Wuppertal Institute
for Climate, Environment
and Energy

Stakeholder Input

Input to the
European Commission Stakeholder Consultation on

The 2015 International Climate Change Agreement: Shaping international climate policy beyond 2020

By the

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Summary

Climate Policy Needs to Overcome the Win-Lose Narrative

One key reason for the slow pace of climate policy is that it is based on a win-lose narrative: either economic development wins or climate protection. Climate policy will never get where it needs to be going if this narrative of pain and sacrifice is not overcome. It is in our view indeed deeply flawed for various reasons:

First, maintaining the current energy system is hardly cheap and will tend to become ever more expensive in the future. Already today the world's countries each year spend trillions of dollars on fossil fuel subsidies and imports. Second, a high share of the necessary reductions can be achieved at a net economic benefit through energy efficiency. Third, the economics of renewable energy-based energy provision are changing rapidly. Renewables are already cost-competitive in various settings and the rapid decline of equipment costs through technological progress and increasing market penetration continues. Wind and solar will probably be fully competitive in most of the world by the end of the decade. Fourth, in addition to the global climate externality fossil fuel use also causes substantial local externalities, such as local air, water and land pollution, which have to be borne by the public and need to be taken into account in cost-benefit analyses. Fifth, the discussion about risks of carbon leakage is rather disproportionate to the share of national emissions that is actually at risk, and the risk decreases further the more efforts to tackle the climate problem pick up speed globally.

The problem is hence not so much the macro-economic outlook. The problem is that climate policy is effectively economic policy with substantial distributional impacts and thus naturally engenders resistance. Those who stand to lose from the low-emission transition have so far managed to dominate the narrative while the innovation impulses and new markets created by climate policy have so far not received adequate attention.

Parties Should Explore Different Types of Commitments

Arguably, a key factor in the framing of the narrative is how commitments are framed. We recommend to reconsider the political wisdom of the quantity-based approach that climate policy has so far been based on. As long as emissions are seen as inextricably linked to economic well-being, framing commitments in terms of emission reductions directly triggers the perspective of seeing climate protection as an economic loss. In addition, quantity commitments are equivalent to giving countries money. These two factors directly give rise to the distributional controversy that has dominated the climate negotiations. Moreover, adopting quantity commitments is risky for governments as key emission drivers such as economic and population growth are largely beyond their influence. The prevalence of fears that quantity commitments may become a "cap on development" is hence not surprising. Finally, quantity commitments constitute not only a minimum but also the maximum emission reduction and adjusting commitments once they have been set has proven to be nearly impossible.

We therefore recommend to explore other types of commitments that do not trigger fears of imposing a "cap on development" and that are more in line with what governments can actually deliver: implementing policies.

Direct emission pricing is economically equivalent to cap-and-trade. Cap-and-trade induces an emission price, and taxing emissions at that price would reduce emissions to that cap. But direct emission pricing does not have many of the drawbacks of emission caps. It does not create a new commodity to be distributed and contrary to emission reductions emission pricing is directly implemented by governments, thus entailing much less risk for governments to not be able to meet their commitments. As there would be no hard emissions cap, fears of a "cap on development" might also be lower. Moreover, due to the political influence of loser interests actual mitigation costs can be expected to be lower than the figures political discussions are based on. In such a situation, direct emission pricing will deliver higher emission reductions than expected, rather than surplus allowances that create difficulties for future commitment periods.

However, direct emission pricing does share one core problem of emission caps, that it is seen as an economic burden and not directly in the national interest. A further limitation is that, irrespective of the level of ambition, emission pricing, be it via emission trading or taxation, is no silver bullet as climate-friendly investments are impeded by a variety of non-economic barriers.

We therefore recommend a multi-dimensional approach to commitments. Countries should be encouraged to complement emission (pricing) commitments with other types of commitments that may dovetail more directly with what is seen as being in the national interest, such as scaling up certain climate-friendly technologies or improving energy efficiency. Experience suggests that the sum of such sector or technology specific commitments may well often be more ambitious than the respective country's overall emission (pricing) commitment. Experience also seems to indicate that overachieving clean energy targets is often seen as a prompt for doing more, while overachieving emission targets is seen as an invitation to rest on one's laurels.

The strongest mobilisation of political support might perhaps be achieved by framing commitments as a joint international undertaking to provide universal access to sustainable energy services by a specific date, as such an undertaking would be fully aligned with the aspirations of many governments and people.

Evaluation of the experience from implementing concrete actions based on systematic monitoring should contribute to shifting opinions about the feasibility of climate protection and thus allow knowledge-based adoption of ever more ambitious commitments step by step.

Revisit and Improve

Commitments should be reviewed regularly after they have been adopted. However, the history of the UNFCCC suggests that reviews are only taken seriously if they are coupled with the expiration dates of commitments. Therefore, commitment periods should not be longer than five years as in the first Kyoto period. Moreover, five years is compatible with the time horizon of most policy-makers. Commitments that are due longer into the future are quickly seen as somebody else's problem.

Climate Mainstreaming and Outreach

In addition, to make climate protection fully part and parcel of all government decisions, all countries, with possible exceptions for Least Developed Countries and other poor countries to be identified through certain criteria, should commit to adopting comprehensive zero-emission development strategies (ZEDS) covering all sectors. ZEDS should be grounded in a strategic

vision to fully phase out fossil fuel use by 2050. In addition, governments should include climate damages into the shadow pricing procedure when deciding on infrastructure investments and government procurement.

As for involving non-state actors, Parties could explore the possibility of inviting such actors to make their own pledges under the 2015 agreement or in a parallel document or register. Parties might also explore the possibility of fast-tracking such pledges for support from the Green Climate Fund or from domestic resources. However, such actions by non-state actors can only be a facilitator of, not be a substitute for ambitious government action, as all of these actions will count towards national commitments.

Criteria for Differentiation

Departing from the quantity-based approach would substantially recast the effort sharing discussion, as it would be no longer be about how to share the globally necessary reductions or a global emissions budget. If commitments are framed in different terms, it would have to be explored to what extent differentiation indicators that have so far been discussed would also be relevant for determining levels of ambition for these new types of commitments.

Negotiation Process

One reason for the failure of the Copenhagen summit was maybe that the undertaking was too broad, trying to simultaneously develop new architectures for mitigation, adaptation, finance, technology cooperation and capacity building. The task for the 2015 agreement could arguably be made easier by limiting it from the outset to top-level items and delegating implementation details to COP decisions. The key top-level items are in our view mitigation commitments, financial commitments, and common accounting. As regards finance, the climate regime should ideally be made self-financing through emission pricing instruments. In addition, climate change needs to be mainstreamed into all public finance flows, including official development assistance, export promotion etc.

In terms of negotiation process, Parties should define clear milestones to be achieved at the 2013 and 2014 COPs. Initial offers for commitments should be put on the table by countries in 2014 already in order to allow review by the international community and subsequent strengthening in case the initial offers fall short of the required level of ambition.

