



# TROPICAL FORESTS

## A RESOURCE UNDER THREAT

An issue primer for religious leaders and faith communities

### INTRODUCTION

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Trees are sacred for people of many traditions as blessings that provide direct gifts to humanity: resources such as clean air, lumber, medicines, food, and even the simple gifts of shade and beauty. When gathered together as forests, trees inspire still-greater awe, providing many indirect benefits to humanity through services that regulate our environment, from circulating water through the atmosphere, to stabilising soils, to storing carbon that would otherwise contribute to global warming, to providing habitat for a host of species. Yet threats to tropical forests have never been higher. Deforestation from agriculture, logging, mining, roads, and other depredations continue to shrink tropical forest cover and drive species loss and climate change. Today more than ever, tropical forests require and deserve our protection, just as we need theirs.

### KEY FACTS

- Tropical forests once occupied 12% of Earth's land area, but today cover less than 6%.
- They are home to more species than any other land-based ecosystem on Earth.
- They are critical to sustainable development, contributing to rural incomes, food security, fresh water supplies, disease control, and protection from natural disasters.
- Deforestation consumes 12-13 million hectares of tropical forest per year and is a key driver of our planet's extinction crisis, which threatens 1 million species.





# AN IRREPLACEABLE GIFT

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Tropical forests, particularly rainforests, are the most biodiverse and productive of Earth's land-based ecosystems. Depending on the local climate and altitude, tropical forests can vary from evergreen and semi-evergreen forests with lush vegetation—like the Amazon rainforests or the Andean cloud forests, to peat-swamp forests like those in Borneo and Malaysia, to semi-deciduous and deciduous forests as in the Cerrado region of Brazil, and dry tropical forests found across the middle of Africa.<sup>1</sup> Thus, not all tropical forests are rainforests. Each of these tropical forest types has distinct vegetation and wildlife and provides different ecosystem services to human populations worldwide, such as providing fresh water, regulating climate, and supplying food and medicinal plants.<sup>2</sup>

At one time tropical forests occupied 12 percent of the Earth's land area, but today they cover less than 6 percent.<sup>2</sup> The Amazon Basin contains the largest continuous block of tropical forests on Earth, spanning nine countries in South America.<sup>1</sup> Significant areas of tropical forests are also found in the lowlands of Southeast Asia and in the Congo basin, as well as across mountain ranges such as the Andes, and in coastal areas as in East Africa.<sup>1</sup> Some 1,770 million hectares of tropical forests are found worldwide today, although a much smaller portion of these—just 959 million hectares—are rainforests, the most productive and species-rich forest type.<sup>3,4</sup>

## CRITICAL FOR SUSTAINABLE DEVELOPMENT

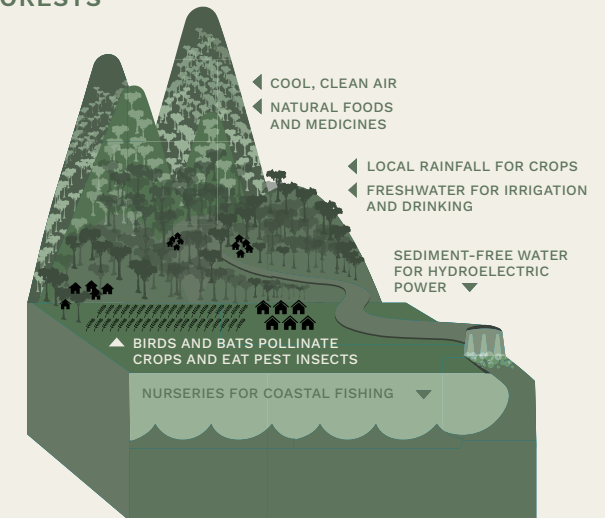
Tropical forests are crucial to achieving the UN Sustainable Development Goals (SDGs), a set of sustainability targets agreed by nations worldwide in 2015<sup>5,6</sup> as a shared blueprint for peace and prosperity for people and the planet. The Life on Land goal (SDG 15) specifically targets the protection, restoration and sustainable use of forests and other terrestrial ecosystems,<sup>7</sup> while many other SDGs depend directly on the existence and healthy functioning of forests.

