

Possible Elements of a 2015 Legal Agreement on Climate Change

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THE NEED TO KNOW WHERE WE ARE GOING

Countries have committed to negotiating a new legally binding agreement by 2015, applicable to all countries for the period after 2020. This commitment has given new impetus and direction to the UN climate talks. The talks certainly need to progress on individual elements in the run up to 2015. However, Copenhagen showed that unless there is clarity and convergence on the overall objectives of the negotiation (the meta-negotiation), the technical level negotiations will get stuck. This is why there is a need to step back and envisage all potential elements of a new climate agreement, and their interaction. This is the objective of this paper, which IDDRI invited from three renowned international experts.

A HYBRID FRAMEWORK TO BALANCE TOP-DOWN AND BOTTOM-UP

Governments have committed to limiting warming to 2 degrees C above pre-industrial levels. The recently released IPCC report shows that this essentially requires capping total cumulative emissions: in the future emissions will need to decline to close to zero. The paper proposes that governments commit to phasing down net anthropogenic GHG emissions to zero by 2050. This multilaterally negotiated objective would be complemented by nationally determined mitigation objectives, which would be subject to international *ex ante* review and *ex post* verification.

DYNAMISM AND UNIVERSALITY

The paper proposes a clear process for regularly updating and strengthening national commitments. The climate regime needs to move out of continuous negotiation and into a framework of continuous implementation. The paper proposes no explicit differentiation of countries. Rather countries would propose nationally determined commitments, guided by the multilaterally agreed phase out goal and the international review. This would maximize participation. The Agreement should also include provisions for recognizing the actions of parties unable to ratify and for deterring egregious cases of free-riding.

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Citation: Haites, E., Yamin, F., Höhne, N. (2013). *Possible Elements of a 2015 Legal Agreement on Climate Change*, Working Paper N°16/13, IDDRI, Paris, France, 24 p.



This paper was commissioned by IDDRI to catalyze discussions about the design of the 2015 Agreement. The authors would like to thank numerous experts and policy makers who have provided written comments and all those who have taken time to talk with us at various meetings about key ideas set out here. Our special thanks go to Thomas Spencer at IDDRI and Jennifer Morgan at WRI/IPPI for providing financial support for our work and for funding our participation at UNFCCC meetings. The views expressed in this paper are the sole responsibility of the authors and are not necessarily shared by the individuals or organizations mentioned above.



This article is based on research that has received a financial support from the French government in the framework of the programme « Investissements d'avenir », managed by ANR (French national agency for research) under the reference ANR-10-LABX-14-01.



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ISSN 2258-7071

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FOREWORD

In 2011, governments committed to negotiating a new legally-binding global agreement on climate change by 2015. This has given new impetus and direction to the UN negotiation process. It has also prompted increasing engagement on climate change from other forums and institutions, business, and civil society. After the declining attention on climate change since Copenhagen, 2015 is building as an important international moment for strengthening global cooperation on climate.

Achieving a new legal agreement is a formidable challenge, both politically and technically. Nevertheless, much has been achieved since the Copenhagen climate summit. Countries have submitted emissions reduction pledges covering 80% of global emission and 90% of global GDP. New institutions have been established to strengthen the transparency of action, and to facilitate cooperation on adaptation and technology and international climate finance. Countries have learned about domestic policies and are clearer about the need for greater international cooperation but less clear on how best to shape the new legal agreement.

In the light of this, IDDRI thought it was timely to step back and assess the lessons of the

past, and to identify the missing or weak pieces of the current climate regime and how these might be strengthened through a new agreement. We encouraged three international experts, Erik Haites, Farhana Yamin and Niklas Hohne to elaborate key elements of the 2015 agreement in the form of this commissioned paper.

No element of the climate agreement will exist in isolation. While negotiations absolutely need to progress on step-wise deliverables between now and 2015, countries can also benefit from starting to envisage the agreement as a whole. Therefore this paper takes a broad perspective, examining all the elements of the future agreement. In particular, it outlines how top-down and bottom-up approaches can be combined to account for national circumstances and the need for international cooperation.

In the run-up to the COP in Paris in 2015, IDDRI will be deeply engaged in the international negotiations. IDDRI's role as an independent think tank is to stimulate the new thinking, through our own work and by providing a platform for the views of others. Farhana, Erik, and Niklas' paper is an important contribution to the debate around the new agreement.

Thomas Spencer,
Program Director Energy and Climate, IDDRI

EXECUTIVE SUMMARY

| | |
|--|--|
| <p style="text-align: center;">Mitigation</p> <ul style="list-style-type: none"> - More ambition pre 2020 - Goal of phasing out net GHG emissions by 2050 - Nationally defined commitments, reviewed by other parties, from 2020 with upward adjustment every 4 years <ul style="list-style-type: none"> - Requirement to specify equity principles - New register to record non-state actors' actions | <p style="text-align: center;">Adaptation</p> <ul style="list-style-type: none"> - Completion of institutional arrangements, including for loss and damage <ul style="list-style-type: none"> - Financial resources on par with mitigation - Policy coherence across UN system - Comprehensive review by 2017 |
| Elements of a 2015 Agreement | |
| <p style="text-align: center;">Finance, technology & capacity</p> <ul style="list-style-type: none"> - Utilization of existing architecture - COP decides how much parties are to mobilize based on SCF biennial assessments <ul style="list-style-type: none"> - Each party's contribution based on UN scale of investment - Technology bodies guide technology development and diffusion <ul style="list-style-type: none"> - Capacity building fast track funding available | <p style="text-align: center;">MRV, Markets and Universal Application</p> <ul style="list-style-type: none"> - All Parties prepare annual inventories, biennial reports, national communications using agreed formats and accounting frameworks & international review of reports <ul style="list-style-type: none"> - Exemption for parties < 0.1% global emissions <ul style="list-style-type: none"> - New Market Mechanism - Compliance Committee - Provisions for non-Parties and border taxes |
| <p style="text-align: center;">New agreement achieves balance between:</p> <ul style="list-style-type: none"> - Mitigation and Adaptation - Top-down phase out goal by 2050 combined with bottom-up flexible architecture for all parties including mechanisms to raise ambition - Increased flows and predictability of finance, technology and capacity | |

This paper aims to inform public debate by proposing possible elements of a 2015 legal agreement. The proposed elements are as follows:

- Parties commit, jointly and individually, to a goal of phasing out anthropogenic greenhouse gas emissions, with a target of zero net emissions by no later than 2050 (the net zero or phase out goal).
- Each party is required to propose a national emissions limitation commitment for 2020-2023 consistent with achievement of the net zero goal. Each party decides the nature of its national commitment. The commitment must be expressed as a change to observed emissions or policies.
- Each party is required to specify the equity principle(s) it used to determine that its proposed national commitment is a fair contribution to the global effort. There are no categories of parties.
- Proposed national commitments and equity principle(s) are subject to an independent technical review and comments by other parties. Parties then submit their final commitment for the period.
- To ensure a stable legal regime, each commitment is automatically followed by a more ambitious four year commitment until the phase out goal has been achieved.
- A party may raise the ambition level of its commitment at any time.
- The UNFCCC establishes a register to record mitigation actions by non-state entities with annual recognition and/or prizes for best achievements. Party commitments are not adjusted for the effects of non-state entity actions.
- Adaptation is given greater financial and institutional resources across the UN. This is achieved by the UNSG establishing a high level panel to report in early 2015 on how adaptation, disaster risk reduction, loss and damage and other long term issues can be addressed and financed in an integrated manner across the UN/UNFCCC. Relevant recommendations of the panel are incorporated into the 2015 Agreement with a review in 2017.
- Each biennial review by the Standing Committee on Finance serves as the basis for a COP decision on climate finance to be mobilized by parties. Each party's contribution is calculated using the UN scale of assessment. Parties continue to have discretion over the channels used for their financial contributions.
- The Technology Executive Committee (TEC) and Climate Technology Centre and Network (CTCN), guide development and diffusion of technology under the Convention with funding from operating entities of the financial mechanism of the Convention subject to COP decisions.
- Capacity building needs and strategies are determined by thematic area based on national input and programmes to implement the strategies are fast tracked for approval and funding by operating entities of the financial mechanism of the Convention based on COP guidance.
- All parties prepare and submit annual inventories, biennial reports and national communications using the agreed methodologies and formats for developed country Parties beginning no later than 2020. The formats may need to be revised to cover the range of commitment types adopted and updated calculations of the party's

- fair share of the global emission reduction target based on the equity principle(s) it proposed.
- Lighter reporting requirements are developed for LDCs and parties whose annual GHG emissions are less than 0.1% of global total. Around half of the 194 parties to UNFCCC fall below this threshold. All reports are subject to international expert review analogous with the Kyoto Protocol process. To improve reporting capacities, prompt start provisions ensure reporting and review commence as early as technically possible after 2015.
 - The Compliance Committee is transferred from the CMP to COP with its mandate and composition adjusted as necessary.
 - A party that is interested in selling emission units may establish a domestic emissions trading scheme and/or domestic crediting scheme for emissions reductions. A new market mechanism body would certify allowances and credits that meet specified criteria as international emissions units. Only international emissions units transferred via the International Transaction Log (ITL) can be used for compliance with national commitments.
 - The new market mechanism body takes over any remaining functions of the CDM Executive Board and JI Supervisory Committee.
 - The national commitment of a country that is not a party to the agreement can be “recognized” subject to criteria such as equivalent stringency of both mitigation and financial commitments and acceptance of the reporting and international review arrangements that apply to parties.
 - Fairness and universal participation are enhanced by inclusion of internationally agreed border adjustments. Experience shows these would rarely, if ever, be used.
- Options to reduce pre-2020 emissions include: a phase-out fossil fuel subsidies; more stringent energy/emissions standards; agreement on a rapid phase out of HFCs; initiatives to reduce emissions of short-lived pollutants; early action to regulate international aviation and shipping emissions by ICAO and IMO; scaled up financial commitments by developed countries; and incentives for early mitigation action.