A full draft of the new agreement should be on the table at the 2015 intersessional at the latest. Political leaders should be involved much more closely than so far and much earlier than in the Copenhagen process. As climate policy is effectively economic policy with strong distributional impacts, these impacts need to be judged by heads of state and government. Delegates will not be able to work out the high-level items if they do not have high-level guidance as a basis.

The negotiations could also benefit from stronger involvement of stakeholders, who so far play only a marginal role. A possible model is provided by FAO's Committee on World Food Security, the world's highest-level body on global food security policy, where constituencies have essentially equal standing to Parties, except for the right to vote.

Need for Stronger EU Action

The EU could inject additional momentum into the international negotiations by adjusting its commitments to current realities. The EU has almost achieved its 20% target domestically. Taking into account offset credits surrendered in the EU ETS, the EU in 2012 even reduced emissions by the equivalent of 27% of its 1990 emissions.

In addition, the EU or individual member states should take up other sector-specific initiatives with countries which share common interests. One possible example is the “Renewables Club” recently formed by China, Denmark, France, Germany, India, Morocco, South Africa, Tonga, the United Arab Emirates, the United Kingdom and the International Renewable Energy Agency (IRENA), though the details still need to be fleshed out.

Preface: Fundamentals First: Climate Policy Needs to Overcome the Win-Lose Narrative

Climate policy in general and the UNFCCC climate negotiations in particular are being conducted by most participants in a win-lose mindset: Either we protect the climate, but then we will have to shoulder an economic burden. Or we put the economy first, but then we get severe climate change. Being able to use fossil fuels is seen by most as indispensable for economic well-being. Statements by world leaders frequently boil down to a belief that reducing emissions sharply would mean losing industry and jobs, have negative impacts on living standards and would amount to limiting "development space."[1]

Former UNFCCC Executive Secretary Yvo de Boer reportedly identified the lack of confidence in the viability of low-emission development as key factor behind the failure of Copenhagen to deliver the hoped-for agreement.[2] If this is the case, climate policy will never get where it needs to be going unless the fundamental narrative is changed.

We consider that the win-lose narrative is indeed deeply flawed for a number of reasons and instead subscribe to the view that, "Thorough analysis shows that the current world energy system (and with it the entire, fossil fuel-based world economy) is situated in a "local sub-optimum" – as a sled is stuck in a local hollow, which is separated from a deep valley (the "global optimum") only by a short and relatively gently rising slope. If one exerts a minor extra effort to push the sled across the slope, the vehicle can get moving rapidly! The energy transition needs exactly this push from governments – in the long term the extra-investment will pay off double, triple and manifold."[3]

First, maintenance of the current energy system is far from cheap and will tend to become ever more expensive in the future. According to a recent study by the International Monetary Fund (IMF), the world each year spends trillions of dollars on energy subsidies, which mostly benefit fossil fuel use. The IMF puts the value of the subsidies at 0.7% of world GDP on a pre-tax and 2.5% of world GDP on a post-tax basis. And while the purported objective of these subsidies is to help with energy access of the poor, according to the IMF, most of the benefits are actually captured by higher-income households. Just removing these subsidies could according to the IMF reduce CO_2 emissions by 13%.[4] The recent World Energy Outlook special report on climate

[1] See e.g. a collection of statements in Moomaw, William; Papa, Mihaela (2012): "Creating a mutual gains climate regime through universal clean energy services", in: Climate Policy, Vol. 12, No. 4, pp. 505-520.

[2] Quoted in: Murray, James (2012): Doha: Loss and damage in the desert - 10 Dec 2012. http://www.businessgreen.com/bg/james-blog/2230841/doha-loss-and-damage-in-the-desert, last accessed 24 June 2013.

[3] Rahmstorf, Stefan / Schellnhuber, Hans Joachim (2006). Der Klimawandel. Diagnose, Prognose, Therapie. München: Beck, p. 114, translated from the original Germany by the authors.

[4] International Monetary Fund (2013): Energy Subsidy Reform: Lessons and Implications. January 28, 2013. http://www.imf.org/external/np/pp/eng/2013/012813.pdf, last accessed 24 June 2013.

change by the International Energy Agency (IEA) complements that global fossil fuel subsidies are six times the level of support received by renewable energy technologies and that 15% of global CO_2 emissions effectively receive an incentive of US$110 per tonne through fossil-fuel subsidies.[5]

The EU each year spends around €400 billon on fossil fuel imports, which corresponds to around 3% of the EU's GDP. The International Energy Agency's chief economist Fatih Birol has commented that this is "the equivalent of a Greek crisis – every year".[6]

Second, in the mid-term a large share of the necessary emission reductions can be achieved at a net economic benefit through efficiency improvements. For instance, a study conducted by the Wuppertal Institute in cooperation with German utility E.On concluded that in Germany about 160 Mt CO_2-eq. of annual emission reductions could be achieved through efficiency improvements within ten years, and out of these about 120 Mt CO_2-eq. at a net economic benefit.[7] 120 Mt CO_2-eq. corresponds to about 10% of Germany's 1990 emissions. Regarding the EU, Fraunhofer ISI concluded that overall final energy demand could be reduced by 57% compared to the baseline projection by 2050, resulting in annual cost savings of about €500 billion (in year-2005-euro).[8]

Regarding the global level, the IEA for the 2012 WEO developed an "Efficient World Scenario" that is based on doing no more than exploiting energy efficiency opportunities which justify themselves economically in terms of rates of return and payback periods but are not being utilised due to a variety of barriers. According to the IEA, mobilising this potential through appropriate policies to remove these barriers would result in a global emission trajectory that up to 2020 would be nearly identical with the IEA's 450 Scenario, which represents a trajectory that would lead to a stabilisation of atmospheric GHG concentrations at 450 ppm CO_2-eq. The Efficient World Scenario would lead to a peak of energy-related CO_2 emissions before 2020, and even up to 2035 implementation of the Efficient World Scenario would take the world nearly halfway to the 450 Scenario.

[5] IEA (2013): Redrawing the Energy-Climate Map. World Energy Outlook Special Report. Paris: OECD/IEA. www.worldenergyoutlook.org/energyclimatemap, last accessed 24 June 2013.

[6] Quoted in: The Guardian: Overseas aid to Africa being outweighed by hefty costs of importing oil, 1 April 2012, http://www.guardian.co.uk/world/2012/apr/01/overseas-aid-africa-oil-imports-costs?newsfeed=true, last accessed 24 June 2013.

[7] Barthel, Claus et al. (2006): Optionen und Potenziale für Endenergieeffizienz und Energiedienstleistungen. Kurzfassung. Wuppertal: Wuppertal Institut für Klima, Umwelt, Energie. http://wupperinst.org/uploads/tx_wupperinst/EE_EDL_Kurzfassung.pdf, last accessed 24 June 2013.

[8] Boßmann, Tobias; Eichhammer, Wolfgang; Elsland, Rainer (2012): Concrete Paths of the European Union to the 2°C Scenario: Achieving the Climate Protection Targets of the EU by 2050 through Structural Change, Energy Savings and Energy Efficiency Technologies. Accompanying scientific report – Contribution of energy efficiency measures to climate protection within the European Union until 2050. Karlsruhe: Fraunhofer ISI. http://www.isi.fraunhofer.de/isi-en/e/projekte/bmu_eu-energy-roadmap_315192_ei.php, last accessed 25 June 2013.

