Halfway There?

What the Land Sector Can Contribute to Closing the Emissions Gap

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Executive Summary

International talks on climate change will reach a critical stage at the end of 2015, when an agreement on large reductions in global warming emissions is to be negotiated in Paris. In order to avoid the worst consequences of climate change, the sum of countries' further emissions reductions will need to close the "emissions gap"—the difference between what they have already committed themselves to doing and what will be necessary to keep global temperature rise below 2 degrees above pre-industrial levels. The United Nations Environment Programme, in its most recent Emissions Gap report (2014), has estimated that in the absence of sufficient reductions beforehand, this gap will be 8–10 billion tons of CO_2 equivalent (Gt CO_2eq) in 2020 and 14–17 Gt CO_2eq in 2030. At present, total global emissions are about 54 Gt CO_2eq/year.

Closing the emissions gap is thus a huge challenge for the global community, and we will begin to see in early 2015 whether countries are likely to meet it. This is when they start announcing their Intended Nationally Determined Contributions (INDC)—the mitigations they plan to achieve in the 2020s. The large-scale deployment of available and highly effective land use options could increase that likelihood substantially.

Ruminants such as cattle are the largest single source of emissions from agriculture.

Union of Concerned Scientists

TABLE 1 . Climate Mitigation Potentials of AFOLU Subsectors, Globally and by Country

	Ruminant Methane	Rice Methane	Soil N_2O and CO_2	Deforestation and Degradation	Peat	Sequestration from Regrowth
Global	High	Moderate	High	High	High	High
United States	High		High			High
Indonesia		Moderate		High	High	Moderate
China	High	Moderate	High			Moderate
India	High	Moderate	Moderate			Moderate
European Union (28 countries)	High		Moderate		Moderate	Moderate
Brazil	High		Moderate	High		High
Mexico	Moderate		Moderate	Moderate		Moderate
Democratic Republic of the Congo				Moderate		

High Potential, Generally 100s of Mt to Gt CO_2eq/year   Moderate Potential, Generally 10s of Mt to 100s of Mt CO_2eq/year

Notes: Because these estimates are for the post-2020 period, they take into account both actions to date and those expected before 2020. The ruminant methane subsector includes enteric fermentation and manure as well as both supply- and demand-side approaches. The soil N_2O and CO_2 subsector includes synthetic fertilizer, manure, and other soil management options both on cropland and pasture—but only on mineral soils (not peat). The peat subsector includes reduced clearing and restoration. The sequestration from regrowth subsector includes reforestation, afforestation, and restoration in nonforest ecosystems.

Based on scientific estimates from the Intergovernmental Panel on Climate Change (IPCC) and other more-recent studies, this report shows the potentials for reducing the gap from the land sector, or Agriculture, Forestry, and Other Land Use (AFOLU). There are three major kinds of AFOLU-based mitigation activities: reducing carbon emissions from deforestation, forest degradation, and the clearing of peat lands; decreasing emissions from agricultural sources such as methane from cattle and rice paddies, nitrous oxide from fertilizer and manure, and carbon from the soil; and taking carbon dioxide out of the atmosphere (sequestration) through reforestation and other kinds of ecosystem restoration.

Additionally, there are approaches to each activity both on the supply side (production—e.g., how livestock, rice paddies, or forests are managed) and on the demand side (consumption—e.g., how much beef is consumed or how much food is wasted). The IPCC has reviewed various estimates of the total global mitigation potential from AFOLU, which range from less than 1 Gt CO_2eq to more than 13, depending on methodology, time period, assumed carbon price, subsectors (types of land use changes) included, and whether both demand- and supply-side actions are considered (Smith et al. 2014, Figure 11.14).

This report compiles and presents previously published estimates of AFOLU mitigation potential for eight of the world's major emitters: Brazil, China, the Democratic Republic of the Congo (DRC), the European Union (EU—28 countries), India, Indonesia, Mexico, and the United States. These countries together account for 57 percent of global AFOLU emissions. Both for 2020 and 2030,

[Both for 2020 and 2030, the United States has the largest potential for land use mitigation.]