For example, as important sources of income, food security and livelihoods, tropical forests contribute to Ending Poverty (SDG 1) and Zero Hunger (SDG 2).<sup>8,9</sup> Tropical forests make substantial and underappreciated contributions to agricultural production by providing clean water for irrigation, influencing weather patterns that make land suitable for farming, and offering habitat for insects, birds and bats that pollinate crops. Products harvested directly from the forest represent, on average, almost a quarter of household income of families who depend directly on these ecosystems.<sup>10</sup>

The contribution of tropical forests to Good Health (SDG 3) is evident when forests disappear: deforestation has been linked to an increase in the incidence of malaria<sup>11,12</sup> and other diseases like dengue, hantaviruses, Lyme disease, West Nile fever virus, and yellow fever. Forests also provide many traditional and modern medicines and remove harmful pollutants from the air.<sup>2,13,14</sup> At the same time, tropical forests play a critical role in absorbing, cleaning and recycling freshwater by catching rainfall, returning moisture to the sky, capturing water underground, removing pollutants, recycling nutrients and regulating weather patterns, all of which contribute to the Clean Water and Sanitation goal (SDG 6).<sup>15</sup> Tropical forests also prevent soil erosion and mitigate the risks of natural disasters like landslides, floods, storm surges and tsunami waves, thus supporting Sustainable Cities and Communities (SDG 11).<sup>16</sup>

## FORESTED LANDSCAPES PROVIDE SERVICES; DEFORESTATION PUTS LIVES AT RISK

### INTACT FORESTS



### DEFORESTATION



Source: Center for Global Development.



# A HAVEN FOR BIODIVERSITY



Tropical forests are home to a greater variety of life than any other land environment on Earth. They host at least half of the Earth's living species of plants and animals,<sup>1</sup> despite occupying only a small fraction of the Earth's surface. The range of climates, habitats and foods found in tropical forests provides abundant opportunities for life to thrive.<sup>2</sup> So astonishingly biodiverse are tropical forests that just 50 hectares in a tropical forest can contain more tree species than the entire land mass of Europe and North America combined.<sup>17</sup>

The Amazon's forests harbour more than one-tenth of the world's 4,000 known amphibian species,<sup>18</sup> 2,000 species of bromeliads (the pineapple family) and 837 species of palms.<sup>19</sup> Brazil alone has seven times more species of fish than are found in all of Europe.<sup>19</sup> Despite its relatively small size, Colombia is one of the most biodiverse countries in the world thanks to its forests. It is home to 1,826 species of birds (more than any other country in the world),<sup>20</sup> up to 51,000 plant

species, and 10-20 percent of the world's orchids.<sup>19</sup> Many of the species found in tropical forests are endemic, meaning they exist in a limited geographic range and are found nowhere else on Earth, making them particularly vulnerable to extinction when their limited habitats are threatened by deforestation. Each extinct species represents the incalculable loss of a unique piece of creation and an evolutionary path that unfolded over extraordinarily long periods of Earth's history.

Species new to science are being discovered in tropical forests all the time. In 2014 and 2015 in the Amazon alone, 381 new species were catalogued, including 216 plants, 93 fish, 32 amphibians, 19 reptiles, 1 bird, and 20 mammals.<sup>21</sup> Yet as fast as new species are discovered, they are also dying off. Over the past century, human activities, including deforestation and degradation of tropical forests, have driven species extinct 100 times faster than the natural rate<sup>22</sup>.



