WWF

CLIMATE & ENERGY

AMBITION PAPER

2018

DELIVERING NOW FOR A 1.5°C FUTURE: RAMPING UP CLIMATE AMBITION AT THE NATIONAL LEVEL

Country case studies for improving NDCs to reach Paris goals

EXECUTIVE SUMMARY

In this report, WWF analyses the Nationally Determined Contributions (NDCs) of more than 10 very diverse countries in all regions of the world.

For each of those countries, we provide a brief description of the NDC and information on progress on implementation and on the political context in country regarding ambition increase. We also look at the potential for increased ambition in each country. Based on this and on the political and social context for the country, we present specific recommendations to achieve ambition in each NDC such as:

- Increasing support for renewable energies and energy efficiency to underpin ambitious renewables and efficiency targets (e.g. Chile, China, EU, Mexico)
- Strengthening measures and policies in agriculture, forestry and land use (AFOLU) (Brazil, Madagascar, Chile)
- Phasing out fossil fuels subsidies and exploitation (Brazil, Chile, Norway)
- Improving carbon pricing mechanisms (Chile, Mexico, Norway, New Zealand, South Africa)
- Early peaking and South-south cooperation (China)
- Phasing out coal use (Chile, China, EU, South Africa)
- Contributing a fair share of global emissions reductions by moving to net zero emissions by 2040 (EU)
- Just transition (EU, South Africa, NZ)
- Efficiency in the transport sector (NZ, UK), Electromobility (Chile)
- Adaptation plans and policies (Brazil, Madagascar)
- Aligning private and public financial flows with climate objectives (EU, Mexico)
- Technology development for decarbonising the industry sector (Norway, UK)
- Set the conditions for financing the investments needed to reach 1.5°C (Brazil, China, EU, Mexico)

Recommendations for governments on enabling conditions to maximise the contribution of Non-State Actors are also presented, as we believe they should play a key role in enhancing climate action and ambition.

The aim is to showcase that more ambition is not only necessary and urgent, but also possible. We want to highlight untapped potential as well as tools to leverage greater climate ambition on the national level. To meet the Paris goals, countries need to make a collective effort that starts at home. WWF offers recommendations to achieve this, based on the work and views of its National Offices across the world..

In this paper, we are setting out the context of the identified emissions reductions gap that still remains. The Ambition Mechanism introduced in the Paris Agreement is also addressed. Finally, case studies from selected countries set out how governments should address the need for greater ambition from a WWF perspective. We hope our contribution is useful and can inspire countries to announce enhanced NDCs by 2020.

Contents

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IPCC AND THE GAP TO MEETING PARIS AGREEMENT GOALS

In 2018, the Intergovernmental Panel on Climate Change (IPCC) published a special report on the impacts of global warming of 1.5°C and related global greenhouse gas emissions pathways. This report was prepared in response to an invitation contained in the Decision to adopt the Paris Agreement.

The report concludes that global warming is likely to reach 1.5°C between 2030 and 2052 if warming continues to increase at the current rate. To halt anthropogenic global warming in the next few decades would require reaching and sustaining net-zero global CO_2 emissions and declining net non-CO_2 radiative forcing. On longer timescales, net negative CO_2 emissions and/or further reductions in non-CO_2 radiative forcing may still be required to prevent further warming.

If the commitments given in the current NDCs submitted under the Paris Agreement are met, emissions in 2030 are estimated to be 52-58 $GtCO_2yr^{-1}$. This level of emissions would not limit global warming to 1.5°C, even if there were very challenging increases in the scale and ambition of emission reductions after 2030. If the temperature rise is to be limited to 1.5°C with no or limited overshoot, emissions must be below 35 $GtCO_2yr^{-1}$ by 2030[1]. The lower the emissions in 2030, the lower the challenge in limiting global warming to 1.5°C after 2030 with no or limited overshoot.

Limiting global warming to 1.5°C requires rapid and far-reaching transitions in energy, land, urban environment and infrastructure such as transport and buildings, and industrial systems. The rate of system change required has occurred in the past but only within specific sectors, technologies or geographies and not at the scale that will now be needed to meet Paris goals. Specific changes in pathways limiting global warming to 1.5°C include:

- Lower energy use through enhanced energy efficiency and fast electrification of energy end use
- Renewables providing 70-85% of electricity in 2050
- Increasing nuclear and fossil fuels with carbon capture and storage
- CO_2 emissions from industry decreasing by 75-90% in 2050 relative to 2010
- Share of low emission final energy in the transport sector rising from less than 5% in 2030 to about 35-65% in 2050
- Large transitions in global and regional land use - their scale depending on the mitigation portfolio
- Annual average energy-related mitigation investment for the period 2015-2050 around US$ 900 billion.

In addition to reducing emissions, all pathways with limited or no overshoot of 1.5°C project the use of carbon dioxide removal (CDR). Significant near-term emissions reductions and measures to lower energy and land demand can limit CDR deployment.

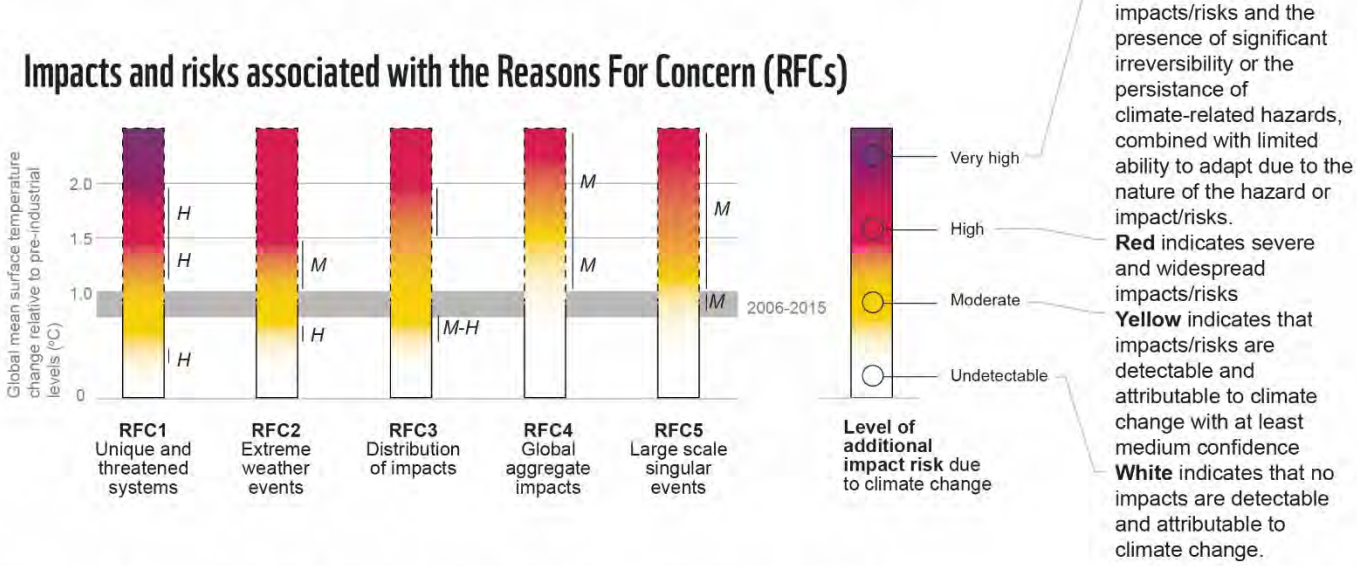
There are multiple synergies and trade-offs between mitigation options deployed in 1.5°C consistent pathways and the sustainable development goals. Pathways that include low energy demand, low material consumption and low greenhouse gas intensive food consumption have the

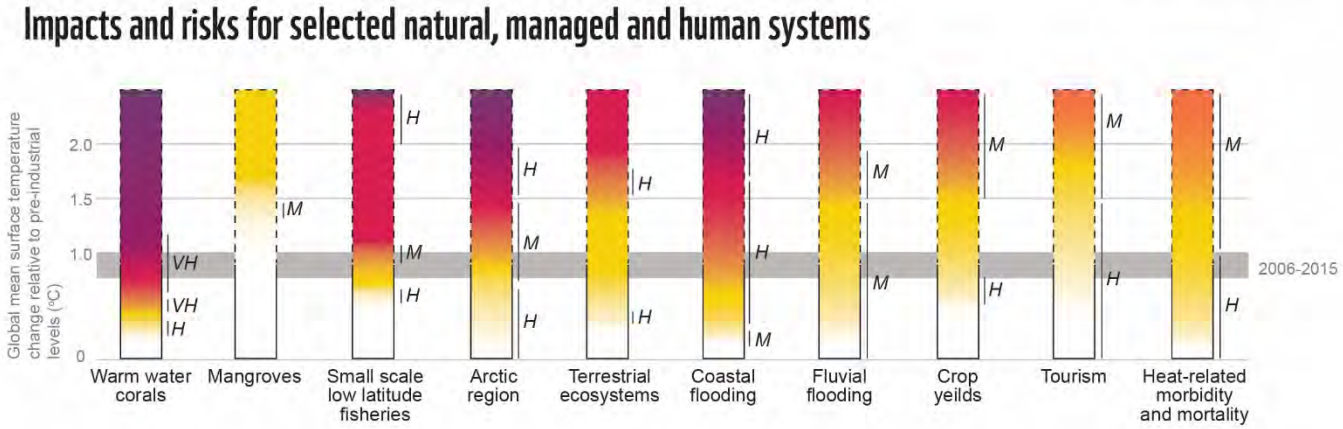
1 All but one of the pathways limiting global warming to 1.5°C have emissions below this level by 2030.

most pronounced synergies and the lowest number of trade-offs with respect to sustainable development

Even with 1.5°C global warming there will be increased climate-related risks to health, livelihoods, food security, water supply, human security and economic growth. If the temperature increases to 2°C, the risks are still higher. The figure below illustrates some of the impacts and risks for people, economies and ecosystems at different degrees of warming. Already at 1.5°C there are high risks associated with unique and threatened systems (ecological and human ecosystems with restricted geographic range e.g. coral reefs and the Arctic and its indigenous peoples) and extreme weather events. At 2°C, there are high to very high risks across all the Reasons for Concern.

Five Reasons For Concern (RFCs) illustrate the impacts and risks of different levels of global warming for people, economies and ecosystems across sectors and regions.





Confidence level for transition: *L*=Low, *M*=Medium, *H*=High, and *VH*=Very high

Source: IPCC Special report on Global Warming of 1.5 degrees Celsius Summary for Policy Makers

A wide range of adaptation options are available to reduce the risks to ecosystems but at 2°C adaptation is expected to be more challenging for ecosystems, food and health systems than for 1.5°C. Even at 1.5°C, vulnerable regions such as small islands are projected to face multiple and interrelated climate risks.

The message to be taken from the IPCC report is thus that to limit the worst impacts of climate change on ecosystems and humans, significantly more ambitious action is needed from all levels of government, the private sector and civil society.

THE PARIS AGREEMENT AND ITS AMBITION MECHANISM

The Paris Agreement's central goal is to limit global temperature rise to well below 2°C above pre-industrial levels and to pursue efforts to limit still further to 1.5°C.

The agreement also aims to strengthen the ability of countries to deal with the impacts of climate change. NDCs represent the contribution of each Party towards meeting the goals of the Agreement. Developed country Parties are asked to take the lead by undertaking economy-wide absolute emission reduction targets. Developing country Parties are encouraged over time to move towards economy-wide emission reduction or limitation targets.

The Paris Agreement was adopted by Decision 1/CP.21. This Decision emphasises the urgent need to address the gap between the emissions which would result from the aggregate pledges of the Parties and the emissions needed to hold the temperature to well below 2°C. In recognising this gap, it also emphasises the urgency of implementing the Kyoto Protocol to enhance pre-2020 ambition. Measures set out in the Decision to enhance action pre-2020 include strengthening the technical examination process, enhancement of the provision of urgent finance, technology and support, and measures to strengthen high-level engagement.

The Paris Agreement established a five-year cycle for communication of the NDCs, with increasing ambition in each subsequent NDC. Submitted NDCs have different timeframes for their commitments, some have 2025 timeframes others 2030. Decision 1/CP.21 encourages countries with a 2025 timescale to submit new NDCs by 2020, while those with 2030 timeframes are called upon to update their NDC by 2020. The Talanoa Dialogue, which is the renamed facilitative dialogue from the Decision, was launched in January 2018 to drive higher ambition in the NDCs submitted in 2020.