1. INTRODUCTION

At Durban in 2011, the Conference of the Parties to the UNFCCC (COP-17) agreed to establish a process known as the ADP (Ad Hoc Working Group on the Durban Platform for Enhanced Action). The ADP is mandated to develop, by 2015, a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties to come into effect and be implemented from 2020. The ADP's Workstream 1 covers the 2015 agreement to take effect from 2020 with a mandate to address, *inter alia*, mitigation, adaptation, finance, technology development and transfer, transparency of action and support and capacity building. Workstream 2 of the ADP is mandated to raise levels of ambition of all parties pre-2020 by launching a Work Plan on Enhancing Mitigation Ambition to identify and explore options that can close the ambition gap.

Political capital for international cooperation is scarce and the time available for the ADP negotiations is limited. To succeed the negotiations must devote the political capital to those issues where there are significant functional gaps – mitigation and financial commitments including the balance of effort and financial resources between mitigation and adaptation. Existing bodies under the UNFCCC can help with many of the other issues. Some aspects of mitigation and finance issues may require higher levels of political leadership: fora such as the UN Secretary General's summit on climate change in 2014 could enable Heads of State to provide high level political guidance to the UNFCCC process. Additionally, to build trust it is critical that both COP 19 and COP 20 deliver results mandated for them, including the adoption of institutional arrangements to address loss and damage, and that significant resources be pledged to the Green Climate Fund no later than early 2014.

This paper aims to inform public debate by proposing possible elements of a 2015 legal agreement. The paper is structured as follows. Section 2 sets out the scientific basis for urgent and ambitious action to reduce global emissions to achieve the agreed goal of limiting the global average temperature increase to less than 2°C. Section 3 sets out the institutional context of the UNFCCC including relationships with other 2015 related UN processes that have implications for climate negotiations. The central contribution of this paper – a “hybrid design” that incorporates possible elements of a 2015 agreement – is found in section 4. Each element of the ADP mandate – mitigation, adaptation, finance, technology development and transfer, transparency of action and support and capacity building – is included. Options for

enhancing participation and maintaining universality are also included in the form of proposals to recognize the actions of non-parties and to deal with non-compliance. The final section lists options to reduce pre-2020 emissions.

2. AVOIDING DANGEROUS CLIMATE CHANGE

At COP 16 (Mexico, 2010) Parties agreed to reduce global greenhouse gas emissions so as to hold the increase in global average temperature below 2°C above pre-industrial levels. Parties further agreed to review strengthening this long term global goal on the basis of the best scientific knowledge, including in relation to a global average temperature rise of 1.5°C. Least-cost scenarios consistent with a “likely” chance of meeting the 2°C target have a peak before 2020 and have emissions levels in 2020 of about 44 GtCO₂e.¹ Afterwards, global emissions decline at a rate of about 2.5% per year. Forty percent of these scenarios have negative emissions during the latter part of the century. In short, achievement of the 2°C goal requires ambitious reductions of global greenhouse emissions beginning as soon as possible.

We propose that parties to the 2015 agreement commit to phase out anthropogenic emissions of greenhouse gases by 2050 – to begin to reduce global anthropogenic emissions of greenhouse gases no later than 2020 and to reduce net global anthropogenic emissions of greenhouse gases to zero by 2050.² Phasing out anthropogenic greenhouse gas emissions is an appropriate long term goal given the dynamics of the climate system: long-lived greenhouse gas emissions have to drop to a very low level to stabilise the climate at any level as the processes that remove them from the atmosphere saturate.³ The earlier emissions decline, the lower the stabilization level.

The commitment to phase out anthropogenic greenhouse gas emissions complements the 2°C temperature goal; it does not seek to replace it. On its own, the 2°C goal does not provide sufficient legal clarity for long term mitigation efforts. By focusing on emissions, the net zero goal creates a robust but flexible legal anchor for global mitigation

1. Niklas Höhne and Michel den Elzen, *The Gap Between the Pledges and the Emissions Needed for 2°C, Elements of a New Climate Agreement by 2015*, UNEP Risø Centre, Denmark, 2013.

2. See Majuro Declaration on Climate Leadership, 5 September 2013.

3. See the UNEP gap report 2012, <http://www.unep.org/publications/ebooks/emissionsgap2012/>

efforts to ensure that long term global temperature increase remains below 2°C. This is important because the Convention, and the Kyoto Protocol, established “one-off” time bound commitment periods which leave a legal and functional vacuum after their expiration. The zero net emissions goal remedies this important flaw in the current regime design by requiring sequential, progressively more stringent but flexible commitments that do not result in a legal gap until the long term objective of the Convention set out in Article 2 is achieved.

Universal participation makes the global phase out goal easier to achieve. Universal participation requires an unprecedented level of differentiated commitments by parties that reflect national circumstances. For this reason we avoid categories of parties or commitments as these tend to become obsolete quickly. In our proposal each party makes progressively more ambitious commitments consistent with its changing circumstances until the net zero emissions goal is achieved. This structure of continuous, progressively more ambitious national commitments provides a powerful legal and political signal that all countries are serious about tackling climate change. Collective action increases the benefits to every country thus providing a better return for each country’s mitigation action.

3. THE UNFCCC INSTITUTIONAL CONTEXT AND RELEVANT INTERNATIONAL PROCESSES

We assume that the UNFCCC will remain in force and that its institutional structure – the Subsidiary Bodies for Implementation (SBI) and for Scientific and Technological Advice (SBSTA) as well as the various specialist bodies such as the Adaptation Committee, Standing Committee on Finance, and Technology Executive Committee – remains in place.⁴ Kyoto Protocol institutions also can contribute to the 2015 agreement. For example, a restructured Compliance Committee under the COP would serve as the compliance mechanism of the new agreement.

Some UNFCCC and other processes may have a significant impact on the negotiation of a 2015 agreement. Specifically,

- Failure to agree at COP 19 on institutional arrangements to address loss and damage associated with the impacts of climate change in developing countries that are particularly vulnerable to the adverse effects of climate change

would adversely affect the negotiation of a 2015 agreement.

- Developed countries must pledge substantial contributions to the Green Climate Fund by early 2014 to demonstrate progress toward meeting their financial commitment for 2020.
- Leaders of major economies must indicate that they are willing to adopt more ambitious national targets pre and post 2020, including at the UNSG’s Summit on Climate Change to be held in 2014 and that they remain committed to negotiating a multilateral, legally binding agreement. Since November 2010 no major economy has changed its emission reduction pledge significantly, although some countries have clarified their targets.⁵

Decisions to agree regulation of post 2020 emissions from international aviation and shipping by 2015 would facilitate the 2015 agreement in several ways. First, it would resolve a problematic issue that has beset the climate regime for decades. Second, it would facilitate the reduction of global greenhouse gas emissions by regulating large, rapidly-growing sources of emissions. Third, if all parties have emissions limitation commitments post 2020, regulation of international aviation and shipping emissions would improve equity since they would otherwise be the only unregulated emissions. Finally, revenue from regulation of international aviation and shipping emissions, if any, could help Parties to implement the financial commitments embodied in a 2015 agreement.

Climate change is being addressed by an increasingly broad range of governmental, private sector, civil society and mixed membership institutions. Some, such as the Clean Energy Ministerial (CEM) and the Climate and Clean Air Coalition (CCAC) focus primarily on climate change at a technical and ministerial level by targeting specific actions relating to the energy sector or short lived pollutants. Others, such as the G20, deal with climate change issues within a broader mandate, including providing guidance to international financial institutions, overseen by annual meetings of world leaders. These fora are important as evidenced by the G20 Summit in Russia where President Obama and Chinese President Xi Jinping agreed to work to phase out hydrofluorocarbons (HFCs) through the Montreal Protocol. We assume that the number of international and regional institutions incorporating climate change into their work will, if anything, grow to facilitate mainstreaming of climate issues.