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**Tropical forests are home to more species than any other land-based ecosystem on Earth and new species are being discovered all the time.**





# A CRISIS CALLED DEFORESTATION

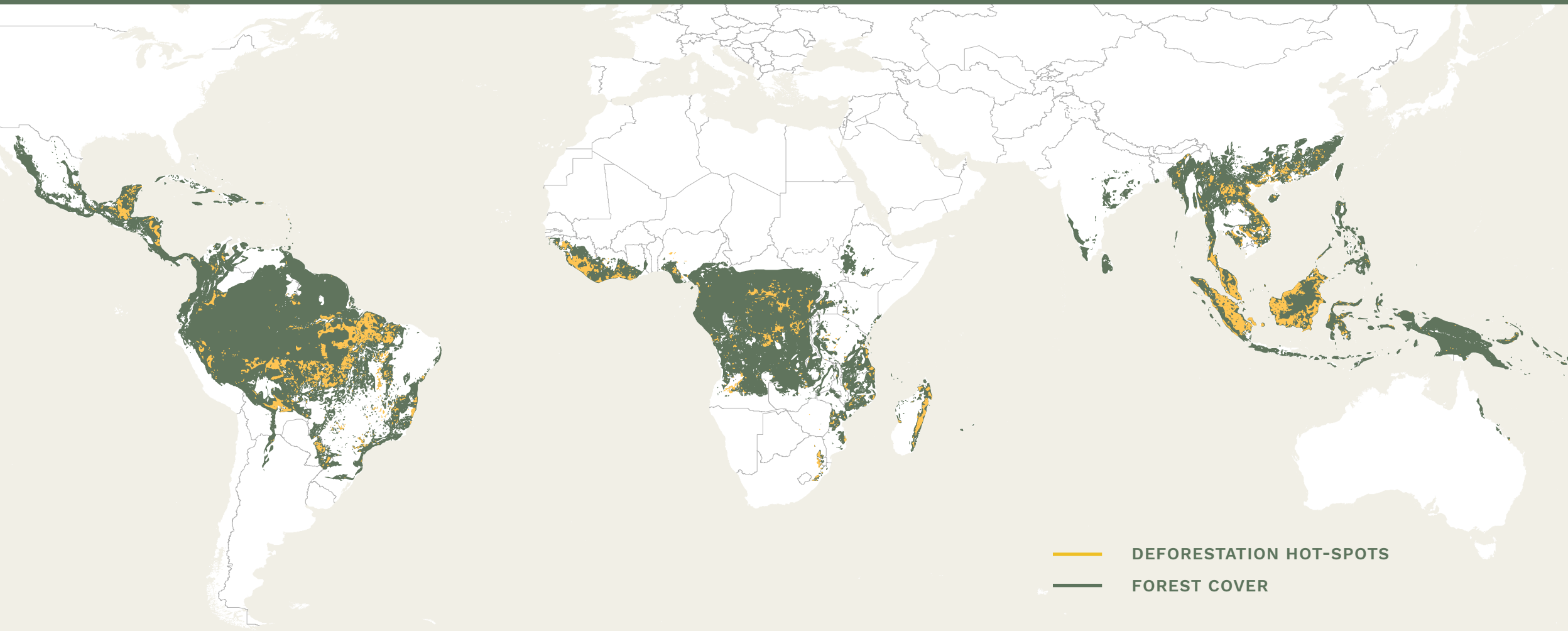
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The world's tropical forests are being lost at an accelerating rate. Every year, forest area the size of Austria—about 12-13 million hectares—is destroyed.<sup>23,24</sup> Of this lost forest, some 3.6 million hectares are primary rainforests—old-growth tropical forests with the greatest carbon storage and biodiversity.<sup>25</sup> In just the last decade, the world lost an area of tree cover equivalent to the combined area of France, Germany and the United Kingdom.

This loss of forests is undermining international efforts to address climate change, achieve sustainable development, and promote human rights, peace and security. If the pattern continues, the world will lose 289 million hectares of tropical forests by 2050—an area about the size of India.<sup>26</sup> A quarter of the Amazon is on track to be cut down by 2030, and Borneo could lose half of its remaining forest cover by the same year.<sup>27</sup> In sum, deforestation is an environmental crisis of existential importance that threatens the Earth's ability to sustain human life as we know it.



