

INDCs, Take 3

*The Land Sector in the Intended Nationally
Determined Contributions of Brazil, Indonesia,
India, and the Democratic Republic of the Congo*

Doug Boucher

November 2015

© 2015 Union of Concerned Scientists
All Rights Reserved

This report was produced by the Tropical Forest and Climate Initiative (TFCI) of the Union of Concerned Scientists. Its author, Doug Boucher, is the director of the TFCI.

The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet's most pressing problems. Joining with citizens across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future.

More information about UCS and the Tropical Forest & Climate Initiative is available on the UCS website: www.ucsusa.org/forests.

This report is available online (in PDF format) at www.ucsusa.org/halfwaythere.

ACKNOWLEDGMENTS

This report was made possible by the generous support of the Climate and Land Use Alliance and UCS members. We are grateful for the help we received from colleagues, including Alden Meyer, Angela Anderson, Nancy Cole, Cynthia DeRocco, Pipa Elias, Kalifi Ferretti-Gallon, Lael Goodman, Adam Markham, Jeremy Martin, Ashley Seifert, Asha Sharma, Sharon Smith, Susan Tonassi, Bryan Wadsworth, and Mike Wolosin. We especially thank Steve Marcus for his excellent editing of the report.

The opinions expressed herein do not necessarily reflect those of the organizations that funded the work or the individuals who reviewed it. The author bears sole responsibility for the report's content.

NATIONAL HEADQUARTERS

Two Brattle Square
Cambridge, MA 02138-3780
t 617.547.5552
f 617.864.9405

WASHINGTON, DC, OFFICE

1825 K St. NW, Ste. 800
Washington, DC 20006-1232
t 202.223.6133
f 202.223.6162

WEST COAST OFFICE

500 12th St., Suite 340
Oakland, CA 94607-4087
t 510.843.1872
f 510.843.3785

MIDWEST OFFICE

One N. LaSalle St., Ste. 1904
Chicago, IL 60602-4064
t 312.578.1750
f 312.578.1751

[EXECUTIVE SUMMARY]

The land sector, which accounts for one-fourth of global warming emissions worldwide, is an important part of the effort to reduce them enough to avoid the most dangerous consequences of climate change. Throughout 2015, the world's countries have been announcing their plans for climate actions—in the form of “Intended Nationally Determined Contributions” (INDCs) submitted to the United Nations—to be carried out during the 2020s. The Union of Concerned Scientists (UCS) has already released two white papers analyzing the land sector's role in the INDCs of several countries that are major emitters (Boucher and Ferretti-Gallon 2015b, Ferretti-Gallon and Boucher 2015); in this third white paper we do much the same for four major tropical-forest nations: Brazil, Indonesia, India, and the Democratic Republic of the Congo.

Brazil led the world in the past decade both in reducing its emissions from tropical deforestation—by 70 percent since 2004—and in publicly sharing the satellite data on which the monitoring of this progress was based. The Brazilian INDC continues this leadership in terms of transparency, but not in terms of action. It has unambiguous data on Brazil's overall goals and how progress toward them will be measured, and the document makes it clear that they are not conditional on international support. But the land-sector's level of ambition is low, considering the country's past accomplishments; the INDC proposes to eliminate only *illegal* deforestation and only in the Amazon biome.

Indonesia is now the planet's leading emitter from deforestation, forest degradation, and the clearing of carbon-rich peat swamps. Its INDC is fairly transparent on overall quantitative goals and their conditionality, but less so on the land sector. It doesn't set specific targets for reducing emissions from the above three detrimental activities. Nor does it indicate whether current policies to prevent clearing of primary forests and peat swamps will remain in effect. Given that Indonesia's land-sector emissions account for five-eighths of its overall total, these gaps are significant limitations.

