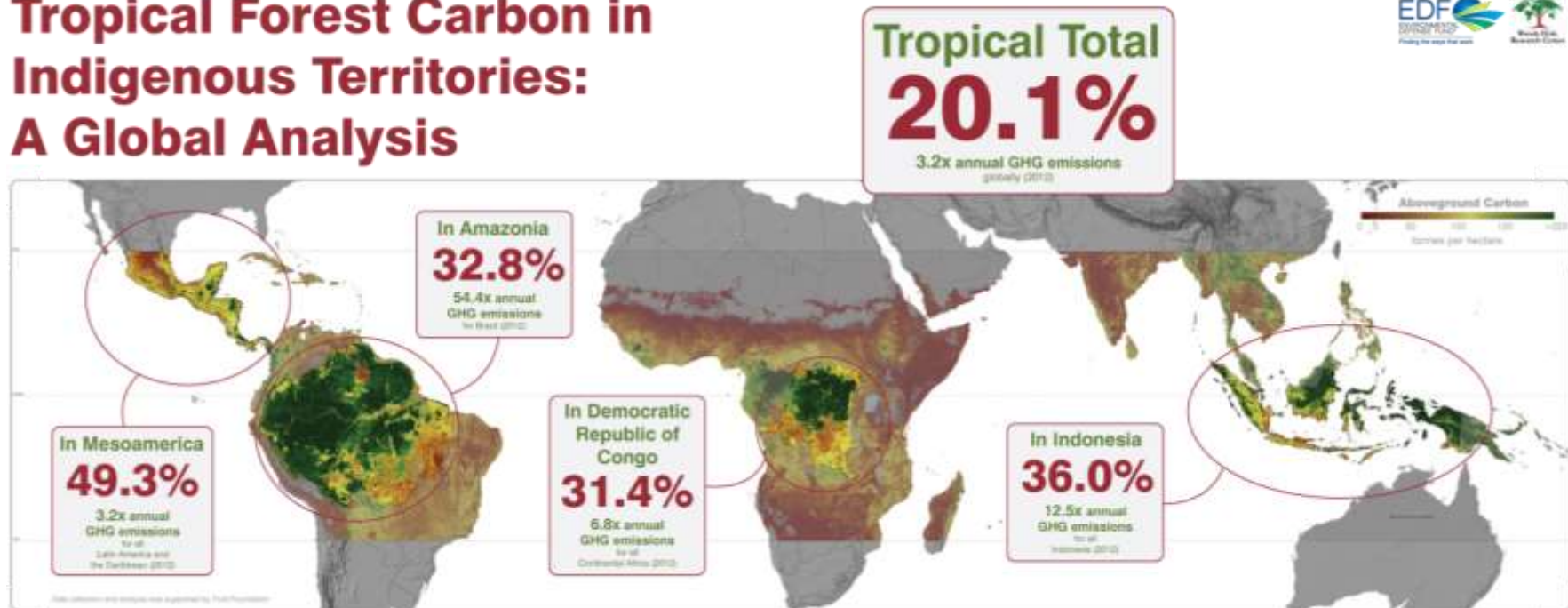


Figure 1: Percentage of aboveground carbon stored across Mesoamerica, Amazonia, the Democratic Republic of Congo and Indonesia by region and for the tropics as a whole.

Table 1: Total aboveground carbon storage and equivalent emissions estimates for indigenous territories and protected natural areas across Mesoamerica, Amazonia, the Democratic Republic of Congo and Indonesia.

Global Analysis (MtC)						Indigenous Territories in Detail					
Region	Indigenous Territories (ITs) <sup>†</sup>	Protected Natural Areas (PNAs) <sup>†</sup>	IT/PNA Overlap <sup>†</sup>	All Other Land <sup>†</sup>	Total Carbon (TC) <sup>§</sup>	Total ITs (ITs+Overlap) (MtC) <sup>†</sup>	Total Recognized (MtC) <sup>††</sup>	Total Not Recognized (MtC) <sup>††</sup>	Total Not Recognized (% of TC)	Total Not Recognized (Gt CO <sub>2</sub> )	Total Not Recognized (x US CO <sub>2</sub> E) <sup>§§§</sup>
Mesoamerica	2,910 (35.8%)	1,256 (15.4%)	1,097 (13.5%)	2,871 (35.3%)	8,135 (100.0%)	4,008 (49.3%)	3,138 (78.3%)	870 (21.7%)	10.7	3.2	0.5
Amazonia <sup>§§</sup>	23,380 (27.1%)	19,116 (22.2%)	4,867 (5.7%)	38,758 (5.7%)	86,121 (100.0%)	28,247 (32.8%)	21,976 (77.8%)	6,271 (22.2%)	7.3	23.0	3.4
D.R. Congo	5,687 (25.7%)	1,527 (6.9%)	1,261 (5.7%)	13,653 (5.7%)	22,128 (100.0%)	6,948 (31.4%)	0 (0%)	6,948 (100.0%)	31.4	25.4	3.8
Indonesia	6,783 (36.8%)	N/A	N/A	12,068 (64.0%)	18,851 (100.0%)	6,783 (36.0%)	0 (0%)	6,783 (100%)	36.0	24.8	3.7
<b>Regional Total</b>	<b>38,760 (28.7%)</b>	<b>21,899 (16.2%)</b>	<b>7,226 (5.3%)</b>	<b>67,350 (49.8%)</b>	<b>135,235 (100.0%)</b>	<b>45,986 (34.0%)</b>	<b>25,144 (54.6%)</b>	<b>20,872 (45.4%)</b>	<b>9.1</b>	<b>76.4</b>	<b>11.5</b>
<b>Tropical Total</b>	<b>(16.9%)</b>	<b>(9.6%)</b>	<b>(3.2%)</b>	<b>(29.4%)</b>	<b>228,712 (100.0%)</b>	<b>(20.1%)</b>					

