

Benefit-cost Analysis of the Paris Climate Agreement

Kazi N M

Principal, ex. Iqra's H J Thim College of Arts & Science Jalgaon MS North Maharashtra University
nmquazi@hotmail.com

Abstract—After spending two uber-intense weeks in Paris to the COP21 U.N. climate summit, it was amazing to see how governments, business and civil society came together to forge a historic climate agreement. It's far from perfect. There are gaps: The emissions targets aren't yet ambitious enough, and specific means for strengthening them and financing their implementation are challenges for a future day. But the agreement clearly signals a global pivot to a low-carbon world.

When governments, markets and businesses put a price on carbon pollution and account for it in their books; when land use is sustainable and forests and other ecosystems are restored and protected ... that's when we'll know it worked. The difference between what the Paris Agreement and INDCs require countries to do, versus what they need to do to keep warming to 1.5 degrees, is called the "emissions gap." It remains wide, and it will take many agreements, and action on many levels — regional, national, subnational, municipal, markets, technology, civil society — to close it.

The Earth Economics team helped us to capture the full range of benefits of the Community and Watershed Resilience Program, including the tremendous ecological benefits that it will provide not just to but to the State as a whole. The winning proposals all make use of natural systems to build resilience to climate change impacts and other disasters. Benefit-cost analysis that includes nature helps us make smarter investments at federal, state, and local levels. We owe it to ourselves and future generations to use this tool to identify the best, most robust and resilient investments. The data for this research article is collected from mostly secondary sources.

Keywords: COP21, Climate, Agreement, Generations, Benefits.

1. INTRODUCTION

The international political response to climate change began at the Rio Earth Summit in 1992, where the 'Rio Convention' included the adoption of the UN Framework on Climate Change (UNFCCC). This convention set out a framework for action aimed at stabilising atmospheric concentrations of greenhouse gases (GHGs) to avoid "dangerous anthropogenic interference with the climate system." The UNFCCC which entered into force on 21 March 1994, now has a near-universal membership of 195 parties.

The main objective of the annual Conference of Parties (COP) is to review the Convention's implementation. The first COP

took place in Berlin in 1995 and significant meetings since then have included COP3 where the Kyoto Protocol was adopted, COP11 where the Montreal Action Plan was produced, COP15 in Copenhagen where an agreement to success Kyoto Protocol was unfortunately not realised and COP17 in Durban where the Green Climate Fund was created. In 2015 COP21, also known as the 2015 Paris Climate Conference, will, for the first time in over 20 years of UN negotiations, aim to achieve a legally binding and universal agreement on climate, with the aim of keeping global warming below 2°C.

Now that COP21 is over, let's take a step back to assess where we are now, and where we need to go. After spending two uber-intense weeks in Paris to the COP21 U.N. climate summit, it was amazing to see how governments, business and civil society came together to forge a historic climate agreement. It's far from perfect. There are gaps: The emissions targets aren't yet ambitious enough, and specific means for strengthening them and financing their implementation are challenges for a future day. But the agreement clearly signals a global pivot to a low-carbon world. Here are six takeaways from Paris that explain why, In order to combat the greatest threats from climate change, there must be a strong commitment and bold action from business. Reducing corporate CO₂ and GHG emissions, along with the development of new technologies and solutions, will be seen as the primary marks of leadership.

2. MATERIAL AND METHODOLOGY:

In past United Nations Framework Convention on Climate Change (UNFCCC) agreements, only developed countries agreed to reduce their emissions. This time, all 196 countries — north and south, large and small emitters alike — have agreed. All countries have different but critical contributions to make. Emerging economies have agreed to a greater share of the responsibility. Nearly all developing and developed countries already have submitted plans for their "intended nationally determined contributions" (INDCs) to reducing emissions and addressing threats from climate change. About 75 of them include some form of forest protection, especially

in tropical countries. The data for this research article is collected from mostly secondary sources.

i). It's unanimous and Aiming higher/ lower:

