



SUBNATIONAL CLIMATE LEADERSHIP

THE POTENTIAL CONTRIBUTION OF THE UNDER 2 MOU

Earth Innovation Institute¹
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EXECUTIVE SUMMARY

- Subnational, bottom up approaches are critical to carry out the global climate deal.
- California's leadership of subnational collaboration on climate change began in 2008 with the Governors' Climate and Forests task force (the "GCF"). The commitment of the GCF member states and provinces to slow deforestation 80% by 2020 could avoid 5 billion tons of CO₂ emissions, and is one of the most important near-term climate solutions.
- Our initial assessment of less than half of the signatories of the "Under 2 MOU" represents emission reductions commitments of 20 GtCO₂e by 2030, which could be over 77% of what is needed to keep the planet habitable.
- 60% of avoided emissions by 2030 would be from reductions in tropical deforestation in GCF states; 30% are from Mato Grosso - Brazil.

THE UNDER 2 MOU

Even the most optimistic estimate of global emission reductions that will be achieved through implementation of the Intended Nationally Determined Contributions (INDC) is far below what is needed by 2030 to avoid dangerous climate change². While the global deal reached in Paris is critical, it is essential to look elsewhere for opportunities to close the gap. The innovation and leadership of sub-national governments may be the best place to start. In this report, we provide a preliminary estimate of the potential

contribution of the Under 2 MOU, a memorandum of understanding between sub-national governments to lower GHG emissions 80-95% below baseline levels **or** keep their emissions under 2 metric tons per capita by 2050.

The initiative was born out of a partnership between the states of California (USA) and Baden Württemberg (Germany), and quickly snowballed into one of the most extensive sub-national mitigation efforts on the planet. Now with over 65 signatory jurisdictions and counting, the MOU represents 588 million people and what would be the largest economy in the world. While much work remains to be done to realize the potential of the U2MOU, each signatory is developing its own region-specific plan that outlines how each will achieve its ambitious goals.

A HISTORY OF SUB-NATIONAL COLLABORATION ON CLIMATE CHANGE

The U2MOU builds on a history of California's leadership for subnational action on climate change that started in 2009 with the establishment of the Governors' Climate and Forests task force (GCF)—a coalition of state and provincial governments with the aligned goals of mitigating climate change, curbing tropical deforestation and promoting low-emission rural development. The GCF has now grown to a network of 29 states and provinces throughout Brazil, Indonesia, Ivory Coast, Mexico, Nigeria, Peru, Spain and the United States representing ¼ of the world's tropical forests.

In September 2014, [The Climate Group](#), [CDP](#), [R20](#), and [nrg4SD](#) launched the [Compact of States and Regions](#) at the New York United Nations Climate Summit as the first global platform to record progress of GHG reduction targets at the state and regional level, such as the U2MOU. The platform is developed in coordination with the United Nations and will feed data into the [Non-State Actor Zone for Climate Action \(NAZCA\)](#) platform.

TIMELINE OF SUB-NATIONAL CLIMATE CHANGE INITIATIVES

2002	• NRG4SD
2009	• GOVERNORS' CLIMATE AND FORESTS TASK FORCE (GCF)
AUG 2014	• GCF RIO BRANCO DECLARATION
SEP 2014	• COMPACT OF STATES AND REGIONS
MAY 2015	• UNDER 2 MOU

1 Full citation: Swette, B., D. C. Nepstad, and J. Horowitz (2015). Subnational Climate Leadership: The Potential Contribution of the Under 2 MOU. Earth Innovation Institute, San Francisco.