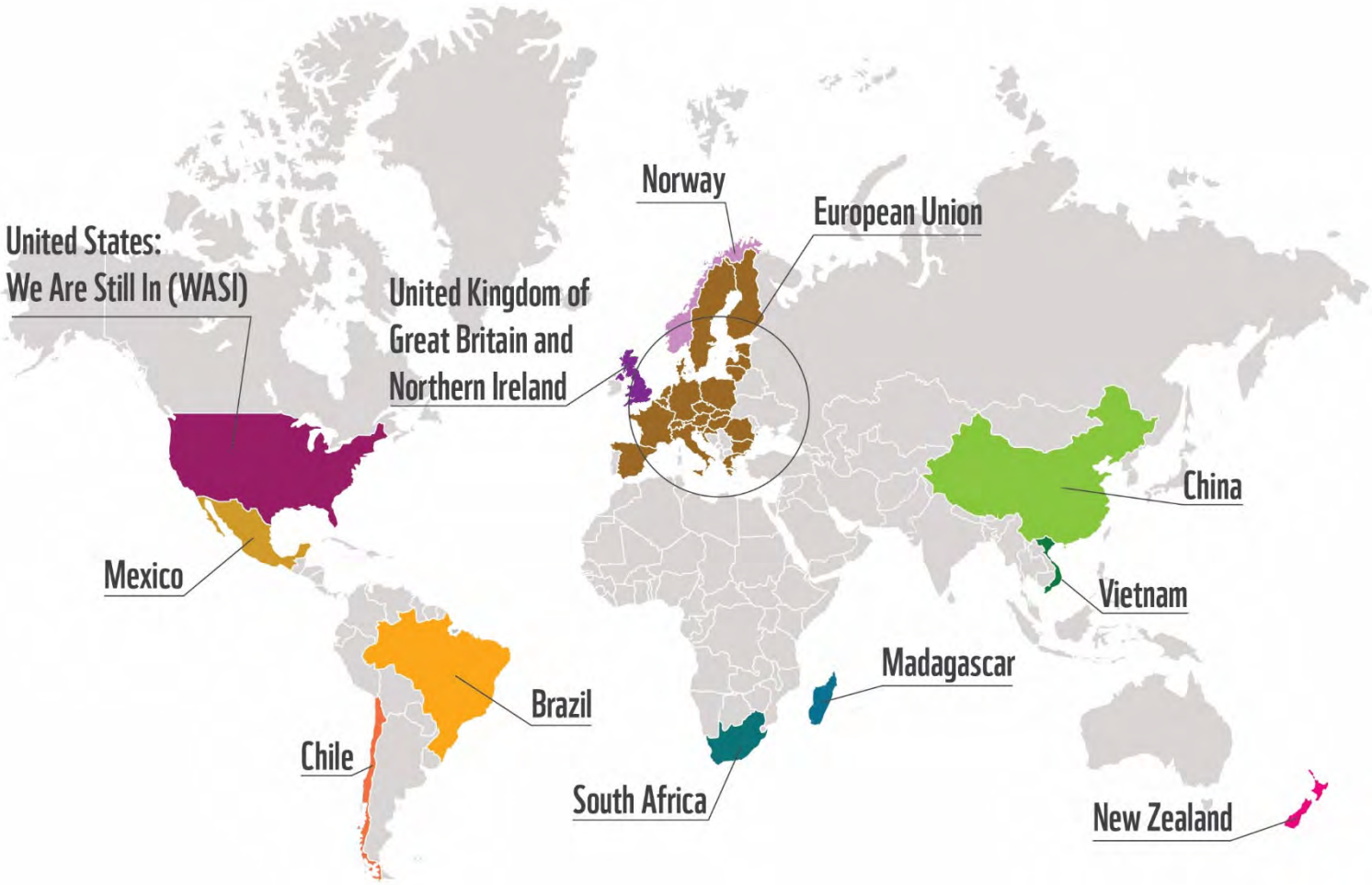
For every five year cycle, NDCs must be submitted at least 9 to 12 months in advance of the relevant Conference of Parties (COP). This is to allow time for the UNFCCC secretariat to synthesise the NDCs in a report. As part of the five-year cycle, there will also be a global stocktake on collective progress towards achieving the goals of the Paris Agreement - the first being in 2023. The outcomes from the stocktake will inform Parties in updating and enhancing their actions, and support and enhance international cooperation. The design of the global stocktake and the sources of information to be used are still being negotiated.

In addition to the sufficiently ambitious NDCs, all Parties should strive to formulate long-term low greenhouse gas emission development strategies. These should take into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances. They are invited to communicate these strategies to the UNFCCC secretariat by 2020. To date, only a few countries have communicated these strategies.

ACTION ON THE NATIONAL LEVEL – CASE STUDIES ON IMPROVING NDCS

As WWF is present in about 100 different countries and works closely with national governments on developing national climate policies and strategies and implementing NDCs, we have assembled this series of ten case studies to contribute to discussions and inspire further climate action and ambition at COP 24 and beyond.

The case studies presented in this section describe the current commitments in NDCs[2] in a selection of countries, discuss the developments in those countries with regard to climate change action and include recommendations to increase ambition in those NDCs.



2 Submitted NDCs can be viewed at https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx

BRAZIL CASE STUDY

Description of NDC

The Brazilian NDC set the goal to reduce greenhouse gas emissions by 37% below 2005 levels in 2025. As a subsequent indicative contribution, Brazil intends to reduce greenhouse gas emissions by 43% below 2005 levels in 2030. Brazil's NDC is economy wide and consistent with the long-term vision of holding the increase in global average temperature below 2°C above pre-industrial levels.

In addition, Brazil's commitments included specific targets to increase the share of sustainable biofuels in the Brazilian energy mix to approximately 18% by 2030, by expand biofuel consumption, increase ethanol supply; strengthen policies and measures with a view to achieving zero illegal deforestation in the Brazilian Amazon by 2030; restore and reforest 12 million hectares of forests by 2030; restore an additional 15 million hectares of degraded pasturelands by 2030 and enhance 5 million hectares of integrated cropland-livestock-forestry systems by 2030; achieve 45% of renewables in the energy mix by 2030, including expanding the use of renewable energy sources other than hydropower in the total energy mix to between 28% and 33% by 2030; among other commitments.

Regarding adaptation, the Brazilian NDC commits to implementing policies and measures to adapt to climate change and contribute to building resilience of populations, ecosystems, infrastructure and production systems, by reducing vulnerability and through the provision of ecosystem services. The National Adaptation Plan (NAP) is one of the policies to be implemented.

Progress in implementation

Over the last three years, Brazilian society has made some advances in raising awareness about the strategy for implementation of the Brazilian NDC. Several studies, workshops and sectoral contributions were presented to guide government decisions on the Brazilian commitments to the Paris Agreement. Among the studies, we highlight a document from Brazilian Forum of Climate Change (FBMC, acronym in Portuguese www.fbmc.com.br): "Short-term Measures for Implementation of the Brazilian NDC".[3]

In August 2018, the document was delivered to the President Michel Temer by the FBMC. The president signed an act requesting the Forum to elaborate a position on the possibilities of reaching this long-term goal by 2060. This is the first time that Brazil has signaled this goal and the first step in Brazil's positioning in relation to a long-term strategy for net-zero emissions.

Other important documents are also: "IES-Brasil - Economic and Social Implications: GHG Mitigation Scenarios 2030",[4] a scenario study that shows the economic and social benefits of NDC compliance and the additional benefits of increased ambition of mitigation targets (this study was supported by WWF-Brazil); and "Options for Greenhouse Gas Emissions Mitigation in Key Sectors of Brazil",[5] a study that estimates the potential and costs of GHG emission abatement through an integrated economic-energy analysis for the period between 2012 and 2050 in the different key sectors.

Potential for increased ambition

- Systematically and annually reduce anthropogenic emissions of greenhouse gases for the whole of Brazil's economy by a maximum of 1 $GtCO_2e$ in 2030.
- Strengthen policies and measures to achieve the zero conversion of natural habitat of all biomes by 2030 and the reduction of deforestation rates of all biomes by 50% by 2020 and by 80% by 2025 in relation to the base year 2015;
- Restore and reforest 12 million hectares of forests by 2030, prioritizing the restoration of liabilities in permanent preservation areas (APPs).
- Extend the scale of forest management systems in the Amazon to reach 20 million hectares by 2030, through georeferencing systems for forest production and traceability of their products, with a view to discouraging illegal and unsustainable practices.

3 https://drive.google.com/file/d/1Z3f2vVILNx12ciZzTNGOE72qbQC4hcrd/view
4http://www.centroclima.coppe.ufrj.br/images/Noticias/documentos/ies-brasil-2030/1_sumario-executivo-portugues.pdf
5https://www.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/opcoes_mitigacao/Opcoes_de_Mitigacao_de_Emissoes_de_Gases_de_Efeito_Estufa_GEE_em_SetoresChave_do_Brasil.html

Political context in country regarding ambition increase

Brazil had Presidential elections in October 2018. It is unclear whether the new government that will take office on January 1st 2019 will maintain the same level of commitment to the NDC implementation as the previous government.

Recommendations

Brazil has the potential to increase ambition in the NDC. Recommendations to achieve this include:

- Create a plan to discourage investments in new fossil fuel power plants. Increase investment for non-hydro renewable sources, aiming at the resilience and safety of the national electricity mix.
- Create instruments for the improvement of financing lines for microgeneration.
- Develop an efficient industrial policy to promote the competitiveness of non-hydro renewables.
- Expand biofuel and food production in degraded pasture areas.
- Accelerate implementation of the Forest Code, ensuring public transparency and social control.
- Increase recovery of degraded pastures;
- Strengthen technical assistance to implement sustainable practices and improvement of productivity in livestock.

CHILE CASE STUDY

Description of NDC

Chile has pledged unconditional, conditional (on international financial support in the form of grants) and specific land-use and land-use change and forestry (LULUCF) targets. Unconditionally, Chile committed to reduce greenhouse gas (GHG) emissions intensity of GDP to 30% below 2007 levels by 2030. This target covers the energy, industrial processes and waste sectors. Climate Action Tracker (2018) estimates that this will lead to GHG emissions levels of 154% above 1990 and 42% above 2010, excluding LULUCF, based on current GDP projections managed by the government.[6] The conditional target is a 35–45% reduction of GHG emission intensity of GDP below 2007 levels by 2030, which, according to Climate Action Tracker, is equivalent to 100–136 % above 1990 levels and 12–24% above 2010 GHG emissions levels, excluding LULUCF. Regarding LULUCF, Chile pledged to sustainably manage and recover 100,000 hectares (ha) of forest by 2030 and to reforest 100,000 ha, subject to approval of new laws. Chile is one of the few countries to separate the LULUCF sector target from other emissions, which increases the transparency of its proposed actions. On adaptation, Chile pledged to develop sectoral adaptation plans to establish specific measures and mechanisms to measure progress.

Progress in implementation

Since COP21, the Chilean Government has made significant progress in elaborating national plans for mitigation in the energy sector and for adaptation following a sector-specific approach, including forestry and agriculture, infrastructure, biodiversity, fisheries, health and cities. Moreover, under the Partnership for Market Readiness (PMR) initiative supported by the World

6 https://climateactiontracker.org/countries/chile/

Bank, Chile has been analysing carbon pricing options since 2015. Although the current carbon tax remains ineffective in terms of mitigation outcomes (US$5/t$CO_2$), institutional capacity was built for monitoring and reporting for the largest CO_2 emissions sources at the national level. In 2017, Chile issued a National Strategy for Climate Change and Vegetation Resources (ENCCRV) which includes the first national-level Emissions Reduction Programme that targets reductions in the rates of land and forest degradation, and also increasing forest carbon capture through reforestation. It is expected that over a period of 9 years, improvements in AFOLU-related policies and in management programs would contribute significantly towards Chile´s NDC, while accessing results-based-payments in the carbon market[7]. However, a mega fire outbreak in early 2017 affecting 600,000 ha of forest plantations, grasslands and native forests, demonstrated the vulnerability of land - both encompassed by this Programme and beyond it - to climate change.

The frequency and extent of fires in the Centre and South of Chile is the greatest factor of uncertainty and could be determinant in shaping Chile´s future GHG emissions trajectory. Before 2017, the AFOLU sector was a net absorber of emissions mostly associated to the expansion of forest plantations and played a significant role in reducing the overall net balance of emissions. However, excluding AFOLU, since 1990, net national emissions steadily rose due to increasing rate of burning of fossil fuels (IPCC energy sector). This overall trend continues today.

Potential for increased ambition.

In the run-up to a revised NDC in 2020, the greatest potential for increased ambition lies in GHG mitigation in the energy generation sector. Chile's geography, political stability, robust economy and energy market conditions create an exceptional environment to accelerate the transition to a low emissions economy. Nevertheless, this will require phase-out of coal capacity before it reaches end-of-life. Coal reached 53% of installed capacity in May 2018[8], versus 18% of current renewable capacity. In early 2018, Chile announced that it will not build any new coal-fired power plants (without CCS) and will develop a plan to phase out coal, as coal-fired power permitting has stalled in recent years due to the comparatively low costs of renewable energy. Current solar PV and onshore wind costs in Chile are as low as US$ 0.03/kWh to US$ 0.04/kWh.[9] However, under business as usual (BAU) conditions, the fact that a significant portion of coal plants have been built in recent years means that projections are for a 19% share for coal in electricity generation in 2050. This share would need to be close to zero to make Chile´s energy sector compatible to 1.5°C[10]. Chile's Ministry of Energy is leading a roundtable to analyse the best options for the decommissioning or reconversion of coal-plant capacity, but there is still the need for strong political will, corporate leadership and citizen engagement to ensure that Chile can include coal-phase out as a key measure for increased NDC ambition in 2020.