4. ADP, “Reflections on the first part of the second session of the Ad Hoc Working Group on the Durban Platform for Enhanced Action”, Note by the Co-Chairs, 22 May 2013.

5. See Höhne and den Elzen, footnote 1.

While issues and proposals for a new agreement can and will be discussed in those fora, an agreement applicable to all parties under the Convention (as set out in the ADP mandate) can only be adopted under the UNFCCC. Similarly, other international processes such as the leaders' summit on climate change in 2014 announced by the UN Secretary General and adoption of the Sustainable Development Goals (SDGs), may impact the ADP process positively or negatively, but will not shift the negotiations away from the UNFCCC.

4. POSSIBLE ELEMENTS OF A 2015 AGREEMENT

This section discusses possible elements of a 2015 agreement. For each element of the agreement, we identify one or more functional gaps in the existing arrangements and we suggest an option to address the gap. The proposals are our attempt to bracket the broad range of views reflected in the literature while delivering the scale of action necessary to achieve the 2°C target.⁶

4.1. Mitigation Commitments

Parties have agreed to keep global temperatures below 2°C (and to review this to a more stringent 1.5°C in 2013-2015) but they have never established a long term mitigation framework. The Convention does not contain legally binding commitments that require Parties to reduce their anthropogenic greenhouse gas emissions. Parties are required only to formulate national mitigation programmes and appropriate climate policies (Article 4.1). The

6. Proposals from parties and other actors on the design of the 2015 agreement are available on the UNFCCC website in the form of proposals put to the COP under Article 17 of the Convention and since COP-17 under the ADP. The following publications and websites contain comprehensive reviews of literature relating to designing a new agreement: Aldy *et al*, "Beyond Kyoto: Advancing the International Effort Against Climate Change", Pew Centre, 2003; Remi Moncel, Paul Joffe, Kevin McCall and Kelly Levin, World Resources Institute, 2011, "Building the Climate Regime, Survey and Analysis of Approaches", especially Appendix III, Key Highlights from Proposals and Background Reading; Future International Action on Climate Change (FIACC), Ecofys maintained website, <http://www.fiacc.net>. Useful materials on the design of the UNFCCC itself including design of whether it should incorporate pledge and review processes is contained in "Pledge and Review Processes: Possible Components of a Climate Convention", Workshop Report by Michael Grubb and Nicola Steen, Royal Institute of International Affairs, 1991. For more recent treatments, see, Beyond Copenhagen, Guest editors: Navroz K. Dubash and Lavanya Rajamani, *Climate Policy*, Volume 10, Issue 6, 2010.

2015 Agreement needs to create legally binding obligations for all parties, developed and developing countries, to reduce their emissions and to continue to make reductions until the objective in Article 2 has been achieved.⁷

Apart from the 2013-2015 review of the 2°C goal, at Durban parties decided that subsequent reviews of mitigation commitments should take place following the adoption of an IPCC assessment report or at least every 7 years (Decision 2/ CP.17, para. 167). We suggest more frequent reviews (every 4 years) to prompt more ambition in response to changing science and deletion of the reference to adoption of an IPCC report as this may stall rather than prompt adoption of the IPCC reports.

4.1.1. Global Phase out of Anthropogenic GHG Emissions

Our proposal is that all parties to the 2015 Agreement commit, jointly and individually, to a goal of phasing out anthropogenic greenhouse gas emissions, with a target of net zero emissions by no later than 2050, and to take additional action until this goal is achieved. It is acknowledged that every country contributes to this goal in the form of commitments based on its national circumstances but availing itself of available financial and technological assistance under the Convention and the 2015 agreement.

Very low levels of greenhouse gas emissions are required to stabilize atmospheric concentrations at any level. The phase out date proposed (2050) is ambitious and technically achievable. It would require unprecedented levels of national and multilateral action but that is an issue which needs to be addressed at the political level. From the perspective of science, existing scenarios show that it is technically and economically feasible to reduce emissions to zero for roughly 90% of current sources of GHG emissions with technological options available today or in the near future.⁸ A phase-out of net emissions by 2050 covering the remaining 10% of emissions is, we believe, possible with additional innovation and offsetting residual emissions

7. Article 2 sets out a negative goal (avoiding dangerous anthropogenic interference with climate system) but does not provide collective, positive goal (phasing out anthropogenic greenhouse gas emissions). In functional terms, Article 2 defines the goal of the *UNFCCC itself and any new related legal instruments* that may be adopted by parties but does not directly address the substantive mitigation related commitments of individual parties which are set out in Article 4.

8. See "Feasibility of GHG Emissions Phase-out by mid-Century", Pieter van Breevoort, Niklas Höhne, Yvonne Deng, Julia Larkin and Gesine Hansel, September 2013, Ecofys, Germany (available upon request from authors).

by sinks. A net phase-out by 2050 would ensure a very high likelihood of meeting the agreed 2°C goal and a 50% chance of staying below 1.5°C by the end of the century.⁹

A limited number of studies have analysed low emission scenarios that could be considered a phase out by 2050. Such studies can be categorised as one of two types, reflecting two fundamentally different modelling approaches and resulting strategies:

- **Scenarios with (near) 100% renewable energy by 2050:** These scenarios aim at the outset at a certain emission target as well as a certain contribution of renewables.¹⁰ They find that 100% renewable energy by 2050 is possible. Saving energy is a key strategy in these scenarios because high efficiency makes it possible to supply almost all energy from renewable sources.
- **Scenarios with less than 100% renewable energy but with carbon capture and storage (CCS):** Most of the existing scenarios are modelled using so-called integrated assessment models. The model chooses from different technological options to achieve a cost optimal global energy system within certain economic boundary conditions, e.g. very low emissions in the middle of the century.¹¹ Energy efficiency is modelled on a more generic level. Consequently, these scenarios feature higher energy use and a lower share of renewables for energy supply. To still meet the emission targets, the models assume that carbon capture and storage (CCS) is deployed on a large scale. Due to the use of biomass with CCS, these scenarios sometimes reach negative emissions in the second half of the century.

The number of studies analysing scenarios with very low GHG emissions by mid-century is small

but increasing. Some studies are analysing the feasibility of stabilizing the climate at 1.5°C, essentially reaching zero or negative GHG emissions in the latter half of the century. More low emissions scenarios are currently being developed, but are not yet available publicly; for example, modelling comparisons of EMF27, AMPERE, LIMITS¹² and the IPCC Fifth Assessment Report. Many more scenarios are available that reach zero GHG emissions in the energy system by the *end* of the century.

Technical options exist for most sectors to phase out GHG emissions within the 2050 timetable. On average, the global economy could cope with such a change. Cost estimates for low emissions scenarios require less than 5% of annual GDP until 2050.¹³ Many of these options include substantial cost savings but also have other social benefits, primarily from avoided direct water, air and soil pollution association with traditional energy generation. The main challenge is thus not technical and economic but social and political. Achieving the net zero goal by 2050 requires widespread, and rapid, social acceptance of a wide range of technologies and systems which in turn require governmental action as it is unlikely that markets will implement the options set out in Table 1 without further incentives and regulations.

The utility of a long term goal is recognized in the design literature and a number of proposals have been put forward by parties over the past two decades.¹⁴ We believe, at this point, a long term goal of phasing out net anthropogenic greenhouse gas emissions is most compatible with nationally driven targets and actions and complements the long term temperature goal of 2°C. The zero net emissions goal provides a clear signal that investments globally will need to shift to non-emitting technologies. Yet the zero net emissions goal is sufficiently flexible to accommodate diverse national

9. See UNEP gap report 2012, <http://www.unep.org/publications/ebooks/emissionsgap2012/>

10. Deng Y., Blok K. & van der Leun, K., 2012: Transition to a fully sustainable global energy system. *Energy Strategy Reviews* 1(2), 109–121 (2012)

Teske, S., 2012: Greenpeace International, European Renewable Energy Council (2012). *Energy [R]evolution. A sustainable world energy outlook*. 4th edition. ISBN: 978-90-73361-92-8

11. Calvin, K., Clarke, L., Krey, V., Blanford, G., Jiang, K., Kainuma, M., Kriegler, E., Luderer, G. and Shukla, P. R. (2012) 'The Role of Asia in Mitigating Climate Change: Results from the Asia Modelling Exercise'. *Energy Economics*, 34 (Suppl.3):S251-S260

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Magne, B., Kypreos, S. and Turton, H. (2010) "Technology Options for Low Stabilization Pathways with MERGE". *Energy Journal*, 31 (1): 83-107 (energy only)

12. http://emf.stanford.edu/research/emf_27_global_model_comparison_exercise/, <http://ampere-project.eu/web/>, <http://www.feem-project.net/limits/>

13. See "Feasibility of GHG Emissions Phase-out by mid-Century", Pieter van Breevoort, Niklas Höhne, Yvonne Deng, Julia Larkin and Gesine Hansel, September 2013, Ecofys, Germany (available upon request from authors).