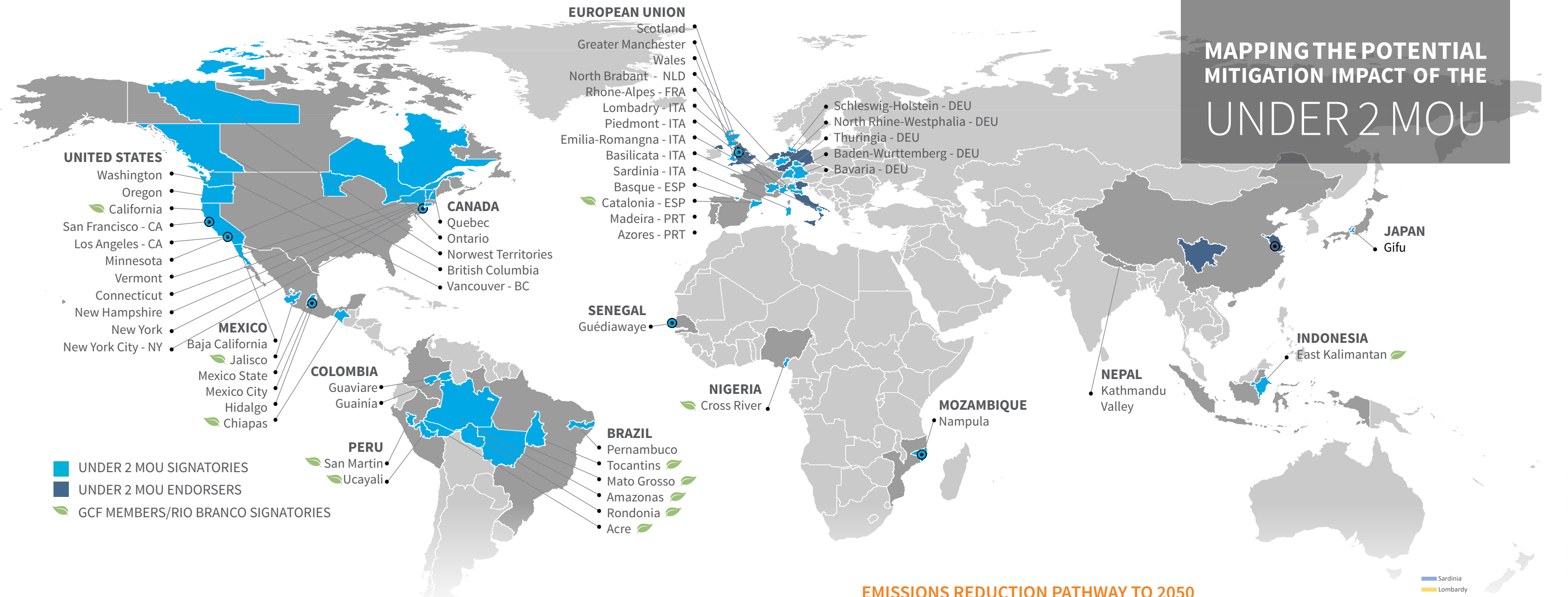
2 UNEP (2015). The Emissions Gap Report. 2015. United Nations Environment Programme (UNEP), Nairobi.