The National Strategy for Climate Change and Vegetation Resources (ENCCRV) launched in 2017 provides a solid foundation to scale-up and integrate other land-based and nature-based mitigation and adaptation solutions, particularly through forest landscape restoration. This is an opportunity to reduce the severity of extensive fires. Work through this strategy to increase landscape resilience will help ensure baseline conditions are maintained and take advantage of the opportunity to capture mitigation and reduced land vulnerability (adaptation). In this context, a national forest restoration plan with the goal of restoring up to 1M ha coupled with watershed management measures and scaled-up plans for biodiversity protection (such as those proposed under the National Adaptation Plan for Biodiversity) would show clear signs of Chile's commitment. Mitigation in LULUCF is still a low hanging fruit for increased NDC mitigation ambition, that addresses further social and environmental needs for adaptation and sustainable development, while opening the opportunity to integrate ecosystem protection for future generations.

7 http://www.conaf.cl/cms/editorweb/ENCCRV/Nota-Informativa-24.pdf
8 http://generadoras.cl/documentos/boletines/boletin-mercado-electrico-sector-generacion-junio-2018
9 https://www.irena.org/publications/2018/Jan/Renewable-power-generation-costs-in-2017
10 Climate Tracker 2018

Political context in country regarding ambition increase

Chile's 2050 Energy Policy (PE2050) aims for renewable targets of at least 60% by 2035, and 70% by 2050 for electricity generation. Recently, the Energy Route 2018-2022, the Mitigation Plan for the Energy Sector, and the Electromobility Strategy stand out as complementary policies that together should foster increased energy efficiency, scaling-up small distributed energy and introducing 100% electric public transport and 40% electric private vehicle fleet by 2050. These developments represent strong signals for change, however there is still the need to determine how the government will deploy measures, improve enabling conditions for the private sector and ensure a participatory approach with citizens, particularly in the cases where local impact is expected. Furthermore, there is an urgent need to accelerate adaptation response across the territory. While adaptation sectoral plans are being developed at the national level, it is crucial to move forward in implementation plans with strong local and regional participation.

Recommendations

For Chile to increase its NDC ambition it should:

- Include the mitigation resulting from a national agreement and plan to phase out coal-fired generation in the NDC in 2020. The government, companies and local community representatives should continue working on transparent criteria to determine the timelines, support and measures involved in the decommissioning of each unit.

- By 2020, improve the design, and expand the scope of the current carbon tax to include other highly emitting sectors. Establishing a gradually rising carbon price will provide more certainty to investors that play a key role in scaling up the implementation of climate-compatible projects.

- For successful coal phase-out, the NDC should include a commitment to work with the private sector and civil society to ensure enabling policy conditions for renewable energy capacity to replace coal-fired capacity by building a reliable, efficient, inclusive, sustainable and secure system.

- The NDC can also include at least a portion of mitigation results expected by 2030 through the implementation of the Electromobility Plan launched in 2018. Including electromobility in Chile´s NDC will reflect institutional commitment on this matter, which in turn will better position this emerging market in the map of investors.

- Introduce a significantly stronger target for forest landscape restoration (up to 1M ha) that accelerates national action and accesses international support to reduce the exposure to water scarcity and conditions leading to fires which peak LULUCF emissions (as in 2016-17). Moreover, a commitment to develop land-based (including nature-based) adaptation measures is increasingly critical to reduce vulnerability and increase resilience across the country.

- Support increased NDC ambition in 2020 by pooling mitigation potentials by 2030 from coal phase out, the expansion of renewable energy utility and distributed capacity, and progress in electromobility. While fires are becoming a great factor of uncertainty, it is still possible and necessary to increase LULUCF/AFOLU mitigation ambition. Chile is already piloting results-based-payments, and further, reforestation and reducing land and forest degradation are critical to reduce vulnerability, strengthen resilience and adaptation, while also protecting essential ecosystem services, biodiversity, and to incentivise decentralised sustainable development.

CHINA CASE STUDY

Description of NDC

China submitted its NDC to the UNFCCC in June 2015. It covers targets, policies and implementation measures for both mitigation and adaptation.

The key targets of the NDC, to be achieved around or by 2030, are summarized as follows: a) to achieve the peaking of CO_2 emissions around 2030 and make best efforts to peak earlier than that; b) to lower CO_2 emissions per unit of GDP by 60-65% from the 2005 level; c) to increase the share of non-fossil fuels[11] in primary energy consumption to around 20%; and d) to increase the forest stock volume by around 4.5 billion cubic meters compared to 2005

To achieve this, a series of policies and measures were proposed, including for energy system, industry, buildings, transportation, and carbon sinks.

As for adaptation, China proposed to "proactively adapt to climate change by enhancing mechanisms and capacities to effectively defend against climate change risks in key areas" and to "progressively strengthen early warning and emergency response systems and disaster prevention and reduction mechanisms", covering various sectors including agriculture, forestry and water resources, as well as in cities, coastal and ecologically vulnerable areas.

Progress in implementation

China's 2020 target, to reduce its carbon intensity by 40-45%, was reached already in 2017 and the target for forest stock volume was also over-fulfilled. With China's renewable energy industry boom, the proportion of non-fossil fuel in primary energy consumption increased to 13.8% by

11 Non-fossil fuels here mean renewables and nuclear energy.

2017. These achievements also give China a solid foundation to reach its 2030 targets before that date.

Coal consumption control and the transition from coal to non-fossil fuels might be the most important drivers for China's progress. While coal remains the dominant fuel in China, the percentage of coal in total energy consumption decreased from 72.4% in 2005 to 60.4% in 2017. In contrast, China's renewable energy sector is booming. According to REN21, China ranks as the world's leader in total renewables capacity, and also in solar PV, wind and geothermal heating capacity, and investment in renewables capacity.[12] By the end of 2017, China's total installed capacity of renewable energy reached 650GW, with massive growth in wind and solar power especially. It is estimated that China's proportion of non-fossil energy sources will reach, and surpass, 15% by 2020.

The policies issued and the actions implemented by Chinese government and other stakeholders, will ensure a full fulfillment of the commitment that Chinese government has pledged to the international society. Most prominently, China's international pledges and national targets are backed up by national strategies, policies, and detailed implementation measures with transparency and accountability mechanism.

Potential for increased ambition.

According to a survey done by the China Carbon Forum, 87% of respondents expect China to achieve the carbon emissions peak by 2030 the latest, and 48% even expect it by 2025 or earlier.[13] Most of the research revealed that China could peak earlier than or well before 2030 and one study shows that China's carbon emissions are likely to peak between 2020 and 2022.[14] Given its economic restructuring potential, China could achieve an emissions peak around 2023 with efforts in energy efficiency lowering the CO_2 intensity in China's GDP by just over 71% by 2030 compared to 2005, thus exceeding the NDC target of 60-65%.[15]

The transition trend from coal to renewables and other low carbon energy sources might be a great driver for China to overachieve its 2030 targets. A new study released by the China National Renewable Energy Centre reveals that it is possible and beneficial for China's fossil fuel use to peak in 2020 and decline steadily towards 2035.[16] According to a 2015 WWF report, around 84% of China's electricity generation can be met with renewable sources by mid-century and the number is expected to be 49% in 2030.[17]

Given the above progress and scenario analyses, we believe China has the potential to improve its NDC in terms of the peaking timeline, share of non-fossil fuel in the primary energy consumption, and carbon intensity targets, showing more leadership as a torchbearer in global climate governance. There is also reason to expect China to soon propose a long-term strategy for 2050 under the 1.5°C and 2°C scenarios.

Political context in country regarding ambition increase

The Chinese government has shown strong political will on environmental protection in recent years through emphasizing the concept of "ecological civilization". Since the 19th National Congress of the Communist Party of China, the environment has risen to an unprecedented status

12 REN21, Renewables 2018 Global Status Report
13 China Carbon Forum. 2018, "2018 China Carbon Pricing Survey".
14 Chinadialogue, 5 June, 2018, "Roundtable: Is China still on track to reach its Paris targets?" https://www.chinadialogue.net/article/show/single/en/10653-Roundtable-Is-China-still-on-track-to-reach-its-Paris-targets-
15 Qilin Liu, Qi Lei, Huiming Xu, et.al. "China's energy revolution strategy into 2030", in Resources, Conservation and Recycling, 2018, 128, 78-89
16 China National Renewable Energy Center, 2018, "China Renewable Energy Outlook 2018".
17 WWF, 2015, "China's Future Generation 2.0", https://d2ouvy59p0dg6k.cloudfront.net/downloads/china_s_future_generation_2_0_report.pdf

in the national development agenda. The main driving force for environmental protection is the need for sustainable development, including the need to fight air pollution.

While US President Donald Trump has announced that the US will be pulling out of the Paris Agreement, the China government has several times reaffirmed its commitment to the Agreement and the country's targets. However, it should also be noted that international trade tension between China and the US, and the domestic challenges of slower economic growth arising from that, have resulted in some conservative arguments against ambitious climate action in China.[18]

Recommendations

For China to reach its sustainable development ambition and goal of becoming an "ecological civilization" by mid-century, and when considering the need for urgent and ambitious climate actions to avoid global warming over 1.5°C, it should take the following actions:

Revise its climate targets and commitments under the Paris Agreement by 2020, by:

- Bringing the timeline for emissions peaking to around 2022.
- Proposing a carbon emission reduction pathway for the period after the peaking, to be in line with the Paris Agreement's 1.5-2°C target.
- Accelerating the deployment of renewable energy to achieve a higher share of non-fossil fuels in primary energy by 2030.

Accelerate its energy transition from fossil fuels to renewable energy, by:

- Strengthening coal consumption control, halting new coal power, and eliminating inefficient capacity.
- Reducing dispersed coal burning through efficiency improvement, reduction, and clean energy replacement.
- Accelerating power sector reform to create an environment for promoting large-scale and distributed deployment of renewable energy.

Enhance international cooperation to take more leadership in addressing global climate change, by:

- Supporting other developing countries to improve their capacity to achieving their climate targets through south-south cooperation on climate change.
- Shifting China's oversea energy investments from coal to renewables to accelerate the pace and scale of the world's transition to a sustainable model of energy and development.

18 Li Shuo, 28 October, 2018, "Does China Still Want to Be a Global Environmental Leader?" https://thediplomat.com/2018/10/does-china-still-want-to-be-a-global-environmental-leader/

Photo: © Hung Chung Chih / Shutterstock.com

EUROPEAN UNION CASE STUDY

Description of NDC

The EU NDC purely focuses on mitigation, outlining the agreed EU domestic emissions reduction target, the implementation process and a narrative on why the EU believes its NDC is fair and ambitious. This submission covers the collective contribution of the EU and the 28 Member States

The commitment is for the EU and the Member States to achieve an unconditional, economy-wide, "binding target of an at least 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990" on 100% of emissions, to be achieved domestically without the use of international credits[19]. The commitment period for the target is from January 1st 2021 (the EU's second commitment to the Kyoto Protocol ends on December 31st 2020) to December 31st 2030. Additional legislation was created to facilitate the achievement of this goal, including on LULUCF, energy and transport. The NDC holds no concrete information on any non-mitigation elements e.g. adaptation, climate finance, loss & damage. Complementing its NDC is the European Commission Communication 'The Paris Protocol - a blueprint for tackling global climate change beyond 2020[20], which briefly discusses basic elements on several issues, including climate finance, adaptation, and mitigation cycles.

Progress in implementation

The EU's 2030 climate and energy framework[21] -politically agreed in October 2014- forms the basis of its NDC. The various pieces of legislation that pursue the attainment of the NDC target were agreed between 2016 and 2018 by EU Member States and European Parliament. Of note, based on the EU's own calculations, new legislative targets on renewable energy uptake and

19 European Commission (2015). *Environment Council approves the EU's* intended nationally determined contribution *to the new global climate agreement.* Available at: https://ec.europa.eu/clima/news/articles/news_2015030601_en
20 European Commission, 2015. The Paris Protocol - a blueprint for tackling global climate change beyond 2020. http://ec.europa.eu/transparency/regdoc/rep/1/2015/EN/1-2015-81-EN-F1-1.PDF
21 European Commission, 2014. European Council Conclusions. http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145397.pdf

energy efficiency measures mean that the EU's emissions (if all Member States achieve these targets) will be reduced by 45%[22] by 2030. However this higher target is by no means in line with achieving 1.5°C or with becoming a net-zero economy well-before mid-century[23], let alone the EU's equitable fair-share.

Political context in country regarding ambition increase

The Paris Agreement marked a significant shift in global ambition on climate change, and committed EU Member States and other UNFCCC parties to keeping average global temperature rise 'well below' 2°C and to pursuing efforts to limit it to 1.5°C.