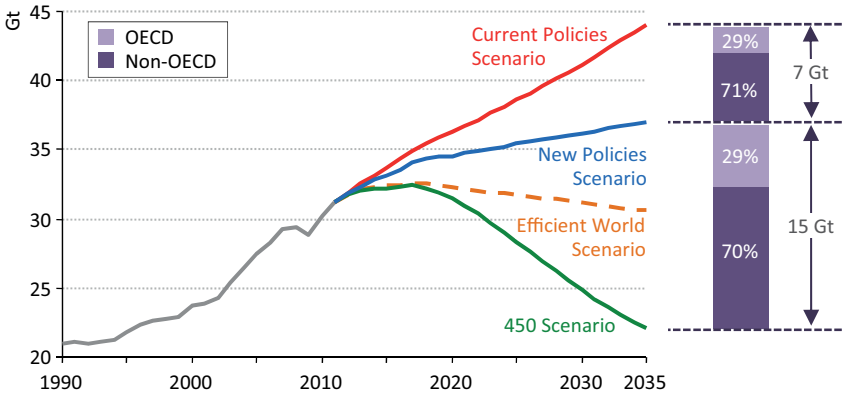

Figure 1: Energy-related CO2 emissions in the 2012 WEO's Current Policies, New Policies, Efficient World and 450 Scenarios[9]

According to the IEA, the Efficient World Scenario would result in a more efficient allocation of resources, boosting cumulative economic output through 2035 by US$18 trillion, with a 0.4% higher global GDP in 2035 than in the New Policies Scenario, which reflects current and announced policies. Additional investment of $11.8 trillion in more efficient end-use technologies would be needed, but this would be more than offset by a US$17.5 trillion reduction in fuel expenditures and US$5.9 trillion lower supply-side investment. One may also not that the scenario mainly considers incremental changes to the technologies and practices used, but not more holistic concepts, such as prioritising energy efficiency at all levels of urban planning, or lifestyle changes.

Third, the picture on the energy provision side is changing rapidly. According to the IPCC's Special Report on Renewable Energy, renewables are already cost-competitive in various settings.[10] And the economics continue to improve rapidly through technological progress and increasing market penetration. Equipment costs of solar photovoltaics (PV) have fallen by about 80% within the last five years. Wind turbine costs have fallen by 29% in the same timeframe even though starting from a much lower level.[11] A recent report by GTM Research notes that 2009 industry roadmaps were targeting US$1.00/W module costs as a medium-term goal, while in fact best-in-class Chinese producers are now already approaching costs of US$0.50/W. The report projects that solar PV module costs will fall further to US$0.36 per watt by the end of 2017.[12] McKinsey has similarly projected that solar PV costs will continue to fall by as much as 10% annually by 2020.[13] A recent report by Citigroup projects that both wind

[9] IEA (2012): World Energy Outlook 2012. Paris: OECD/IEA, p. 318.
[10] IPCC (2011): IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (eds)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1075 pp.
[11] Liebreich, Michael (2013): Keynote. Bloomberg New Energy Finance Climate Summit. 23 April 2013. http://bnef.folioshack.com/document/summit2013/1czp7t, last accessed 25 June 2013.
[12] Mehta, Shyam (2013): PV Technology and Cost Outlook, 2013-2017. GTM Research. http://www.greentechmedia.com/research/report/pv-technology-and-cost-outlook-2013-2017, last accessed 25 June 2013.
[13] Aanesen, Krister; Heck, Stefan; Pinner, Dickon (2012): Solar power: Darkest before dawn. McKinsey&Company. http://www.mckinsey.com/client_service/sustainability/latest_thinking/solar_powers_next_shining, last accessed 25 June 2013.

and solar will be fully competitive with other energy sources in most parts of the world.[14]

While some point to renewables' need for backup, which entails additional costs, total energy-related expenditures in a renewables-based energy system are also expected to become lower than those of a fossil-based system in the not too distant future. The German Reference Study (*Leitstudie*), which analysed the impacts of the Energy Concept adopted by the German government, projects that total energy expenditures in a system based on efficiency and renewables, as foreseen in the German Energy Concept, will fall below those in a fossil-based energy system around 2025. The balance of higher upfront investments and subsequent savings is projected to turn positive around 2030, with cumulative savings amounting to around 570 billion Euros by 2050. Taking into account climate damages, the balance would turn positive around 2020 already.[15]

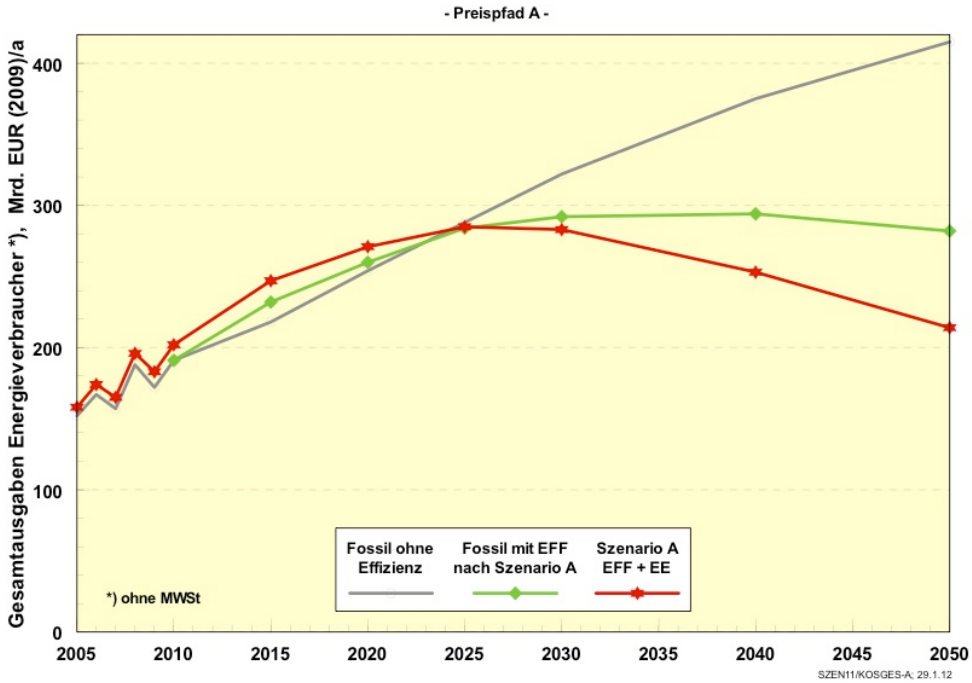

Figure 2: Total energy expenditure of all consumers with exclusively fossil provision of current energy consumption levels (grey line), with implementation of the German Energy Concept's efficiency targets (green line), and for the renewables-dominated energy mix as aimed for in the German government's Energy Concept (red line).[16]

[14] Channell, Jason; Lam, Timothy; Pourreza, Shahriar (2012): Shale & renewables: a symbiotic relationship. Citi Research. https://ir.citi.com/586mD+JRxPXd2OOZC6jt0ZhijqcxXiPTw4Ha0Q9dAjUW0gFnCIUTTA==, last accessed 25 June 2013.