# GLOBAL TREE COVER LOSS IN TROPICAL FORESTS, 2001 TO 2018



Source: Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global MAs of 21st-Century Forest Cover Change." *Science* 342 (15 November): 850-53. Data available on-line from: <http://earthenginepartners.com/science-2013-global-forest>. Accessed through Global Forest Watch on 30/04/19. [www.globalforestwatch.org](http://www.globalforestwatch.org).

The boundaries and names shown and the designation used on maps do not imply official endorsement or acceptance by UN Environment or contributory organisations.



## DRIVERS OF DEFORESTATION

Commercial agriculture is by far the biggest driver of deforestation. It caused nearly three-quarters of all tropical deforestation between 2000 and 2012,<sup>27</sup> and about half of that forest loss took place illegally<sup>27</sup>. Soy (most of which is fed to livestock) and beef production are the leading contributors to deforestation, especially in Latin America.<sup>28,29</sup> Palm oil production is another significant driver, particularly in Indonesia<sup>30</sup> and Malaysia<sup>31</sup>, and increasingly in Latin America<sup>32</sup> and Central Africa<sup>33</sup>. In Indonesia alone, palm oil plantations increased tenfold between 1985 and 2007, reaching 6 million hectares.<sup>34</sup> As a result, Borneo and Sumatra lost more than half of their natural forests, and are projected to lose an additional 27 million hectares by 2030.<sup>27</sup> Mining and large-scale infrastructure projects such as dams<sup>35,36,37</sup> also drive deforestation. In addition, even when tropical forests are not razed outright, their health and integrity are often severely compromised by roads<sup>38</sup>, fires, illegal logging, hunting, and other activities that fragment and degrade them.

GLOBAL TREE COVER LOSS IN TROPICAL FORESTS, 2001 TO 2017



## HOW DO WE KNOW ABOUT THE RATES AND DRIVERS OF DEFORESTATION?

The last decade has seen remarkable advances in the technologies used to track deforestation. Improvements in the spatial resolution of remote sensing data and satellite imagery enable precise measurement of deforestation rates, drivers of deforestation, and emissions avoided by reduced deforestation, almost in real time. Improvements in drone technology have enabled forest managers—including indigenous peoples and forest communities—to monitor their forests and spot and document illegal activity much more efficiently than they could previously. And increased accessibility of drone, camera and mobile technology are ushering in a new era of crowd-sourced forest monitoring. Together, these advances are increasing the transparency of forest-related information and decision-making and shedding light on deforestation threats and hotspots that previously went undetected.



# THE FATES OF THE CLIMATE AND TROPICAL FORESTS ARE BOUND TOGETHER

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Tropical deforestation and climate change are intricately connected problems. Deforestation accelerates climate change and erodes our resilience to it, while climate change further damages forests and reduces their ability to remove carbon from the atmosphere. Reducing emissions from tropical deforestation is essential to any strategy to rein in climate change. Forests are natural carbon storehouses, thanks to their capacity to absorb carbon dioxide, a greenhouse gas, and store it in tree trunks, leaves and roots.<sup>39</sup> Greenhouse gasses are naturally occurring gasses that trap heat from the sun and warm the Earth. Global ecosystems are adapted to and dependent upon this natural warming.<sup>40</sup> However, as human activities emit more greenhouse gases into the atmosphere, this natural effect is amplified, raising Earth's average temperature in a process known as global warming, with disruptive effects on most ecosystems.<sup>41</sup>

Tropical forests stored between a quarter and a third of all carbon emitted by human activities between 1960 and 2015, a testament to their massive natural capacity to help regulate the carbon dioxide in our atmosphere.<sup>42</sup> Despite this crucial contribution, the role of tropical forests in mitigating climate change is widely under-appreciated. Indeed, despite their vast potential as net absorbers of carbon, the world's forests are now on the brink of becoming net emitters of carbon due to deforestation and forest degradation.<sup>42</sup> This is because when forests are felled or burned, the carbon dioxide they had stored escapes into the atmosphere, where it contributes to global warming.

