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The Paris Agreement 2015

Turning Point for the International
Climate Regime

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The Paris Agreement 2015 Turning Point for the International Climate Regime

In 2015 international climate negotiations were heading for a new major step. After extensive preparation, the 195 member states of the Framework Convention on Climate Change (UNFCCC) agreed in December on how to deal with the challenges of post-2020 climate policy. These include climate protection (mitigation), adapting to climate change (adaptation), loss and damage caused by climate change, technology transfer and the financing of all necessary measures (climate finance). The 21st Conference of the Parties (COP21) in the French capital adopted on 12th December a new “Paris Agreement” specifying climate policy targets and new processes to guarantee a broad participation of all parties.

It took six years of negotiations after the first attempt to agree a post-Kyoto climate regime failed in Copenhagen in 2009. The Copenhagen summit achieved no more than sketching the outlines of a new agreement. The European Union and its member states insisted to retain the Kyoto Protocol model for a new regime. They were unprepared for the non-binding pledge and review outcome (Copenhagen Accord), which was compatible with the interests of the United States, China and India.

The new post-2020 regime will be measured not only by the effectiveness of mitigation efforts, but also by whether it enables comprehensive and sustainable climate risk management. What shape does the regime take? One important component is the contribution of emerging economies to climate protection, lifting the “firewall” between industrialised and developing countries that has guaranteed to the emerging economies that responsibility for climate action lies with the industrialised countries. Another component is to support economically weak parties through climate finance and capacity-building on the basis of reliable sources. At the same time the new climate regime has flexible components which enable the 196 parties to reconcile their interests with the demands of future climate change.

Despite the high bar set in the run-up to Paris, there were good prospects of the 21st Conference of the Parties (COP21) passing an agreement. Firstly, since 2013 the United States has been working seriously to meet its own climate targets, and using bilateral channels

to persuade China and India to engage more strongly in climate policy cooperation. Washington's talks with Beijing in 2014 dissolved a long mutual blockade that had massively hindered international climate negotiations. Also, German and EU efforts in the preparations for Paris have persuaded other industrialised and emerging economies, including Brazil, Canada and Japan, to promise support for long-term climate protection.

Secondly, important elements of a new regime have already been established in the post-Copenhagen UNFCCC process. These include the Cancún Adaptation Framework, the Green Climate Fund (GCF), and the approach of voluntary contributions on the basis of national climate policies, rather than internationally negotiated burden-sharing. By December 2015 188 parties had notified the UNFCCC Secretariat of their INDCs (Intended Nationally Determined Contributions), which include emission reduction targets as well as adaptation measures in developing countries. The INDCs have evolved as a vehicle to enable broad participation in the new climate regime after 2020 and are now incorporated in the Paris Agreement as NDCs (Nationally Determined Contributions).

Thirdly, the Least Developed Countries (LDCs) wanted a comprehensive post-2020 climate regime to grant adaptation the same priority as climate protection and include adequate financial and technical support. Despite tight constraints on national budgets, a positive trend emerged until 2015. Resources for climate financing have been growing since Copenhagen, the GCF started funding its first projects, and the Paris Agreement as well as the INDCs name actual adaptation needs. Long-term development strategies to address the growing challenges associated with climate change are still in their infancy. A series of technical questions must be examined in greater detail, both to clarify the various adaptation needs and to support those UNFCCC parties now agreeing to take mitigation action for the first time.

The Paris Agreement is based on a consensus on all the core issues of post-2020 climate policy. It is, however, apparent that the regime will have to be developed further in 2016 and beyond. For example, the commitments announced in the INDCs have to be ratcheted up, as they are insufficient to achieve the two degree target sought for the end of the century. And the public/private post-2020 financial resources still have to be mobilised further in the donor countries.

In order to deliver on the Paris Agreement's climate policy agenda, the United States, China, India and the European Union, will above all have to bring their energy policy priorities in line with the global post-2020 climate targets. Also, the European Union, the United States and other historical polluters will have to meet the demands for climate finance after 2020. For Germany and the European Union, there are many opportunities for cooperation with these major players. In view of the German energy transition ("Energie-wende") and European experience with climate policy, the emerging economies are certainly interested in such cooperation. Beijing intends to introduce a national emissions trading scheme as soon as 2017, for which it will require further support. Delhi will want to advance its expansion of both coal power and renewables, and here too Germany can offer helpful input.

Although the United States achieved key breakthroughs in the COP21 preparations, it is unlikely that it will continue to actively shape the UNFCCC's climate agenda in 2016 (as an election year). The productive collaboration in 2015 between Washington's external climate policy and the German G7 Presidency came to an end with the Paris summit. A continuation would be conceivable under the German G20 Presidency in 2017 (following China in 2016). It would certainly offer opportunities to advance the climate agenda's next steps jointly with the United States at the highest political level.

The European Union, on the other hand, has to quickly conclude the legislative processes scheduled for 2016 to meet its 2030 climate target (at least 40 percent lower emissions than in 1990). Germany should operate both as a supporter of reforms of EU emissions trading and energy legislation, and as a mediator between the western and eastern EU member states.