- the largest potential is in the United States (2–3 Gt CO_2eq);
- Indonesia, China, and India also have substantial potentials (0.75–1.75 Gt); followed by
- Brazil and the EU (about 0.5 Gt); finally
- Mexico and the DRC have fairly low levels (less than 0.2 Gt).

However, the subsectors and approaches with the largest emissions-reduction potentials are quite different by country, as summarized qualitatively in Table 1.

The median estimates of AFOLU mitigation potentials for these countries add up to nearly 7 Gt CO_2eq/year both for 2020 and 2030, amounting to about three-fourths of the 2020 gap and nearly half of the gap in 2030. Moreover, AFOLU mitigation by other countries not included in the report would further reduce the emissions gap.

As countries begin presenting their Intended Nationally Determined Contributions in early 2015, this report's estimates of AFOLU mitigation potentials could help the world gauge how committed these nations are to meeting those potentials—that is, to tackling the most critical challenge of our time.

Introduction

THE 2-DEGREE CHALLENGE AND THE EMISSIONS GAP

As year after year continues to pass without strong global action on climate change, the specter of Earth's temperatures rising by more than 2°C above the preindustrial level has become increasingly likely, and increasingly alarming. The science underlying this prospect is clear; it derives from the large gap between what nations have been willing to do—not enough so far—and what will be necessary to sufficiently reduce their emissions of global warming pollution (Sanford et al. 2014). This "emissions gap," estimated at 8 to 10 billion tons of CO_2 in 2020 and 14 to 17 billion tons in 2030, must be closed if the most dangerous consequences of global warming are to be averted (UNEP 2014).

In economic terms, this mitigation of emissions may be done in two ways. On the one hand, we could continue to consume the same things we do now, even in increasing amounts, but produce them through alternative means—for example, electric power from the wind and the sun instead of from coal, cars and trucks propelled by biodiesel or electricity instead of by gasoline, and wood grown in plantations instead of logged from natural forests. On the other hand, we could change our patterns of consumption over time, at least in relative terms—such as by reusing and recycling products rather throwing them away, traveling more on public transit and less in cars, and eating more chicken and less beef.

Manure, seen here in a typical lagoon, is an important source of both methane and nitrous oxide, two greenhouse gases that are much more damaging than CO_2.

[Emissions from the agriculture, forestry, and other land use sector now represent about 24 percent of global warming pollution.]

Although the emphasis so far has been heavily on the first way (commonly called the supply, or production, side) it is increasingly evident that the second (the demand, or consumption, side) also has large potential and will need to be engaged as well if the emissions gap is to be closed (Bajzelj et al. 2014; Dickie et al. 2014).

LAND USE'S ROLE IN CLOSING THE GAP

Emissions from the "agriculture, forestry, and other land use" (AFOLU) sector now represent about 24 percent of global warming pollution, according to the Intergovernmental Panel on Climate Change (IPCC) (Smith et al. 2014). These emissions come from many sources and processes—such as the cutting of forests, the fertilizing of soils, and the draining of peat swamps—and they loom large in nearly every country in the world, whether developed or developing; in many countries, they account for the majority of emissions (Dickie et al. 2014). Because this sector involves some of the most fundamental aspects of human existence—how we feed, house, and clothe ourselves; how we relate to the numerous species with which we share the planet; and how we see our place in the world (Bustamante et al. 2014)—one should not be surprised that it represents a substantial fraction of the potential to close the gap.

There are three broad AFOLU alternatives for reducing global warming emissions:

AGRICULTURAL EMISSIONS

The most recent IPCC estimate of emissions directly from agriculture was 5.0 to 5.8 billion metric tons of CO_2 equivalent (Gt CO_2eq) per year (Smith et al. 2014). Somewhat over half of this amount is associated with the production of livestock, particularly methane-emitting ruminants such as beef cattle (Dickie et al. 2014; Searchinger et al. 2013). Other important global warming emissions include N_2O from fertilizer and manure, methane from rice, and CO_2 flows into and out of crop and pasture soils.