14. See e.g. William Nitze, "Recommendations for Strengthening Pledge and Review", in Grubb and Steen, 1991, cited above, and Jonathan Pershing and Fernando Tudela, "A Long Term Target: Framing the Climate Effort", in Aldy *et al*, Pew Centre, Advancing the Effort, 2003. Proposals relating to global peaking were also proposed in the AWG-LCA process under shared vision and are set out in FCCC/AWG/LCA/2012/MISC.8 and by Argentina, Bolivia, Democratic Republic of the Congo, China, Dominica, Ecuador, Egypt, El Salvador, India, Iran, Iraq, Kuwait, Malaysia, Mali, Pakistan, Philippines, Saudi Arabia, Sri Lanka, Sudan, Thailand in the form of a draft decision dated 23 November 2012.

Table 1. Key technical options, and challenges, for phasing out net GHG emissions*

| Sector | Current emissions (% of global total) | Main areas where technological options are available today or in the near future to reduce net GHG emissions | Remaining technical challenges |
|-----------------|---------------------------------------|---|---|
| Industry | 29% | Material and energy efficiency, fuel switch to electrification and sustainably sourced biofuels, CCS, no HFCs | No technological option currently available for some production processes (currently 6% of global emissions) |
| Buildings | 18% | Zero emissions buildings (new and renovated), efficient appliances | Energy efficient renovation of existing building stock |
| Transport | 15% | Smart urban areas, energy efficiency, modal shift to public transport and electric rail, electric and hybrid vehicles, sustainably sourced biofuels | Shifting to 100% biofuel use in air, water and freight road transport, extending range of electric vehicles |
| Energy supply | 13%** | Renewable energy, nuclear, CCS Methane capture and reuse in fossil fuel production | Dependency on viability and infrastructure needs of CCS (some scenarios) Integration of renewables in the electricity grid |
| Land use change | 15% | Stopping deforestation/ degradation Afforestation and reforestation | Conflicting demands for land (alternative land uses are often more profitable) |
| Agriculture | 7% | Adoption of improved livestock and agricultural land management technologies Reduction of demand: food waste and loss, dietary changes | Reduction options provide some reductions but not to zero |
| Waste | 3% | Stopping landfilling of organic waste Treating waste water | - |

* Reproduced from "Feasibility of GHG Emissions Phase-out by mid-Century", Pieter van Breevoort, Niklas Höhne, Yvonne Deng, Julia Larkin and Gesine Hansel, September 2013, Ecofys, Germany (available upon request from authors).

** This value does not include electricity and district heat used in the industry/buildings/transport sectors. These emissions are included in those sectors.

circumstances and many different views. A phase out goal does not prescribe specific targets or policy options for individual parties. Equity is assessed in terms of the contribution of each party to the global goal rather than allocation of the available emissions budget. Our proposals for finance and technology (discussed below) enable developing country parties that need assistance to avail themselves of resources from the Convention's financial mechanism and other sources.

The Subsidiary Body on Scientific and Technological Advice (SBSTA) would recommend sector-specific strategies to achieve the phase out of anthropogenic greenhouse gas emissions taking into account the availability of technologies, such as:

- Electricity supply has zero net greenhouse gas emissions by 2040
- Highly material efficient, long-lasting, almost 100% recyclable products from industry by 2050
- All new buildings are zero energy buildings as of 2025
- Passenger road transport is decarbonised or electrified by 2040
- HFC phase out by 2030¹⁵
- No new organic waste is landfilled by 2025
- Net deforestation is reduced to zero by 2025

15. For analysis of recent progress on HFCs issues see David Doniger, U.S., China, G-20 "Make New Progress on Curbing HFC Super Pollutants in St. Petersburg Summit and G20, Leaders' Declaration", September 2013, available at http://switchboard.nrdc.org/blogs/ddoniger/us_china_g-20_make_new_progres.html

How the UNFCCC and other international bodies could assist parties achieve these sector-specific objectives would be deliberated upon by SBSTA after the 2015 agreement is adopted. But the overarching commitment to the net zero emissions goal remains in place to ensure a long term mitigation architecture which will drive a continuous decline in global anthropogenic emissions of greenhouse gases to ensure the 2°C global temperature increase is not exceeded.

4.1.2. Nationally defined commitments

Each party submits a nationally defined emissions limitation commitment as its contribution to the global phase out goal. The national commitment covers a period of four years and is automatically followed by a more ambitious four year commitment until the phase out goal has been achieved. A party can increase the ambition of its existing commitment at any time. Sequential, progressively more stringent commitments is an important concept embodied in the new agreement, as opposed to a one-off agreement for a limited period. This ensures that time is not wasted in negotiating new commitment periods *ab initio*.

Each party's proposed commitment is subject to technical review and comment by other parties before being finalised (see section 4.1.5.).

Each party decides the nature of its national commitment, subject to the following conditions:

- The commitment is expressed as a change to observed emissions or policies: reductions from

future “business as usual” emissions can be used to determine a target level, but the commitment is then measured in terms of absolute emissions;

- The party specifies the equity principle(s) it used to determine that its national commitment is a fair contribution to the global effort;
- To assist comparability, each party must specify its proposed national commitment including base year, gases, sectors/scope, accounting methodology and equity principle(s) using an agreed template.¹⁶ The agreed template would encourage parties to provide further information about their commitments, including the policies to be implemented, envisaged trends in carbon intensity of energy supply, GDP elasticity of energy demand, and relevant sectoral information and indicators. These additional indicators enable other Parties to better understand the proposed commitment and actions, enhancing trust and mutual ambition, while maintaining a flexible and dynamic system of commitments.

A party that wants to raise the ambition level of its commitment ahead of the four year cycle would have the legal right to do so at any time provided the Compliance Committee has reviewed the party’s proposal and confirmed that changes have the effect of increasing stringency. In these cases, the COP would simply take note of and confirm the party’s new commitment. This provision would help address a flawed dynamic that has emerged in climate negotiations whereby some parties, typically those with the weakest mitigation commitments or none, seek to prevent others from taking more stringent action.

4.1.3. Differentiation

The current two annexes to the Convention would remain in place; however, the new agreement would define the rights and obligations of parties for the post 2020 period. No categories of parties are proposed for the new agreement.¹⁷ In our view,

since any categorization system is subjective, it will quickly become out-dated and will prove difficult to adjust due to the lack of agreed rules for decision-making under the Convention. The overarching net zero goal and the degree of flexibility given to parties to define their nationally tailored commitment makes categories of parties unnecessary.

We also do not propose a “menu” of types of commitments (absolute, intensity, economy wide, sectoral, etc.). The choice of the type of commitment would be left to each party. In the past, negotiating such a menu has proved divisive and taken up precious negotiation time without commensurate benefits as it relies on categorization of parties as well as how to adjust these categorizations over time.¹⁸ We suggest the ADP negotiations avoid the triple burdens (negotiations of categorization of parties, of types of commitments and of related adjustment procedures for different groups over time).

Rather every party is required to specify the equity principle(s) it used to determine that its proposed national commitment is a fair contribution to the global phase out effort. In addition, all proposed national commitments are subject to technical review and comment by other parties before they are finalized. In practice, we expect political level negotiations will lead to OECD member countries and some major economies to adopt economy wide targets.¹⁹

4.1.4. CBDR&RC/Equity

Equity and the principle of common but differentiated responsibilities and respective capabilities (CBDR&RC) were deliberately omitted from the ADP mandate as a result of intense negotiations at Durban. Nevertheless, it is clear there must be some shared understanding of how the principles of the Convention apply to the new agreement including the concept of leadership by developed countries on account of their greater historical

16. The Common Template for clarification of quantified economy-wide emission reduction targets is a good starting point. It would need to be extended to include information on the equity principles chosen and their use to establish that the proposed commitment is a fair contribution to the global effort. Modifications might also be needed to accommodate other types of proposed commitments. The template should be compared with the common tabular format for biennial reports by developed country Parties to ensure that all relevant baseline information for reporting achievements is provided.

17. The specific commitments of Annex I and non-Annex I parties would remain in relation to obligations arising from the Convention and covering the period up to 2020 when the new Agreement is expected to enter into force.

Unlike the Bali Agreement, the mandate of the ADP was negotiated on the political and legal understanding that a new agreement post 2020 would not extend the Annex I/non-Annex I typology.

18. See Grubb and Steen, 1991, the report of IPCC WG III and their recommendations for the design of a Convention, issues and design literature cited by Dan Bodansky in 1992 Yale Commentary on UNFCCC. For proposals related to a menu, see various proposals on different kinds of policies and measures (PAMs) see Joanna Depledge, “Tracing the Origins of the Kyoto Protocol, An Article by Article Textual History”, contained in FCCC/TP/2000/2, 25 November 2000.

