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Climate Negotiations: What Can be Expected from the Climate Summit in Paris?

Philipp M. Richter and Hanna Brauers

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Philipp M. Richter |prichter@diw.de| TU Dresden and DIW Berlin;
Hanna Brauers |hbrauers@diw.de| Department of Energy, Transportation, Environment at DIW Berlin

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Shortly before the upcoming UN climate summit, Angela Merkel wrote in a German newspaper: "With good reason, it is expected from governments and politicians, that they do not longer close their eyes to the pressing scientific results that climate protection requires rapid and vigorous action." She further calls for a clear negotiation outcome: "The greenhouse gas emissions do not only have to be stabilized, but have to be reduced as quickly as possible." These words could well have been written today, however, they were actually published on March 26, 1995 (FAS, 1995); at a time, when Mrs. Merkel still was Germany's Federal Minister of the Environment and designated president of the first climate summit.

After 20 years of UN climate talks, the world's attention is now firmly on the 21st COP (Conference of the Parties) in Paris that will be held from November 30 until December 11, 2015. These climate negotiations are generally perceived as the last chance to reach a global agreement that can prevent severe climate change. In this DIW Roundup we take a closer look at the upcoming COP21, discuss the negotiation status and highlight the pivotal elements currently discussed. Furthermore, we touch upon the economic theory on International Environmental Agreements and present milestones of past climate summits.

On the Road to Paris – More Than Twenty Years of UN Climate Talks

There is ample scientific evidence on the existence of climate change, and that its driving factor is anthropogenic (IPCC, 2013). Demands to limit carbon dioxide emissions were present as early as 1989 (UN, 1989) culminating in the *United Nations Framework Convention on Climate Change* (UNFCCC, 1992) ratified by 195 countries. The UNFCCC's defined target is "to achieve [...] stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". More than two decades of international climate negotiations under the UNFCCC followed and created the basis for the Paris climate summit taking place in in the following weeks. Table 1 provides information for selected past climate summits and highlights important milestones for climate negotiations.

Table 1: Milestones of previous climate negotiations

Conference	Year	Milestone
Rio Conference – "Earth Summit"	1992	Agreement on Climate Change Convention and the creation of the Conference of the Party (COP) System. The objective of the Convention is declared in Article 2 with the goal to stabilize the concentration of greenhouse gases in the atmosphere "at a level that would prevent dangerous anthropogenic interference with the climate system" (UNFCCC, 1992).
COP1 - Berlin	1995	In the *Berlin Mandate* all Parties agree to strengthen commitments and to create a global climate agreement with concrete reduction targets and periods for the time after 2000 (UNFCCC, 1995). Angela Merkel (Federal Minister of the Environment at the time) is elected president of COP 1.
COP3 - Kyoto	1997	The Kyoto Protocol is the first legally binding global climate agreement. 41 States commit to curb their emissions for the period of 2008 to 2012 by 5.2% compared to 1990 (UNFCCC, 1998). The Kyoto Protocol only enters into force in 2005. Canada withdraws from the Kyoto Protocol in 2012, while the USA never ratify (UNFCCC, 2014e).
COP13 - Bali	2007	Agreement on the *Bali Road Map*, a negotiation mandate for a post-Kyoto treaty two years later in Copenhagen (UNFCCC, 2007)
COP15 - Copenhagen	2009	The Parties only *take note* of the *Copenhagen Accord* while nothing is officially agreed on. Nevertheless, developed countries pledge to provide $100 billion annually by 2020 to support climate change mitigation and adaption in developing countries (UNFCCC, 2014a).
COP16 – Cancún	2010	The Parties agree on the 2°C target with a review process until Paris in 2015, to possibly lower the maximum target to 1.5°C. They also agree on the Green Climate Fund, where most of the pledged money from the industrial countries should be transferred (UNFCCC, 2014b).
COP17 – Durban	2011	The Parties agree on a second period of the Kyoto Protocol from 2013-2020. They also establish a new platform of negotiations - the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP). The ADP shall deliver a global agreement for the period beyond 2020, with legal force by 2015 (UNFCCC, 2014c).
COP20 – Lima	2014	One of the results of Lima is a 23-pages draft for the Paris agreement which needs to follow the principle of common but differentiated responsibilities taking into account "different national circumstances." Furthermore, in Lima the Parties concretise the form of the INDC (UNFCCC, 2014d).