A few options exist that can be used to create the impetus for a revised, higher level of EU ambition in 2030: The EU justifies its insufficient NDC by quoting various IPCC assessment reports. Following this logic, the EU should now begin using the IPCC Special Report on Global Warming of 1.5°C as the basis for all of its actions. Moreover, while the Paris Agreement has been agreed, the rules governing it are yet to be agreed, so ensuring a strong and successful completion of these rules may help to reignite the debate on increased EU ambition. In October 2018, the EU's position for COP24 states that the EU will "communicate or update its NDC by 2020, taking into account the collective further efforts needed and actions undertaken by all Parties to meet the objectives of the Paris Agreement"[24]. In this same position, the EU highlighted the importance of the Global Stocktake in 2023 for enhancing climate action by acknowledging the Paris Agreement's wider ambition cycle. To round out this list of options, the European Parliament recently voted to show support for an EU emissions reduction target of 55% by 2030.[25]

Typically, for any ambition increase to occur, all EU Heads of State and Government need to politically guide a target increase. The next appropriate moment to discuss an increase is when they examine a new long-term climate and energy target and strategy for the EU, which will most likely take place May 2019. This meeting would be an opportune moment for EU Member States to examine their own long-term targets, thereby contributing information that would allow the bloc as a whole to explore what prospects there are for an even more ambitious NDC target in line with a new EU long-term target. However, no clear signal from all EU Member States has been sent that they would support such a revision of the EU NDC target. Moreover, the legislative right to initiate a revision lies with the European Commission; a change in its cabinet is foreseen after the European Parliament elections (05/2019), the implications of which will only be known after it happens.

Another track that can be used to pursue higher ambition is at the EU Member States level. All EU Member States must develop and submit final national climate and energy plans (NECPS) by the end of 2019, outlining how a Member State will achieve their share of the EU 2030 targets. With these plans, Member States also have the opportunity to highlight measures that allow their domestic emissions reductions to go beyond the minimal action required to fulfil their share of the EU targets e.g. coal-phase out ahead of 2030, permanent cancellation of ETS allowances, or higher rates of deployment of sustainable technologies i.e. renewable energy, energy efficiency.

Indeed, a few EU Member States have called for increased EU ambition[26], while other EU Member States have called for the EU to focus on implementing existing EU policies before looking to

22 European Commission (2018). *Speech by Commissioner Miguel Arias* Cañete at the High Level Stakeholder *Conference: The EU's Vision of a modern, clean and competitive economy.* Available at: http://europa.eu/rapid/press-release_SPEECH-18-4447_en.htm
23 Climate Action Tracker (2018). *EU.* Available at: https://climateactiontracker.org/countries/eu
24 Consilium (2018). *Climate change: Council adopts conclusions for COP24.* Council of the EU. Available here: https://www.consilium.europa.eu/en/press/press-releases/2018/10/09/climate-change-council-adopts-conclusions/
25 European Parliament (2018). *COP24 Resolution.* Available at: http://www.europarl.europa.eu/news/en/press-room/20181018IPR16550/paris-agreement-meps-call-for-stepping-up-eu-climate-commitments
26 Bureau Woordvoering Kabinetsformatie (2018). *Coalition agreement 'Trust in the future' [Kingdom of the Netherlands Cabinet Coalition government*]. Available at: https://www.kabinetsformatie2017.nl/documenten/publicaties/2017/10/10/regeerakkoord-vertrouwen-in-de-toekomst?_sp=97c0f122-98ad-4998-91f4-dc49cdd03a6c.1507635788124

increase targets[27]. Whilst the potential to go further exists, the collective, political will of EU Member States does not yet exist. Even so, a consensus by all Member States is not a formal requirement since the EU's environment and climate policies are formally agreed by qualified majority voting rules.

Recommendations

More must be done to strengthen the EU's existing climate and energy policies and to create an enabling environment that motivates EU Member States to race to the top of the ambition pyramid. **Specific recommendations are:**

- Revise the EU NDC by 2020 and increase its level of ambition to reflect the level of urgency imbued in the IPCC 1.5°C report, and to support a transition to a net-zero greenhouse gas emissions society in the EU by 2040.

- The EU as a whole must aim to reach zero net greenhouse gas emissions domestically by 2040.

- All EU Members States must be encouraged to overachieve their 2020 targets. The EU as a bloc is set to overachieve its 2020 climate targets, however eight EU Member States are projected to miss their climate and/or energy targets[28].

- Reduce emissions in different sectors to zero (or near zero) by 2040, including by phasing out fossil fuels, moving to a 100% renewable energy system, accelerating the shift to a circular economy and by promoting the use of energy efficiency. Member States can use existing EU tools and frameworks on climate and energy policy and should also be encouraged by the EU to use additional policies, regulations and incentives adapted to national circumstances.

- Facilitate the increase of removals by sinks in EU Member States, by using environmentally sustainable approaches under e.g. the EU Timber Regulation, to facilitate the restoration of forests and other ecosystems, and phasing out EU bioenergy policies that increase deforestation or reduce sinks and that are counterproductive in climate terms.

- Follow the lead of other countries and develop a just transition model for EU Member States to use as guidance for EU Member States. The model should bring workers and companies along with the energy transition and plan for early retirement, re-skill workers and restore the natural environment.

- Outline mechanisms to assess the consistency of all existing EU policy and infrastructure investment with the goal of zero net emissions in 2040, in order to facilitate emissions reductions, to ensure that all EU policy is mutually reinforcing and does not unintentionally undermine the integrity of EU climate and energy efforts, and to reduce the risk of stranded assets.

- Assess and implement policies and measures so that the EU can contribute to emissions reduction elsewhere in the world, both by reducing demand for imported goods that have high carbon footprints and by increasing climate finance and capacity building for climate action in developing countries. In addition to the EU fulfilling its own domestic targets, domestically.

27 Reuters (2018). *Merkel says EU should meet existing emissions aims, not set new ones*. Available at: https://uk.reuters.com/article/uk-germany-politics-merkel/merkel-says-eu-should-meet-existing-emissions-aims-not-set-new-ones-idUKKCN1LB0HG
28 EUR-Lex (2018). *Climate action progress report*. European Commission. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0716&from=EN

- Set out how EU public and private financial flows – starting with the EU budget, should be reoriented towards the above objectives, to help all Member States benefit from the transition to a clean economy.

MADAGASCAR CASE STUDY

Description of NDC

Madagascar submitted its NDC in 2015. The Ministry of Environment, Ecology and Forest, in particular the National Head of Climate Change Coordination, is leading the process for the country. Madagascar has committed to reduce approximately 30 $MtCO_2$ of GHG (representing 14% of national emissions) by 2030, compared to the BAU scenarios based on the GHG inventory from 2000 to 2010. This commitment covers the LULUCF, energy, agriculture and waste sectors. It includes reforesting 270 000 ha to increase removal of carbon by 61 $MtCO_2$ (32%) and promoting REDD+ (reducing emissions from deforestation and forest degradation). Other measures include increasing renewable energy from the current level of 35% to 79%, increasing energy efficiency (including dissemination of improved cooking stoves) and increasing rural electrification. Agricultural measures include large scale dissemination of intensive/improved rice farming technique and implementation of climate smart agriculture. On adaptation, by 2020 to 2030, Madagascar committed to develop and implement its National Adaptation Plan, to strengthen the mainstreaming of climate change adaptation into the water resources management and national maritime territory strategies and to support the development of the national framework for meteorological services. It also covers the development of resilient integrated agriculture models; nature-based actions (restoration, sustainable management of natural resources including climate refugia inside and outside the protected areas), setting up of multi-hazard early warning systems and sensitisation and awareness raising on climate change. The cost of the Madagascar NDC is estimated at USD 42.099 billion conditioned by external and national contributions (the Republic of Madagascar will contribute, through the mobilisation of domestic resources, up to 4% of the NDC implementation costs).

Progress in implementation

Since the submission of its NDC, Madagascar has shown some progress, and particularly through the collaboration between the Government and various partners and/or donors. including WWF. On mitigation, Madagascar has adopted a new National Energy Policy for 2015-2030, with main targets including 85% renewable energy in electricity production, an electricity access rate of 70%, 50% of fuelwood needs coming from legal and sustainable forest resources and adoption of energy efficient devices by 65% of households. As part of the implementation of this policy, a national strategy was approved in 2018 for a sustainable fuelwood value chain. In addition, in 2018 the country developed its REDD+ national strategy with a monitoring, reporting and verification system in place. An Emissions Reduction project was also approved by the Forest Carbon Partnership Fund in 2018 and the new national strategy for reforestation/afforestation was approved, while the country also committed to restore 4 million ha as part of AFR100 (African Forest Restoration Initiative).[29] Recently, through Conservation International, Madagascar GEF6 Concept on the capacity building initiative for transparency (CBIT) was approved and proposal development is ongoing. On the adaptation side, the country launched the development of its NAP in 2016. This is still underway with support from the NAP coordination and monitoring/evaluation committee formed by non-state and state stakeholders, and where WWF is very active and supportive. Madagascar also received support from the French Development Agency through the Adapt'Action project to support the country to implement the NDC and to build its capacity. Other projects and/or programmes are currently being implemented by several stakeholders such as Government ministries, GIZ, USAID, World Bank, WWF, UNIDO (United Nations Industrial Development Organization), that contribute to the NDC commitments. There is not yet a framework to clearly assess these contributions.

Potential for increased ambition.

Given that neither the carbon registry, nor the adaptation registries are yet in place, there is no information to track progress. Increased ambition could be achieved through the implementation of existing improved sectoral policies and strategies, promotion of intersectoral synergy and natural/land-based solutions. WWF is supporting the government in the expansion of the marine protected areas and the mapping of ecological infrastructure as part of the national land use planning process. However, the recent surge in the deforestation rate is alarming (510,000 ha lost in 2017 according to Global Forest Watch) and needs to be addressed[30]. According to the country NDC, if nothing is done, Madagascar's total emissions will increase from ca. 87 $MtCO_2$ in the year 2000 to reach 214 $MtCO_2$ in 2030. The country therefore has to tackle this deforestation seriously. It will also be important to consider other sectors, such as the mining and petroleum sector, which is foreseen to support economic development of the country. To summarise, the National Head of Climate Change Coordination is trying to coordinate those ongoing actions and initiatives, but should be enhanced for better coordination of country achievements.

Political context in country regarding ambition increase

The National Development Plan for 2015-2019 emphasises the resilience of natural capital which has shown the country commitment to address climate issues. However, the country just went through the first round of presidential elections on 7 November 2018. There are uncertainties regarding political stability which may have some implications on any commitments to increase ambition. In general, new government leads to changes in the ministry structure. Since 2015, the head of the National Directorate of Climate Change Coordination has changed three times, which delays implementation. Local governments could also play a stronger role in the implementation

29 https://afr100.org
30 https://www.globalforestwatch.org/dashboards/country/MDG

of NDC, however so far their role has been unclear and information flows from the national to local government are weak.

There are existing climate and energy platforms in the country such us the National Energy Task Force Group, the National Climate Change Thematic Group (acting both on adaptation and mitigation), the national REDD+ Platform and various climate change CSOs platform including youth. These platforms should increase their involvement in the NDC implementation and support the government to deliver their ambition as well as lobbying for improved ambition.

Recommendations

To increase the ambition of the NDC, Madagascar should

- Boost the development of the NDC implementation plan or equivalent.
- Accelerate the development and implementation of sectoral plans and measures contributing to the NDC.
- Operationalise an NDC platform advisor (formed by state and non-state actors) that will support the government in better mainstreaming climate change challenges in sectoral policies and plans, in delivering the country commitments and in revising/increasing its ambitions.
- Make operational the carbon and adaptation registries or equivalent monitoring system which are crucial to assess the pre-2020 contributions and help to track the progress before the next revision.
- Boost the implementation of the new Energy Policy (in particular the national strategy for sustainable fuelwood management and reforestation/afforestation, through resource mobilisation and market-based approaches) and the REDD+ National Strategy
- Boost the development and implementation of the National Adaptation Plan.
- Increase ambition, with particular attention to nature-based solutions:
    - By 2020, a revised climate-smart protected area framework and guidance as well as for CBNRM should be in place and used to revise existing and new management plans. In addition, an expansion plan for Marine and Terrestrial Protected Areas should be developed based on climate risks assessment. A joint contribution between NDC and Aichi Targets will be also crucial particularly regarding strategic goal 5, 10 and 11.
    - Increase the LULUCF targets particularly with regards to the deforestation rate which is quite alarming so far and could jeopardise the country GHG targets. Develop a joint contribution between NDC and Aichi targets (particularly regarding the strategic goal 11 and 15) in the revised contributions.
    - Boost the the development and implementation of the 30-year vision on land-use management spatially framed within Madagascar's ecological infrastructures to ensure the resilience and durability of all economical, environmental and social investments in the country.
    - Consider updated sectoral policies that are more specific and higher in ambition than the present NDC targets.

MEXICO CASE STUDY

Description of NDC

Mexico has played a leading role in the international climate negotiations and has developed a strong national institutional framework to tackle climate change. After the Paris Agreement, Mexico was the first developing country to submit its NDC setting several targets. On the mitigation side, the Federal Government committed to reduce 22% of GHG emissions under the baseline scenario by 2030 and up to 36% conditional on international support. It also set an unconditional target to reduce 51% of black carbon emissions, and a conditional one of 70%, under the baseline scenario by 2030. The emissions mitigation pathway presented in the NDC implies the carbon-intensity of the national economy should be reduced up to 40% during the 2013-2030 period.

Sectors included in these targets are energy, industry, transport, urban development, agriculture and livestock and LULUCF. Despite these targets implying significant and rapid improvements in public regulations and technology, independent evaluations consider them insufficient in terms of their alignment with 1.5°C temperature rise goal[31].