19. Countries with very small contributions could be allowed some discretion as regards reporting but we believe it is important for all countries to have the same commitment to the global phase out goal.

responsibilities and financial and technological resources. The work of the ADP, as well as on-going discussions, are contributing to a better understanding of how existing principles and new concepts, such as equitable access to sustainable development (EASD), can be reflected in the new agreement, in particular, on the practical implications of different framings, starting points and positions on emissions pathways that are compatible with Article 2 and the 2°C goal.²⁰

It should be remembered, however, that numerous criteria for defining how CBDR&RC/equity might be operationalized have been proposed over the last two decades, but none has been able to command consensus.²¹ While it is possible that progress toward convergence of views on equitable burden sharing can be made over time, we do not think this is possible in time for use in the 2015 agreement.²²

We suggest each party be required to specify the principle(s) it used to determine that its proposed commitment is a fair contribution to the global effort.²³ Each party's proposed initial and subsequent

commitments and equity principle(s) are subject to an independent technical review and comments by other parties before the final commitment and principle(s) are submitted. Since each party may comment on the equity principle(s) and national commitments proposed by other parties, parties may begin to converge on a limited number of equity principles over time.²⁴ The hope is that the requirement to demonstrate that a proposed commitment is a fair contribution to the global effort, as well as the existence of an international review process, will lead to adoption of more ambitious national commitments that are also seen as fair.

After the agreement enters into force, every party submits an annual emissions inventory and biennial reports on its progress toward meeting its emission reduction commitment with a lighter and less frequent reporting cycle for parties with emissions smaller than 0.1% of the global total (see MRV below). We propose that the biennial reports also include an equity related reporting requirement whereby each party has to report an updated calculation of its fair contribution to the global emission reduction goal using the equity principle(s) it proposed. These reports would be subject to international reviews. Over time these requirements will enable a dynamic, flexible and more practical approach to operationalization of equity than previous formulaic attempts to allocate one-off global shares of carbon budgets have allowed.

4.1.5. Review of proposed national commitments

Proposed national commitments and equity principle(s) are subject to an independent technical review and comments by other parties. The independent technical review would be undertaken by a qualified institution selected by SBSTA, such as UNEP, and agreed by the COP. We propose a single institution be appointed to execute the independent review function to enable a smooth, efficient and consistent service to parties and build up global expertise and capacity. Constituting and convening expert reviews teams on an ad hoc basis, on the other hand would likely involve more bureaucracy, costs and delay especially given

20. See Harald Winkler & Lavanya Rajamani, "CBDR&RC in a regime applicable to all", *Climate Policy*, published online: 03 Jun 2013 and Harald Winkler, Thapelo Letete and Andrew Marquand, "Equitable access to sustainable development, operationalizing key criteria, *Climate Policy*", volume 13, Issue 4, 2013

21. For a discussion of various equity principles and formulae proposed over by Parties and researchers, see Chapter 13 (Table 13.2) of the IPCC Working Group III contribution to the fourth assessment report (2007) for these and other proposals). These include equal per capita emissions, basic needs emissions, contraction and convergence, grandfathering, carbon budgets, historic responsibility, ability to pay, equal mitigation cost, multisector convergence, and multicriteria.

22. Experience with binding burden sharing agreements for emission reduction commitments is very limited not just in climate change but internationally. Attempts to set Kyoto Protocol commitments for Annex I parties using a burden sharing formula were unsuccessful although the negotiations did raise the level of ambition of the proposed commitments initially put forward by parties (For example, the pledges put forward by the USA, the EU and Japan ahead of COP-3 were bettered significantly as a result of international pressure generated by the negotiations process. See Michael Grubb, Ott on history of Kyoto Protocol. It should also be noted that the EU managed to negotiate a binding burden sharing agreement to adjust the Kyoto Protocol emission limitation commitments of 15 member states and will now have to do so for its 27 members for the second commitment period amendments.

23. The approach proposed requires each country to specify an equity principle(s) and to use that principle to calculate its fair share of the global emission reduction target. Other parties can comment on the equity principle(s) proposed. Equally, a party may comment on the equity principles (and commitments) proposed by other parties. The hope is that this approach will lead to adoption of more ambitious commitments.

24. We are aware of efforts to develop an equity reference framework. See, for example, proposals from Climate Action Network, on how equity indicators might be developed and operationalized in the new agreement at: <http://www.climatenetwork.org/publication/climate-action-network-discussion-paper-core-convention-based-equity-indicators-septembe>. Should agreement on an equity framework be reached among parties, each party could calculate its proposed commitment using the agreed framework and indicators.

the increase in frequency, scope of content and numbers of parties arising from the new agreement.²⁵ If necessary, the selected institution would contact a party to clarify the details of the proposed commitment and the application of the equity principle(s). If a party proposed a commitment that excluded some sectors or gases, the technical review would obtain emission projections for the excluded emissions. The technical review would also ensure that specified equity principle(s) were applied to the country's total emissions, not just those covered by the commitment. Finally, the technical review would sum all of the proposed commitments (including those from non-state actors, see below) and compare them to the net zero emissions goal. We estimate that the technical review could be completed in four months.

The results of the independent technical review would be available to parties in time to inform their comments on other parties' proposed national commitments and proposed equity principles. Parties would have two months to comment on other parties' proposals. Then each party would have two months to submit its final national commitment and equity principle(s).

Submission of proposed initial national commitments for 2020-2023 should occur by 31st January 2015 to allow for transparency and review. Technical review would be completed by 31st May 2015 followed by comments from other parties. Each party would then submit its final commitment at COP 21.

4.1.6. Raising ambition and evolution of commitments

The mitigation commitments arising from the net zero global phase out goal also obliges parties to take *additional action* every four years until the phase out objective is achieved. This is a fundamentally different approach to that set out in the Convention and the Kyoto Protocol which both leave problematic gaps due to the legal commitments "expiring" at the end of each time period or commitment.²⁶ The current approach means negotiation of new commitments begins *ab initio*,

25. Our proposal anticipates that approximately 100 parties (those with emissions over 0.1% of global total) report every 4 years with a biennial update while parties with emissions below 0.1% report only every 4 years.

26. The substantive mitigation commitments of Annex I Parties under the Convention are set out in Article 4.2 (a) and (b) and in practice have been deemed to have expired after the year 2000. The legal gap under the Kyoto Protocol between the first and second commitment period which could last for 2 or more years also illustrates the need for a new approach to designing legal commitments that do not "stop and start" in this way which generated legal and political uncertainty and undermines longer term investment planning.

as if the previous commitments had never existed. This does not result in a stable regime, encourages gaming behaviour and wastes precious negotiation time as the regime becomes a permanent negotiating round.

The current structure also means that the mitigation effort is not sustained making achievement of the 2°C goal more difficult and more costly. And a party can reduce the stringency of its commitment from one agreement to the next.

Our proposal is that parties have successive, progressively more ambitious commitments of four years, with no gaps, until the phase out goal is achieved. A party may increase the stringency of its existing commitment at any time. A party may change the type of commitment it proposes and/or the equity principle(s) it uses to demonstrate that its proposed commitment is a fair contribution to the global effort, provided that the new commitment is more ambitious. Issues relating to stringency would be determined by the new Compliance Committee.

Proposed commitments for a subsequent period are submitted two years prior to the start of that period; by January 31st 2022 for the 2024-2027 period. They go through the technical review and comment process outlined in section (e) above and are finalised by the COP at the end of the year – the COP at the end of 2022. This gives each party one year to scale up its efforts to meet its new commitment. In practise, it is likely that parties' commitment will not fluctuate wildly but be a steady and consistent progression.

4.2. Mitigation by Non-state Entities: Register of Actions

Many non-state entities – sub-national governments, businesses, industry associations, etc. – are implementing emission reduction measures which are not reported under the Convention. These actions have the potential to significantly contribute to mitigating emissions.²⁷ These could help the COP formulate better policy as well as give better guidance to the financial mechanisms and related bodies.

It is hard to find information about these initiatives and actions in real time. National reporting is too slow and too highly aggregated to capture learning from these initiatives. More granular information is available on specific projects and programmes in reports from various sources, but often with some delay. A more comprehensive, forward

27. Kornelis Blok, Niklas Höhne, Kees van der Leun, Nicholas Harrison 2012: "Bridging the greenhouse-gas emissions gap", *Nature Climate Change* 2, 471–474

looking process that can identify and capture learning from a diversity of actions would be useful for parties and a host of other actors. It would also generate a groundswell of supportive actions that have been spurred by and contribute to the fulfilment of the objective of the Convention.

We propose that the UNFCCC establish a register to record actions by non-state entities. They can report greenhouse gas reductions achieved and other contributions to the phase out goal (e.g., climate mitigation and adaptation investments, reduced carbon content of investment portfolios, relationship to national commitments) with annual recognition and/or prizes for best achievements (this could build on the Momentum for Change Initiative). The Register and Recognition/Rewards system will enable a wide variety of actors to showcase their contributions to the phase out goal long before such contributions show up in the inventories reported by parties.