Introduction: Reaching a New Climate Agreement in Paris

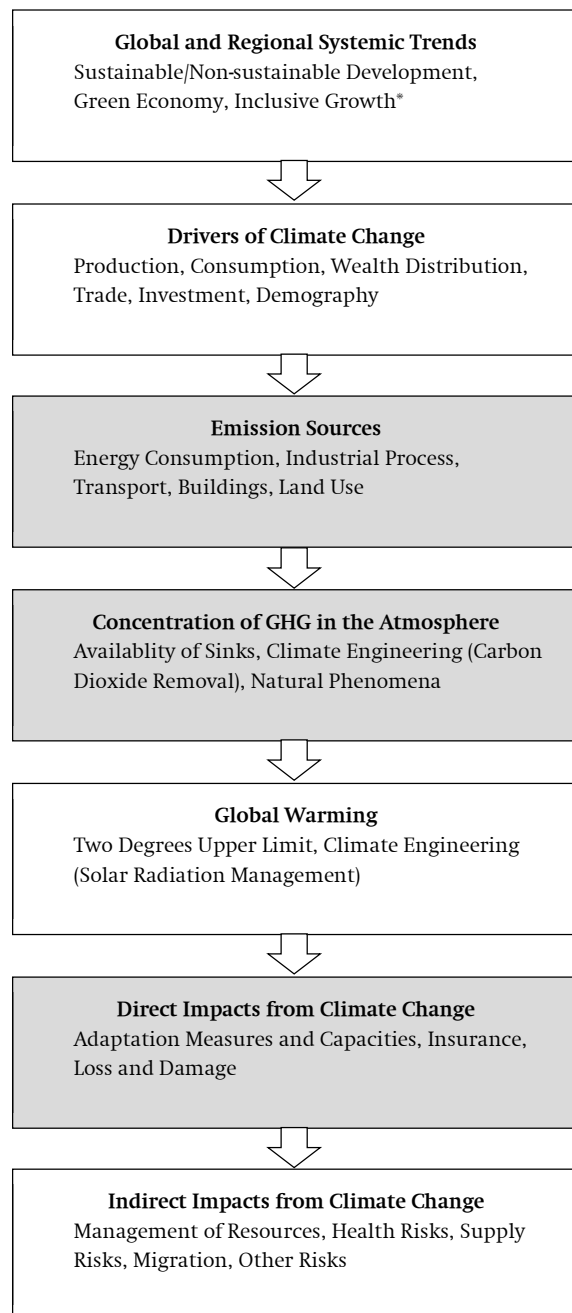
High expectations were placed on the 2015 climate negotiations under the UN Framework Convention on Climate Change (UNFCCC). They were to deliver an agreement which limits global warming and minimises the risks from climate change. Adapting to climate change was to be given equal priority to climate protection, and cooperation between developing, emerging and industrialised countries was to be placed on a new footing. The Paris climate talks in December 2015 succeeded where Copenhagen failed in 2009: in concluding a new and comprehensive global agreement under the UNFCCC.

Some cornerstones of a new regime have already been agreed over the past six years, including retaining the voluntary nature of national post-2020 mitigation measures, as introduced in Copenhagen. However, dimensions and processes of climate change are broader than that. Following Joyeeta Gupta, the challenges can be divided into various dimensions subject to influence by political action and societal change (see Fig. 1).¹ This involves political actors as well as representatives from civil society – business, research and non-governmental organisations (NGOs). Climate change is closely connected to *systemic developments*. Related national and international decisions influence climate change, for example pursuing sustainable development with a focus on “green” growth. Economic and consumer policies affect patterns of production and consumption, trade flows and investment decisions, which all function as *drivers* of climate change. Moreover, climate policy is substantiated by the definition of rules and policy instruments, such as standards or pricing systems for *emissions sources* – like energy consumption or land use. Accumulated greenhouse gases (GHGs) in the atmosphere can be removed by extending sinks (such as forests) or through technical interventions in the climate processes.² A comprehensive climate policy has to also address the

1 Joyeeta Gupta, *The History of Global Climate Governance* (Cambridge: Cambridge University Press, 2014).

2 The opportunities and risks of “climate engineering” are a divisive issue. See The Royal Society. *Geoengineering the Climate: Science, Governance and Uncertainty* (2009), https://royalsociety.org/~media/Royal_Society_Content/policy/publications/2009/8693.pdf (accessed 28 October 2015).

Figure 1
Processes and dimensions of climate change:
political, economic and systemic influences



* See <http://www.oecd.org/inclusive-growth/about.htm>.

Source: based on Joyeeta Gupta, *The History of Global Climate Governance* (Cambridge: Cambridge University Press, 2014), 24.

direct and indirect consequences of climate change. These include adaptation measures at international and local level, dealing with irreversible loss and damage caused by climate change, and addressing risks around security of supply ensuing from climate change.

What Was Negotiated before and in Paris?