Note: COP is the abbreviation for *Conference of the Parties*. Today there are 196 Parties: 195 countries that have ratified the *United Nations Framework Convention on Climate Change* UNFCCC, together with the European Union.

At the beginning of the international climate negotiations, a strict distinction between developing and developed countries has been made. The UNFCCC groups developed countries as Annex I countries that are obliged to reduce greenhouse gas (GHG) emissions, while non-Annex I countries, the developing countries, are only invoked to mitigate climate change and are entitled to financial assistance by developed countries for efforts in mitigation and adaptation. This is commonly referred to as the *common but differentiated responsibilities principle*.

This principle is also the basis of the first (and only) legally binding global climate treaty, the Kyoto Protocol. The Kyoto Protocol was agreed on in 1997, setting emission reduction targets for all participating developed countries to be reached until 2012 at the latest. However, it was never ratified by the USA and did not enter into force before 2005. Obliging only those developed countries that had ratified the treaty, the Kyoto Protocol did not succeed in curbing global GHG emissions.

Nevertheless, the Kyoto Protocol led to reduced emissions by included Parties (Aichele and Felbermayr, 2013) such as the EU.

As of today, further attempts to reach a global climate treaty failed, most prominently in Copenhagen in 2009, where conflicting interests collided, namely of developing and developed countries (Grubb, 2015): While (most) developing countries demanded to keep the strict division in Annex I and non-Annex I countries, which only obliges the former to mitigate climate change, developed countries aimed at committing emerging economies, such as China, that account for an increasing share in global emissions.

Economic Thinking on International Environmental Agreements (IEA)

Hence, history shows that it is difficult to reach an international agreement that is successful in reducing global GHG emissions. From an economic point of view there are two reasons why climate negotiations are quite a specific problem (cf. Barrett, 2005). First, abatement of GHG emissions is a public good: As no one can be excluded from the benefits of mitigating climate change, these benefits are non-rivalrous. It is the absolute level of emissions that determines the increase in mean temperature and not its distribution. This consequently leads to the problem of free riding and weak incentives for individual countries to reduce their emissions. Avoiding severe climate change, however, can only be achieved through a global commitment. The second reason why climate negotiations are special is that there exists no enforcement of climate mitigation by third parties, such as a supranational institution. It follows that a climate treaty, or International Environmental Agreement (IEA), can only be successful if it is *self-enforced*: In particular, this means that there must not be any incentive for participating countries to withdraw or to fail the accomplishment of their targets.

The theory of IEA is situated in non-cooperative game theory focusing on participation (cf. Barrett, 2005). It derives quite pessimistic outcomes in its standard model: there is either low participation in a treaty or high participation with low achievements on mitigation, depending on the costs and benefits structure of abatement. However, there are remedies in increasing the effectiveness of a climate mitigation agreement: side payments, i.e. transfers between countries to balance positions and to incentivise mitigation, and issue linkage, i.e. making the access to beneficial endeavours, such as R&D cooperation or free trade, exclusive to participating countries. These theoretical considerations can be easily applied to past and current efforts to reach a global climate agreement.

The COP21 in Paris

Still, one of the most contentious issues debated at the 21st COP in Paris will be the differentiation between developing and developed countries. According to the Lima Call for Climate Action defining the basis for the Paris climate talks, an agreement is supposed to reflect the common but differentiated responsibilities and respective capacities of all parties. However, the additional text element "in the light of different national circumstances" (UNFCCC, 2014f) aims at the *de facto* end of the division in Annex I and non-Annex I countries in contrast to previous negotiations and agreements, such as the Kyoto Protocol.

The second main difference is a new form of climate governance. While the Kyoto Protocol was based on a top-down approach, i.e. the common definition of long-term targets and individual country mitigation targets, the architecture for a Paris Agreement can best be characterised as a hybrid of top-down and bottom-up approaches (Germanwatch, 2014). On the one hand, long-term goals, such as the 2°C target, and common rules are decided on together, following a top-down approach. On the other hand, every country decides on its individual contribution to climate