[15] Nitsch, Joachim et al. (2013): Langfristszenarien und Strategien für den Ausbau der erneuerbaren Energien in Deutschland bei Berücksichtigung der Entwicklung in Europa und global. Schlussbericht. Stuttgart, Kassel, Teltwo: Deutsches Zentrum für Luft- und Raumfahrt (DLR), Fraunhofer Institut für Windenergie und Energiesystemtechnik (IWES), Ingenieurbüro für neue Energien (IFNE).

[16] ibid., S. 32.

Fourth, in addition to the global climate externality fossil fuel use also causes substantial local externalities that have to be borne by the public, such as local air, water and land pollution. Climate change is far from the only problem the world has with its current fossil-based energy system. According to analysis by the European Commission, a domestic EU emission reduction of 30% by 2020 would reduce annual health damages by €7.3-16.7bln and air pollution control costs by €5.3bln.[17]

Fifth, much of the discussion is being dominated by fears of carbon leakage. The question is, however, what percentage of EU emissions is actually exposed to this risk? Is transport – which according to Eurostat accounts for around 32% of final energy use in the EU[18] – going to be relocated to other countries if the EU pursues stringent climate policy and other countries do not? Are households, which account for another 27%, going to be relocated? Are power plants, waste, agriculture and forestry? And even in industry, most sectors are either not emission intensive or not strongly exposed to international competition.[19] Nevertheless, overall climate ambition is being substantially held back by concern about a rather minor share of overall emissions.

The problem is hence not so much the macroeconomic outlook. The above-mentioned finding that energy subsidies mostly benefit wealthy rather than poor households points to where the problem lies: Climate policy is essentially economic policy and will have substantial distributional impacts. While at the macro level the benefits will be substantial even without taking into account climate damages, at the micro level there will be losers as well as winners, which naturally engenders resistance. Companies and entire sectors that have so far based their business models on the use of fossil fuels will either have to fundamentally restructure, or be replaced by others that provide the same societal service in a low-emission manner. According to the recent IEA special report, net revenues for existing nuclear and renewables-based power plants would be boosted by US$1.8 trillion (in year-2011 dollars) through to 2035 under in the 450 Scenario, while the revenues from existing coal-fired plants would decline by a similar level. 8% of new fossil-fuelled plants would be retired before their investment is fully recovered.[20]

Pursuing a 2°C compatible climate policy would also amount to effectively expropriating the majority of global fossil fuel reserves. According to the IEA and others, at least 2/3 of global fossil fuel reserves will need to remain untouched if the 2°C target is to be met. However, these reserves are already on companies' books. Analysis by HSBC concluded that if adequate policies to achieve the 2°C target were

[17] European Commission (2010): Commission staff working document. Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage, Background information and analysis, Part II. Brussels, 26.5.2010, SEC(2010) 650.

[18] Eurostat: Consumption of energy, http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Consumption_of_energy, last accessed 24 June 2013.

[19] See e.g., Graichen, Verena; Schumacher, Katja, Matthes, Felix Chr.; Mohr, Lennart; Duscha, Vicky; Schleich, Joachim; Diekmann, Jochen (2008): Impacts of the EU Emissions Trading Scheme on the industrial competitiveness in Germany. Dessau-Roßlau: Federal Environment Agency (Umweltbundesamt).

[20] Ibid.

introduced, this could strip as much as 60% of the market value off fossil fuel companies.[21]

Those who stand to lose from the low-carbon transition have so far managed to dominate the political narrative while the innovation impulses and new markets created by climate policy have so far not received adequate attention. This narrative will need to be turned from its head on its feet if climate policy is ever to get where it needs to be going.

We consider that a key factor in the framing of the narrative is how commitments are framed.

[21] HSBC (2013), Oil & carbon revisited, Value at risk from unburnable reserves, http://gofossilfree.org/files/2013/02/HSBCOilJan13.pdf

Response to Consultation Questions

Question 1: How can the 2015 Agreement be designed to ensure that countries can pursue sustainable economic development while encouraging them to do their equitable and fair share in reducing global GHG emissions so that global emissions are put on a pathway that allows us to meet the below 2°C objective? How can we avoid a repeat of the current situation where there is a gap between voluntary pledges and the reductions that are required to keep global temperature increase below 2° C?

Question 2: How can the 2015 Agreement best ensure the contribution of all major economies and sectors and minimise the potential risk of carbon leakage between highly competitive economies?

A Quantity-Based Approach Has Serious Drawbacks

One of the main reasons why the international negotiations have been so difficult is arguably that commitments and actions have so far usually been conceived of in terms of emission reduction targets. This may be called a very "scientific" approach. As climate change is caused by the accumulation of greenhouse gas emissions in the atmosphere, it was concluded that policy should put a cap on emissions and ratchet that cap down over time. And ideally use this cap as a basis for an emission trading system, which would put a price on emissions and thus drive investments and innovation into low-emission alternatives.

However, as long as emissions are seen as inextricably linked to economic well-being, framing commitments in terms of emission reductions directly triggers the perspective of seeing climate protection as an economic loss. In addition, turning the Earth's GHG absorption capacity into a new commodity inevitably gives rise to controversy about who should receive what share of this commodity. Quantitative commitments are contentious because they are equivalent to giving countries money.[22]

Moreover, quantitative emission commitments do not only mandate a minimum emission reduction, they at the same time also mandate the maximum emission reduction. If a country or company overachieves its target, this yields no benefit to the atmosphere. Instead, the overachievement yields a surplus of emission allowances, which others can buy to offset their above-target emissions. Which is the stated point of the system, as it gives those who can easily reduce their emissions an incentive to do so

[22] Stiglitz, Joseph E. (2006): Making Globalization Work. New York / London: W W Norton & Co.

while reducing the costs for those who are not able to easily reduce their emissions. But this becomes a problem when emission reductions turn out to be more easy than expected (as the history of environmental regulations has shown to usually be the case) or if a recession causes emissions to be drastically lower than expected.

And while in theory this problem could easily be solved by making the commitments more stringent, in practice it has turned out to be rather difficult to adjust emission targets once they have been set.

The theoretical advantage of quantity commitments, that they provide certainty on the environmental outcome, therefore loses much of their luster as in practice it has turned out to be near-impossible to set commitments at the level where they would need to be set, or indeed to set any commitments at all.