The negotiations under the UNFCCC in Paris addressed three of the listed dimensions (grey in Fig. 1): emissions sources, GHG concentrations/sinks and direct impacts.

The regime under the Kyoto Protocol (1997), which will last until 2020, focuses solely on emissions sources and sinks.³ During the negotiations in the 1990s the guiding principle was to develop through ongoing negotiations a global regime anchored in binding treaties to limit the rise in global warming and stipulate what contribution each of the parties to the UNFCCC should make.⁴ Given the global character of climate change this is the first-best approach: the earth's atmosphere is a global public good that should be protected through global action. However, cooperation between states and actors is ineffective without an institutional backing to ensure its bindingness. Each country tends to free-ride on the mitigation action undertaken by others and thus implements few of the agreed measures or none at all. This could be observed under the Kyoto regime. In particular, political and economic considerations made it difficult for many parties to comply with the obligations. It was part of the Paris negotiations to correct this poor performance.

The crux in Paris was to agree on a legally binding framework that not only enables effective climate protection from 2020 onwards, but enhances the importance of adaptation, provides means for supporting developing countries' adaptation and mitigation efforts, and also is perceived as fair by all 196 parties.

³ The climate regime is understood here as an international regime that defines norm- and rule-based forms of cooperation between states (and non-state actors included in the regime); the regime manifests itself as a complex of explicit and/or implicit principles, rules and decision-making processes on which climate policy actors orientate their expectations. See Stephen Krasner, "Structural Conflict: The Third World against Global Liberalism", in *International Regimes*, ed. Stephen Krasner (Ithaca and London, 1983), 1–22.

⁴ Oliver Geden, *Modifying the 2°C Target: Climate Policy Objectives in the Contested Terrain of Scientific Policy Advice, Political Preferences, and Rising Emissions*, SWP Research Paper 5/2013 (Berlin: Stiftung Wissenschaft und Politik, June 2013).

For this the INDCs were a key component. They needed to be included in a way that is as binding as possible, prescribes a regular increase in ambitions, but avoids a prescriptive character. High demands were placed on incorporating adaptation as an equally important issue as mitigation, because related financial obligations were needed to increase substantially over time.⁵

The negotiations were thus aiming at a new way of incorporating the overarching principle of Common but Differentiated Responsibilities and Respective Capabilities (CBDR&RC) which has been at the heart of the climate regime since the founding of the UNFCCC in 1992. In line with that, the solutions negotiated in Paris needed to be generally regarded as equitable. The particular importance of this principle was clear, while the way in which tribute was going to be paid to it was not. Differentiation along the CBDR&RC demands that the regime takes into account each country's economic strength and historical contribution to climate change as well as its contributions and its needs for support for future efforts in mitigation and adaptation. Climate finance (for a definition see below, p. 27) and technology transfer serve as instruments to balance interests and incentives for deeper cooperation; and as such they also contribute to fulfilling the CBDR&RC principle. Ultimately, the Paris Agreement text includes references to differentiation in all key articles (see "The Paris Climate Summit 2015", pp. 23ff.).

Another element was the transparency of the new regime which relates to all processes, in particular to the accounting and reporting duties of the parties. As the developing countries are newcomers in submitting targets on protecting the climate, and as many INDCs formulate mitigation and adaptation in a conditional way – by connecting activities to financial and other support – the Paris Agreement needed to include standardised accounting and review procedures.

After the Copenhagen summit the UNFCCC negotiations have suffered harsh criticism, with a comprehensive solution to climate change apparently nowhere in sight. However, many climate initiatives and measures – not least initiated by the UNFCCC and the Kyoto Protocol – have emerged at national, regional and local level, driven by state and non-state actors, for example in the form of civil society and entrepreneur-

⁵ UNFCCC – United Nations Framework Convention on Climate Change, *Adoption of the Paris Agreement*, Proposal by the President, Draft Decision 12 December 2015, <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf> (accessed 8 January 2016).

neurial initiatives or alliances of cities. In Paris there were attempts to connect these diverse subnational and transnational activities with the global regime.⁶

Which Achievements Were Needed in Paris?

The 2015 climate talks were pursuing the goal of establishing a binding global post-2020 framework for a comprehensive climate policy and a consensus among all 195 participating states. Regardless of its substance or degree of obligation, this consensus already represents a diplomatic breakthrough, given that during the 2015 preparations for COP21 the interests of the parties were considerably apart on a number of details.

Moreover, the new agreement needed to firstly, demonstrate ways to coordinate national climate action and align them with the long-term objective of limiting greenhouse gas emissions sufficiently to meet the two degree target. That means supplying information, verifying the achieved emission reductions and revising them over time, and it means that the participation of as many countries as possible had to be secured.