India differs from the other countries analyzed because in net terms it is *re*foresting, not deforesting. But given that its overall goal is expressed as an emissions intensity (emissions per dollar of GDP), one cannot tell how much India's actions will reduce global warming pollution. The document states a goal of 2.5–3.0 billion tons of additional sequestration from forests and tree cover, but it does not make clear whether this is an annual figure or a cumulative total through 2030—quite a big difference.

In contrast to the other three countries, the Democratic Republic of the Congo (DRC) has submitted an INDC that is noteworthy both in transparency and ambition (especially in light of the DRC's modest historical responsibility and national capability.) The document presents the goal of a 17 percent reduction—with clarity about the objective's business-as-usual basis and conditionality—and it gives specific goals, by sector, for the emissions reductions and financing needed. Its land sector goals include both reducing deforestation and substantially increasing reforestation. Although the DRC is the smallest of the four countries analyzed, in terms both of population and economy, its INDC is actually the best with respect to agriculture and forests.

All in all, the INDCs we analyzed—in this white paper and in the two issued earlier this year—have mostly fallen short of expectations with respect to the land sector. Ironically, it is among the smaller countries that we found the best models. As INDCs are revised after the December 2015 climate negotiations in Paris, we hope to see the larger countries follow suit.

[INTRODUCTION]

Throughout the year 2015, and leading up to the climate negotiations in Paris (COP21) in December, the world's countries have been submitting official descriptions of their "Intended Nationally Determined Contributions," or INDCs, to the United Nations. These documents, which outline the individual countries' plans to deal with global warming pollution during the 2020s, are a key aspect of COP21; in aggregate they indicate whether the world is likely poised at present, or not likely, to take sufficient steps to avoid the worst consequences of climate change.

One area of particular interest in the INDCs is what countries plan to do regarding the "land use sector"—fundamentally, agriculture and forests. This sector accounts for about one-fourth of total global warming emissions (Tubiello et al. 2015), which means that climate change cannot be sufficiently reduced if leaders ignore this part of the problem. Yet some high-emitting countries have said nothing about their plans for the land sector in their INDCs (Boucher and Ferretti-Gallon 2015b), as if global warming were a result of polluting activities in the energy sector alone.

In a report released at the Lima climate negotiations (COP20) in December 2014, the UCS showed that the land sectors of the world's largest countries offer great potential for reductions in global warming emissions (Boucher and Ferretti-Gallon 2015a). Further, land is the only sector in which it is currently practical to remove CO₂ from the atmosphere, most notably through reforestation and afforestation. The net contributions of land sector actions could make up more than half of the gap between (a) current plans to reduce emissions and (b) what is needed to prevent the increase of global temperatures by more than 2 degrees Celsius—beyond which, members of the scientific community almost unanimously agree, the level of climate change would become truly dangerous (UNEP 2013).

The Boucher and Ferretti-Gallon (2015a) report concluded that the largest potentials for land-sector climate actions reside with the United States, followed by Indonesia, China, and India. Brazil and the European Union have somewhat lower, but still significant, potential while those of Mexico and the Democratic Republic of the Congo (DRC) are relatively small. Taken together, these eight entities' actions relating to their agriculture and forests could make up more than half of the "emissions gap"—nearly 7 billion tons of CO₂ equivalent (Gt CO₂eq).

As these and other countries submitted their INDCs (since March 2015), we have been publishing a series of white papers analyzing these documents' land-sector actions. The first paper (Boucher and Ferretti-Gallon 2015b), issued in April, examined the proposed land-sector actions of the United States, the European Union, and Mexico, while the second white paper in September (Ferretti-Gallon and Boucher 2015) covered those of China, Canada, Ethiopia, and Morocco. Now that four more countries whose potential was analyzed in the *Halfway There?* report—Brazil, Indonesia, India, and the DRC—have submitted their INDCs, this white paper examines those documents in much the same way our earlier ones did.