Entities that wanted to be part of the annual recognition/prize awards (which could include cash or in kind benefits) would be required to report their achievements using specified templates. Use of the templates would be voluntary for other entities. Expert panels would review the achievements of non-state entities and share knowledge and insights of what is working well and make recommendations on how they can be scaled up with relevant UNFCCC institutions and other bodies.

As is currently the case, party commitments are not adjusted for the effects of non-state entity actions. The net effect of non-state entity actions, of course, is reflected in parties' emission inventories. Parties could choose to encourage non-state entity measures to help meet their commitments.

4.3. Adaptation

Historically, adaptation has received less political attention and fewer institutional and financial resources in the UNFCCC than mitigation. The 2015 Agreement can help redress remaining imbalances by filling a number of legal and institutional gaps related to adaptation. Unlike mitigation which has clear metrics that lend themselves to measurement based on agreed GHG inventory processes, adaptation is less clearly defined and measurable. The Convention tries to distinguish between human induced and natural climatic variability (Article 1), but does not define adaptation or vulnerability. Better conceptual, policy and institutional understanding of the links and overlaps between vulnerability, development, adaptation and disaster risk reduction is needed to ensure adaptation gets its share of legal, financial and political resources. The institutions for adaptation are new; COP 19 is

to agree on institutional arrangements to address loss and damage associated with the impacts of climate change in developing countries that are particularly vulnerable to the adverse effects of climate change. Even with these institutions, some issues relating to climate impacts (displacement and migration, security, statelessness and international conflicts) may need to be addressed more coherently by the UNFCCC and other bodies that play a role in those areas. And means of support, finance, technology and capacity building resources need to be mobilized.

It is not clear whether the above issues can be tackled within the ADP given the limited negotiating time and given that mitigation issues will tend to command higher political attention. To redress the political imbalance, we propose that a process be established at the UN level under the authority of the UNSG comprising a high level panel supported by a multiagency support task force/secretariat. The panel would recommend how adaptation, disaster risk reduction, loss and damage and other long term issues (displacement, migration, refugees, loss of territory) can be addressed and financed in an integrated manner across the UN/UNFCCC.

The work of the panel would ideally be completed in early 2015 to feed into the ADP and hence into the 2015 Agreement. The panel's work should be based on commitments already set out in the Convention and subsequent decisions and build on existing Convention institutions, including the new institutional arrangements to address loss and damage at COP 19. The Agreement would incorporate a review provision for 2017 to examine how well existing UNFCCC adaptation institutions (SBI, SBSTA, Adaptation Committee, new loss and damage institutional arrangements) are working to serve as the basis for additional guidance to Convention bodies as needed.

4.4. Mobilizing Finance

The Convention sets out collective financial obligations of Annex II parties in Articles 4.3 and 4.4. These are general obligations and they currently do not generate sufficient resources. At COP 16 in Cancun and subsequently at Durban and Doha, parties confirmed that developed countries will mobilize \$100 billion per annum by 2020. Commitment of substantial contributions to the Green Climate Fund by developed countries by early 2014 at the latest would build trust and enhance the prospects for the success of the ADP negotiations.

The 2015 Agreement must mobilize more resources from more sources and more parties after 2020. Institutional processes to assist with

the mobilization of resources have recently been agreed, but not yet been implemented. The Standing Committee on Finance (SCF) is expected to undertake biennial reviews of climate finance.

We propose that each biennial review by the Standing Committee on Finance serve as the basis for a COP decision on climate finance to be mobilized under the Convention. Taking into account revenue from alternative sources, the COP would decide on the amount to be mobilized by parties.²⁸ Each party's contribution would be calculated using the UN scale of assessment, which is adjusted every two years to reflect changing circumstances.

The use of mandatory financial contributions, including a scale of assessment, is fairly common for international agreements. The most prominent example is the UN Scale of Assessment. It is used to fund the UN core budget and the UNFCCC. It also serves as the basis for funding UNEP and contributions to the Multilateral Fund of the Montreal Protocol. The financial and technological obligations of Annex II countries under the Convention would continue to apply until 2020.²⁹

4.5. Disbursement of Finance

The Convention established a financial mechanism, but bi- and multi-lateral flows exceed those through operating entities of the financial mechanism.

The 2015 Agreement must try to channel financial resources to the most cost-effective, country driven mitigation and adaptation measures. The SCF's annual forum for communication and exchange of information among bodies and entities dealing with climate finance may serve this purpose.

We propose that Parties continue to have discretion over the channels used for their financial contributions – bilateral, operating entities of the financial mechanism of the Convention, or other multilateral channels. The allocation of funds by operating entities of the financial mechanism would be subject to guidance by the COP. If the thematic bodies (Adaptation Committee, Technology Executive Committee, etc.) or the SCF identify funding gaps (including the geographical balance and the shares for mitigation, adaptation and other uses), the COP could provide

28. Alternative sources could include funds collected internationally from levies on compliance units (share of proceeds), the auction of compliance units or the regulation of international aviation and shipping emissions.

29. The 2015 Agreement would not result in deletion of Annex I or Annex II and these would continue to apply until the new agreement enters into force.

appropriate guidance to operating entities of the financial mechanism: the Global Environment Facility and Green Climate Fund.

4.6. Technology

Under the Convention, Annex II parties are required to promote, facilitate and finance transfer of, or access to, suitable technologies. Other Parties may assist with technology transfer. Most technologies are privately owned, so the ability of Annex II (or other) governments to facilitate transfer is circumscribed by international and national intellectual property laws. Technology related institutions with a mandate to help developing countries acquire and deploy appropriate mitigation and adaptation technologies have recently been established, but their effectiveness is not yet proven.

We propose that the 2015 agreement utilize existing institutions, the Technology Executive Committee (TEC) and Climate Technology Centre and Network (CTCN), to guide development and diffusion of technology to achieve the new mitigation and adaptation related commitments under the agreement including helping developing country parties achieve their commitments. Funding from operating entities of the financial mechanism of the Convention subject to COP decisions would help parties acquire and deploy appropriate technologies.

4.7. Capacity building

The ADP's mandate specifically refers to capacity building. To date, capacity-building has been addressed by COP's general authority to take up any other functions because it is not dealt with explicitly in the Convention itself. SBI and SBSTA have evolved programmes to address the gap including the Durban Forum on Capacity Building. COP 18 requested the SBI to explore ways to enhance implementation of capacity-building at the national level, including through the Durban Forum.³⁰

We consider the general authority of the COP suffices as a legal basis to further capacity building efforts and the 2015 agreement need not elaborate new legal provisions in this regard.

Given its critical importance to implementation, we propose, however, that capacity building needs and strategies be determined by thematic area based on national input and that programmes to

30. Decision 1/CP.18, paragraph 77(b).

implement the strategies be fast tracked for approval and funding by operating entities of the financial mechanism of the Convention based on COP guidance.

4.8. Measurement, Reporting and Verification (MRV)

A number of functional gaps relating to MRV of mitigation, adaptation and finance must be addressed by the new agreement. The Convention's reporting and review provisions have been developed by decisions adopted by COP 16, 17 and 18. These set in motion more frequent submission of inventories, biennial reports and new review processes (international consultations and analysis (ICA) for developing countries and international analysis and review (IAR) for developed countries). The process for review of greenhouse gas inventories that currently applies to developed countries is robust by international standards. The processes for review of parties' implementation efforts (i.e. their policies) are nascent and weak compared with those of other multilateral agreements and with the need to ratchet up commitments quickly.

Currently, reporting on implementation of financial commitments is weaker and less timely than the annual reporting of emissions. Annex II Parties report the financial resources provided in their national communications, roughly every five years.³¹ Financial reporting suffers from data gaps and differences in methodologies.³² However, biennial reporting of climate finance has been agreed with the first reports by developed countries to be submitted in 2014 and the first reports by developing countries due a year later. If parties adhere to the reporting templates, these reports should more comprehensive and more timely information on climate finance.

The diversity of mitigation commitments allowed by our proposal creates additional needs for robust reporting based on agreed methodologies that would be adopted by the COP. The methodologies must ensure that the commitments are well defined and their implementation can be tracked. The technical review of proposed commitments will help ensure that they are clearly defined.

31. Reporting on Fast Start Finance was much more current; reports by May of resources provided during the previous calendar year. However, each country implemented its own reporting system, so consolidation of information required considerable effort.

32. UNFCCC (2011). Compilation and synthesis of fifth national communications. UNFCCC, Bonn, Germany. Available at: <http://unfccc.int/resource/docs/2011/sbi/eng/inforao2.pdf>.