DEFORESTATION, FOREST DEGRADATION, AND CLEARING PEAT

Because forests represent enormous stores of carbon, especially in the wood of trees, clearing them results in large emissions of CO_2 to the atmosphere. This deforestation is the largest source of emissions from changes in land use. "Forest degradation" activities that damage forests without totally clearing them, such as selective logging, shifting cultivation, or fires in the vegetation under forest canopies, are also significant, as are the emissions that come from draining carbon-rich peat swamps. The IPCC estimated the combined emissions global from these sources at 4.3 to 5.5 Gt CO_2eq annually (Smith et al. 2014).

CARBON SEQUESTRATION FROM THE RESTORATION OF FORESTS AND OTHER ECOSYSTEMS

While most actions needed to close the emissions gap involve reducing the emissions themselves at their sources, the land sector, unlike most others, also offers another important option: carbon sequestration—the taking of CO_2 out of the atmosphere and storing it in wood and soils. The only prac-tical way at present to do this on a large scale is with a "technology" that evolved over a billion years ago: photosynthesis. Reforestation, whether by planting trees or encouraging natural forest regeneration, is the main alternative here, although restoration of other kinds of ecosystems could contribute as well (Lamb, Erskine, and Parrotta 2005).

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Because they involve the lands that are so basic to our existence, the three AFOLU alternatives outlined interact


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Restoration, such as with this 12-year-old tropical forest growing back on degraded land, can actually remove CO_2 from the atmosphere.

in complicated ways with other critical factors, such as food security, adaptation to the changing climate, and overall economic development (Bustamante et al. 2014; Garnett 2013; Searchinger et al. 2013; Smith et al. 2013; Golub et al. 2012). While there are important synergies—e.g., increasing the organic matter in soil can not only store carbon but also make crops more resistant to drought—there are fundamental tradeoffs as well. Land used to produce crops cannot simultaneously grow forest; pasture soils can store carbon in the deep roots of grasses but the cattle they support emit large quantities of methane. Thus while we emphasize climate mitigation from the land in this report, we do not forget that it is connected in complicated ways to broader issues—who controls the land, how they make their living, how they could adapt to the climate change that is inevitable, and how societies may provide a better livelihood for all, particularly the world's poorest people.

THE PURPOSE AND METHODS OF THIS REPORT

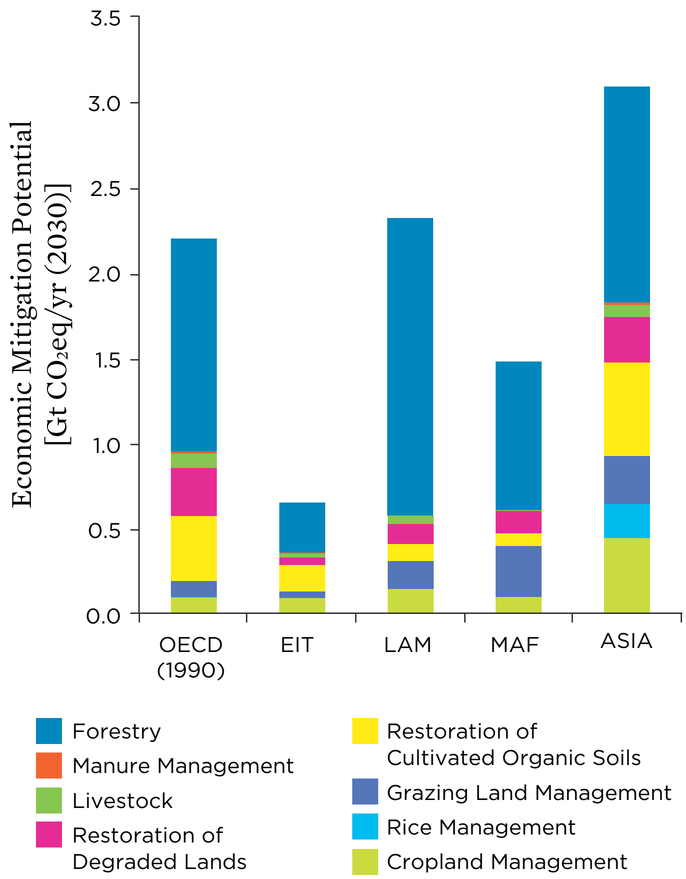
The goal of this report is to estimate, based on the most recent scientific literature, the extent to which emissions mitigations from the AFOLU sector could contribute to closing the emissions gap. While there have been recent estimates for the sector as a whole (Bastos Lima et al. 2014; Smith et al. 2014), we believe that it is also important to quantify these potentials specifically for the countries that are world's leading AFOLU emitters. After all, the size of each country's intended contribution to closing the emissions gap, scheduled for announcement to the world community in spring 2015, will be critical to success. These individual contributions will differ substantially among countries—in line with the internationally recognized principle of common but differentiated responsibilities—in accordance with differences, for example, in capacity and development priorities. Although the tradeoffs involved in determining these contributions will be complex, all countries, beginning with the largest global warming emitters, will need to contribute to the common effort. Thus we seek to quantify not only the total emissions-reduction potential but also the potentials for each of the eight parts of the world—Brazil, China, the Democratic Republic of the Congo, the European Union (28 countries), India, Indonesia, Mexico, and the United States—that together accounted for 57 percent of the world's net AFOLU emissions in 2010 (JRC/PBL 2013).