On the adaptation side, Mexico included three goals in its NDC: strengthen actions for ecosystem protection and restoration and attain a deforestation rate of 0%; increase the adaptive capacity of the population to climate change and reduce high vulnerability in 160 municipalities and; generate early warning and prevention systems in the entire country against extreme hydrometeorological events. Compared to other developing countries, Mexico stands out by naming ecosystem-based adaptation as the core of its NDC and having prepared the NDC through considering synergies between adaptation and mitigation.

31 See latest Climate Action Tracker assessment at: https://climateactiontracker.org/countries/mexico/

Progress in implementation

According to the last official national inventory, GHG annual emissions have increased from 44,742 Gg of CO_2e in 1990 to 682,959 Gg of CO_2e in 2015. Since 2008, the rate of increase has slowed compared to previous years.

As a result of the Energy Reform that started in 2012, the government opened the electricity sector to private investment which enhanced the participation of renewable energy in the energy matrix. Solar and wind power generation has grown 38.5% and 43.5% during the 2012-2017 period. Despite this major progress, renewable sources only represent 15.6% of the total annual generation, of which 9.7% is hydropower that has shown high vulnerability to climate changes. Increasing the percentage of renewables, represents a major challenge to complying with NDC mitigation targets and also to the goals set in the Energy Transition Law to reach 35% of clean energy by 2024 and 50% by 2050.

According to the Forest Resources Assessment published every five years, the annual loss of forest surface decreased from 190,400 thousand hectares per year during the period 1990-2000, to 91,600 thousand hectares during 2010-2015 period.

In addition, the Mexican government has made progress in building enabling conditions for NDC implementation. Firstly, it estimated the cost of complying the non-conditional target as around US$ 126 billion. It also conducted several sectoral dialogues with relevant government and private sector entities to socialise the NDC targets and to identify opportunities for effective collaboration. A similar exercise was implemented with state and local governments. At the moment, 30 out of 32 states have climate change programs including emissions inventories and mitigation actions. Mexico City and Guadalajara Metropolitan Areas, the two most populated urban areas in the country are now part of C40 Cities[32] and receive support to develop climate change plans aligned with the 1.5°C temperature target.

On the legal side, last July, the federal government published several modifications and additions to the General Climate Change Law. One of them is to set as goal of this law to contribute to the accomplishment of the Paris Agreement and the inclusion of NDC targets.

Political context in country regarding ambition increase

General elections were held in Mexico on July 2018. It was one of the broadest processes, including the Presidency, Senate, Chamber of Deputies and most of state governors. As the result, the whole country is experiencing a massive change in political power from traditional political parties (PRI, PAN and PRD) to MORENA, a recently created political party that now has the presidency and majorities in the chamber and Senate.

The explicit positions of Andres Manuel Lopez Obrador, the elected president regarding climate change have been unclear in relation to specific policies and measures to comply with current commitments and to raise ambition, and especially in terms of coherence with other positions and announcements particularly in the energy sector. Priority actions in the new energy plan are mainly aimed at fossil fuel promotion and the implications on GHG emissions are not mentioned. In the electricity sector, one of the most sensitive issues would be the methodology for defining electricity tariffs. This should be released in December and will definitely influence the speed and scale of deployment of renewable energy. At the One Planet Summit, the president announced that in 2019 an emissions trading system will start a pilot implementation phase that will cover 500 companies belonging to the stock exchange. This would apply a price to around 400 million tons of CO_2e.

32 https://www.c40.org

Recommendations

The elected Mexican government faces the challenge of reducing violence, poverty and inequality in a highly globalised economy and unstable political environment in the region. In this context, international agreements that Mexico has signed, particularly in the sustainable development agenda, should be seen as levers to define the direction and magnitude of current and new public policies in a more coherence and synergistic framework. **Recommendations for an improved NDC to reduce GHG emissions beyond the current targets and also contribute to a more general sustainable development agenda are**:

- Show real commitment to renewable energy through: developing auction mechanisms with a special focus on renewable energy and involving more buyers; establishing clear and most ambitious clean energy goals through the Clean Energy Certificates mechanism in the long-term; eliminating subsidies for electricity and establishing a robust methodology to calculate final tariffs for retail users and; keeping regulatory bodies such as Energy Regulatory Commission (CRE) as autonomous and independent technical-decision organisations that don't follow political cycles.

- Adjust carbon pricing mechanisms in place, including the emissions trading system and carbon tax, to reflect the real cost of carbon externalities globally and locally.

- Develop significant incentives for the private sector to set mitigation goals (e.g. science-based targets) and incentivise regulatory certainty to foster the investments needed.

- Strengthen local governments' capacities to implement additional mitigation actions including training on developing emissions inventories, identification of cost-effective measures, monitoring, reporting and verification systems and access to finance.

- Elaborate and implement a national urban policy that: expands the use sustainable modes (walking, cycling, public transport) in primary and secondary cities; extends current programs to promote eco-technologies in residential and commercial buildings; collaborates with local governments to improve waste management practices and implements a more ambitious strategy for sustainable consumption and production.

- Reform agricultural support programs to ensure that subsidies do not increase deforestation rates.

- Expand the National Program of Payment for Hydrological Services and strengthen the National System of Natural Protected Areas.

NEW ZEALAND CASE STUDY

Description of NDC

Aotearoa New Zealand pledged in 2015 to reduce its emissions to 30% below 2005 levels, which amounts to 11% below 1990 levels. This is an all-sectors, all-gases, economy-wide target, set using Kyoto Protocol accounting standards. It was premised on unrestricted access to international carbon markets with ecological integrity. This NDC is mitigation only. It does not include any adaptation component.

Over 17,000 New Zealanders submitted on New Zealand's NDC. Around 99.5% of the New Zealanders who suggested a quantitative target sought a more ambitious mitigation target.[33]

Independent scientists at Climate Action Tracker have assessed New Zealand's NDC as "insufficient", consistent with 3°C of warming.[34]

In 2013, New Zealand also pledged to reduce its net emissions to 5% below 1990 levels by 2020. The country is on track to meet this target, though this is largely due to surplus units, including from international trading, from the first Kyoto Protocol commitment period.[35]

33 Ministry for the Environment New Zealand's Climate Change Target (July 2015) https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/nz-climate-change-target-summary-of-submissions_0.pdf at 6.
34 Climate Action Tracker New Zealand: Pledges and Targets (2017) https://climateactiontracker.org/countries/new-zealand/pledges-and-targets/.
35 Ministry for the Environment Latest update on New Zealand's 2020 net position (April 2018) https://www.mfe.govt.nz/climate-change/what-government-doing/emissions-reduction-targets/reporting-our-targets/latest-2020.

Progress on implementation

New Zealand gross emissions have increased 19.6% since 1990 and still continue to rise,[36] but are projected to stabilise at around current levels.[37] This represents a 21% increase on 1990 levels and only a 6% reduction compared to a business as usual scenario. Consequently, past governments have placed high importance on access to international carbon markets and the use of domestic forestry sinks to in plans to achieve emissions targets like the NDC.

New Zealand's emissions profile poses particular challenges, with approximately one half of net emissions coming from agriculture. While New Zealand's total agricultural emissions continue to grow, significant improvements have been made on biological emissions intensity.[38] Avoiding international emissions leakage is therefore particularly important in securing meaningful agricultural emission reductions.

Much work is underway to overhaul New Zealand's domestic climate change policies and activities. For example, the New Zealand Productivity Commission has completed a detailed investigation into the opportunities for transition to a low (or net zero) emissions economy.[39]

The government is also working to address climate adaptation and ensure a Just Transition for workers. The Climate Change Adaptation Technical Working Group (CCATWG) has made detailed recommendations.[40] A dedicated Just Transitions unit has been established within the Ministry of Business, Innovation and Employment.[41]

Potential for increased ambition

New Zealand has a significant opportunity to show leadership by enhancing its NDC. In 2017, the New Zealand government announced an intention to set a 2050 target of net zero emissions. Prime Minister Jacinda Ardern has described climate action as her generation's "nuclear free moment", alluding to New Zealand's historic 1987 decision to ban nuclear weapons or energy within its territory.[42]

New Zealand is also on the verge of passing a new climate law to enact the net zero emissions goal. Since 2016, youth organisation Generation Zero has campaigned (with support from WWF-New Zealand and others) for this new law, the Zero Carbon Act. The government has now committed to pass it, and the main opposition party has agreed to support the creation of a climate commission.

The Zero Carbon Act has strong public support. Over 91% of the 15,000 New Zealanders who submitted on it endorsed the net zero emissions 2050 target.

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36 Ministry for the Environment New Zealand's Greenhouse Gas Inventory (April 2018) https://www.mfe.govt.nz/climate-change/state-of-our-atmosphere-and-climate/new-zealands-greenhouse-gas-inventory.
37 Climate Action Tracker New Zealand: Country Summary (2017) https://climateactiontracker.org/countries/new-zealand/
38 As the New Zealand Parliamentary Commissioner for the Environment noted in 2016, New Zealand is "one of the most efficient producers of milk and meat" worldwide: Jan Wright *Climate change and agriculture: Understanding the biological greenhouse gases* (Parliamentary Commissioner for the Environment, October 2016) at 26.
39 New Zealand Productivity Commission *Low Emissions Economy* (Final report, August 2018) https://www.productivity.govt.nz/sites/default/files/Productivity%20Commission_Low-emissions%20economy_Final%20Report_FINAL.pdf
40 Climate Change Adaptation Technical Working Group *Adapting to Climate Change in New Zealand* (May 2018) https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/ccatwg-report-web.pdf
41 Jacinda Ardern *Collaborative approach to just transition essential* (25 May 2018) https://www.beehive.govt.nz/release/collaborative-approach-just-transition-essential
42 Isobel Ewing *Jacinda Ardern: 'Climate change is my generation's nuclear-free moment'* (Newshub, 20 August 2017) https://www.newshub.co.nz/home/election/2017/08/jacinda-ardern-climate-change-is-my-generation-s-nuclear-free-moment.html.

In April 2018, Prime Minister Jacinda Arden announced that the government would issue no further offshore oil exploration permits. Parliament passed this decision into law on 7 November 2018.[43]

Strong business support also exists for ambitious climate action. Over 200 New Zealand businesses, community groups and leaders signed a WWF open letter supporting the net zero emissions target in June 2018.[44] One month later, a group of major New Zealand businesses that together account for 22% of New Zealand's private sector GDP and one half the country's gross emissions launched the Climate Leaders Coalition, committing to ambitious voluntary action.[45]

Political context in country regarding ambition increase

Negotiations are underway between the government and the opposition on the key elements of the Zero Carbon Act. Businesses and civil society organisations, including WWF-New Zealand, have highlighted the importance of this cross-party consensus.

We anticipate that these negotiations will conclude soon, and that the Zero Carbon Bill will be introduced to Parliament early in 2019 and become law within the following months. New Zealand therefore has an opportunity for bipartisan consensus on its long-term decarbonisation trajectory and the key legislative architecture to enable this.

It is crucial that all parties in Parliament seize this opportunity. The government's March 2018 decision to end new offshore oil and gas exploration exposed stark political division between the government and opposition, but there is an opportunity now to secure collective action across party lines.

Once passed, the Zero Carbon Act will provide crucial context for New Zealand to review and enhance its NDC.

Recommendations

New Zealand has an opportunity to enhance its 2030 ambition to be consistent with limiting warming to 1.5°C this century. **To do this, we recommend that New Zealand:**

- Continue to seek cross-party consensus on climate policy wherever possible.
- In early 2019, introduce and then pass a Zero Carbon Bill that enacts an all-gases 2050 net zero emissions goal and expressly affirms the 1.5°C goal.
- Mandate the Climate Commission to urgently develop the first three 5- or 6-year emissions budgets to be set under the Zero Carbon Act.
- Review its 2030 NDC in 2019 on the basis of the Talanoa Dialogue and the emissions budgets set under the Zero Carbon Act and submit an enhanced NDC in 2019 or 2020.
- Continue to amend the New Zealand emissions trading scheme to ensure that it has ecological integrity and sets a meaningful price signal, and in particular to incorporate agriculture into the emissions trading scheme.
- Use the upcoming second round of amendments to the Crown Minerals Act to:

43 Crown Minerals (Petroleum) Amendment Act 2018.
44 WWF-New Zealand *Now is the time for climate action* (June 2018) https://www.wwf.org.nz/take_action/climate_change_open_letter/
45 *Climate Leaders Coalition* https://www.climateleaderscoalition.org.nz

- prevent any further extension of existing offshore oil and gas exploration and extraction permits; and
- set a timeline for ending new onshore oil and gas exploration and extraction.

- Amend the Resource Management Act 1991 to allow local authorities to consider climate change mitigation in planning decisions.
- Develop a long-term zero carbon development strategy pursuant to article 4(19) of the Paris Agreement.
- Continue to further prioritise active, public and other low carbon transport modes in future transport plans and budgets, begin to price in the externalities of transport emissions, and continue to bring funding for road and rail transport further into balance.
- Implement specific policies to enable goal of reaching 100% renewable electricity generation by 2035, including by reintroducing the ban on new thermal baseload electricity generation, and by developing a plan and timetable to transition away from coal and gas generation for peaking.
- Building on CCATWG's work, include an adaptation component in the revised NDC.
- Continue to work across government and with New Zealand trade unions, businesses and civil society organisations to development and implement a Just Transition strategy.