Before the Paris climate talks, there was much debate about whether limiting warming to 2 degrees Celsius was even realistic. But the Paris Agreement went even further and aimed for a limit of 1.5 degrees. That's a safer target for avoiding the most dangerous, disruptive and costly climate impacts. It's widely accepted that this is an agreement with legal force, as the 2011 COP17 decision in Durban said it must be. It's not any less binding than a "treaty"; technically it is a treaty. The Obama administration may downplay that, calling it an "executive agreement" because it doesn't need to be ratified by the Senate. In fact, many international treaties with the force of law for the U.S. were signed by the president without going to the Senate. Unlike the previous climate treaty, the Kyoto Protocol, this one won't be ignored by signatories on the grounds it isn't ratified.

When governments, markets and businesses put a price on carbon pollution and account for it in their books; when land use is sustainable and forests and other ecosystems are restored and protected ... that's when we'll know it worked. All 196 countries are obligated to review their emissions reduction every five years, mandating a framework for ramping up goals over time. New ways of reporting and monitoring each country's progress will provide transparency and help set up a race to the top. Each country still must determine and pass the domestic laws needed to enforce their climate commitments. But the Paris Agreement has given them more confidence and political will to do so.

The private sector was more engaged in this process than ever before, with thousands of businesses, investors and trade coalitions involved over the past year. We have climate pledges from 5,000 diverse global companies representing virtually every industrial sector and over 90 countries. They include signatories to the American Business Act on Climate Pledge, the CDP/We Mean Business Coalition, the World Economic Forum CEOs group, the B Team and many others. Altogether, companies pledging climate action represent combined annual revenue over \$38 trillion — about half of global GDP — and the majority of the world's market capitalization. Already, the global market for low-carbon goods and services is estimated at \$5.5 trillion per year. The agreement should increase investor confidence and help the low-carbon share of the global economy grow. At the U.N. climate talks, Unilever and other big businesses announced plans to stabilize forest cover by 2030 and restore forest cover to 1990 levels by 2050. Hundreds of major companies are committed to eliminating deforestation from their supply chains, including those conducting about 90 percent of the global palm oil trade. Their support helped cement a prominent place for forest conservation in the Paris Agreement.

ii) Forests' role recognized:

Forestry, agriculture and other land use account for nearly a quarter of global emissions, and are a key piece of the climate puzzle. Keeping forests standing has financial value for the carbon they sequester and the other ecosystem services they provide. The Paris Agreement recognizes this, and devoted a whole section (Article 5) (PDF) to Reducing Emissions from Deforestation and Forest Degradation (REDD), sustainable forest management, forest conservation and reforestation. That signals the importance of forests to fighting climate change, and will help strengthen financial mechanisms that provide payments for effective forest conservation. Hundreds of major companies are committed to eliminating deforestation from their supply chains, including those conducting about 90 percent of the global palm oil trade.

Meanwhile, negotiators largely punted on reducing emissions from farming and livestock. Even though they're major emitters, the Paris Agreement doesn't mention them except in relation to food security. But climate action plans should include revolutionizing food production systems for the billions living at or below the poverty level, so farmers can meet rising food demand and lower their emissions, increasing their yields and incomes on the land they're working, without clearing more forests.

iii). Minding the emissions gap:

For all its ambition, there are many other things the agreement does not address, and no guarantees about how we'll tackle the hard part of actually fulfilling it. For example, there's no legally binding obligation for wealthy countries to fulfil their pledges of \$100 billion annually starting in 2020 to help developing countries combat and adapt to climate change. But there were some voluntary funding announcements, such as Germany, Norway and the U.K. pledging \$5 billion over the next five years to reduce emissions from tropical deforestation. The agreement doesn't put a price on carbon. It sets aspirational goals for emissions reduction that national governments will have to plan for and report on. But whether they do it through carbon taxes or fees or trading schemes or something else, and how fast they progress, remains to be seen — it will depend upon the steps of individual countries.