Global Summaries

In recent years, the global scientific community has produced increasingly detailed estimates of the potential for climate mitigation from the land sector. The starting point for examining these studies is logically the IPCC's AR5 (IPCC 2014), which reviewed and summarized studies prior to 2013 and gave quantitative estimates of economic AFOLU-based mitigation potential by region and by carbon price, for the year 2030 (see the figure).

The estimates total about 7 Gt CO_2eq/year in 2030 at a nominal price of $50/ton, and nearly 10 Gt at $100/ton. Moreover, these amounts do not include the effects of demand-side measures such as shifting diet trends away from high-emissions foods and reducing food waste, with a total potential considered to be roughly comparable in size to the above two estimates

Economic Mitigation Potentials of the AFOLU Sector, by Region and Subsector, according to the IPCC



For each region, the potential mitigation in Gt CO_2eq/year corresponding to the year 2030 is shown for a carbon price of $100USD/t CO_2eq. Regions correspond to: OECD–1990 is developed countries, EIT (economies in transition) is the former Soviet Union and Eastern Europe, LAM is Latin America, MAF is Africa and the Middle East, and Asia is the remaining Asian countries.

SOURCE: MODIFIED FROM FIGURE 11.17, SMITH ET AL. 2014.

(Smith et al. 2014, Table 11.8; Smith et al. 2013). Reviewing all the estimates of global potential (not only those for a specific carbon price), the IPCC found totals that ranged from less than 1 to over 13 Gt CO_2eq/year (Smith et al. 2014, Figure 11.14). Together, these results mean that the potential contribution of AFOLU efforts to closing the emissions gap can be quite considerable.

To estimate country-specific potentials, we started with the IPCC analysis and then gathered data from three additional kinds of studies:

- In-depth analyses of particular countries' and subsectors' mitigation potentials, such as the work of Bustamante et al. (2012) on the cattle sector in Brazil.
- Quantitative estimates of demand-side potentials that were not included in Figure 1 because they were not based on particular carbon prices (e.g., Dickie et al. 2014)
- Studies that were not included in AR5 because they were published more recently (e.g., Tilman and Clark 2014; UNEP 2013)

The above data yielded potentials. But what were the trends? For the forest sector, the IPCC found that emissions had dropped in the most recent decade, and the panel expected this trend to continue, possibly going past zero to net sequestration (i.e., the sector becoming a carbon sink). However, the opposite was the case in agriculture, where emissions were projected to grow in coming decades.