NORWAY CASE STUDY

Description of the NDC

In its NDC, Norway aims to reduce emissions by at least 40% below 1990 by 2030. Though the country is not a member of the EU, the NDC will be achieved collectively through an agreement with the EU, which also has a collective 40% target. Priority areas are transport, industry, carbon capture and storage, renewable energy and shipping. Norway also committed to becoming carbon neutral by 2030 "as part of an ambitious global climate agreement where other developed nations also undertake ambitious commitments". This condition was met with the Paris Agreement. Neutrality will be achieved through the emissions trading market, flexible mechanism, and international cooperation. In its NDC, Norway describes its goal as being in line with a 2°C pathway.

Progress in implementation

Norway's emissions were higher in 2017 than in 1990, and with today's policies it will not reach its 2020[46] or 2030 targets. The government projected a decline in emissions of 17.6% from 2010 to 2030[47], which is far from the IPCC recommendation that global emissions must be halved in that period. The Climate Action Tracker concluded that Norway's goal for 2030 is inconsistent with the Paris Agreement's goals[48], thus it is clear that current policies are even less consistent with the Paris Agreement goals.

46 Norway's pledge under the Kyoto Protocol's second commitment period is 40% by 2020, over the 1990 level.
47 Norwegian Ministry of Finance, 2018: "Meld. St. 1 (2018–2019) Nasjonalbudsjettet 2019".
48 Climate Action Tracker, 2018, "Norway", https://climateactiontracker.org/countries/norway/

There are some positive signs. Norway passed a Climate Law in 2017 that establishes legally binding emissions reduction targets for 2030 and 2050, and the goal of becoming "a low emission society" by 2050, meaning 80–95% emission reductions below 1990 levels. The law requires the government to report on its progress in non-ETS sectors annually to Parliament. To make it possible to assess the overall consequences of the state budget in light of Norway's obligations to limit global warming to 1.5°C, Norway should commit to annual reporting on expected emissions pathways in all sectors, from the government to Parliament, covering domestic and international operations and activities.

In terms of progress in implementation of the priority areas in the NDC, we highlight the following:

- Transport: Norway is currently leading the way globally on electric vehicles, with a ban on new gas-powered cars by 2025, and has put incentives in place which have been effective. In June 2018, electric vehicles made up 25% and hybrids 36% of new cars sold[49]. Norway is also investing heavily in electric ferries to service communities along its long coastline.

- Renewable energy: In 2018, wind power made up only 2% of Norway's generation and consumption of electricity, the bulk (95.1%) being made up by hydropower[50]. Interest in building more wind power is increasing, however, due to lower installation costs and some of the best wind resources in Europe. The government has mapped areas suitable and not suitable for new wind energy installments and, building on expertise from offshore oil and gas operations, the world's first floating windmills have been built.

- Carbon capture and storage (CCS): Important research projects on the use of CCS in fertilizer and cement production and in waste management are about to go into a pilot phase, which could have major implications for global emissions reduction efforts.

In addition to government action, non-state actors such as cities and businesses are acting. Oslo's Climate and Energy Strategy[51] has been widely praised for its high ambition level, with a target to reduce CO_2 emissions by 50% by 2020 and by 95% by 2030, compared to 1990. It includes an innovative climate budget specifying all measures that will lead to increased or reduced emissions and spells out the necessary measures. Concrete actions include reduced private car traffic, densification, making public transport and heavy-duty vehicles run on renewable energy sources, shifting goods transport over to rail and sea, phasing out fossil fuels for heating in buildings, energy savings in public buildings, improved waste management and green public procurement.

In 2017, 15 sectoral "roadmaps for green competitiveness" were issued by a government appointed committee, based on the collective work of actors in agriculture/food production, aquaculture, finance, forestry, petroleum, the processing industry, renewables, retail, shipping, transport, waste management and more.

Potential for increased ambition

There has been a tendency in Norwegian climate politics to set national goals without properly defining the measures necessary to reach them domestically. Because emission reductions will often be cheaper in other countries, the government has largely made use of flexible mechanisms to offset Norwegian emissions. The 2050 carbon neutrality goal is vague, while the 2030 goal, set in the NDC, assumes continued use of flexible mechanisms. This is a disincentive for national stakeholders to reduce their share of domestic emissions.

49 Din side, June 2018: "Elbilene gjør rent bord i nybil-salget". https://www.dinside.no/motor/elbilene-gjor-rent-bord-i-nybil-salget/69984237
50 National Bureau of Statistics, 3 October 2018: "Electricity". https://www.ssb.no/en/elektrisitet
51 Oslo municipality, 2016: "Climate and Energy Strategy for Oslo." https://www.oslo.kommune.no/getfile.php/13174213/Innhold/Politikk%20og%20administrasjon/Etater%20og%20foretak/Klimaetaten/Dokumenter%20og%20rapporter/Climate%20and%20Energy%20Strategy%20for%20Oslo%20ENG.pdf

A 2017 report released by Oil Change International on behalf of Norwegian NGOs examines the role of Norwegian oil and gas production in a Paris-aligned global carbon budget[52]. It describes how Norway's proposed and prospective new oil and gas fields would lead to 150% more emissions than what is in currently operating fields. It also concludes that Norway is exporting 10 times more emissions than the country produces at home. The emissions embedded in exported fossil fuels are not covered by its NDC. The report concludes that Norway can set a global precedent by managing the decline of its existing production to be in line with the Paris goals.

Political context in country regarding ambition increase

Norway is a stable social democratic welfare state, with ample natural resources, including petroleum and renewable energy. GNP per person was $71,800 in 2017[53], and even though Norway's electricity supply is based on near 100% renewable energy, annual emissions per person were 9.8 tons in 2018[54]. Political disagreement on climate is largely not over whether Norway should take climate action, but over ambition level, domestic action versus offsetting abroad and the role of the petroleum industry in a future low carbon welfare society.

Recommendations

In 2018, Norwegian NGOs published a report commissioned from the Stockholm Environment Institute called "Norway's Fair Share of Meeting the Paris Agreement"[55]. It takes into account historic responsibility and current economic and technological capacity and concludes that to do its fair share of the global efforts to avoid global warming of over 1.5°C, Norway must contribute emission reductions to the amount of 430% of its domestic emissions in 1990 by 2030. Since domestic reductions of several hundred percent are obviously impossible, a new domestic target of at least 53% has been proposed. It is critical that a transition to a low carbon society be started at home too, not least because of Norway's unsustainable consumption levels, and because the massive wealth is, in part, based on well-managed petroleum resources. The remaining 377% (199 million tons CO_2e) will need to be compensated for by financing mitigation in other countries.

In terms of increasing ambition of the NDC and increasing mitigation domestically, Norway should:

- Develop a target for domestic emission reductions, and sectoral plans for how to reach it.
- Implement a national carbon budget with sectoral overviews of planned emission reductions and how they relate to the national emission reduction target.
- Implement new measures for emissions reductions and technology development and export in industry, transport, the building sector, agriculture and energy.
- Stop issuing any new oil and gas licenses and discontinue new oil exploration activities.
- Discontinue the tax reimbursement scheme for petroleum companies, through which the state reimburses companies for the majority of their investment costs.
- Draft and implement a strategy for just transition of the Norwegian economy from fossil fuel dependency to sustainable alternatives.

52 H. McKinnon, G. Muttitt, K. Trout, 2017: "The Sky's Limit Norway: Why Norway Should Lead the Way in a Managed Decline of Oil and Gas Extraction." http://priceofoil.org/content/uploads/2017/08/The-Skys-Limit-Norway-1.pdf
53 CIA World factbook, "Norway": https://www.cia.gov/library/publications/the-world-factbook/geos/print_no.html
54 National Bureau of Statistics, 2018
55 S. Kartha, C. Holz, T. Athanasiou, 2018: "Norway's Fair Share of Meeting the Paris Agreement". Written for Friends of the Earth Norway, Rainforest Foundation Norway, Norwegian Forum for Development and Environment, Norwegian Church Aid, https://www.kirkensnodhjelp.no/globalassets/lanserte-rapporter/2018/norways-fair-share-2018_web.pdf

- Increase the national CO_2 tax to strengthen the polluter-pays principle.
- Implement measures to curb air traffic such as increased air travel fee, discontinuation of duty-free sales, and greatly improved rail connections domestically and between the Nordic capitals.

SOUTH AFRICA CASE STUDY

Description of the NDC

As the second largest economy in Africa and a member of BASIC constellation under the UNFCCC South Africa carries significant weight in international climate negotiations. The current South African NDC is divided into three components – adaptation, mitigation and support. It is the only country to refer to "just transition" in the NDC. On the mitigation front, the NDC provides an economy-wide conditional target to remain within the emissions range of 398-614 $MtCO_2$-eq by 2025 and 2030 – in the form of a "deviation from business-as-usual" commitment. Only the middle to lower end of its NDC target constitutes its fair share of the global mitigation effort required to keep global warming below 2°C, as calculated using the Climate Equity Reference Calculator.[56]

The targets are economy-wide, covering all sectors and six GHGs – with a focus on carbon dioxide, methane and nitrous oxide. The target includes emissions from AFOLU. The overall approach to the NDC is based on the national climate policy in the National Climate Change Response White Paper and the National Development Plan. On adaptation, the NDC provides six goals for the time period 2020-30: developing a NAP; considering climate in national, sub-national and sectoral policy frameworks; building institutional capacity; developing early warning, vulnerability and adaptation monitoring system; vulnerability assessment and adaptation needs framework; and adaptation investments.

56 WWF-South Africa, 2017. "The Cost of Achieving South Africa's Fair Share of Global Climate Change Mitigation," prepared for WWF-South Africa by Hugo van Zyl, Yvonne Lewis, and James Kinghorn. https://www.dropbox.com/s/erjqgda4rrff19o/WWF%202017_%20Fair%20Share%20technical%20report_Final.pdf?dl=0

Progress in implementation

South Africa is an emerging economy with a heavy dependence on fossil fuels, particularly coal. Accounting for just over one percent of global GHG emissions, South Africa is one of the top-20 global emitters. South Africa's GHG emissions during the time period 2000-12 have grown at an average annual rate of 7 $MtCO_2e$ from 434 $MtCO_2e$ to 518 $MtCO_2e$.[57] During the same period, the contribution from the energy and waste sectors emissions increased from 78.9% and 2.8% to 82.6% and 4.2% respectively. The AFOLU and Industrial Processes and Product Use sectors witnessed a decline from 10.6% and 7.7% to 6.0% and 7.2% respectively. If the country maintains its average annual emissions growth rate of 7.4 $MtCO_2e$, it will reach the upper limit of its NDC target in 2025. The Department of Environmental Affairs (DEA) observes that at the projected year-on-year economic growth rate of 1.5% this emissions growth rate does not seem likely. However, climate policy implementation is lagging behind and would benefit from strengthening the institutional capacity needed to coordinate climate action at multiple levels of governance.

A number of policy and political interventions are being planned to tackle climate change. Notable amongst these are: a) carbon tax by the National Treasury; b) efforts of the DEA to legislate the Climate Change Bill; c) development of a Mitigation System to oversee mitigation in the country and allocate carbon budgets for companies; and d) announcement of the establishment of a Presidential Climate Change Coordinating Commission to oversee the 'just transition'. South Africa's Mitigation System is proposed to cover all GHG sources and sectors. Whether or not carbon offsets and carbon trading should be catered for as part of this emerging policy portfolio and, if so in what form, is also being debated. WWF-SA has made policy inputs to the whole suite, including arguing that carbon trading will not be effective in driving emission reductions in the context of South Africa's economy and may well yield unintended perverse outcomes.[58] In particular, the proposed carbon tax of R120/tCO_2e is inadequate for driving mitigation action. In addition, there are a number of initiatives currently underway at municipal level.

Political context in country regarding ambition increase

The low-carbon transition agenda and climate action in South Africa faces resistance from fossil-fuel interests that remain embedded in the South African economy. These entrenched interests around the fossil economy contest the rationale for strong climate action and just transition by emphasising the ready availability of coal, presenting distortionary figures on renewables and ignoring global trends of increasing renewable energy investments. Labour on the other hand has been engaging with just transition. While it supports transition to a clean energy system it remains cautious about the ability of these measures to address social justice.[59] Sections of organised labour, which in principle support a just transition, demand that labour market issues be resolved before fossil fuel jobs can be lost. At the same time, academia and civil society have been demanding ambitious action from the government on both climate change and just transition.