Tropical deforestation is a major source of carbon emissions.<sup>43</sup> Indeed, after fossil fuel combustion, the largest source of human-caused carbon emissions is land-use changes, including agriculture and deforestation.<sup>43,44</sup>

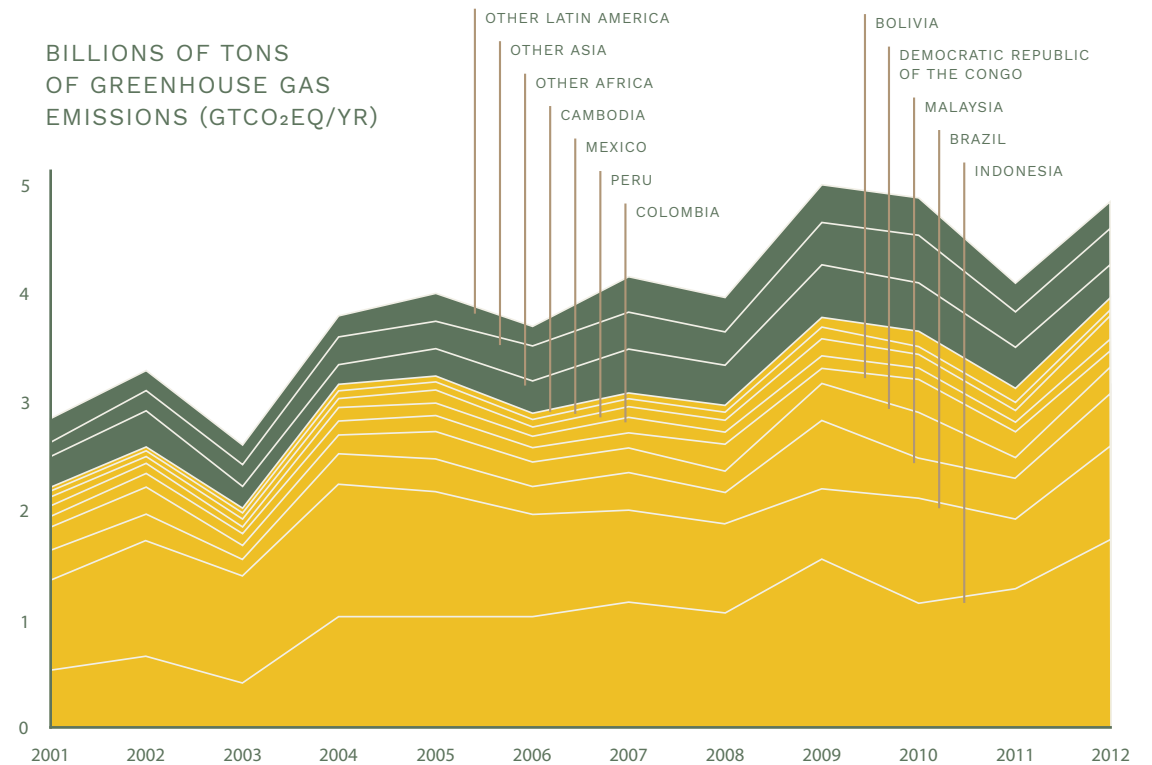


Land-use change produces nearly 50 percent more greenhouse gases than the entire global transportation sector (which is popularly regarded as a chief source of emissions).<sup>43</sup> Moreover, emissions from deforestation are highly concentrated: just nine tropical countries accounted for 77 percent of the greenhouse gas emissions from deforestation between 2001 and 2012.<sup>45</sup> The power and concentrated nature of deforestation make preventing and reversing deforestation a high-payoff strategy for protecting the climate.