Analyses by Climate Action Tracker in October 2015 showed that the INDCs would limit warming to an average of 2.7 degrees Celsius by the end of the century.⁷ Estimates by the UNFCCC Secretariat put the figure at 3.3 degrees. As the analyses showed that on the basis of the INDCs submitted thus far growth in emissions would slow by 2030 but certainly not by enough to reverse the global emissions trend (Fig. 2, p. 10), it was crucial for COP21 to find a dynamic solution for scaling up the INDCs.⁸

Secondly, the agreement was supposed to assign and distribute the risks associated with climate policy and with accelerating climate change. This required consensus on adaptation measures, recognition of loss

and damage, and above all provision of support (finance and technology).

In particular, agreement had to be achieved on future climate finance. The COP in Cancún 2010 already decided to provide the developing countries with US\$100 billion annually until 2020; by 2014 existing financial sources totalled some US\$61 billion (see “Financing Climate Policy”, pp. 27f.). A successful deal in Paris was dependent on ensuring climate finance *after 2020*.

The Paris COP21 was part of a broader UN agenda in 2015. The adoption of the 17 SDGs on 25 September 2015 created a new basis for cooperation between industrial, emerging and developing countries tackling global challenges. In the SDGs, all members of the UN have signed up to make their own contributions to fighting poverty, conserving resources and the environment, and shaping sustainable development paths. The Paris Agreement was expected to achieve a similar breakthrough by broadening the participation of countries in taking climate action and addressing the full scope of climate change related issues. Circumstances for COP21, however, were difficult as the EU was affected by internal crises and rising security concerns caused by conflicts in Syria and the Ukraine.⁹

Germany's Role

Germany's share of global GHG emissions is small, amounting to 2.4 percent in 2012 (see Table 1, p. 11, value for 2012). However, there are various respects in which the German economy and policy are significant for the development of global emissions, also beyond its national borders. On the one hand, German exports of efficient technologies and innovative processes, political instruments and sectoral initiatives (such as the energy transition) create so-called spillover effects that improve climate protection in other countries.

On the other hand, Germany's globalised economy also causes emissions abroad, when households and businesses import goods and services. These emissions, however, do not enter Germany's emissions data. The

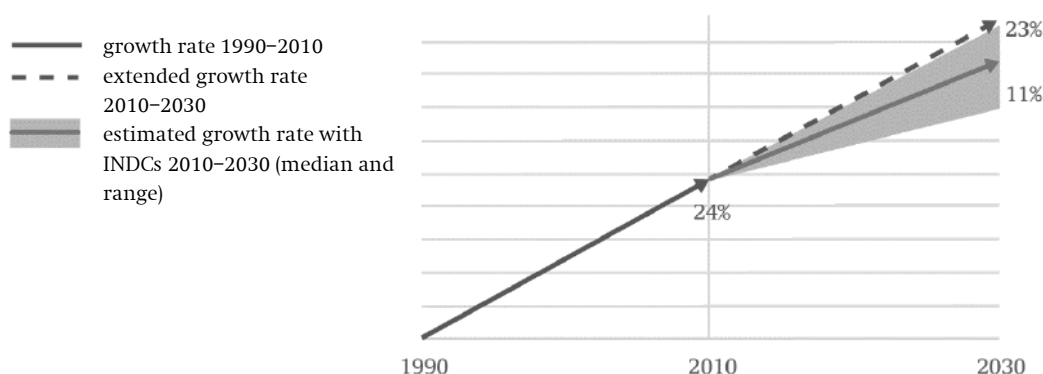
⁶ Michele Betsill, Navroz K. Dubash, Matthew Paterson, Harro van Asselt, Antto Vihma and Harald Winkler, “Building Productive Links between the UNFCCC and the Broader Global Climate Governance Landscape”, *Global Environmental Politics* 15, no. 2 (May 2015): 1–10.

⁷ Climate Action Tracker, *Tracking INDCs*, as of 23 October 2015, <http://climateactiontracker.org/indcs.html> (accessed 27 October 2015).

⁸ United Nations Framework Convention (UNFCCC), *Synthesis Report on the Aggregate Effect of Intended Nationally Determined Contributions (INDCs)*, 30 October 2015, 10ff., <http://unfccc.int/resource/docs/2015/cop21/eng/07.pdf> (accessed 6 November 2015). INDCs submitted up to 1 October 2015 were analysed.

⁹ Clearly, the terrorist attacks of 13th November 2015 in Paris had placed a severe constraint on the French government. It had to organise and secure the leaders' event on the 30th November with more than 150 heads of state and governments attending COP21, and two weeks with more than 45,000 participants. <http://newsroom.unfccc.int/cop21/parisinformationhub/cop-21cmp-11-information-hub-leaders-and-high-level-segment/> (accessed 21 January 2016).

Figure 2
Slowing of growth in emissions on basis of INDCs submitted by 1 October 2015 (147 parties)



Source: UNFCCC, *Synthesis Report on the Aggregate Effect of Intended Nationally Determined Contributions (INDCs)*, October 2015, 2, http://unfccc.int/files/focus/indc_portal/application/pdf/synthesis_report_-_brief_overview.pdf (accessed 10 November 2015).