Potential for increased ambition

The majority of the country's emissions come from coal-fired electricity and given that there are clear and affordable solutions to displace coal, there is tremendous scope for improvement in the country's energy system and thus emissions reduction. The latest draft of the Department of Energy's Integrated Resource Plan (IRP) provides an overview of energy sector until 2030 and makes provisions for renewable energy and coal-phase out.[60] However, the IRP lacks long-term,

57 DEA. 2017. South Africa's 2nd Annual Climate Change Report 2016. Department of Environmental Affairs: Pretoria.
58 Arp, R. & Upadhyaya, P. Forthcoming. Carbon trading in South Africa: Providing flexibility or escape route? WWF South Africa: Cape Town.
59 Cloete, K. 2018. Numsa supports a transition from dirty energy to clean renewable energy. Available online at: http://firstthing.dailymaverick.co.za/article?id=101902#.W-6oY-KxXIU. Last accessed on 16th Nov, 2018.
60 DoE, 2018. IRP Update 2018 Draft for Comments. Department of Energy: Pretoria.

strategic thinking.[61] This is reflected in: a) its failure to acknowledge that coal mining is a sunset industry; b) an unwillingness to acknowledge that energy transition in many countries is already underway; c) an understanding that any delay on South Africa's part to initiate the same would significantly undermine its competitiveness; and d) an indifference to the changing profile of the global risks – from being largely economic in 2008-10 to environmental in 2016-18[62]. There is an urgent need to make provision for enabling a just transition to a flexible and low-carbon energy system at both national and municipal level. This calls for a much more ambitious NDC which makes provisions for addressing climate action and social justice simultaneously.

Recommendations

To this end, for South Africa to meet its fair share of emission reduction and also enable a just transition in the energy sector to a flexible and low-carbon energy system, our concrete recommendations are as follows:

- Take cognizance of the findings of the IPCC in relation to global warming of 1.5 °C and localise them to the South African context so that the Presidential Climate Change Coordinating Commission can lead a managed just transition process within the next five years.

- Establish a carbon tax in the range of R570-R1,140/tCO_2e by 2020. To be able to achieve the 1.5°C target this price should increase sharply in subsequent years.[63]

- Underpin the country's energy supply planning and mitigation ambition in climate change policy with an understanding of the implications of the IPCC's Special Report on Global Warming of 1.5°C. As per the report, "Countries in the tropics and Southern Hemisphere subtropics are projected to experience the **largest impacts on economic growth due to climate change should global warming increase from 1.5°C to 2°C."** Being a developing country in the southern hemisphere subtropics, it is in South Africa's interest that temperature rise is limited to 1.5 °C. And a world consistent with 1.5°C means a world where 'renewables are projected to supply 70-85% of electricity in 2050 … while the use of coal shows a steep reduction in all pathways and would be reduced to close to 0% (0-2%) of electricity.'[64] South Africa needs to take substantial measures to delink its growth from fossil fuels.

- Wind down subsidies to fossil fuels over the next five years to maintain competitiveness of the South African economy in the long run.

61 Upadhyaya, P. & Scholtz, L. 2018. IRP 2018: Too little, too slowly for energy transition? Available online at: https://www.fin24.com/Opinion/irp-2018-too-little-too-slowly-for-energy-transition-20181113. Last accessed 16th Nov, 2018.
62 World Economic Forum, 2018. "The Global Risks Report 2018: 13th edition."
63 World Bank, 2017. "High-Level Commission on Carbon Prices. 2017." Report of the High-Level Commission on Carbon Prices. Washington, DC: World Bank.
64 IPCC, 2018. "Global Warming of 1.5°C: Summary for Policymakers". Intergovernmental Panel on Climate Change: Incheon.

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND CASE STUDY

Current commitment

The UK does not have an NDC; it is part of the European Union. UK ambition on climate action is set under the UK's Climate Change Act, 2008. This world-leading legislation established a legally-binding target for emissions cuts, to be delivered using carbon budgets framed by an independent advisory committee and set by the UK Parliament. That advisor, the Committee on Climate Change (CCC), as well as setting out the carbon budgets, reports to Parliament on progress and advises government on actions to meet the budgets, alongside advice on, and assessment of, the UK's adaptation to climate impacts.

Under the Act, the UK is committed to 80% greenhouse gas emission reductions by 2050 (on a 1990 baseline) – a target in line with a 2°C world and not in line with Paris ambition. The target covers all sectors – power, buildings, transport, waste, agriculture as well as land use, land-use change and forestry (LULUCF) and domestic aviation. Currently, UK carbon budgets are tied to the EU emissions trading scheme (EU ETS), and the EU effort sharing decision. The former sets an EU-wide cap on power and factory emissions and sets the 'traded' part of each UK carbon budget. The latter guides national carbon budgets for non-EU ETS sectors. International aviation and shipping, regarded by the government as outside the domestic remit of any one country, are not included in UK carbon reduction planning.

The UK reviews climate change adaptation risks and planning every five years in response to Climate Change Risk Assessments, supported by advice from the CCC adaptation sub-committee (ASC). A National Adaptation Programme (NAP) sets out UK strategy.

Progress in implementation

Provisional figures suggest that, in 2017, the UK had cut greenhouse gas emissions by 43% since 1990 (down 3% on 2016). This means that the UK has delivered on its first, second and third carbon budgets, with the third running to 2022. All sectors have seen cuts since 1990, but they are steepest in the power sector, where share of generation from renewables is now around 30%, up from less than 7% in 2010. LULUCF is a net sink, which has increased seven-fold from 1990 to 2016. Reductions from buildings have been steeper in businesses than homes, the latter seeing a small increase in the most recent year for which there are detailed breakdowns. Transport has seen least progress and is now therefore the single largest source of emissions at 26%, with a 2% rise from 2015-2016 - see figure below.

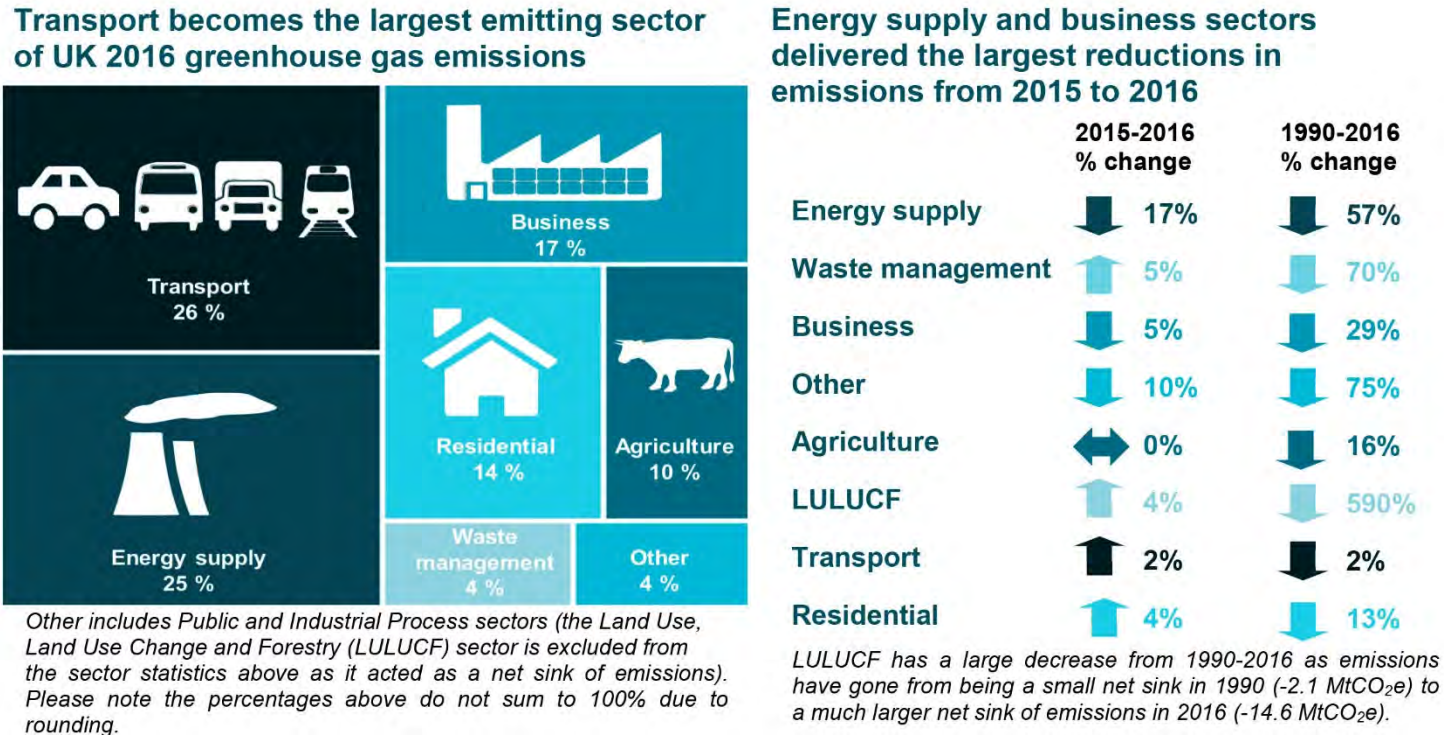

Figure source: https://www.gov.uk/government/collections/final-uk-greenhouse-gas-emissions-national-statistics

The CCC estimate that the existing 80% reduction target by 2050 will require 3% emissions cuts each year. In September 2017, the UK government published its *Clean Growth Strategy,* a plan for delivering the fourth and fifth carbon budgets. There are some welcome policies and targets in the document. However, there is insufficient detail, resource and ambition; by their own admission, the UK falls 6% and 7% short of delivering on the fourth and fifth budgets respectively. Policy announcements since the *Clean Growth Strategy* have done little to close that gap. For instance, in summer 2018, the government reaffirmed the UK's commitment not to phase out the sale of new petrol/diesel vehicles until 2040, despite widespread support in the private sector and a WWF report showing that bringing it forward to 2030 could halve the gap to delivery of the fifth carbon budget. Broader policy announcements are more hopeful. In October 2018, a week after publication of the IPCC's Special Report on Global Warming of 1.5°C, the governments of the UK, Scotland and Wales jointly commissioned the CCC to provide formal advice on net-zero.

Potential for increased ambition

Polling consistently shows strong support for climate action, with anything from two-thirds to four-fifths of people concerned about impacts on UK nature and wildlife. Support for renewables and zero emission transport is high. Younger voters in particular place climate action top of their list of concerns. The politics and some of the voices given prominence since the vote for the UK to leave the EU have given a platform for de-regulatory arguments of the sort that act against climate action. However, they are not dominant and the UK government has made some very welcome commitments around environmental protections to be introduced in place of existing EU law. A broad coalition of UK NGOs is campaigning to strengthen those further and to hold the government to delivering their commitments.

Recommendations

Mindful of the net-zero advice commission from the UK government to the CCC, UK NGOs are pressing for ambitious delivery of net zero well before 2050. A new report from WWF and Vivid Economics shows that it is possible to reach net-zero GHG in the UK by 2045 – whether contributing to the EU NDC or standing alone if we leave the EU. This acknowledges the importance of reducing carbon emissions across UK sectors as a priority over roll-out of greenhouse gas removal (GGR) strategies – some of which could affect biodiversity, habitats and food production; and recognise areas where offsetting could then be applied in order to ensure the UK meets its Paris commitments. **These are our recommendations:**

- Continue ambitious support for renewable energy deployment, including a route to market for the cheapest forms of generation: solar and onshore wind.

- Support a target to end the sale of new petrol/diesel vehicles by 2030, with supply-side regulation such as an EV mandate; support for consumers to buy electric vehicles, and incentives to grow charging infrastructure. Policy should help ensure UK industry realises the gains from this transition and boost ambition to address other areas in transport including large goods vehicles and freight.

- Aviation and shipping remain hard to treat sectors, falling significantly behind other areas with regard to alternative technology development. Noting the high reliance of this sector on GGR and biofuel, the UK cannot support large scale expansion of UK air travel infrastructure such as backing a third runway at Heathrow, and it should spend and tax in ways that encourage public transport, cycling and walking.

- Make key decisions on the solutions to heating our homes to enable targeted support to the right technology to hasten decarbonisation of heat. This needs to be matched by policy and spending commitments to retro-fit 20 million UK homes with energy efficiency measures and a requirement on the construction sector to build net-zero carbon homes.

- As part of a green exit from the EU, pay UK farmers for public goods – especially those which enhance soil and forest sequestration of carbon. This must be supported by ambitious commitment to nature-based climate solutions, including reforestation and afforestation; protection and restoration of peatlands.

- Invest in development and scaling of carbon capture and storage (CCS). Much as we would hope to avoid over-reliance on bio-energy with CCS, it will be essential as part of helping industry decarbonise.

- Re-define our food system, including our diet and consumption patterns, and our disturbingly high levels of food waste.

VIETNAM CASE STUDY

Description of the NDC

Vietnam is one of the countries most affected by climate change. The costs associated with coping with the impacts of climate change are already high and will continue to rise in the future. Vietnam ratified the Paris Agreement in 2016 and in the same year submitted its NDC. Based on its NDC the government developed a national plan, containing a more comprehensive strategy for the implementation of the Paris Agreement. Overall, in its NDC, the Vietnamese government committed to reducing GHG emissions by 8% below BAU levels between 2010-2030 by domestic efforts, and by 25% contingent on international support. In response, the Ministry of Natural Resources and Environment (MONRE) initiated a comprehensive NDC review and update process which will be completed at the end of 2019 and appointed a task force to revise the first NDC based on a number of stakeholder consultations. At the end of August 2018, MONRE organised the Consultation Workshop "Technical Report on Review and Update of NDC" to present key contents of the first draft of the Technical Report of the revised NDC (NDC2). Major changes included adjustments of the base year, emission reduction targets compared to the BAU scenario and the new mitigation sector of 'industrial processes (IP)' to complement the existing ones (energy, waste, LULUCF and agriculture). MONRE is currently working actively on the adaptation component with all stakeholders, including civil society organisations (CSOs) in Vietnam, to complete the first draft of the National Adaptation Plan (NAP).