Most governments evidently do not have the necessary confidence that they will actually be able to control emissions to the extent required. National emissions are strongly influenced by factors such as economic and population growth, which governments can at best influence indirectly, if at all. In addition, technology choices are in many cases not under the control of national policy. One of the best examples is the energy efficiency of cars, which is decided on in the headquarters of the production centres, in the USA, Europe, Japan, South Korea and (perhaps) China – all other countries are "takers" of such of decisions. Furthermore, as noted above, the ability to emit GHGs is seen by many as crucial precondition for the ability to develop. This is especially pertinent for the rapidly industrialising countries. Rapid industrialisation and urbanisation is in itself a challenge for reducing emissions. In addition, future emission levels are much more difficult to forecast in rapidly growing economies than in less rapidly growing ones.

Most countries evidently first need to convince themselves and their public that flourishing economically while forsaking fossil fuel use is actually possible. Climate policy should therefore explore other types of commitments that do not trigger fears of imposing a "cap on development" and that are more in line with what governments can actually deliver: implement policies.

Exploring Alternative Types of Commitments

Emission taxation is economically equivalent to emission trading. Cap-and-trade induces an emission price, and taxing emissions at that price would reduce emissions to that cap. However, emission price commitments may have several strategic advantages. They would not turn emissions into a commodity to be distributed among countries. Contrary to emission reductions, emission pricing is directly implemented by governments, thus entailing much less risk for governments to not be able to meet their commitments. Instead of committing to a certain economic output governments would commit to a certain input. As there would be no hard emissions cap, fears of a "cap on development" might also be lower. Moreover, due to the political influence of loser interests actual mitigation costs can be expected to be lower than the figures political discussions are based on. In such a situation, the emission price will deliver higher

emission reductions than expected, rather than surplus allowances that create difficulties for future commitment periods.

Cramton, Ockenfels and Stoft suggest a global emission price commitment, which could directly achieve what is also the ultimate objective of emission trading, but which emission trading can achieve only indirectly: A uniform global emission price. Such, a global price commitment could eliminate the risk of leakage at one stroke. In terms of process, they suggest that each country would declare its highest acceptable carbon price. The lowest price that would be needed to cover a pre-defined share of global emissions would become the carbon price for all countries that sign up to the agreement. Developing countries would receive compensatory payments through the Green Climate Fund, but only participants in the pricing agreement would be eligible to participate in the GCF. This approach would create a level playing field while fully taking into account the argument of some countries that no Party would be willing to have other Parties dictate its contribution, as no country would be forced to commit to a higher price than it declared.[23]

Emission price commitments would be fully compatible with domestic emission trading systems that already exist. While translating the price commitments directly through domestic carbon taxation would be the most straightforward approach, the price commitments could also be implemented through emissions trading with price management systems, such as a floor price. Concerns regarding the social and equity impacts of emission pricing could for example be addressed with a "feebate" approach, whereby a fee is applied to that which is supposed to be discouraged, in this case GHG emissions, and the revenues are used to pay for rebates on better alternatives. Alternatively, the revenues could be directly rebated to citizens on a per capita basis, which would have the effect that high emitters would be net payers while low emitters would be net recipients.

However, emission taxation does share one core problem of emission caps, that it is seen as an economic burden and not directly in the national interest. Ambitious pricing commitments and in particular a global price commitment may well not be feasible politically in the short term. A fall-back option may be differentiated national or sectoral price commitments.

A further limitation is that, irrespective of the level of ambition, emission pricing, be it via cap-and-trade or taxation, is not a silver bullet as climate-friendly investments are impeded by a variety of non-economic barriers, such as split incentives, e.g. the landlord-tenant problem, risk aversion against new technologies, lack of capacity and information, and others. If prices were the sole determinant of investments, the world would not dispose of gigatonnes of no-regret potential, as analysed by the IEA and others. Also, renewables would hardly have come down the learning curve as fast as they have if no dedicated support had been provided.

[23] Cramton, Peter; Ockenfels, Axel; Stoft, Steven (2013): How to Negotiate Ambitious Global Emissions Abatement. A Statement of Key Principles and an Explanatory Note. http://www.cramton.umd.edu/climate/files/2013/05/GCP-Project-statement-exlanatory-note.pdf.

We therefore recommend taking a multi-dimensional approach to commitments. Countries should be encouraged to complement emission (pricing) commitments with other types of commitments that may dovetail more directly with what is seen as being in the national interest, as long as these are shown to go significantly beyond business as usual. And as reducing emissions is a complex problem, it is an adequate approach to tackle it from as many different angles as possible.

Commitments could for example be framed in terms of scaling up certain climate-friendly technologies or improving energy efficiency. The EU itself provides a possible template with its 20-20-20 targets. Technology scale-up and energy efficiency improvements can be more directly influenced by government action than overall emissions and may dovetail with countries' and citizens' interests to promote certain technologies and energy security. The German shift to renewables is largely driven by private citizens, based on the enabling environment put in place with the German feed-in tariff. Private citizens account for half of the installed renewable electricity capacity, more than 500 renewable energy cooperatives have been created over the last years and there are now 120 "100% renewable energy regions" aiming to become independent of fossil fuels.[24]

Another possible type of commitment some countries might wish to adopt could be to limit fossil fuel extraction. Ecuador has made a proposal in this regard in its Yasuni initiative. As noted above, analysis by the IEA and others suggests that to achieve 2°C at least 2/3 of global fossil fuel reserves will need to be left untouched. But currently the same governments that are trying to reduce fossil fuel use are at the same time still promoting the maximum possible exploitation of fossil fuel reserves wherever they are found, from fracking and tar sands to frozen carbon hydrates on the ocean floor.

As the EU example shows, multi-dimensional commitments might also often be more ambitious than mere emission (pricing) commitments. Achieving the EU's renewable and energy efficiency targets would lead to emission reductions of 25% rather than only 20%.[25] China may offer a similar example. In addition to lowering its CO2 emissions per unit of GDP by 40–45% by 2020 compared with the 2005 level, it also pledged to increase the share of non-fossil fuels in primary energy consumption to around 15% by 2020. And according to analysts, the 15% non-fossil energy target is more ambitious than the emission intensity target.[26]

In addition, experience seems to indicate that overachieving clean energy targets is often seen as a prompt for doing more, while overachieving emission targets is seen as an invitation to rest on one's laurels. For example, the Chinese solar PV target for 2015

[24] Energiegenossenschaften investieren 800 Millionen Euro in Energiewende, http://www.solarwirtschaft.de/presse-mediathek/pressemeldungen/pressemeldungen-im-detail/news/energiegenossenschaften-investieren-800-millionen-euro-in-energiewende.html; 100ee-Map: 100%-EE-Regionen, http://www.100-ee.de/index.php?id=100eemap, last accessed 25 June 2013.

[25] European Commission (2011): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions. A Roadmap for moving to a competitive low carbon economy in 2050. Brussels, 8.3.2011 COM(2011) 112 final.

[26] China – Developing countries – Climate Action Tracker, http://climateactiontracker.org/countries/china.html, last accessed 24 June 2013.

was initially set to 5GW and then raised to 10GW, 15GW, 21GW and finally 35GW, with 10GW to be installed in 2013 alone.[27] In Germany, while at federal level the renewable target in the power system has been left untouched in the post-Fukushima realignment of energy policy, remaining at 35% in 2020 and 50% in 2030, the federal states (*Länder*) have developed ambitions far beyond, which has resulted in aims (and probable developments) of 40% in 2020 and 72% in 2030. We experience here a dynamic competition between "member states" in the multilevel state Germany. If the same conditions would prevail at EU level, the pioneering approach by Germany could result in an upwards competition between EU member states. The same has to be allowed to unfold at UN level.