Three of these countries contain the three largest tropical forests in the world, with Brazil's being the largest in the Americas, the DRC's being the largest in Africa, and Indonesia's being the largest in Southeast Asia. India has a population of more than a billion, and Brazil's and Indonesia's people each number in the hundreds of millions. These countries also represent some of the world's biggest economies, and have shown rapid economic growth (5 percent or more) in recent years. All four have important agricultural and forest sectors with respect to GNP, contribution to world food production, and global warming emissions—either individually or in combination. Thus their intended actions have major implications for the international effort to avoid dangerous climate change.

Brazil

As the country recognized for having achieved the largest reduction in emissions of any on Earth over the past decade, chiefly through its reduction of Amazon deforestation by 70 percent (Boucher 2015), Brazil's INDC and its proposed land-sector actions were eagerly awaited. And by at least one criterion—transparency, including the presentation of clear quantitative descriptions of its climate targets—Brazil's INDC (Federative Republic of Brazil 2015) is the best one yet among the large countries. Its overall

goal—a 37 percent reduction in emissions (some 0.8 Gt/year) below the 2005 level by 2025—is expressed clearly. And Brazil’s INDC makes it evident that while the country would welcome international support for its actions, its commitment is not conditioned on receiving such support.

Brazil’s target is separated into pre-2020 reductions and the additional reductions to be achieved in the decade of the 2020s, and it is also expressed in terms of emissions intensity (t CO₂eq/\$ of GDP) and per capita (t CO₂eq/person). Finally, the data are presented using two different ways of calculating the equivalence between CO₂ and other greenhouse gases, such as methane and nitrous oxide: Global Temperature Change Potential (GTP) and Global Warming Potential (GWP). While this difference is generally considered a highly technical one of interest only to experts, Brazil’s presentation of its plans with both metrics shows that the resulting numbers can substantially differ.

In this sense, Brazil’s INDC is a model for others to follow. However the same cannot be said of the country’s proposed land-sector actions. Most notably, the goal for further reducing deforestation is “to achieve, in the Brazilian Amazonia, zero illegal deforestation by 2030 and compensating for greenhouse gas emissions from legal suppression of vegetation by 2030.”

The date and the modifiers are important here. After cutting deforestation by nearly three-fourths in only a decade, Brazil proposes to take 50% more time to deal with just a third as much deforestation. The zero goal is limited to the Amazon alone, excluding other important Brazilian biomes such as the Cerrado and the Mata Atlantica. And most important, this goal applies only to *illegal* deforestation, with no estimate of what proportion of the overall problem it represents. Similarly, Brazil’s plans for agricultural improvement and ecosystem restoration are relatively modest compared with the country’s size and previous accomplishments. Its INDC proposes restoring and reforesting 12 million hectares of forests, and restoring an additional 15 million hectares of degraded pasturelands, by 2030, but considering Brazil’s nearly 500 million hectares of forest and large areas of already-cleared land, these amounts are not particularly impressive.

All in all, then, while Brazil’s INDC represents an excellent example of transparency, its land sector plans reflect a disappointing lack of ambition, in sharp contrast with what it has done in recent years. After leading the world in climate action over the past decade, the country now seems content to rest on its laurels.

Indonesia

In the past five years or so, as a result of Brazil’s reduction in deforestation in the latter part of the decade of the 2000s, Indonesia passed it to gain the dubious title of global leader in emissions from deforestation and peat clearing. It has very substantial emissions from the clearing and draining of peat swamps, which in some years (such as 2015) represent an enormous source of global warming gases as well as of the air pollution “haze” that kills tens of thousands of people annually. These effects are again particularly severe during the current El Niño year (Goodman and Mulik 2015; Johnston et al. 2012).