<sup>†</sup> Values in parentheses reflect the percentage of total carbon in each category relative to the total carbon (TC) for the region/globe.

<sup>††</sup> Values in parentheses reflect the percentage of total carbon in each category relative to the total carbon in Indigenous Territories (ITs).

<sup>§</sup> After Baccini et al. 2012, Nature Climate Change, except for Amazonia.

<sup>§§</sup> Data for Amazonia based on Walker et al. 2013, Carbon Management.

<sup>§§§</sup> After U.S. EPA 2015. Value expressed as a multiple of U.S. anthropogenic CO<sub>2</sub> emissions in 2013 (i.e., 6.67 Gt).

## Data and Methods

### *Data*

Indigenous territory (IT) and protected natural area (PNA) boundaries were compiled in the form of ESRI shapefile and/or Keyhole Markup Language (KML) polygons from the best known/available data sources for the Amazon, Mesoamerica, DRC and Indonesia.

For the nine countries of the Amazon Basin, IT and PNA boundaries were compiled by member organizations of the Red Amazónica de Información Socioambiental Georreferenciada (RAISG; Amazon Georeferenced Socio-Environmental Information Network) from a range of government and non-government sources [1,2]. The limit of Amazonia employed here consists primarily of the biogeographical boundary of the Amazon ecosystem with exceptions for Ecuador and Brazil where additional legal and administrative criteria are applied. For Mesoamerica, specifically Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, and Panama, IT boundaries were compiled and provided by the AMPB from a range of government and non-government sources. In the case of Mexico, IT (i.e., Ejido) boundaries were obtained from the Mexico Registro Agrario Nacional (National Agrarian Registry). Indigenous territories of the DRC were obtained from La Dynamique des Groupes des Peuples Autochtones (DGPA) via the Moabi initiative (<http://rdc.moabi.org>). In the case of Indonesia, AMAN provided area statistics derived from the National Indicative Map of Indigenous Territories (PIWA) for claims deemed highly or moderately likely to receive recognition. Territorial area (54.7 million ha) was multiplied by an average carbon density value (124 Mg/ha) for intact Indonesian tropical forest estimated from Baccini et al. (2012) to arrive at a total carbon stock value.

Protected natural area boundaries for all regions outside of Amazonia were obtained from the World Database on Protected Areas (WDPA; <http://www.protectedplanet.net>). In all cases, care was taken to avoid the double counting of overlapping ITs and PNAs, which is a common occurrence across the tropics. Protected areas for Indonesia were not included in this analysis because lack of access to the spatially explicit IT boundaries meant double counting could not be avoided with certainty.

The map of carbon density was produced by the Woods Hole Research Center using an approach that combines field measurements with information acquired by Earth observation satellites [3]. The effort resulted in a continuous estimate of the amount and distribution of carbon stored aboveground in the live woody biomass of vegetation across tropical America, Africa, and Asia for the period 2007-2008 at a resolution of circa 500 meters. The data set was generated using field measurements co-located with satellite-based Light Detection And Ranging (LiDAR) observations from the NASA Geoscience Laser Altimeter System (GLAS) together with a cloud-free temporal mosaic generated from NASA Moderate Resolution Imaging Spectrometer (MODIS) and Nadir Adjusted Reflectance (NBAR) data [3].

Country boundaries were derived following adjustments to national borders based on geographic considerations. Such adjustments were necessary to address, in an unbiased

fashion, the coarse nature of existing boundary databases as well as ongoing boundary disputes between some countries. As a result, the limits used here cannot be considered strictly official.

### **Methods**

Together, the three basic data layers (IT/PNA limits, carbon density map, and country/regional limits) were analyzed in a geographic information system (GIS; ArcGIS 10.2) using a raster-based approach. The political-administrative layers were used as a basis for quantifying the amount and distribution of carbon contained within the various IT and PNA units. Regions of IT and PNA overlap were analyzed separately from all other ITs and PNAs. Additionally, ITs legally recognized by national governments were differentiated from those lacking official government recognition.

### **References**

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