Another example of escalating targets is Denmark, which will oblige its energy energy network or distribution companies to save 2.4 percent of final energy each year from 2015 onwards.

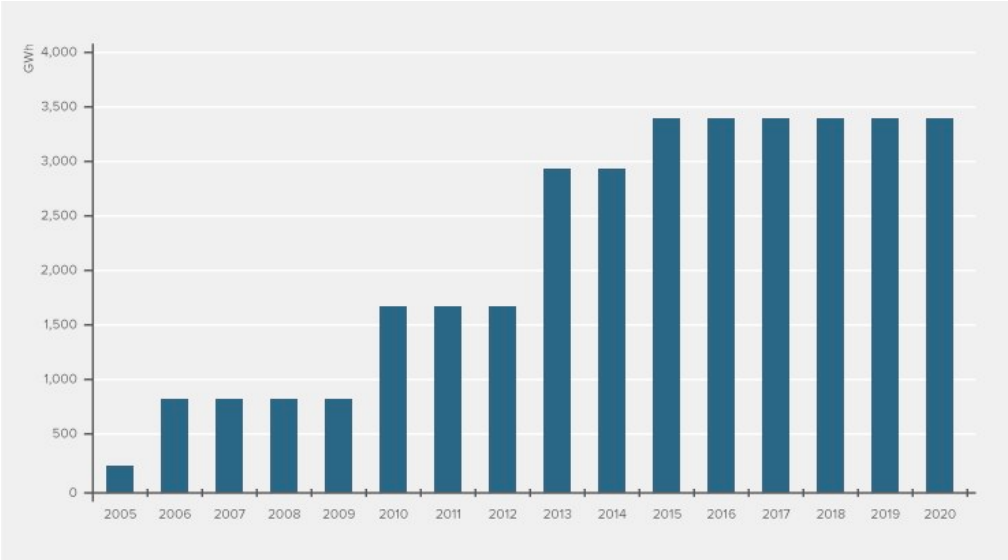

Figure 3: Development of Danish energy-saving targets of energy network or distribution companies from 2005 (electricity only) to 2020 (electricity, gas, district heat and heating oil)[28]

The strongest mobilisation of political support might be achieved by framing commitments as a joint international undertaking to provide universal access to sustainable energy services by a specific date, as such an undertaking would be fully aligned with the aspirations of many governments and people.[29] A key divide in climate policy is that industrialised countries see climate change from the environmental perspective while developing countries see it from the development perspective. It is in fact in both cases a development issue, as industrialised countries need to fundamentally re-develop their energy systems.

[27] Parkinson, Giles (2013): Solar Insights: China lifts PV target to 35GW. http://reneweconomy.com.au/2013/solar-insights-china-lifts-pv-target-to-35gw-10104, last accessed 25 June 2013.

[28] Source: Ea Energianalyse, NIRAS and Viegand & Maagøe (2012): Evaluering af energiselskabernes energispareaktiviteter (in Danish). www.bigee.net/s/chuz82, last accessed 24 June 2013.

[29] Moomaw, William; Papa, Mihaela (2012): "Creating a mutual gains climate regime through universal clean energy services", in: Climate Policy, Vol. 12, No. 4, pp. 505-520.

Evaluation of the experience from implementing concrete actions based on systematic monitoring should contribute to shifting opinions about the feasibility of climate protection and thus allow knowledge-based adoption of ever more ambitious commitments step by step.

As for assuring sufficient global ambition, initial offers should be put on the table by countries in 2014 already in order to allow review by the international community and subsequent strengthening in case the initial offers fall short of the required level of ambition.

Other Barriers to Universal Participation

In terms of *Realpolitik* a crucial barrier to universal participation is the requirement for a 2/3 majority in the US Senate to ratify international treaties. It does currently not seem likely that such a majority could be reached in the foreseeable future. It could therefore be useful to explore possibilities for non-Parties to participate in the 2015 agreement, for example on the basis of legally binding national legislation. The 2015 agreement might define minimum criteria for non-Party participation, including robust accounting and MRV standards. Access to agreement benefits such as carbon markets or technology cooperation could also be made contingent on meeting such criteria.

Revisit and Improve

In addition, commitments should also be reviewed regularly after they have been adopted. We share the view expressed in the Commission consultation that the 2015 agreement may not fully complete the task of setting the world on a 2°C pathway. In addition, given the rapidly declining costs of renewable energy technologies, the world in 2020 may look very different from the world in 2015. At the same time, the findings from climate science are becoming ever more alarming by the year.

International climate policy therefore needs to be designed so as to be able to react flexibly to new opportunities and new scientific findings. The agreement should therefore include regular reviews of ambition levels.

However, the history of the UNFCCC suggests that reviews are only taken seriously if they are coupled with the expiration dates of commitments. The review of adequacy foreseen in Art. 9 UNFCCC has so far been an empty shell.

Therefore, commitment periods should not be longer than five years as in the first Kyoto period. Lengthening commitment periods could lock the world into a long-term trajectory not compatible with preventing dangerous climate change. Moreover, five years is compatible with the time horizon of most policy-makers. Commitments that are due longer into the future are quickly seen as somebody else's problem.

Question 3: How can the 2015 Agreement most effectively encourage the mainstreaming of climate change in all relevant policy areas? How can it encourage complementary processes and initiatives, including those carried out by non-state actors?

Making commitments multi-dimensional as suggested above, by inviting countries to make sector- and technology specific commitments in addition to emission (pricing) commitments, could in our view strongly contribute to mainstreaming climate change in other policy areas.

In addition, to make climate protection fully part and parcel of all government decisions, all countries, with possible exceptions for Least Developed Countries and other poor countries to be identified through certain criteria (see answer to question 4), should commit to adopting **comprehensive zero-emission development strategies (ZEDS)** covering all sectors at least two years prior to the start of each new commitment period. To ensure that the ZEDS have a level of ambition sufficient to meeting the country's obligations, they should be submitted to an international review.

- ZEDS should be grounded in a strategic vision to fully phase out fossil fuel use by 2050.

- ZEDS should be organised by sectors and subdivided by greenhouse gas.

- The ZEDS should set out a credible pathway to comply with commitments through mitigation actions that cover all sectors. This pathway should cover both medium-term goals, including the commitments for the next commitment period or periods as agreed in the 2015 agreement, as well as a long-term goal to fully phase out fossil fuel use by 2050.

- Draft ZEDS for the period 2020-2025 should be submitted by the end of 2017 at the latest.

The process for reviewing draft ZEDS could build on the procedures already in place for International Assessment and Review (IAR) and International Consultation and Analysis (ICA).

- Where the review process finds that a ZEDS is not in line with meeting the global long-term target, the analysis should explore options to raise the level of ambition of the ZEDS.