German climate target of reducing CO₂ emissions by 40 percent by 2020 (compared to the figure for 1990) refers only to emissions released from German territory, and takes no account of emissions effects generated internationally or at EU level. For achieving the German target European policies and measures play a key role, because more than 40 percent of the German CO₂ emissions are regulated by the European emissions trading system (EU ETS). A reduction in emissions from industry or electricity generation in Germany has no effect on the total balance of European Union emissions in these sectors. Thus, Germany cannot speed up emissions reductions effectively without a corresponding strengthening of the EU climate agenda. In order to follow up on the Paris Agreement, it will be important to follow up on both the national and the EU policy level.

In preparing for the Paris negotiations, the German government was able to make productive use of its G7 Presidency in 2015. In June at the G7 Summit in Elmau, Bavaria, the reticent partners Canada and Japan were persuaded to agree to a long-term objective of decarbonisation by the middle of the century, meaning above all phasing out of fossil fuels.¹⁰ G7 activities and the bilateral talks the U.S. government has been conducting with China and India since 2014, adding to a cooperative spirit in the climate negotiations and bringing on board the major emerging economies. If

the new climate regime established by the Paris Agreement is to be strengthened and its targets are to be met, cooperation with the major players must continue and deepen from 2016 onwards.

This research paper examines the climate policy interests of the European Union, the United States, China, and India as they emerged before the COP21. It looks into the way in which economic and energy trends have contributed to the climate policy interests of each of these players at the national and international level and their role in preparing the Paris Agreement. Opportunities for future climate cooperation are identified.

The research paper also elaborates the principles and elements of the climate regime, including the UNFCCC, the Kyoto Protocol and the Paris Agreement, and concludes with an outlook to 2016 and the role of Germany and the European Union in the ongoing UNFCCC process.

¹⁰ G7 Germany, *Think Ahead: Act Together*, Leaders Declaration, G7 Summit, 7–8 June 2015, Schloss Elmau, 16–18, https://www.g7germany.de/Content/DE/_Anlagen/G8_G20/2015-06-08-g7-abschluss-eng.html (accessed 28 October 2015).

Table 1
GHG emissions of G20 states in 2005 and 2012 (Mt) and share of global total (%)

Ranking	GHG emissions 2005 (in Mt)	Share (%)	Ranking	GHG emissions 2012 (in Mt)	Share (%)
1 China	7,345.03	18.9	1 China	10,975.50	24.5
2 United States	6,841.50	17.6	2 United States	6,235.10	13.9
3 European Union	4,953.34	12.8	3 European Union	4,399.15	9.8
4 Russia	2,141.35	5.5	4 India	3,013.77	6.7
5 India	2,081.93	5.4	5 Russia	2,322.22	5.2
6 Japan	1,336.84	3.4	6 Japan	1,344.58	3.0
7 Germany	940.59	2.4	7 Brazil*	1,012.55	2.3
8 Brazil	840.19	2.2	8 Germany	887.22	2.0
9 Canada	722.57	1.9	9 Indonesia*	760.81	1.7
10 Mexico	656.93	1.7	10 Mexico	723.85	1.6
11 UK	636.75	1.6	11 Canada	714.12	1.6
12 Indonesia	626.62	1.6	12 South Korea	693.33	1.5
13 Italy	563.39	1.5	13 Australia	648.23	1.4
14 South Korea	559.27	1.4	14 UK	553.43	1.2
15 Australia	558.84	1.4	15 Italy	465.20	1.0
16 France	515.98	1.3	16 South Africa	462.60	1.0
17 South Africa	407.72	1.1	17 France	457.34	1.0
18 Saudi Arabia	352.08	0.9	18 Turkey	419.70	0.9
19 Argentina	328.34	0.8	19 Saudi Arabia	352.08	0.8
20 Turkey	319.47	0.8	20 Argentina	338.00	0.8
Total	32,728.73	84.4	Total	36,778.78	82.1
G20 total (without D, F, I, UK)	30,072.02	77.5	G20 total (without D, F, I, UK)	34,415.59	76.8
Rest of world	8,709.91	22.5	Rest of world	10,399.95	23.2
GHG global total	38,781.93	100.0	GHG global total	44,815.54	100.0

* In ten of the G20 states the inclusion of land use, land use change and forestry (LULUCF) changes emissions. According to CAIT the countries whose share of global GHGs would increase most if land use, land use change and forestry were included are Brazil (from 2.3 to 3.8 percent in 2012) and Indonesia (from 1.7 to 4.2 percent in 2012).

Source: Own calculations; data from Climate Analysis Indicators Tool (CAIT) (Washington, D.C.: World Resources Institute, 2015), <http://cait.wri.org> (accessed 22 June 2015). Without land use, land use change and forestry (LULUCF).

Between Summits: Climate Policy Exposed to Economic and Energy Trends

Since their early days the climate negotiations have been dominated by international trends that restrict or expand the options of individual states to act on mitigation and adaptation. Again, after the Copenhagen summit of 2009, the heads of state and government engaged actively in advance of the Paris COP21 and once more this summit was regarded in public as the last chance to fix the problem. Between these two COPs, however, the actual implementation of climate policy was heavily influenced by short-term economic and energy trends, which continue to play a central role in national climate and energy politics.