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MAPPING THE POTENTIAL MITIGATION IMPACT OF THE UNDER2 MOU



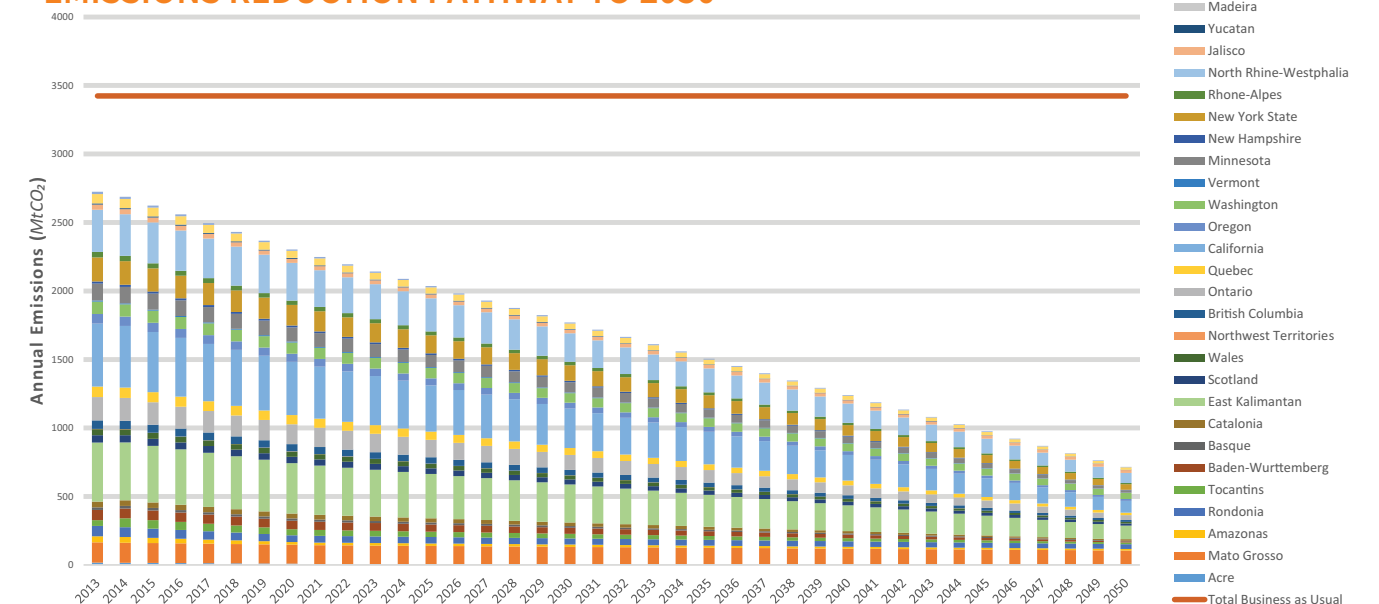
The U2MOU could represent a global total of over 20 billion tons of avoided CO₂e emissions by 2030 and 64 billion tons by 2050.

In 2010, the IPCC estimated global emissions at 49 (±4.5) GtCO₂e³. In order to keep warming of the planet under 2°C at the end of the century, global annual emissions must be lowered to 39-47 GtCO₂e by 2030 and 8-28 GtCO₂e by 2050, while on a pathway to zero-net emissions by 2100.⁴ To achieve these goals, we need a global total of 7-26 GtCO₂e emission reductions by 2030 and 221-533 GtCO₂e emission reductions by 2050 from the 2010 emission level. Our early assessment of only 30 of the over 65 signatories (see graph legend) shows that the U2MOU could contribute over 70% of the necessary reductions by 2030 and 12-29% by 2050, if fully implemented. As the MOU continues to grow and data is reported, the potential and recorded impact will be tracked at www.under2mou.org.

Note on Methodology

Individual country emission data sources are posted on the [U2MOU mapping platform](http://U2MOU.mappingplatform). Annual projected emissions are calculated by assuming an economy-wide, linear reduction from the most recent reported annual emissions to a 2020 or 2030 interim target if reported, and then to the 2050 target emission levels. Avoided emissions are calculated by subtracting annual projections from a default reference level of 1990 emissions, with exceptions for regions that have defined their own business as usual levels. The Brazilian states use a 1996-2005 average; Basque, Madeira, Yucatan, Catalonia, and Lombardy use 2005; East Kalimantan uses 2006, British Colombia 2007, and Mexico City 2010.

EMISSIONS REDUCTION PATHWAY TO 2050

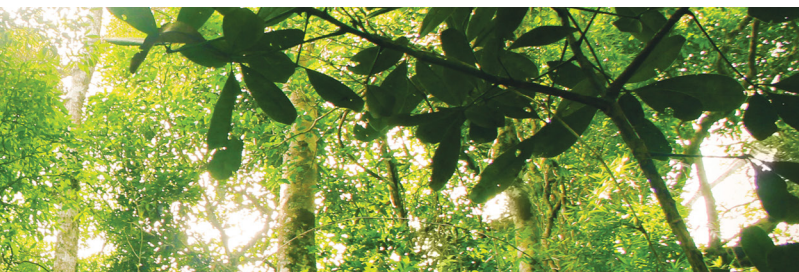


³ IPCC (2014). Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

⁴ UNEP (2015). The Emissions Gap Report 2015. United Nations Environment Programme (UNEP), Nairobi.