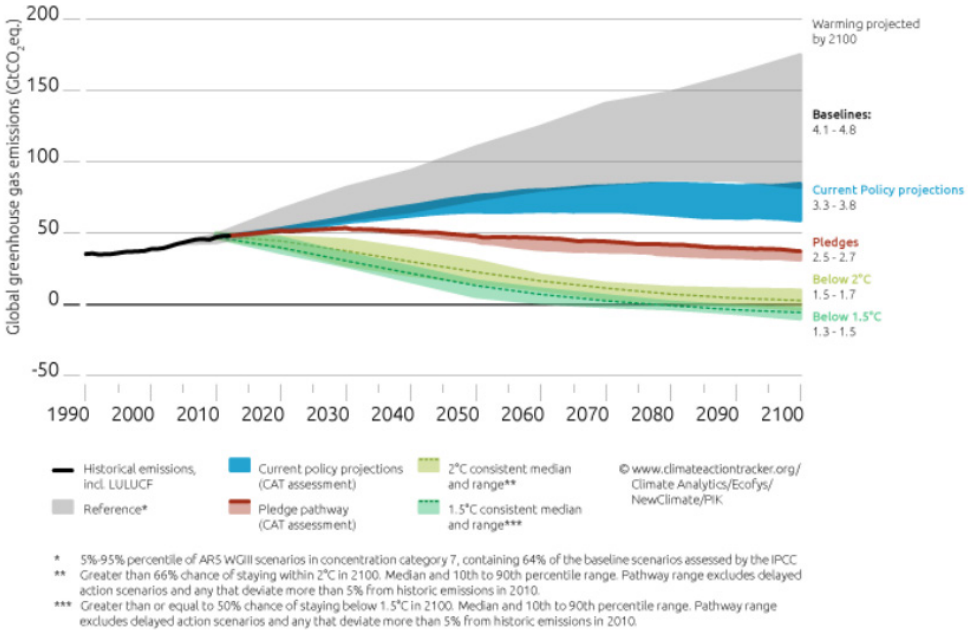
change mitigation on a voluntary basis, represented by the so called Intended Nationally Determined Contributions (INDCs). With this bottom-up approach, each country itself evaluates to what extent it is willing and capable to contribute to the reduction of GHG emissions; taking into account the level of ambition of all other parties. In contrast to the Kyoto Protocol, negotiations will not be about mitigation targets of individual countries but rather about finding a mechanism to ensure that individual pledges eventually meet the long-term global targets (Barrett et al., 2015).

Notably, climate talks in Paris will not only be about mitigation but equally concern measures of adaptation, the 'loss and damage' due to climate change, and financial assistance for developing countries – topics that gained more and more importance in the last years (Dröge, 2015). One important institution for financial assistance is the Green Climate Fund (GCF). Both mitigation efforts and questions of financial assistance will be discussed in more detail in what follows.

Mitigation Efforts – the Aggregate Impact of the INDCs

By November 18, 2015, 164 countries have submitted their INDCs to the UNFCCC, representing 91% of global emissions in 2010 and 92% of the global population (Climate Action Tracker, 2015b). For instance, the European Union pledges to reduce its GHG emissions by 40% by 2030, relative to the 1990 levels (Dröge and Geden, 2015; Kemfert et al., 2014).

First evaluations estimate the aggregate impact of these pledges on climate change. They show that the currently submitted INDCs are insufficient to limit global warming at 2°C, which corresponds to a maximum of 1000 Gt CO_2eq, that can still be emitted (IPCC, 2013). Given that all INDCs will in fact be met, Climate Interactive (2015) calculates a rise in the global mean temperature of about 3.5°C until 2100, while the analyses of Climate Action Tracker (2015a) and the IEA (2015) see a rise in temperature by 2.5-2.7°C. Figure 1 illustrates the gap between the emission pathway defined by the INDCs and the emissions reduction needed to limit global warming to 2°C. Similarly, the Synthesis Report of the UNEP (United Nations Environment Programme) calculates that the remaining carbon budget consistent with the 2°C target will already be used by about 75 per cent until 2030 (UNFCCC, 2015b).



* 5%-95% percentile of AR5 WGIII scenarios in concentration category 7, containing 64% of the baseline scenarios assessed by the IPCC
** Greater than 66% chance of staying within 2°C in 2100. Median and 10th to 90th percentile range. Pathway range excludes delayed action scenarios and any that deviate more than 5% from historic emissions in 2010.
*** Greater than or equal to 50% chance of staying below 1.5°C in 2100. Median and 10th to 90th percentile range. Pathway range excludes delayed action scenarios and any that deviate more than 5% from historic emissions in 2010.