In particular national developments in the energy markets have driven the climate policies of individual states. The shale gas revolution in the United States, in the course of which U.S. CO₂ emissions fell, represents a prime example, as does air pollution in Chinese cities caused by coal-burning, or the German energy transition.

Crisis Reins in the Pioneer

The economic and financial crisis significantly affected the 2009 climate talks and the ensuing phase. The Lehman bankruptcy at the end of 2008 triggered an international financial crisis, followed in the subsequent year by a collapse in the real economy. All economies integrated into the international capital and goods markets were badly affected.¹¹

The biggest economic powers, which are at the same time the biggest emitters of greenhouse gases (see Table 1), established the G20 to discuss how to regulate the international financial markets. Many states launched economic stimulus packages, some with a “green” focus on environmentally- and climate-friendly investment.¹²

¹¹ Hanns Günther Hilpert and Stormy-Annika Mildner (eds.), *The Financial Crisis: Collateral Damage and Responses*, SWP Research Paper 6/2009 (Berlin: Stiftung Wissenschaft und Politik, May 2009).

¹² The states have announced a total volume of up to US\$2.8 trillion. See Susanne Dröge, “Climate Policy and Economic Bust: The European Challenges to Create Green Stimulus”, in *Carbon and Climate Law Review* 3, no. 2 (February 2009): 135–42.

However, political interest in climate change issues collapsed. International climate policy, which until the Copenhagen summit had been pushed at the highest policy level, fell back into the responsibility of the ministers for the environment or other departments. And while the financial crisis of 2009 came at the worst possible moment for Copenhagen’s expansion of climate financing under UNFCCC Article 11 (see “Financing Climate Policy”, pp. 27f.), it was at least possible for OECD countries to pledge US\$30 billion in “fast start finance” for 2010–2012.

From 2007 the EU adopted the role of driving force and pioneer of global climate action by setting up a climate and energy package including the EU’s 2020 climate target for the new global agreement, and by pushing for a successful Copenhagen summit. After the Copenhagen conference failed in delivering on the EU’s ambitions, the European Commission nevertheless sought to persuade the member states to increase the EU’s emission reduction target for 2020 from 20 to 30 percent, although this was intended only in case of other major players such as the United States taking comparable efforts (conditional target).¹³

Tensions over climate and energy policy have grown between the eastern and western member states, with the eastern states no longer willing to go along with the Commission’s ambitious agenda in the way they did before Copenhagen.¹⁴ Also in view of the urgency of the EU debt crisis, the 30-percent target never made it onto the agenda of an EU Council summit. After all, the EU 2020 target which was taken up for the second commitment period under the Kyoto Protocol (2012, Doha Amendment), remained a 20 percent reduc-

¹³ Oliver Geden and Severin Fischer, *Moving Targets: Negotiations on the EU’s Energy and Climate Policy Objectives for the Post-2020 Period and Implications for the German Energy Transition*, SWP Research Paper 3/2014 (Berlin: Stiftung Wissenschaft und Politik, March 2014); European Commission, *Analysis of Options to Move beyond 20% Greenhouse Gas Emission Reductions and Assessing the Risk of Carbon Leakage*, COM(2010) 265 final, Brussels, 26 May 2010.

¹⁴ Susanne Dröge and Oliver Geden, *The EU and the Paris Climate Agreement: Ambitions, Strategic Goals, and Tactical Approaches*, SWP Comments 29/2015 (Berlin: Stiftung Wissenschaft und Politik, April 2015), http://www.swp-berlin.org/en/publications/swp-comments-en/swp-aktuelle-details/article/the_eu_and_the_paris_climate_agreement.html (accessed 28 October 2015).

tion.¹⁵ The debate within the European Union subsequently turned to the definition of a new mitigation target for 2030,¹⁶ which was notified as its INDC in the UNFCCC process (see “The Paris Climate Summit”, pp. 23ff.).

Energy Trends: Coal Consumption, Shale Gas and Energy Transition

Global greenhouse gas emissions have increased sharply since the 1990s.¹⁷ According to the Intergovernmental Panel on Climate Change (IPCC), energy supply and industry are largely responsible for the growth in emissions, contributing 77 percent of the dynamic increase over the past decade (2000–2010), followed by transport (11 percent) and buildings (3 percent).¹⁸ This development takes the opposite direction to the reversal of the global emissions trend that the IPCC insists is required by 2020.¹⁹

Over the past fifteen years it is the consumption of coal that has increased most, with its share in the global energy mix rising from 23 percent in 2000 to 29 percent by 2014.²⁰ The IPCC’s fifth assessment report points out that the growing use of coal in the industrialised and emerging economies has not only stopped but in fact reversed the decarbonisation trend