The difference between what the Paris Agreement and INDCs require countries to do, versus what they need to do to keep warming to 1.5 degrees, is called the "emissions gap." It remains wide, and it will take many agreements, and action on many levels — regional, national, subnational, municipal, markets, technology, civil society — to close it. But Paris clearly marks a turning point, the beginning of a transformation of the previous business-as-usual trajectory towards a sustainable global economy, which governments and businesses will pursue together. We'll be able to recognize its success by the signs of progress we see in the years ahead. When the transition to decarbonized energy sources is accelerating; when governments, markets and

businesses put a price on carbon pollution and account for it in their books; when land use is sustainable and forests and other ecosystems are restored and protected, then the emissions gap will be bridged and the agreement's targets will be within reach. That's when we'll know it worked. With companies that control half of global GDP and counting already moving towards a low-carbon future, that day could be coming fast.

3. DISCUSSION:

If a tree falls in the forest, what does it cost? From the perspective of federal disaster assistance, the answer traditionally has been "not much." But now — thanks to improved number-crunching — the federal government is taking nature into account when it tallies the cost of disasters. And, even more importantly, it is recognizing the value of nature — forests, wetlands, parks — in preventing or mitigating disasters. Remember the Rim Fire, which incinerated a 400-square mile swath of California near Yosemite in 2013? When the state of California first asked the Federal Emergency Management Agency (FEMA) for a "major disaster" declaration, it was turned down. Why? Because most of the damage was inflicted on forests, rather than man-made structures — and there was no way to put a price-tag on that loss. Just think: a backyard shed gets destroyed by fire, that's a \$2,000 loss. But when 77,000 acres of Yosemite National Park are reduced to smoking embers? Nada.

Enter Earth Economics, an independent non-profit that helps decision makers assess the financial value of natural systems. The group's economists looked at the services the forest provided — filtering drinking water, preventing floods, sequestering carbon, providing recreational opportunities — and calculated the dollar value of what was destroyed by the fire.

Fast forward to 2016. The once-radical notion of valuing nature's services is now more widely accepted by the federal government. Recently, the U.S. Department of Housing and Urban Development (HUD) awarded \$1 billion to 13 communities through the National Disaster Resilience Competition (NDRC) — and actually required applicants to calculate the value of nature and other non-traditional benefits in their proposals. The competition asked applicants to use a holistic benefit-cost analysis developed by Earth Economics with support from The Kresge Foundation, which incorporates natural ecosystems' value and services, long-term environmental sustainability, and community benefits such as health and employment. Earth Economics provided training, tools, and resources throughout the competition to help applicants calculate those values.

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resilience to climate change impacts and other disasters. For example: A California county that was devastated by the Rim Fire received an NDRC grant to restore the health of its forests and watershed, generate energy and support the rural community.

Lower Manhattan, which was inundated by super storm Sandy, got funding to construct a coastal protection system that includes much-needed green space. In Hurricane Katrina-pummelled New Orleans, the gently neighbourhood won a grant to restore coastal wetlands and build water-absorbing parks and green streets. Recognizing the value of nature and other overlooked social and economic benefits simply drives better decision making, according to David Batker of Earth Economics, who helped coach a number of the NDRC's winning applicants.

4. CONCLUSION:

Benefit-cost analysis that includes nature helps us make smarter investments at federal, state, and local levels. We owe it to ourselves and future generations to use this tool to identify the best, most robust and resilient investments. Indeed, investing in nature produces a bigger bang for the buck. For example, on a good day, the Lower Manhattan greenway is a park and bike path; on a bad day, it protects the city by absorbing potentially deadly storm surges. That is more than you can say for most single-purpose "gray" infrastructure, such as concrete levees.

Investing in natural infrastructure is a good way to get the most from taxpayers' money, says Harriet Tregoning, "We are learning together about how to encourage a broader range of benefits from every federal dollar that gets expended," Tregoning said during an announcement of the NDRC winners. When we fail to measure the economic value of nature, we treat it as expendable. That is why the United States — one of the most resource-rich countries in the world — is now running an ecological deficit, according to the Global Footprint Network. So, nature counts for more than pretty postcards and vacations. New tools to measure the dollars-and-cents impact of nature help planners, officials and taxpayers make the wisest choices for both the planet's people and the natural systems that support them.

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