- The Conference of the Parties should review the results of the analysis and may decide to request countries to revise their ZEDS to ensure that they are consistent with meeting the global long-term target.

The implementation of ZEDS should be reported on regularly in the national communications and biennial reports/biennial update reports and also be reviewed in the IAR/ICA processes or their future replacements. ZEDS reporting should contain an obligatory assessment of long-term impacts, including environmental and social integrity. Focusing attention and effort on the broader ZEDS context and long-term impacts would promote interlinkages with other policies /instruments in the countries.

The theoretically most effective way of mainstreaming climate change would be to include the cost of climate change in any economic decision. This would require to generally correct market prices according to the cost of climate change. However, the huge distributional effects of this approach limit its feasibility. A second-best approach is to restrict the concept of having economic decisions guided by costs of climate change to investment decisions, especially those whose lifetime is beyond the time horizon of markets. Such decisions can by definition not be guided by market prices, and in practice they are in fact guided by indicators which are elaborated via different approaches. Long-term investments are mainly made in infrastructure, which is provided by various state agencies. In infrastructure planning in developing countries that is done on behalf of development agencies, the usual method of valuation in feasibility studies is to include damage costs into the **shadow pricing procedure**. The same method is recommended for any procurement decision by governments. For both types of government investment it is feasible to take the shadow price instead of the market prices as the basis for investment decisions, as the otherwise neglected external effects have to be paid by the inhabitants of the state. Hence this kind of decision-making should not only apply to developing countries which need the support of international development banks. It should be generally recommended as standard governmental procedure as part of ZEDS, including in industrialised countries, as the rational of this procedure does also hold for them. One further benefit would be: In doing so, negative income effects for society as a whole as result of external effects could be avoided.

As for **non-state actors**, Parties could explore the possibility of inviting such actors to make their own pledges under the 2015 agreement or in a parallel document or register. The spotlight afforded by such an approach might strongly contribute to receiving ambitious pledges and promoting subsequent implementation. Such non-state actions could also be regularly reviewed under the UNFCCC to check implementation and the potential for scaling up.

Parties might also explore the possibility of fast-tracking such pledges for support from the Green Climate Fund or from domestic resources. Such an approach may be especially effective if coupled with sourcing international revenues for the GCF, such as emissions trading or levies on international aviation and shipping. According to the UN Secretary-General's High-Level Advisory Group on Climate Financing (AGF), 2°C-compatible pricing instrument for international aviation and shipping could yield dozens of billions of dollars of new revenues (see also answer to question 6).

However, such actions by non-state actors cannot be a substitute for ambitious government action, as all of these actions will count towards national commitments. Rather, they should be seen as a means to fast-track action and give additional

momentum to implementation, hopefully leading to overachievement and subsequent strengthening of government commitments in the course of the international review process.

Question 4: What criteria and principles should guide the determination of an equitable distribution of mitigation commitments of Parties to the 2015 Agreement along a spectrum of commitments that reflect national circumstances, are widely perceived as equitable and fair and that are collectively sufficient avoiding any shortfall in ambition? How can the 2015 Agreement capture particular opportunities with respect to specific sectors?

Departing from quantity-based commitments would substantially recast the effort sharing discussion as it would be no longer be about how to share the globally necessary reductions or a global emissions budget. If commitments are framed in different terms, it would have to be explored to what extent differentiation indicators that have so far been discussed would also be relevant for determining levels of ambition for these new types of commitments.

If the quantity-based approach is retained, the results of the "South-North Dialogue" may be of interest, which the Wuppertal Institute conducted in 2003-2006 with partners from 12 developed and developing countries. The outcome of the Dialogue was the "South-North Proposal" for how to differentiate among countries.[30] In this proposal, differentiation is based on the following principles and indicators:

Responsibility as a reflection of a Party's contribution to the climate problem through historic and ongoing GHG emissions

Indicators: Cumulative CO2-emissions per person since 1990. 1990 was chosen as it was the year of the first IPCC assessment report, which can be taken as the date from which policy should have tackled climate change as a matter of urgency.

Capability as a reflection of a Party's financial and socio-economic strength to help overcome the climate problem

Indicators: GDP per person on a power-purchasing parity basis and Human Development Index rating

[30] South-North Dialogue: Equity in the Greenhouse. http://wupperinst.org/en/projects/details/wi/p/s/pd/45/, last accessed 25 June 2013.

Potential as a reflection of the mitigative opportunities within a Party's economy to reduce or limit GHG emissions

Indicators: Emission intensity (CO_2 / GDP), GHG per capita and growth of emissions since 1990.

The South-North proposal suggests three decision rules on this basis:

Potential to mitigate		
High potential	→	High domestic reductions
Medium potential	→	Limitation of domestic emssions
Responsibility to mitigate		
High responsibility	→	Binding absolute reduction target
Medium responsibility	→	Quantitative commitments only binding if all 'high responibility' countries take on commitments and conditional on transfer of adequate financial and technogical resources
Low responsibility	→	Qptional/voluntary mitigation commitments
Capability to mitigate		
High capability	→	Financial transfers for mitigation activities to 'low/medium capability' countries
Medium capability	→	Co-sharing: mitigation partly funded by 'high capability' countries
Low capability	→	All mitigation activities funded by 'high capability' countries

As for capturing opportunities within certain sectors, we consider that the above recommendations to invite sector-specific commitments from countries, and to obligate countries to develop comprehensive ZEDS could have a strong impact in this regard.

Question 6: What should be the future role of the Convention and specifically the 2015 Agreement in the decade up to 2030 with respect to finance, market-based mechanisms and technology? How can existing experience be built upon and frameworks further improved?

One reason for the failure of the Copenhagen summit was maybe that the undertaking was too broad, trying to simultaneously develop new architectures for mitigation, adaptation, finance, technology cooperation and capacity building. However, these architectures have subsequently been put in place through the Cancún and following agreements. There is now a bevy of new institutions which can be built on: the Green Climate Fund, the Standing Committee on Finance, the Technology Executive Committee, the Climate Technology Centre and Network (CTCN), the Adaptation Committee and the Adaptation Framework.

The task for the 2015 agreement could arguably be made easier by limiting it from the outset to top-level items and delegating implementation details to COP decisions. The key top-level items are in our view mitigation commitments, financial commitments, and common accounting. As regards finance, industrialised countries have so far pledged to scale up climate finance to $100 billion annually by 2020. The 2015

agreement will therefore need to contain commitments for the time after 2020. These commitments should be in line with scientific estimates of developing country needs related to achieving the ultimate objective of the Convention and related to adapting to the impacts of climate change and to address loss and damage.

Ideally, the climate regime should be made self-financing through emission pricing instruments. According to analysis by the AGF, the revenue potential from these sources is substantial. Table 1 below summarizes the public revenues that according to the AGF could be derived from auctioning of emissions allowances in industrialised countries, levies on offsets and putting a carbon price and international shipping and aviation.