Although not as detailed in target numbers as Brazil’s document, Indonesia’s INDC presents the country’s overall goal fairly transparently—a 29 percent reduction by 2030 compared with the business as usual (BAU) scenario, and up to a 41 percent reduction if Indonesia receives support from international funders (Government of Indonesia 2015). Given that the BAU estimate for 2030 is made clear (2.881 Gt CO₂eq), as is the 2005 actual total (1.8 Gt CO₂eq), one can calculate the absolute amounts both of the conditional and unconditional reductions. The INDC states as well that “Indonesia also considers to work on finding the peaking time of national [global warming] emissions,” indicating that it, like Brazil, proposes to reach a maximum and then reduce its emissions—in an absolute sense, not just relative to BAU—although the date that this goal is slated to be reached has not yet been determined.

Simply because 63 percent of Indonesia’s global warming gases come from the land sector (Government of Indonesia 2015), it must play an important role in the country’s emissions reductions. Yet the country’s INDC presents no goal for reducing either deforestation (other than to promise to reduce it by an unspecified amount) or peat clearance. The document mentions the climate benefits of the 2009 moratorium on clearing primary forests and the 2010–2016 ban on peat clearance, but it makes no indication about whether either of them will continue. With respect to agriculture (e.g., emissions from flooded rice production), there is little detail of any kind.

Thus Indonesia’s INDC, like Brazil’s, is positive from the point of view of transparency but falls short in terms of proposed land use actions.

India

India differs from the other three countries not only because it is the world's second-largest nation (1.2 billion people) but also because it has actually shifted from net deforestation to a low rate of net reforestation through such programs as community forestry. This example and others show that predominantly agricultural and relatively poor countries can still reduce deforestation to zero and beyond, even while achieving food self-sufficiency and substantial economic growth (Boucher et al. 2014).

India's INDC, at 38 pages, is far longer than those of most other countries (Government of India 2015). But only six of these pages (29–34) make up the INDC itself, with the rest devoted to diverse past and current policies and actions—and not those relating to the 2020s, which are the focus of the INDC process. The overall goal is expressed as a 33–35 percent reduction of emissions intensity (Gt CO₂eq/\$ of GDP) by 2030, relative to the 2005 level. But India's estimated GDP in 2030 is not given, making it impossible to calculate the reduction either in absolute terms (as with Brazil) or relative to a BAU scenario (as with Indonesia.)

India's INDC mentions another goal—"To create an additional carbon sink of 2.5–3 billion tonnes of CO₂ equivalent through additional forest and tree cover by 2030"—which at first reading appears to be an impressive commitment to continuing and expanding India's success in reforestation. This would be the case only if this statement was referring to an *annual* rate, but that is not made clear. If, on the other hand, this is a cumulative goal for the 2020s, then it would be only one-tenth as large on an annual basis (250–300 million t CO₂eq/year)—still a significant contribution but not large relative to the emissions gap, which is roughly 10 Gt CO₂eq (Boucher and Ferretti-Gallon 2015a; UNEP 2013).

Similarly, there is a preliminary estimate of the level of finance that will be required for the sum of India's climate actions—at least \$2.5 trillion by 2030—but again it is not clear whether this is an annual or a cumulative figure. Moreover, there is not yet an estimate of how much of this total amount of financing will be provided domestically, as opposed to funds from foreign sources, nor a clarification of how much, if any, of India's emissions intensity reduction of 33–35 percent is conditional on such support.

All in all, India's INDC lacks specifics on some key points. It also seems to imply considerable ambition with respect to reforestation, but less so on agriculture. And reduction of deforestation and degradation of natural forests is hardly mentioned, even though they still remain a problem despite the country's having made the transition to net reforestation overall (Puyravaud et al. 2010).

The DRC

The Democratic Republic of the Congo is one of the least-developed countries in the world, as is made clear by the figures given in its INDC on income, food insecurity, unemployment, and access to electricity and potable water. It has very low per-capita emissions and a relatively small population (75 million) compared with other tropical-forest countries. In recent decades, despite its large area of forests (152 million hectares), the DRC's deforestation rate has been below the world average for tropical forest countries (République Démocratique du Congo 2015).