– and the associated decline in the CO₂ intensity of global energy production that had begun in the past decade. If demand for energy continues to increase in response to population growth and economic growth, use of coal could contribute to a steady increase in global CO₂ emissions.²¹ The IPCC forecasts that in 2050 up to 42 Gt CO₂ annually could be emitted by the energy supply sector alone (compared to 14.4 Gt CO₂ in 2010). That is equivalent to the entire global emissions volume for 2008.²² India and China are the main drivers of this development. However, in 2015 the coal trend paused. In view of the uncertainties in the global energy market, the latest *World Energy Outlook* by the International Energy Agency (IEA) predicts that by 2040 coal will play a lesser role in China and decline sharply in the European Union.²³

On the demand side the curve is also flattening. In 2014, according to the *BP Statistical Review of World Energy 2015*, the rise in global energy consumption (plus 0.9 percent) slowed for the first time since 2009. Factors contributing to this drop – from plus 2 percent in 2013 – include a strong decline in energy consumption in the European Union (–3.9 percent) and in Japan (–3.0 percent), growth of 1.2 percent in the United States and 2.6 percent in China, and a new peak of 7.1 percent in India.²⁴

China’s Energy Future Determines Global Emissions ...

No other single country has as great an influence on climate change as the People’s Republic of China. Its share of global greenhouse gas emissions has increased from 18.9 percent in 2005 to 24.5 percent in 2012, and now exceeds the sum of U.S. and EU emissions (see Figs 3 and 4). While China’s per-capita GHG emissions were still roughly in line with the world average in 2005 (about 5.6 tonnes), by 2012 the figure had risen to 8.1 tonnes, well above that average (see Fig. 6, p. 17). The increase can be attributed largely to emissions from power generation (coal), energy-intensive industries (cement and steel) and transport. At the same time China is the world leader in investment in renew-

¹⁵ European Commission, *Kyoto 2nd Commitment Period (2013–20)*, http://ec.europa.eu/clima/policies/strategies/progress/kyoto_2/index_en.htm (accessed 28 October 2015).

¹⁶ Geden and Fischer, *Moving Targets* (see note 13).

¹⁷ According to the Climate Analysis Indicators Tool (CAIT) global GHG emissions in 2012 were about 46 Gt, including land use, land use change and forestry; the figure for 1990 was about 32 Gt. In the decade from 2000 to 2010 annual global GHG emissions rose from 35.5 Gt to 44.2 Gt. See CAIT, *Climate Data Explorer, Historical Emissions*, [http://cait.wri.org/historical/Country%20GHG%20Emissions?indicator\[\]=Total GHG Emissions Excluding Land-Use Change and Forestry&indicator\[\]=Total GHG Emissions Including Land-Use, Land-Use Change and Forestry&year\[\]= 2012&chartType=geo](http://cait.wri.org/historical/Country%20GHG%20Emissions?indicator[]=Total%20GHG%20Emissions%20Excluding%20Land-Use%20Change%20and%20Forestry&indicator[]=Total%20GHG%20Emissions%20Including%20Land-Use%20Change%20and%20Forestry&year[]=2012&chartType=geo) (accessed 28 October 2015).

¹⁸ Intergovernmental Panel on Climate Change (IPCC), *Summary for Policymakers: IPCC WG III Report*, 2014, 7–8, http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_summary-for-policymakers.pdf (accessed 28 October 2015).

¹⁹ In order to meet the global two degree target, global emissions would have to fall by up to 95 percent by 2050. IPCC, *Fifth Assessment Report: Summary for Policy Makers* (Cambridge and New York, 2013).

²⁰ International Energy Agency (IEA), *World Energy Outlook 2015: Executive Summary* (Paris, 2015), 5, <https://www.iea.org/Textbase/npsum/WEO2015SUM.pdf> (accessed 10 November 2015).

²¹ IPCC, *Summary for Policymakers* (see note 18), 8.

²² IPCC, *Technical Summary*, IPCC WG III, 2014, 69.

²³ IEA, *World Energy Outlook 2015* (see note 20).

²⁴ British Petroleum (BP), *Statistical Review of World Energy 2015*, http://www.bp.com/content/dam/bp-country/de_de/PDFs/brochures/bp-statistical-review-of-world-energy-2015-full-report.pdf (accessed 28 October 2015).

ables; in 2014 almost half of all global investment in wind and solar power occurred in China.

Compatibility of economic growth with environmental protection has high priority for Beijing, especially with air pollution in the urban areas reaching critical levels.²⁵ Since the 11th five-year plan (2006 to 2010) Beijing has been making an effort at climate protection. The current 12th five-year plan (2011–2015) defines targets for reducing energy and emissions intensity (by 16 and 17 percent per unit of GDP respectively) and for increasing the share of renewables (to 11.4 percent compared to 8.3 percent in 2010).²⁶