Forest fires, particularly those set to clear land for agriculture, release enormous amounts of greenhouse gases, along with other toxic gases that are dangerous for human health.<sup>2,46</sup> In the summer of 2015, forest fires burning across Indonesia to clear land for plantations emitted more greenhouse gases each day than the entire US economy. They also caused an estimated 100,000 premature deaths due to their toxic smoke.<sup>46-48</sup> Importantly, forest loss makes a dual contribution to climate change: in addition to generating carbon emissions, it diminishes nature's capacity to absorb them as forest area shrinks.

Ending deforestation is a powerful strategy for tropical forest countries to fight climate change while improving the livelihoods, health, well-being, and security of their people, particularly the poorest and most marginalized groups. Given the benefits tropical forests provide to all of humanity, the global community has a responsibility to support rainforest countries in meeting this goal. The longer the world waits to reverse and end current deforestation trends, the less capacity forests will have to be a viable climate solution.

## NINE COUNTRIES PRODUCED 77 PERCENT OF EMISSIONS FROM DEFORESTATION FROM 2001-2012



Source: Center for Global Development.

**Ending deforestation is a powerful strategy for major rainforest countries to fight climate change while improving the livelihoods, health, well-being, and security of their people, particularly the poorest and most marginalized groups.**





## **PROTECTING TROPICAL FORESTS MAKES GOOD ECONOMIC SENSE**

Economic factors often drive decisions about land use, yet the full value of forests is often missing from policymakers' calculations, under-playing the value of conservation. Too often, officials consider only the short-term value of converting forests to agricultural land, or of granting concessions for extractive industries, which often yield little in terms of local benefits or long-term economic value. Sadly, the myth that forests are a necessary casualty of economic development and food security is remarkably persistent.

The truth is that converting forests to other land uses eliminates opportunities for income generation and threatens important sectors of a country's economy in the longer term, for example agriculture, energy and health. As mentioned above, forest products contribute on average almost a quarter of the total household income for families that depend directly on these ecosystems.<sup>10</sup> Deforestation also leaves communities and infrastructure vulnerable to floods, landslides and other natural disasters that can impede local economic growth for decades. Deforestation affects agricultural productivity and food security at larger scales as well, threatening the watersheds, weather patterns and pollinators on which agriculture depends. Forests are also crucial resources for energy production, clean water and human health, and the impacts of their loss on these sectors are often not understood until it is too late.



# GLOBAL EFFORTS TO PROTECT OUR TROPICAL FORESTS



The dawn of the current century has brought renewed global attention to stopping and reversing deforestation and forest degradation. In the last decade, the international community, national and local governments, businesses, non-governmental organizations, indigenous peoples and other organized communities have committed to a range of targets aiming to turn the tide of forest loss.

## FORESTS IN THE UN CLIMATE AGREEMENT

The United Nations Framework Convention on Climate Change (UNFCCC) has established the REDD+ mechanism for providing developing countries with incentives “to reduce emissions from deforestation and forest degradation, to sustainably manage their forests and to conserve and enhance forests carbon stocks”.<sup>49</sup> Under the Paris Agreement, nations committed “to limit global

warming to well below 2° Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5° Celsius” by 2030 to reduce risks and impacts of climate change.<sup>50,51</sup> The agreement recognizes the critical role of REDD+ in achieving these goals.<sup>52,53</sup>

Tropical forests also play an important role in the ‘Nationally Determined Contributions’ (NDCs) pledged by many countries in response to the Paris Agreement.<sup>54,55</sup> A 2018 study concluded that 23 percent of the cost-effective mitigation action needed to limit global warming to 2 degrees can be achieved through the conservation, restoration and improved management of tropical forests, mangroves and peatlands.<sup>56</sup> Combined with other nature-related measures, these actions would pack still more of a punch, contributing as much as 37 percent of the emission reductions needed to meet global climate goals by 2030.<sup>57,58</sup>



Unfortunately, although many NDCs recognize forests as important in meeting their emissions targets, most of the potential contribution from tropical forests is not captured in current NDCs.