Given these conditions, it is impressive that the DRC proposes a 17 percent reduction in its emissions, relative to BAU, in the year 2030. The INDC displays several explanatory graphics, including one that shows the BAU scenarios both for the land-use sector and economy-wide from 2010 to 2030. The reduction is also given in absolute terms—a bit more than 70 million tons of CO₂eq/year.

The DRC is also transparent about its estimate of the costs involved (\$9 billion for adaptation and \$12.5 billion for mitigation), as well as about its reduction goal's dependence on international support. Both the potential reduction in global warming emissions and the costs are split up by sector—agriculture, forestry, coastal, and energy/transport, with the first having the greatest reduction potential but the last requiring the most financing. Moreover, there are quantitative estimates of the principal drivers of deforestation; and, despite the country's large existing forests, it presents an ambitious and quantified proposal for reforestation by 2025. This effort would cover 3 million hectares and sequester 3 million tons of CO₂ annually.

Both the transparency and the ambition indicated in the DRC's submission are noteworthy, given its status as a least-developed country and its low level of emissions. The DRC presents more clarity and quantitative detail than have some far richer nations, and it proposes reductions quite in line with its estimated potential (Boucher and Ferretti-Gallon 2015a).

Conclusions

The observations in this third INDC white paper are broadly comparable with those of the previous two, and they show the same paradoxical trend. It has been the INDCs of “smaller” countries—smaller in terms of population and, often, economy—that have done the best jobs so far with regard to the land sector. Examples have included Mexico, Norway, and Gabon in the first set of INDCs submitted in March; Ethiopia and Morocco in the second set; and the DRC in the current one. Other countries that have not been analyzed in detail but appear to reflect the same trend include the Marshall Islands, Ecuador, Costa Rica, Benin, and South Africa.

The world’s largest countries have yet to realize the climate potential of their land sectors—at least, as far as one can tell from their INDCs. Some simply lack quantitative data about agriculture and forests. Others focus on accounting, but provide little on the land-sector actions they propose to undertake. Some fall short by not specifying how much of their ambition is conditional on financing, or by failing to indicate the BAU scenario or the projected GDP growth that is key to interpreting their targets.

But it is not too late to correct these problems. Although the United Nations has not yet stipulated the exact next steps to be taken, it now seems clear that countries will have the opportunity to amend their INDCs next year, even after they have been anchored in the Paris agreement. We look forward to the large countries in particular presenting revised and improved INDCs that consider the emissions reduction potential of the land sector to the same extent as some of the smaller countries’ INDCs have already done.

We should note that the basic distinction seems to be large versus small countries, not developed versus developing. This is apparent in the current white paper, in which all four countries are developing nations, but they vary greatly in population (from 75 million to 1.2 billion) and nearly as much in economic level. Taking into account both transparency and ambition relative to its historic responsibility and respective capacity, it is the smallest country examined in this report—the Democratic Republic of the Congo—that has done the best job of the four.

The potentials of agriculture and forests for reducing global warming emissions are great, and they must be realized in order to prevent the worst consequences of climate change. Taken collectively, the INDCs presented in 2015 are insufficient for achieving this all-important objective, but those presented by some of the world’s smallest nations show that it can be done. In their 2016 revisions, we hope to see the largest emitters following the small countries’ good example.

[REFERENCES]

Boucher, D. 2015. Brazil's 2005–2014 reduction in Amazon deforestation as a transformational change. In *Transformational change for low carbon and sustainable development*, edited by K.H. Olsen and J. Fenhann. Copenhagen: UNEP DTU/GIZ, pp. 53–73. Online at mitigationpartnership.net/unep-dtu-2015-transformational-change-low-carbon-and-sustainable-development, accessed November 2, 2015.

Boucher, D., and K. Ferretti-Gallon. 2015a. *Halfway there? What the land sector can contribute to closing the emissions gap*. Cambridge, MA: Union of Concerned Scientists. Online at ucsusa.org/global-warming/stop-deforestation/halfway-there-what-land-sector-can-contribute-closing-emissions-gap#, accessed November 2, 2015.