Thus the IPCC found that substantial mitigation from the land sector will be necessary to reach the 2-degree goal. Corresponding scenarios should have not only very substantial reductions in fossil-fuel emissions but also decreases in net CO_2 emissions from AFOLU to well below zero as well as cuts in the non-CO_2 gases such as methane and nitrous oxide (which come mostly from agriculture).

Besides country- and sector-specific studies, several global studies relevant to the issue have also appeared in the months since the time limit for inclusion in AR5. These include:

- The analysis of agricultural options by UNEP in its 2013 Emissions Gap report (UNEP 2013)
- The comprehensive examination by Dickie et al. (2014) that focuses on agriculture but also includes figures for land use change and forestry
- The broad estimates of demand-side potential by Bajzelj et al. (2014)
- The paper by Tilman and Clark (2014) on the diet-environment-health "trilemma"
- The World Wildlife Fund's report (Bastos Lima et al. 2014) that links AFOLU to the emissions gap
- The New Climate Economy report (2014), which covers all economic sectors, including a detailed chapter on the land
- The identification by West et al. (2014) of key "leverage points" (countries, subsectors, and policies) to reduce the inefficiency of global food production
- The interim findings of the World Resources Institute's Sustainable Food Future project (Searchinger et al. 2013)
- The work in progress for the book *Why Forests? Why Now?* (Seymour and Busch 2015), being released in parts over several months on the Center for Global Development's website.

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Although they differ in their details, these studies by and large reinforce the major findings of the IPCC:

- Under "business as usual," the overall emissions of the AFOLU sector (increasingly dominated by agriculture) will make the closing of the emissions gap difficult or impossible.
- However, achieving the mitigation potentials of the sector—lowering agricultural emissions, reducing deforestation to zero, and increasing reforestation—could help significantly in closing the gap.
- Demand-side approaches—not just climate-friendly production but also more efficient consumption patterns and supply chains—may well make up the majority of this total potential.

The Major Countries

The previous discussion addresses the overall global situation, but the contributions to mitigation will have to come from individual countries. In the next eight subsections we review the potential post-2020 contributions from the countries that are topmost in terms of emissions, production, or mitigation potential from the land. (This report gives the "bottom lines"—the quantitative estimates we obtained—as shown in Table 2; the details of the methods we used, together

TABLE 2 . Quantitative Estimates (in Gt CO_2eq/year) of the Post-2020 Climate-mitigation Potential of AFOLU, by Country and Summed across All Countries Studied

Year	2020	2020	2020	2030	2030	2030
Country	Low	High	Median	Low	High	Median
United States			**1.9**	0.4	5.8	**3.1**
Indonesia	0.6	2.8	**1.7**	0.6	1.3	**0.8**
China			**1.2**	0.8	1.2	**1.0**
India			**1.0**	0.4	1.0	**0.7**
Brazil	0.3	0.5	**0.5**	0.3	1.6	**0.5**
European Union	0.2	0.7	**0.4**	0.2	0.7	**0.4**
Mexico	0.1	0.4	**0.2**	0.2	0.3	**0.2**
Democratic Republic of the Congo			**0.02**			**0.02**
Sum	5.2	8.4	**6.8**	2.8	11.9	**6.7**
Sum as percent of emissions gap			**76%**			**44%**

Several of the world's largest emitters can make major contributions to climate mitigation from their land sectors.

with the spreadsheet that contains the underlying database and calculations, are available in online appendices at *www.ucsusa.org/halfwaythere*.)

THE UNITED STATES

The United States' potential for reducing land-sector emissions is large. That potential includes demand-side strategies such as further reducing beef consumption, which is now at levels with negative consequences for public health (Pan et al. 2012), and reducing food waste, particularly of high-emissions foods. On the supply side, possibilities include reducing N_2O emissions from fertilization (West et al. 2014) and preventing reductions in carbon from deforestation and the depletion of agricultural soils. The median estimate of the U.S. potential for AFOLU mitigation is 1.9 Gt CO_2/year in 2020 and 3.1 Gt CO_2/year in 2030.