Potential for increased ambition

According to the current analysis under the NDC2 review process, instead of the 8% specified in the previous version, the Vietnamese government now commits to a tentative 9% GHG emission reduction by domestic means by 2030 compared to the BAU scenario. The BAU scenario itself was raised from 787.4 $MtCO_2e$ emissions to 888.8 $MtCO_2e$, and the updated base year is 2014 (instead of 2010). There is a sharp increase of the GHG mitigation target in the energy sector, from 29.46 $MtCO_2e$ in NDC1 to 55.5 $MtCO_2e$ in the unconditional scenario. On the other hand, there is a huge reduction of GHG removal in the LULUCF sector, from 22.67 $MtCO_2e$ down to 4.6 $MtCO_2e$ due to analysis from the Ministry of Agriculture and Rural Development (MARD) regarding reforestation - with lower expectations of forestry coverage and some other issues in

land use planning. It is surprising that the GHG mitigation target for the energy sector in the tentative NDC2 is the same for both the unconditional and conditional scenarios. This will put Vietnam in a very challenging position to request international funding for the energy sector in the future, particularly in terms of investment for renewable energy and energy efficiency.

Currently in Vietnam, WWF is supporting four cities (Dong Ha, Hue, Da Nang and Hoi An) under One Planet City Challenge (OPCC) project to achieve GHG emission reduction by 2030. However, to date the NDC2 review process has not taken these potential amounts into account. Moreover, many climate change mitigation models implemented by CSOs at the grass root level have not been considered in the calculation process of the NDC2.

Political context in country regarding ambition increase

In Vietnam, the Ministry of Natural Resources and Environment (MONRE) leads on environmental regulation that affects energy production, transport and consumption; it also leads on climate change policies including the Nationally Determined Contribution (NDC). Currently, MONRE is leading the NDC review process to submit a revised NDC to the UNFCCC in 2019. The energy sector is led by the Ministry of Industry and Trade (MOIT) which develops most energy related policies. The Ministry of Agriculture and Rural Development (MARD) has a central role in, for example, production and use of biogas from livestock waste and the use of agricultural residues for cooking and heating. It also plays a role in the cases where energy production requires combined land use (for example wind or solar PV power combined with livestock, vegetables or aquaculture). In addition, NGOs work on community initiatives such as Local Energy Planning, promoting technologies for cooking, water heating, solar PV, waste management, composting, biomass gasification, circular agricultural production, and biogas, which are supplied by small and medium enterprises (SMEs). For example, under the OPCC project, three cities in Vietnam commit to GHG mitigation by 2030 as shown below:

CITY	COMMITMENT BY 2030	
	TON OF CO_2	%
Da Nang	**3,524,000**	**25**
Hoi An	**271,000**	**20**
Dong Ha	**309,000**	**15**

MONRE has limited power over energy decisions although it is generally supportive of clean, sustainable energy and energy efficiency, and it has some influence over related decisions. Therefore, it is still a challenge for MONRE to reach agreement with MOIT to reduce GHG emission from energy sector and increase the commitment for GHG emission reduction in NDC2.

As highlighted in draft technical report for NDC2, the largest source of Vietnam's present and future GHG emissions is the energy sector, because of the use of fossil fuels in electricity

production, transport and industrial processes. The production of electricity is the primary source of future energy emissions. The rapid increase from 2010 to 2030 in the BAU is mainly the result of a rapid increase in coal-power and gas-power to respond to rising electricity demand, and fossil fuel use in the manufacturing industry and transport. These are also the areas where the largest emissions reductions are possible and must be achieved. **In the policy context, there are several policies through which WWF-Vietnam can work and advocate for higher ambition of GHG emission reduction in the NDC review process for the energy sector:**

- The formulation of the Power Development Plan 8 for the period 2021-2030 (with an outlook to 2040), for which preparations have already started.
- The formulation of the National Energy Development Strategy (expected: 2021-2035 with an outlook to 2060), which might or might not include a major shift from the development and use of fossil fuels or of renewable energy.
- The formulation of regional development plans, such as the ongoing master planning in the Mekong Delta, that could have major implications for e.g. planning of power generation capacity, and emissions from agriculture and waste.
- The Agenda 2030 with 17 Sustainable Development Goals (SDG) will be very helpful and provide potential for advocacy on clean energy (Goal 7) and climate action (Goal 13). In addition, the Paris Agreement implementation plan is one of the main plans in Vietnam in the climate change sector, which 63 provinces should implement and contribute to the mitigation component commitment at the national level.

Recommendations

Specific actions Vietnam for advocating for higher ambitions regarding GHG emission reduction and the National Adaptation Plan in NDC2 are:

CSOs to:

- Showcase low-carbon development alternatives and highlight the supportive role of NGOs
- Analyse the current gaps in the NDC revision process and highlight best practices on how to close them.
- Showcase ways to integrate Joint Principles of Adaptation (JPA) as well as good adaptation models developed by NGOs into the Paris Agreement Implementation Plan at both national and provincial levels, particularly for the NAP.

Governments to:

- Integrate the GHG mitigation from NGO projects and integrate them into the GHG emission reduction inventory.
- Invite civil society, think tanks, the private sector and other interest groups to play an active and supportive role in the NDC revision process, create regular opportunities for public participation during the ongoing revision process, as well as during the implementation and monitoring phase. By opening the process to the CSO network and the wider public, tasks can be outsourced, existing knowledge used and burdens shared.

NON-STATE ACTOR RESPONSES

Non-state actors (cities, regions, businesses and civil society) have a role to play in both delivering the NDCs and going beyond them to raise ambition.

Through their investments and actions, they affect the direction and performance of the economy and shape public perception and political support for climate action. The importance of their role is recognised both in the Paris Agreement and in the IPCC Special Report on Global Warming of 1.5°C. According to the UN Environment Gap Report[65] "more than 7,000 cities from 133 countries and 245 regions from 42 countries, along with more than 6,000 companies with at least US$ 36 trillion in revenue have pledged mitigation action."

Non-state actors can contribute by taking action individually. For example, since 2011, WWF has run the One Planet City Challenge (OPCC) (www.panda.org/cities) to highlight cities across the globe acting on climate change and their inspiring solutions. The OPCC has engaged over 400 cities across nearly 30 countries and from 2019 will focus on cities' alignment with a 1.5°C goal. The performance of cities varies, reflecting different national and local circumstances, capacities, policy and political contexts, urbanisation trends and priorities. Lower-income cities largely focus on addressing poverty, while high-income cities focus more on sustainable consumption. But the clear message is that local governments can and are leading the charge on addressing climate change all over the world, each within their national circumstances. Likewise, many businesses are aligning their targets with the science of what is needed to meet the Paris Agreement goals - more than 480 have committed to Science Based Targets.

However, individual action is not enough. Many more non-state actors need to be engaged at the national level to accelerate the transition towards low-carbon climate-resilient development. In addition, state and non-state actors need to work together to address the systemic barriers to accelerating climate action and increasing ambition. For example, cities WWF has engaged with in the One Planet City Challenge (OPCC) have found that lack of access to finance, capacities and expertise, political power to execute key transformative projects, and availability of data about what is going on within their boundaries are ultimately limiting factors for executing transformative change. Concerted collective action across non-state actor constituencies and collective constructive engagement with national governments are critical to overcome these challenges.

Over the past year and a half, cities, regions, companies, academia and civil society have also been joining forces to champion climate action in their countries through national multi-stakeholder coalitions. National multi-stakeholder coalitions have been established in the United States (*We Are Still In*), Japan (the *Japan Climate Initiative*) and Mexico (*Alianza para la Acción Climática de Guadalajara*) and Argentina (*Alianza para la Acción Climática Argentina*), and a global network, Alliances for Climate Action (ACA)[66], was launched.

65 https://wedocs.unep.org/bitstream/handle/20.500.11822/26093/NonState_Emissions_Gap.pdf?sequence=1&isAllowed=y

66 Alliances for Climate Action provides information and technical support to domestic multi-stakeholder coalitions to implement bold collaborative actions in line with 1.5°C; build domestic public support for climate action; and collectively engage with national governments to help deliver and enhance national climate targets. Alliances for Climate Action also connects domestic coalitions with each other and elevates their voices internationally to encourage other non-State actors and national governments to accelerate climate action and up ambition together. ACA global partners include C40 Cities Climate Leadership Group, CDP, the Climate Action Network, Fundación Avina, The Climate Group, the We Mean Business Coalition and WWF, working together with leading organizations at the national level.

In the United States, non-state actors have needed to carry the burden of ambition-raising while navigating the reality of a federal government which was rolling back its efforts. Since launching in the days after President Trump's announcement of his intent to withdraw the US from the Paris Agreement in June 2017, We Are Still In (WASI) has tripled in size, now totaling over 3,500 institutions including local and state government, businesses large and small, investors, colleges and universities, tribes, healthcare, cultural institutions, and faith communities. Signatories represent 155 million Americans across all 50 states, accounting for US $9.45 trillion GDP. The individual ambition levels and footprints of these signatories varies, but in 2018 they brought forward hundreds of new commitments through the "We Are Taking Action" campaign, and saw their efforts and impact potential quantified in the latest America's Pledge report.

The Alianza para la Acción Climática de Guadalajara (Alliance for Climate Action-Guadalajara) was launched in August, 2018 by leaders from the 2nd largest metropolitan area in Mexico. The Alianza currently consists of over 35 Mexican entities, including the local government of the Guadalajara Metropolitan Area, the University of Guadalajara, the government of the state of Jalisco, as well as Mexican companies and civil society organizations. Signatories have pledged not only to undertake actions individually but also to implement climate actions jointly in order to increase their collective impact. In addition, they plan to engage actors in other regions of the country and the national government to accelerate the implementation of Mexico's climate targets and leverage domestic opportunities for higher ambition.

Together the potential from non-state actors is large. In the Bonn-Fiji Commitment of Local and Regional Leaders, at COP23, city leaders and networks declared their commitments which could collectively decrease emissions by 1.3 $GtCO_2e$ per year from business as usual in 2030. A recent study concluded that if cooperative initiatives (groups of non-state and state actors working together) delivered on their commitments and countries on their NDCs, then emissions in 2030 would be consistent with a path to well below 2°C.[67] This conclusion depends on a number of assumptions - chiefly that commitments will be delivered.

Non-state actors can contribute to accelerating climate action and raising ambition of NDCs but to do so governments need to:

- Set a clear, long-term path to a zero-carbon and resilient future that provides companies, investors, local and subnational governments and other actors the right signals for long-term investments

- Establish processes to inform non-state actors about the country's national climate commitments (NDCs) and engage them systematically in the process of NDC implementation.

- Engage with non-state actors to understand the contributions that they can make towards NDCs and the enabling conditions that are needed. Lessons can be learnt from existing pilots of vertical integration strategies for national and subnational governments in, for example Colombia and Indonesia, which could be improved and replicated elsewhere.

- Put in place enabling policy conditions that facilitate, rather than stifle, leadership efforts by non-state actors to reduce their carbon footprint and increase their climate preparedness. For example, set the conditions needed to shift finance to low carbon and resilient investments and use public money to crowd in private capital. In the context of urban development, design national urban policies that support cities' efforts with a focus on key areas: developing compact and connected urban areas; promoting renewable and

67 Data Driven Yale, New Climate Institute, PBL 2018: Global climate action of regions, states and businesses. Research Report http://datadriven.yale.edu/wp-content/uploads/2018/08/YALE-NCI-PBL_Global_climate_action.pdf

efficient energy that powers the built environment and urban transport and implementing efficient waste management systems.

- Incorporate ambitious non-state commitments and actions into NDCs. The Global Compact of Mayors for example, is implementing a platform to raise ambition by supporting integration of city commitments and actions into national plans and the global framework.

- Continue to improve transparency of action and results to build confidence in delivery of commitments and to inspire others

CONCLUSIONS

Improving and strengthening NDCs is not a trivial task. However, many processes and events that took place in 2018, such as the Global Climate Action Summit (GCAS), the Marrakech Partnership for Global Climate Action (MPGCA), the UNFCCC's technical examination of measures and policies for mitigation and adaptation and the Talanoa Dialogue have demonstrated that there is serious action on the ground. The IPCC Special Report on 1.5°C has provided the evidence needed. We expect that the political will of countries can be expressed through strong commitments in COP 24. The United Nations Secretary General Summit in 2019 will be another key moment for ambitious NSA actions and commitments to be incorporated in NDCs.

It will be essential for a group of frontrunner countries to drive progress on more ambition and bring others along. While NDCs can and need to be improved in many ways, our overarching concern is to close the mitigation gap identified by the IPPC Special Report, the latest UNEP emissions gap report and in many other analyses as soon as possible. In this paper, we have offered an initial selection of potential drivers and tools, but much more is out there that can be done to stop the climate crisis. We are counting on state and non-state actors to take on this challenge together.