Boucher, D., and K. Ferretti-Gallon. 2015b. *The land sector in the first INDCs*. Cambridge, MA: Union of Concerned Scientists. Online at ucsusa.org/sites/default/files/attach/2015/06/ucs-land-sector-in-first-indcs-2015.pdf, accessed November 2, 2015.

Boucher, D., P. Elias, J. Faires, and S. Smith. 2014. *Deforestation success stories: Tropical nations where forest protection and reforestation policies have worked*. Cambridge, MA: Union of Concerned Scientists. Online at www.ucsusa.org/forestsuccess, accessed November 2, 2015.

Federative Republic of Brazil. 2015. *Intended Nationally Determined Contribution towards achieving the objective of the United Nations Framework Convention on Climate Change*. Online at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Brazil/1/BRAZIL%20iNDC%20english%20FINAL.pdf>, accessed November 3, 2015.

Ferretti-Gallon, K., and D. Boucher. 2015. *The land sector in the second wave of INDCs: Intended climate contributions of China, Canada, Ethiopia, and Morocco*. Cambridge, MA: Union of Concerned Scientists. Online at ucsusa.org/sites/default/files/attach/2015/09/ucs-land-sector-in-second-wave-of-indcs-2015.pdf, accessed November 3, 2015.

Goodman, L., and K. Mulik. 2015. *Clearing the Air: Palm oil, peat destruction, and air pollution*. Cambridge, MA: Union of Concerned Scientists. Online at ucsusa.org/clearingtheair, accessed November 3, 2015.

Government of India. 2015. *India's Intended Nationally Determined Contribution: Working towards climate justice*. Online at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf>, accessed November 3, 2015.

Government of Indonesia. 2015. *Intended Nationally Determined Contribution*. Online at http://www4.unfccc.int/submissions/INDC/Published%20Documents/Indonesia/1/INDC_REPUBLIC%20OF%20INDONESIA.pdf, accessed November 3, 2015.

Johnston, F.H., S.B. Henderson, Y. Chen, J.T. Randerson, M. Marlier, R.S. DeFries, P. Kinney, D.M.J.S. Bowman, and M. Brauer. 2012. Estimated global mortality attributable to smoke from landscape fires. *Environmental Health Perspectives* 120(5):695–701. Online at <http://dx.doi.org/10.1289/ehp.1104422>, accessed 5 November 2015.

Puyravaud, J.-P., P. Davidar, and W.F. Laurance. 2010. Cryptic deforestation of India's native forests. *Conservation Letters* 3(6):390–394. Online at <http://dx.doi.org/10.1111/j.1755-263X.2010.00141.x>, accessed November 5, 2015.

République Démocratique du Congo. 2015. *Soumission de la contribution nationale prévue déterminée au niveau national au titre de la Convention des Nations Unies sur les Changements Climatiques*. Online at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Democratic%20Republic%20of%20the%20Congo/1/CPDN%20-%20R%C3%A9p%20D%C3%A9m%20du%20Congo.pdf>, accessed November 3, 2015.

Tubiello, F.N., M. Salvatore, A.F. Ferrara, J. House, S. Federici, S. Rossi, R. Biancalani, R.D. Condor Golec, H. Jacobs, A. Flammini, P. Prospero, P. Cardenas-Galindo, J. Schmidhuber, M.J. Sanz Sanchez, N. Srivastava, and P. Smith. 2015. The contribution of agriculture, forestry, and other land use activities to global warming, 1990–2012. *Global Change Biology* 21(7):2655–2660. Online at <http://onlinelibrary.wiley.com/doi/10.1111/gcb.12865/abstract>, accessed November 3, 2015.

United Nations Environment Programme (UNEP). 2013. *The emissions gap report 2013*. Nairobi, Kenya: UNEP. Online at unep.org/pdf/UNEP_Emissions_Gap_Report_2013.pdf, accessed November 3, 2015.