### **UN CONVENTION ON BIOLOGICAL DIVERSITY**

In 2011, countries recognized the critical importance of tropical forests for biodiversity and pledged to protect them as part of the Strategic Plan for Biodiversity 2011-2020, established under the United Nations Convention on Biological Diversity<sup>59</sup>. Since that year, over 50 countries, sub-national governments and private entities have committed to restore 150 million hectares of deforested and degraded lands by 2020, and 350 million hectares by 2030, under an initiative known as the Bonn Challenge.<sup>54</sup>

### **THE NEW YORK DECLARATION ON FORESTS**

In 2014, the New York Declaration on Forests was endorsed by more than 190 countries, sub-national governments, companies, NGOs and indigenous peoples, who committed to do their parts to halve the loss of natural forests by 2020, and to end forest loss by 2030.<sup>60</sup> The Declaration also seeks to restore degraded forests and improve forest governance. Meeting the New York Declaration's goals would cut between 4.5 and 8.8 billion tons of carbon pollution every year – about as much as the current emissions of the United States.

### **UN SUSTAINABLE DEVELOPMENT GOALS (SDGs)**

The Sustainable Development Goals provide another essential framework for the protection and restoration of tropical forests.<sup>13</sup> As already mentioned, they include not only specific targets related to forest conservation, but also highlight the crucial role that forests can play in meeting other pressing goals, including ending poverty and hunger, ensuring healthy lives and well-being, providing clean water, reducing the risk of natural disasters, and combating climate change.<sup>13</sup>





# THE NEED FOR FAITH-BASED LEADERSHIP



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The environmental, climate, and economic case for protecting tropical forests is clear, and a growing coalition of governments, non-governmental organizations, indigenous peoples and businesses is working to end tropical deforestation. But more action is urgently needed. One perspective missing from the discussion is the strong moral and ethical imperative for ending deforestation. Indigenous communities—the time-honored keepers of traditional environmental knowledge and cultural practices—are uniquely positioned to inspire action for the protection of tropical rainforests.

Faith-based communities worldwide can stand in solidarity with these indigenous voices for the forest, lending their influence and inspirational power to support the ethical case for forest protection. Such a moral stance, broadly proclaimed, could provide the turning point that the world's forests urgently need. The time has come for a worldwide movement for the care of tropical forests, one that is grounded in the inherent value of forests, and inspired by the values, ethics and moral guidance of indigenous peoples and faith communities.



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## ABOUT THIS PRIMER

This primer is part of a series of briefs meant to inform and inspire faith communities to action to help safeguard tropical forests and their inhabitants. Through facts, graphics, analysis, and photos, these primers present the moral case for conserving and restoring rainforest ecosystems, supported by the latest science and policy insights. They bring together the research and practical tools that faith communities and religious leaders need to better understand the importance of tropical forests, to advocate for their protection, and to raise awareness about the ethical responsibility that exists across faiths to take action to end tropical deforestation.

## PARTNERS

The Interfaith Rainforest Initiative welcomes engagement by all organizations, institutions and individuals of good faith and conscience that are committed to the protection, restoration and sustainable management of rainforests.

## INTERFAITH RAINFOREST INITIATIVE

The Interfaith Rainforest Initiative is an international, multi-faith alliance working to bring moral urgency and faith-based leadership to global efforts to end tropical deforestation. It is a platform for religious leaders and faith communities to work hand-in-hand with indigenous peoples, governments, NGOs and businesses on actions that protect rainforest and the rights of those that serve as their guardians. The Initiative believes the time has come for a worldwide movement for the care of tropical forests, one that is grounded in the inherent value of forests, and inspired by the values, ethics, and moral guidance of indigenous peoples and faith communities.

## QUESTIONS?

The Interfaith Rainforest Initiative is eager to work with you to protect tropical forests and the rights of indigenous peoples. Contact us at [info@interfaithrainforest.org](mailto:info@interfaithrainforest.org).



Norwegian Ministry  
of Climate and Environment



NICFI  
Norway's  
International Climate  
and Forest Initiative



Regnskogfondet  
RAINFOREST FOUNDATION NORWAY

Religions for Peace 



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