Emission based commitments can be tracked using national greenhouse gas emission inventories prepared following the IPCC guidelines with unambiguous information on the gases and sectors included as well as GWPs used. Other types of commitments may need supplementary information, GDP for intensity targets for example, or different monitoring methodologies, for policy commitments for example. Reports also should include updated calculations of the party's fair share of the global emission reduction target based on the equity principle(s) it proposed.

To allow aggregation of the past and future effect of actions to the global level, *accounting* on how the commitments are achieved must be clearly and definitively stated and agreed at the outset as it not only involves the country making the commitment itself but also other countries. Agreement on accounting should cover:

- Tracking of tradable units so that they are not used twice
- Treatment of surplus allowances from one commitment period to the next
- Treatment of land use change and forestry
- Possible double counting of offsets in the originating country and the acquiring country
- Possible double counting of effects on emissions from financial, technological and capacity building assistance in the host and donor countries

We propose that a common accounting framework be developed under the new agreement to allow transparent treatment of these issues.³³ This framework is applied unless the countries involved prove that double counting does not occur. For a proposal to treat trading see section 4.10.

The 2015 Agreement should include more rigorous international review of national inventories, biennial reports and national communications including better use of expert bodies and review teams to identify best practices and successes, examine implementation related issues and to support an institutional culture of learning. Some of this framework exists for Kyoto Protocol parties and can serve as a model. Early country reviews prior to 2020 could help build and test rules for a more analytical and forward looking review that includes best practices and recommendations for improvements.

The COP has adopted a common tabular format for biennial reports by developed country parties to be used for the reports due by 1 January 2014.³⁴

33. Andrew Prag, Christina Hood and Pedro Martins Barata, "Made to Measure: Options for Emissions Accounting under the UNFCCC", OECD, Paris, May 2013.

34. Decision 19/CP.18

It includes information on public climate finance provided by calendar year for various purposes via different channels. The guidelines for biennial update reports by Non-Annex I parties state that they should provide information on financial resources received from developed country parties, operating entities of the financial mechanism and multilateral institutions.³⁵ The guidelines for Non-Annex I parties do not include a specified format.

With regard to mitigation, we propose that all parties prepare and submit annual inventories, biennial reports and national communications using the agreed methodologies and formats for developed country parties beginning as soon as possible and no later than 2020. We propose that in respect of mitigation related reporting, a degree of discretion for LDCs and Parties whose annual GHG emissions are less than 0.1% of global total may be justified given their small contribution. As shown in Appendix 1, approximately 100 parties fall into this category. The remaining 96 or so parties contribute around 97% of the global total. Once submitted, all reports would be subject to international expert review analogous with the Kyoto Protocol process. The Kyoto review system provides a thorough and comprehensive technical assessment of all aspects of a party's implementation of the Protocol. Independent expert teams provide the CMP (the COP serving as the meeting of the Parties to the Protocol) with a report assessing implementation and identifying potential problems in, and factors influencing the fulfilment of commitments. The reporting system enables deep engagement between the expert review teams with parties and provides the backbone of the Kyoto compliance system.³⁶ In our view, reporting and review requirements of the new agreement would need to be developed in more detail by SBSTA and the Standing Committee on Finance who would recommend changes to existing reporting guidelines and formats to the COP.

4.9. Compliance

The Convention provides for establishment of a multilateral consultative process under Article 13, available to parties on their request, for resolution of questions of implementation. The process has

not been established.³⁷ The 2015 Agreement should build on this to include an appropriate compliance process.

The most expeditious process would be to transfer the Compliance Committee from the CMP to COP and adjust its mandate and composition as necessary. The current structure of a facilitation branch and an enforcement branch would be retained. Results of the expert reviews go to the facilitative branch. The enforcement branch could recommend penalties for non-compliance to COP.

Additional functions of the Compliance Committee would be to:

- Consider requests from non-parties for recognition of national commitments (see section 4.11 below).
- Implement internationally agreed border adjustments on imports from non-parties without recognized national commitments and non-compliant Parties (see section 4.11 below).

In both cases the facilitative branch would develop proposed criteria and procedures and the enforcement branch would recommend implementation. All decisions would be made by the COP.

4.10. Framework for Various Actions (FVA)/ Market Mechanisms

The Convention does not mention market mechanisms which can help reduce compliance costs and so facilitate more ambitious commitments. Three different mechanisms were established by the Kyoto Protocol. Although the mechanisms have encountered various difficulties, it is clear that a market mechanism offers potential benefits and should be included in the 2015 Agreement. Alternatives to markets (FVA) are also being developed for specific sectors but it is unclear how these would be further advanced in the new agreement. For this reason, we focus in this paper on market-based measures.

Some parties will want to buy emissions units to reduce the cost of meeting their commitment. Other parties will be willing to sell emissions units. There could also be markets for internationally recognized credits; for border adjustments and possibly for compliance with regulations on international aviation and shipping emissions. When assessing compliance, purchased units count as emission reductions for the buyer party and as emissions for the seller party – for the purposes of assessing

35. Decision 2/CP.17, Annex III, paragraph 15

36. For a detailed discussion of the role of the expert review teams, see Sebastian Oberthur and Rene Lefebvre, "Holding countries to account: the Kyoto Protocol's compliance system revisited after four years of experience", *Climate Law*, Volume 1, Number 1, 2010.

37. Decision 10/CP.4. See also FCCC/AG13/1998/2, Report of AG13 on its sixth session.

compliance the seller's emissions are equal to its actual emissions plus the units sold and the buyer's emissions are equal to its actual emissions less the units purchased. This avoids double counting.

We propose that a party that is interested in selling emission units establish a domestic emissions trading scheme and/or domestic crediting scheme for emissions reductions. A new market mechanism body would certify allowances and credits that meet specified criteria as international emissions units.³⁸ Only international emissions units transferred via the International Transaction Log (ITL) can be used for compliance with national commitments. The ITL provides additional protection against double counting and fraud. In addition to certifying international units and operating the ITL, the new market mechanism body would take over any remaining functions of the CDM Executive Board and JI Supervisory Committee established pursuant to the Kyoto Protocol.

4.II. Universal Participation and Stability: Non-parties and International Border Adjustments

Unlike many other multilateral agreements negotiated in the last twenty years, the Climate Convention has no provisions relating to non-parties.³⁹ This is a major gap because it means the new agreement may not attract the universal, stable participation needed to address the long-term, global problem of climate change. In addition, free-riding by non-parties is unfair and distorts markets. On the other hand, some countries may contribute to the global effort even though they do not ratify the agreement. Such contributions should be recognized by the COP.

38. For example, that a seller party is in compliance with its national commitment.

39. Other MEAS that deal with non-parties and can provide useful models include the Vienna Convention's Montreal Protocol on Substances that Deplete the Ozone Layer, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, the Stockholm Convention on Persistent Organic Pollutants and the Rotterdam Convention On Dangerous Chemicals And Pesticides. For an overview of these provisions see UNEP Report, Trade-related Measures and Multilateral Environmental Agreements, Economics and Trade Branch Division of Technology, Industry and Economics United Nations Environment Programme 2007.

We propose that the 2015 Agreement include provisions to "recognize" the national commitment of a country that is not a party to the new agreement. The agreement would allow the COP to set the conditions for such recognition and to approve or reject requests for recognition from non-parties. The agreement would set out the basic conditions for recognition of a national commitment – equivalent stringency of both mitigation and financial commitments and acceptance of the reporting and international review arrangements that apply to parties. The COP would request the SBI or the new Compliance Committee to elaborate more detailed criteria for recognizing a national commitment by a non-party. When a request is received, the Compliance Committee would assess the request and make a recommendation to the COP.

If the COP approves the request, the country would be expected to fulfil its national mitigation and financial commitments and to demonstrate that through the established reporting and review procedures for parties. If the country fails to meet its national commitments, or if the request is rejected by the COP, the country is treated as a non-party.

The Convention does not include any provisions to deter "free-riding".⁴⁰ As a result national commitments are less ambitious than they otherwise could be. In addition, parties adopt national policies designed to reduce emissions leakage to countries with less ambitious mitigation policies and minimize the adverse economic impacts on their emissions-intensive, trade-exposed industries. Those measures differ by country and are costly.

Since ambitious mitigation policies are needed to meet the net zero emissions goal, we propose that the 2015 Agreement include provisions to deter free-riding. If all countries have a commitment and are parties to the Agreement, the deterrent would not be implemented. A non-party that has its national commitment "recognized", as

40. For this reason, some international environmental agreements include possible trade related provisions to deal with non-Parties. See discussions in UNEP Report, Trade-related Measures and Multilateral Environmental Agreements, Economics and Trade Branch Division of Technology, Industry and Economics United Nations Environment Programme 2007. See Philippe Sands and Jacqueline Peel, chapter 19, "International Trade and Competition", in *Principles of International Environmental Law*, Cambridge, 2012, see also B. Lockwood and J. Whalley, "Carbon-Motivated Border Tax Adjustment: Old Wine in Green Bottles", 33(6) *World Economy*, 810 (2010) and R. Eckersley, "The Politics of Carbon Leakage and the Fairness of Border Measures", 24 (4), *Ethics and International Affairs*, 367 (2010).

discussed in section 4.11, would not be subject to the deterrent. In short, the deterrent would rarely, if ever, be implemented.