IMPLEMENTING THE UNDER 2 MOU

The significance of the U2MOU can best be seen through the [appendices](#) that outline each signatory's region-specific plan to implement the 2050 commitments, and in some cases interim targets. The appendices demonstrate the diversity of approaches and responses to climate change—from cap-and-trade programs, to renewable energy procurement policies, to aggressive deforestation reduction targets, and highlight some of the most promising areas of action and collaboration.



THE RIO BRANCO DECLARATION AND THE LARGE, NEAR-TERM CONTRIBUTION OF TROPICAL FORESTS

In 2014, GCF members launched the Rio Branco Declaration (RBD)—a commitment to reduce deforestation 80% by 2020 if adequate financial resources are in place. The RBD also ensures that substantial shares of pay-for-performance financing will be channeled to smallholder, traditional and indigenous communities. The potential impact of the target is massive—if achieved across all the GCF, over 10 million hectares of deforestation would be avoided, keeping 5 billion tons of CO₂ out of the atmosphere.¹

The U2MOU reaffirms that the land-use sectors are one of the most important climate change mitigation strategies^{2,3}. Currently, 13 signatories of the U2MOU participate in the GCF, and the processes set in motion to implement the RBD and sharply reduce deforestation are serving as an important basis for the actions outlined in the U2MOU. The significant reductions in deforestation already achieved and committed to by 2020 are particularly important because they represent near-term reductions. We estimate 12 Gt CO₂e, i.e. 60%, of avoided emissions by 2030 will be from reductions in deforestation within the GCF states that have signed the U2MOU.

1 Updated from: Swette, B., J. Setiawan, and D.C. Nepstad (2014). What could the GCF Contribute to Climate Change Mitigation by 2020? Earth Innovation Institute, San Francisco, USA.

2 IPCC Working Group 3 (2014). Chapter 5: Drivers, Trends and Mitigation, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

3 Houghton, R.A., B. Byers, A. A. Nassikas (2015). A role for tropical forests in stabilizing atmospheric CO₂. *Nature Climate Change* 5, 1022-1023.

HOW THE UNDER 2 MOU FITS INTO THE INDCS

Perhaps the greatest lesson learned since the United Nations Framework Convention on Climate Change (UNFCCC) was established in 1992 is that effectively addressing climate change requires bottom-up strategies that are responsive to local realities. While a binding international treaty is a key piece of the global strategy, such a deal cannot be implemented without alignment on the necessary and achievable actions at the local and regional level. The significant shift to bottom-up approaches is demonstrated through the INDCs that form the basis of this year's anticipated climate deal. Instead of the negotiated emissions reduction commitment that applies to all industrialized nations that was the foundation of the Kyoto Protocol, the INDCs have been developed by each nation independently, while being shaped by international diplomacy.

The shift to bottom-up approaches does not stop at the level of nations, and in fact depends greatly on the contributions of the sub-national and local actors that quietly lead on climate change. Looking forward, INDC implementation will require significant sub-national action and leadership. The U2MOU commitments are providing significant contributions to national INDC goals, and in some cases going beyond national targets through ambitious regional action. For instance, Mato Grosso and Ontario could account for over 40% of Brazil's and 1/3 of Canada's total emission reductions by 2030, respectively. The U2MOU is largely an initiative of early-mover states, regions, and provinces, and the signatories are outlining some of the most ambitious plans to tackle climate change globally.

CONCLUSION

Twenty-three years ago, when the UNFCCC was approved in Rio de Janeiro, optimism ran high that the world would soon have a binding, global treaty that could tackle climate change. As this next treaty is being finalized, it is clear that a strong UN agreement in Paris is still an essential element of the global strategy for protecting the planet from the most dangerous effects of climate change. However, beyond these national commitments, sub-national innovation and a quiet global revolution of climate change solutions are out ahead of national commitments, designing and implementing strategies for accelerating the transition to low-emission development. Implementation of the UN agreement will depend on supporting regional solutions and sub-national action to achieve these ambitious targets—especially with respect to land-based activities such as reducing deforestation that depends on local agents of change.