Public Sources	**Revenue Potential (billion US$)**		
CO_2 Price (US$/t CO_2-eq.)	**10-15**	**20-25**	**50**
Auctioning of allowances (2-10% of estimated auctioning revenues dedicated to international climate finance)	2-8	8-38	14-70
Levies on offsets (levy of 2-10% of offset transactions)	0-1	1-5	3-15
International maritime transport (no net incidence on developing countries, 25-50% dedicated to international climate finance)	2-6	4-9	8-19
International aviation (no net incidence on developing countries, 25-50% dedicated to international climate finance)	1-2	2-3	3-6

Table 1: Potential Public Revenues from Carbon Market-Related Sources[31]

Looking at the AGF assessment, it is noteworthy that the underlying assumptions are rather conservative. The AGF focuses its analysis on the medium-range carbon price (US$20-25/t CO2-eq.), which is not in line with achieving the 2°C target, and it assumes that only relatively low shares of revenues from carbon markets could be dedicated to international climate finance. If one assumes that mitigation commitments will hopefully at some point be brought in line with the 2°C target, which according to the AGF would lead to a carbon price of about US$50, and that revenues from international sources, in particular carbon-related sources in international transport, could be fully dedicated to climate finance, mobilizing US$100 billion and more does in fact appear as eminently viable. International aviation and shipping alone could provide as much as half of this amount and only a relatively minor share of 7% of the revenues of auctioning allowances in industrialized countries would be needed for the other half.

In addition, climate change needs to be mainstreamed into all public finance flows, including official development assistance, export promotion etc.

[31] Adapted from Sterk, Wolfgang; Luhmann, Hans-Jochen; Mersmann, Florian (2011): How much is 100 billion US Dollars? Climate finance between adequacy and creative accounting. Berlin: Friedrich-Ebert-Stiftung. http://library.fes.de/pdf-files/iez/08158.pdf, last accessed 24 June 2013.

Question 7: How could the 2015 Agreement further improve transparency and accountability of countries internationally? To what extent will an accounting system have to be standardised globally? How should countries be held accountable when they fail to meet their commitments?

Common accounting is a crucial ingredient for the 2015 agreement. The Copenhagen/Cancún pledges are characterised by a high level of uncertainty, the UNEP Emissions Gap Report therefore has no less than four scenarios of where global emissions might end up in 2020, based in the interpretation of the pledges. Therefore, all countries above a certain level of responsibility and capability as defined according to indicators such as those discussed for question 4 should agree to common emissions accounting based on the rules of the Kyoto Protocol.

The need for adequate emissions accounting would not be obviated by framing commitments in other terms than emission targets, as suggested in response to questions 1 and 2. Climate policy would still need to be judged on the basis of what progress is made towards the 1.5°C/2°C target. The lack of reliable data from many countries is a serious impediment in this regard. In addition, having a clear picture of how emissions are developing and what drives them is a core precondition for being able to develop appropriate mitigation actions.

From a political science perspective, compliance with commitments is mostly not determined by the terms of the agreement but by a cost-benefit calculation to what extent meeting the commitment is seen as in the national interest and what would be the consequences of non-compliance, including consequences inside and outside the agreement. Taking a multi-dimensional approach to commitments, as suggested in response to questions 1 and 2, should contribute to countries seeing compliance as in their own interest. As for costs of non-compliance, no recalcitrant country will be dissuaded if even the purported champions of an agreement do not take steps to defend it where necessary. Canada was able to walk away from the Kyoto Protocol with impunity, there is no indication that the EU or others tried to exact any kind of price from Canada.

Compliance could also be promoted by constituting strong privileges that would only be open to complying countries. One possible venue could be to establish a strong plank of international technology cooperation.

Question 8: How could the UN climate negotiating process be improved to better support reaching an inclusive, ambitious, effective and fair 2015 Agreement and ensuring its implementation?

The negotiation process would probably benefit if **majority voting** was introduced as per the draft rules of procedure.

The 2015 process should define **clear milestones** to be achieved at the 2013 and 2014 COPs. A full draft of the new agreement should be on the table at the 2015 intersessional at the latest.

Political leaders should be involved much more closely than so far and much earlier than in the Copenhagen process. Climate policy is effectively economic policy with strong distributional impacts. These impacts need to be judged by heads of state and government. Delegates will not be able to work out the high-level items if they do not have high-level guidance as a basis. At the same time, heads of state and government should not be involved in the minutiae of the negotiations. The world leaders' summit UN Secretary-General Ban-Ki Moon will convene in 2014 may provide a good format for giving high-level guidance but without getting bogged down in details. Another such summit should be held in 2015 to give further guidance for the final shape of the agreement.

The negotiations could also benefit from **stronger involvement of stakeholders**, who so far play only a marginal role. A possible model is provided by FAO's Committee on World Food Security, the world's highest-level body on global food security policy, where constituencies have essentially equal standing to Parties, excepting the right to vote but including the right to intervene, join breakout discussions, and submit and present documents and formal proposals.

As for having Conferences of the Parties (COPs) only every two years to prevent a series of disappointed public expectations, we consider that the public is fully justified in its demand for ambitious action, given the ever more alarming warnings from climate science. We consider that the problem is not the high level of public expectations, but the low level of the system's problem-solving capacity. In addition, the COPs in our view play a crucial role in keeping the issue on the political agenda within countries.

Question 9: How can the EU best invest in and support processes and initiatives outside the Convention to pave the way for an ambitious and effective 2015 agreement?

The EU could inject additional momentum into the international negotiations by adjusting its commitments to current realities. The EU has almost achieved its 20% target domestically. Taking into account offset credits surrendered in the EU ETS, the EU in 2012 even reduced emissions by the equivalent of 27% of its 1990 emissions.[32]

The EU's approach to international aviation in our view provides a best-practice example of how the EU can promote action outside the Convention. After more than a decade of stalemate within ICAO, the EU forced other countries to the table by adopting innovative legislation with extraterritorial application. If the current talks in ICAO fail, the EU should therefore revert to implementing its legislation as originally planned. The EU should also take the same approach to international shipping.

In addition, the EU or individual member states should take up other sector-specific initiatives with countries which share common interests. One possible example is the "Renewables Club" recently formed by China, Denmark, France, Germany, India, Morocco, South Africa, Tonga, the United Arab Emirates, the United Kingdom and the International Renewable Energy Agency (IRENA), though the details still need to be fleshed out. The World Resources Institute in a recent paper proposed some characteristics such "clubs" should have to actually provide added value: Notably, an ambitious vision, limiting membership to countries that are actually in line with that vision, providing significant real benefits to members and a pathway to start quickly and scale up over time.[33]

[32] Sandbag (2013): Europe risks going backwards on climate change unless emissions targets are increased, http://www.sandbag.org.uk/blog/2013/jun/10/europe-risks-going-backwards-climate-change-unless/, last accessed 24 June 2013.

[33] Two Degrees Clubs: How Small Groups Of Countries Can Make A Big Difference On Climate Change, http://insights.wri.org/news/2012/10/two-degrees-clubs-how-small-groups-countries-can-make-big-difference-climate-change.