We propose internationally agreed border adjustments as the deterrent.⁴¹ Border adjustments on imports help address the emissions leakage and adverse economic impact concerns.⁴² The World Trade Organization (WTO) allows the use of border adjustments to offset weak environmental policies provided they are not implemented as a protectionist measure. Internationally agreed border adjustments based on best practice should meet the WTO criteria. The facilitation branch of the Compliance Committee, supported by relevant experts, could create a list of emissions-intensive, trade-exposed goods and identify international best practice, and the associated greenhouse gas emissions, for the production of each of those goods.^{43 44}

The enforcement branch of the Compliance Committee would recommend to the COP which imports – goods and countries of origin – should be subject to border adjustments. After a COP decision all parties would be expected to impose the border adjustments at the agreed rate on specified imports from non-parties. Imports of specified goods from non-parties by any party would be required to purchase the appropriate number of international credits. The credits would go to the Green Climate Fund to provide an international benefit. Parties benefit by being able to implement more efficient domestic mitigation policies; providing fewer free allowances to entities participating in emissions trading schemes, for example.

41. Some parties likely would implement border adjustments unilaterally otherwise. A series of different national border adjustments would be more disruptive than an internationally agreed system.

42. Border adjustments are a “second best” option; universal participation with emissions trading is the best option but it may not be achieved without the threat of border adjustments or other sanctions. Border adjustments impose costs both on the countries that implement them and the target countries with weak mitigation policies, so they are likely to be implemented cautiously.

43. Several jurisdictions, including Australia and the EU, have adopted criteria to identify emissions-intensive, trade-exposed goods so it is possible to agree a list of goods. It is possible as well to identify international best practice, and the associated greenhouse gas emissions, for the production of each of those goods. Imports would be required to purchase the appropriate number of international credits. The credits would go to the Green Climate Fund.

44. Basing the adjustments on international best practice ensures that they are not protectionist measures.

4.12. Legal Form

The results of the ADP’s work could be a protocol, another legal instrument or an agreed outcome with legal force. The term “another legal instrument” refers to amendments of the UNFCCC. The term “agreed outcome with legal force” is not defined but in the context of Durban negotiations on the ADP mandate was intended to be something that has binding legal force. At this stage of the ADP’s work, it is more important for the ADP to clarify what functional gaps need to be addressed and how these might best be captured in legal language. It is also possible that the final agreement may need to be distilled into a mix of legal instruments comprising for example, amendments to the Convention, amendments to the Kyoto Protocol, a new protocol, legal instrument or agreed outcome with legal force as well as COP and CMP decisions.

5. ADP WORKSTREAM 2: REDUCING PRE-2020 EMISSIONS

A second component of the ADP is to raise the levels of ambition of all parties pre-2020 by launching a Work Plan on Enhancing Mitigation Ambition to identify and explore options that can close the ambition gap. Possible options include:

- **Phase-out fossil fuel subsidies.** All parties could agree to phase out their fossil fuel subsidies by 2020. Subsidies would be reported annually to a designated body, possibly the International Monetary Fund, with expert review of proposed policies.
- **Energy/emissions standards.** All parties agree to increase the stringency of energy and emissions standards for traded goods. A body, possibly the International Standards Organisation, is designated to implement a process to constantly update the standards for the most efficient models of each product.⁴⁵ Parties agree to prohibit imports and discourage domestic production of the least efficient models.
- **HFCs phase out.** All parties agree to add HFCs to the list of controlled substances under the Montreal Protocol and agree on a rapid phase out schedule.

45. Many different national and international bodies are engaged in setting energy or emissions standards for various goods, including electric motors, residential appliances, and office equipment, and industrial processes. An agreement to accelerate adoption of more stringent standards and an organization to drive the process are needed.

- **Reduce emissions of short-lived pollutants.** All parties agree to implement Climate and Clean Air Coalition (CCAC) initiatives to reduce short-lived pollutants.
- **International aviation and shipping emissions.** All parties agree to regulate international aviation and shipping through ICAO and IMO initiatives before 2015.
- **REDD+:** Agree on arrangements to improve the coordination of support for the implementation of mitigation actions in the forest sector in developing countries at COP 19.
- **Scaled up financial commitments.** Annex II parties scale up their climate finance commitments for 2015, 2016 and 2017 based on the 2014 biennial overview of climate finance by the Standing Committee on Finance. Pledges to the GCF will be needed before the 2014 overview is completed to make progress in the negotiation of a new agreement. The GCF pledges will help meet the climate finance needs identified by the 2014 overview.

An additional idea is to prioritize earlier mitigation action by creating incentives. For example, all Parties could agree that the initial commitments in the 2015 Agreement are tied to 2013 emissions (base year) so early reduction actions will count toward achievement of the initial commitment.

6. CONCLUSION & FOLLOW-UP

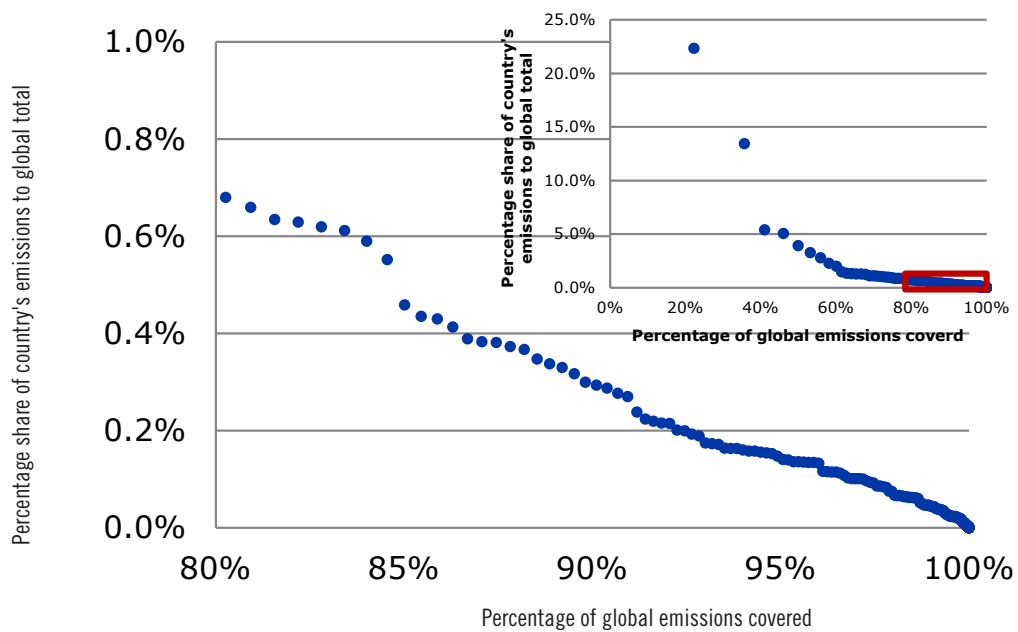
The design of the 2015 agreement will have major consequences for human and ecological well-being. A well designed agreement would command widespread adherence and trigger early action leading to lower compliance costs of the global transition to a non-GHG dependent pathway. If crafted correctly, it should trigger transformative change well ahead of its legal entry into force. A poorly designed agreement might do the opposite. It might lock in low ambition, be difficult to ratify and only result in the modification of behaviour at the margins. The way in which rights and obligations are crafted and balanced against one and other in the climate regime, as well as how trade-offs are constructed across a range of topics such as mitigation, adaptation and resources for implementation, will also influence negotiations that are taking place across the UN on, for example, the sustainable development goals for the post-2015 era. This paper has shown one way in which a balanced but effective legal treaty can be constructed. Many elements outlined here could be elaborated further and would benefit from additional research. We recognize also that other designs are possible and there is merit in discussing the pros and cons of different design options and how different elements might be blended. Part of the ADP negotiations should be spent on understanding the implications of different design options. We hope this paper provides one useful input to that process. ■

APPENDIX

GHG emissions per country and contribution to global total

Figure 1 illustrates the share of emissions covered (x-axis) when excluding countries with emissions smaller than a percentage of the global total (y-axis). E.g. excluding countries with emissions smaller than 0.1% of the global total would mean that 96 countries are included that jointly are responsible for 97% of global emissions.

Figure 1. Share of emissions covered (x-axis) when excluding countries with emissions smaller than a percentage of the global total (y-axis).



Source: EDGAR 4.2, <http://edgar.jrc.ec.europa.eu/overview.php?v=GHGs1990-2010>, values for 2010 including all greenhouse gases and sectors.

Possible Elements of a 2015 Legal Agreement on Climate Change

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