Figure 1: Effect of current pledges and policies on global temperature (Climate Action Tracker, 2015a).

Still, the submission of INDCs by the vast majority of countries is generally seen as an important first step. It is up to the negotiations to make pledges comparable (Löschel, 2015) and to ensure that future national GHG emission reduction targets are reviewed on a regular basis and only allowed to increase in the level of ambition – a so-called "ratchet-up mechanism" (Germanwatch, 2014).

Another important question concerns the legal status of these INDCs (and the entire agreement). While the USA favour a system of "pledge and report", other negotiators, including the EU, instead prefer a stricter system of "commit and comply" (Flannery and de Melo, 2015). It is important for the EU to reach a legally binding treaty similar to the Kyoto Protocol (Dröge and Geden, 2015). By contrast, the US administration cannot credibly commit to an agreement that needs to be ratified by the Republican-led Senate. Accordingly, Jacoby and Chen (2015) expect that the final agreement will be reached in a form that does not require national ratification as the "United States are crucial to any future regime."

Financial Assistance – the Green Climate Fund

Both the transition towards low-carbon economies and the adaptation to climate change will be costly, especially for developing countries that need financial assistance (IPCC, 2014; Stern, 2006). Payments from developed countries are meant to compensate for developing countries' lower GDP, and thus lower leeway to invest in climate change mitigation and adaptation, and for their greater exposure to negative climate change effects.

The COP17 in Durban adopted the *Green Climate Fund* (GCF) as an instrument to fund, by equal shares, climate change adaptation and mitigation projects, with money from both the public and private sector. Industrialized countries committed themselves to annually raise $100 billion by 2020. For the year 2015 pledges from 38 countries sum up to $10.2 billion (Green Climate Fund, 2015a). At the beginning of November this year, the GCF announced its first round of funding: eight projects, worth $168 million, were approved. (Green Climate Fund, 2015b) The acceptance of projects before the COP21 represents an important milestone for the GCF on its way towards becoming the most important climate funding institution. Many multilateral climate funds exist, all with different purposes. The GCF, however, would be the biggest climate fund if pledges were transferred, with a wide range of funding goals. According to ODI (2014) the GCF can improve climate finance due to its broad leeway and low transaction costs.

Marcu, 2015, however, points out that the post-2020 financial assistance is not yet agreed on – one of the most important issue to be negotiated in Paris. Notably, the need for funding has reinitiated the debate on introducing carbon taxes, which also Christine Lagarde, the managing director of the IMF, has recently called for (International Business Times, 2015; Lagarde and Kim, 2015).

Outlook

Experts see a good chance that a Paris Agreement can be reached (cf. Barrett et al., 2015, Dröge, 2015, Löschel, 2015). In particular, the climate deal between China and the US in 2014 (New York Times, 2014) ended a long blockade between the two largest emitters of GHG. Moreover, the political will to reach a global agreement garnered after the failure in Copenhagen.

However, even if an agreement does materialise, it can vary between a strong and a "seriously watered-down agreement" (Marcu, 2015). This can best be illustrated by looking at the current 51-pages draft document, which represents the basis that the Parties will be negotiating on (UNFCCC, 2015a). The document includes the different viewpoints of all Parties, which leads to formulations like the following, with elements in square brackets representing different text options:

> *Parties aim to reach by [X date] [a peaking of global greenhouse gas emissions][zero net greenhouse gas emissions][a[n] X per cent reduction in global greenhouse gas emissions][global low-carbon transformation][global low-emission transformation][carbon neutrality][climate neutrality].*

To reach an agreement, diplomats in Paris will have to agree by consent on all contentious issues.

Most experts expect only a first-step towards an emission pathway reaching the 2°C target and already look beyond Paris (Barrett et al., 2015, Dröge, 2015). Accordingly, it is up to the COP21 to restart the international climate negotiations and to lay the foundations for further climate talks that eventually suffice to reach emission reductions that are consistent with a 2°C target.

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DIW Berlin – Deutsches Institut
für Wirtschaftsforschung
Mohrenstraße 58, 10117 Berlin

Tel. +49 (30) 897 89-0
Fax +49 (30) 897 89-200
http://www.diw.de

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