INDONESIA

Indonesia is now the largest forest-sector emitter in the world, both from deforestation and the clearing of peat swamps. Reducing these emissions and restoring forests and peat lands offer major opportunities for mitigation. The median estimate of Indonesia's total AFOLU potential is 1.7 Gt CO_2/year in 2020 and 0.8 Gt CO_2/year in 2030.

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Deforestation due to commodities like palm oil is an important source of emissions in some countries, such as Indonesia.

CHINA

China boasts a net sink in its forest sector due to large-scale reforestation efforts in recent decades. However, the country's agriculture is a major emitter, with N_2O from overfertilization and methane from rice representing important opportunities. The median estimate of China's AFOLU mitigation potential is 1.2 Gt CO_2/year in 2020 and 1.0 Gt CO_2/year in 2030.

INDIA

India's emissions profile is distinctive: it has net sequestration in its forest sector due to past reforestation efforts, and the country's population consumes few high-emissions foods. As a result, India's agricultural mitigation potential is nearly all on the production (supply) side. This includes opportunities to reduce emissions of N_2O from overfertilization and methane from rice. The median estimate for India's land mitigation potential is 1.0 Gt CO_2/year in 2020 and 0.7 Gt CO_2/year in 2030.

BRAZIL

Brazil is internationally recognized for having reduced Amazon deforestation by 75 percent over the past decade (Seymour and Busch 2015), but because of the country's size there remain substantial opportunities from further reductions in deforestation, both in the Amazon and other biomes, as well from reforestation. A major study by Brazilian researchers (Bustamante et al. 2014) found that the cattle sector, which is not only the country's largest source of direct global warming emissions (such as methane) but also the predominant driver of deforestation, is where Brazil has the greatest mitigation potential. The median estimate of Brazil's post-2020 AFOLU mitigation potential is 0.5 Gt CO_2/year both in 2020 and 2030.

THE EUROPEAN UNION

The EU is important to global agriculture as a producer, consumer, importer, and exporter, and it consumes high levels of emissions-intensive foods such as beef. Demand-side approaches to shifting dietary patterns and reducing food waste offer substantial opportunities for reduction (Smith et al. 2013; Nijdam et al. 2012). The median estimate for the EU's AFOLU mitigation potential is 0.4 Gt CO_2/year both in 2020 and 2030.

MEXICO

An international leader in climate negotiations, Mexico has greatly reduced its loss of primary forests in recent years (Boucher et al. 2014), and has the potential to become a net sink through reforestation and restoration of other ecosystems. There are opportunities in agriculture as well, both on the production side and by slowing the growth of beef consumption. The median estimate of Mexico's AFOLU potential is 0.2 Gt CO_2/year in 2020 and also in 2030.

Flooded rice paddies can produce large amounts of methane, but changes in water management can reduce these emissions while maintaining high yields.

About half or more of the emissions gap could be closed through land-sector mitigation by these countries.

THE DEMOCRATIC REPUBLIC OF THE CONGO

Although it is the largest country in Africa, the DRC has relatively low levels of deforestation, ruminant emissions, and agriculture-linked soil emissions. Its major potential is in the reduction of forest and savanna emissions associated with selective logging and fires, an area in which other central African nations have made considerable progress in recent years (Mayaux et al. 2013). The median estimate of the DRC's potential is 0.02 Gt CO_2/year both in 2020 and 2030.

THE TOTALS FOR THESE COUNTRIES, AND POTENTIALS FOR THE REST OF THE WORLD

Our median estimates of AFOLU mitigation potential add up to 6.8 Gt CO_2/year in 2020 and 6.7 Gt CO_2/year in 2030, although with a considerably wider distribution in the latter year. These estimates are for countries that in aggregate accounted for 57 percent of the world's total AFOLU emissions in 2010 (JRC/PBL 2013). These sums of the median potentials represent 76 percent of the estimated emissions gap for 2020 and 44 percent for 2030 (UNEP 2014). In other words, about half or more of the emissions gap could be closed through land-sector mitigation by these countries. Thus the title of our report, *Halfway There*.[1]

What about the rest of the world? Potential is not necessarily proportional to emissions, particularly for reforestation, peat land restoration, and other sequestration opportunities; the countries included in our report probably have higher relative potential than those not included—for example, the eight entities discussed tend on average to be wealthier than the majority of the world's countries. However, it seems reasonable to predict that AFOLU mitigation by the other countries of the world (some 180) could bring the global total up to two-thirds or more of the emissions gap.


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Uncontrolled and often illegal logging degrades forests and leads to both immediate emissions and an increased likelihood of complete clearing.

From Lima to Paris

LARGE AND VARIED OPPORTUNITIES

The mitigation potentials from the land sector are large, and they can be realized at quite reasonable costs. Indeed, some of the emissions-reduction actions by major countries could have important co-benefits, including increases in the productivity and adaptation capacity of agriculture, reductions in threats to public health such as heart disease, and protection of biodiversity and ecosystem services.

The kinds of AFOLU opportunities vary a great deal among the countries we examined. In some, there is major

1 *One relevant question for expressing our estimates of post-2020 AFOLU potentials as percentages of the emissions gap is whether their potential is already included in the calculation of the gap. This is undoubtedly the case to some extent, particularly with the reduction pledges of Brazil and Indonesia for 2020 that make up part of the gap estimate, although the information available does not allow us to estimate how much. Therefore, to be conservative with respect to this partial double-counting, we should consider the 2020 estimate of mitigation potential (76 percent of the gap; see Table 1) as an overestimate, with the real percentage being lower, perhaps closer to 50 percent.*


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Changing diets and reducing food waste associated with high-emissions foods such as beef has large mitigation potential.

post-2020 potential in reducing emissions from the forest sector (e.g., Indonesia) or in increasing sequestration (Brazil). In agriculture, demand-side changes such as dietary shifts and food waste reduction are major options for some countries (the United States and, to a lesser extent, the EU), while in others increased efficiency in crop and livestock production has the most potential (India and China). To paraphrase a fundamental concept in international climate policy, the AFOLU opportunities are common but quite differentiated.

THE INDCS

As countries present to the world in 2015 their Intended Nationally Determined Contributions (INDCs)—the mitigation they plan to achieve in the 2020s—the commitments (or lack thereof) of these eight regions in their land sectors will be critical. Together these countries account for the majority of AFOLU emissions, and very likely for most of the sector's potential as well. Together they could close a substantial part of the emissions gap if they act boldly.

The developed countries could justify taking action both because of the threats posed to themselves by climate disruption and also because of the health, environmental, and economic benefits that their populations would derive. Meanwhile, higher-income developing countries such as Mexico, Brazil, and China have been willing to take actions, such as reforesting and reducing deforestation, for much the same reasons and have absorbed most of the costs. But other developing countries will need substantial international support, and our estimates of their potential should be seen as indicators of the amounts of climate-related finance that should be made available.

> ***Together these countries account for the majority of AFOLU emissions, and very likely for most of the sector's potential as well.***

THE NEED FOR AFOLU AMBITION

Mitigation action in the land sector needs to be increased, not only to help close the gap but also to avoid the substantial increases in emissions that would result from letting business-as-usual run its course. There have been some successes in reducing deforestation, but much more remains to be done, and there is also large unrealized potential for reforestation and restoration. In agriculture, emissions are high and projected to increase considerably (Tilman and Clark 2014; Searchinger et al. 2013), but there are also opportunities for large reductions associated with patterns both of production (West et al. 2014) and consumption (Bajzelj et al. 2014).

With energy-related emissions making up three-fourths of the global total, the land sector alone cannot close the emissions gap. But neither can it be closed if the potential of the land sector is ignored. As countries follow up from the Lima negotiations and set the stage for Paris, the world will be looking for high levels of land-sector ambition in the INDCs. The potential is there, and the world's leading countries need to show that together they will make it a reality.

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