China's economic growth will slow in the coming years (7.9 percent was achieved in 2014; growth in 2015 was 6.9, very close to the planned 7 percent),²⁷ meaning that emissions will also increase less. The result of initial efforts to improve efficiency is very positive. From 2005 to 2013 the Chinese economy grew at an annual average of 10 percent, its energy consumption by just 6 percent. During the same period energy intensity fell by about 26 percent, thus the rising trend of earlier years was stopped. However the success of short-term measures – for example coal consumption falling by 7 percent in 2014 compared to 2013 – could be misleading as achieving further drastic emissions reductions will be difficult. Coal still accounted for 68.5 percent of China's primary energy consumption in 2013, and continues to supply the lion's share of power generation. Considerable increases in large power stations' efficiency since 2005 and the successful reduction in energy intensity in manufacturing resulted from both low-hanging fruit in terms of efficiency and the closure of highly emission-intensive installations.²⁸ Analysts therefore assume

that the trends for industrial emissions, energy savings and efficiency improvements in power generation will flatten off.²⁹ If emissions are to be decisively curtailed there will also have to be incisive industrial reforms and an expansion of the catalogue of political interventions on consumption.

Chinese energy prices are a critical point, too. The energy companies are still state-controlled and prices do not reflect market interactions; additionally energy sector reforms have been slow. As a first move towards market-based pricing, China is testing emissions trading in selected provinces, with seven pilot projects targeting above all the most energy-intensive companies. In 2015 China announced in the context of the UNFCCC negotiations that it will start national emissions trading in 2017. In view of the delays experienced in the test phase, this target seems rather over-ambitious and analysts assume a fully-fledged system will not be running before 2020 at the earliest.³⁰

In any case, given the number of plants and emissions covered a national cap and trade system will automatically have an impact on China's emissions path and international climate policy: If emissions trading in China was fully operational, costs would rise for companies with inefficient installations, and the international competitiveness of emission-intensive Chinese production would decrease. In the longer run this could in fact create benefits for the Chinese economy: Increasing costs in energy- and emissions-intensive sectors will stimulate modernisation, efficiency and the search for alternatives.³¹ China has repeatedly declared that it wants to encourage production of high-value products for the world market and to reduce heavy industry's share of GDP in favour of services.

²⁵ Tania Branigan, "Chinese Premier Declares War on Pollution in Economic Overhaul", *Guardian*, 5 March 2014, <http://www.theguardian.com/world/2014/mar/05/china-pollution-economic-reform-growth-target> (accessed 28 October 2015); Susanne Dröge and Gudrun Wacker, *China's Approach to International Climate Policy: Change Begins at Home*, SWP Comments 40/2014 (Berlin: Stiftung Wissenschaft und Politik, September 2014).

²⁶ Can Wang, Wenjia Cai, Hua Liao and Jie Lin, "China's Carbon Mitigation Strategies: Enough?" *Energy Policy* 73 (October 2014): 47–56.

²⁷ See the figures published in March 2015: "The Economy: Bad Beginnings", *Economist*, 14 March 2015, 52. A sharp fall was reported at the end of August; see "Taking a Tumble: Briefing: China and the World Economy", *Economist*, 29 August 2015, 18.

²⁸ The yield rose from 41.3 to 75.6 percent. See *BP Statistical Review*, cited in Wang et al., "China's Carbon Mitigation Strategies" (see note 26), 53.

²⁹ Wang et al., "China's Carbon Mitigation Strategies" (see note 26), 51 and 52.

³⁰ "Doubt Cast over Start of China Emissions Trading Scheme", *Financial Times*, 28 September 2015, <http://www.ft.com/intl/cms/s/0/ff2f22fc-65ba-11e5-a28b-50226830d644.html#axzz3pBqoAQQ1> (accessed 28 October 2015); Megan Darby, "Low prices raise concerns for China carbon market", *Climate Home*, <http://www.climatechangenews.com/2016/01/29/low-prices-raise-concerns-for-china-carbon-market/> (accessed 29 January 2016).

³¹ Thomas Spencer, Roberta Pierfederici et al., *Beyond the Numbers: Understanding the Transformation Induced by INDCs: A Project of the MILES Project Consortium*, Study 5/2015 (Paris: Institut du développement durable et des relations internationales [IDDRI], 15 October 2015), <http://www.iddri.org/Publications/Collections/Analyses/MILES%20report.pdf> (accessed 6 November 2015).

Figure 3
Share of global GHG emissions in 2005 (%)

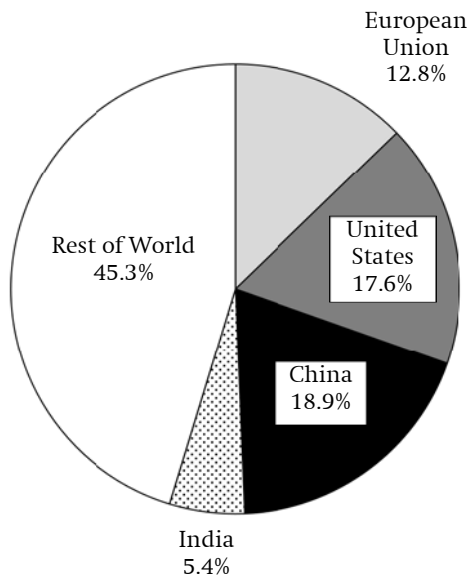
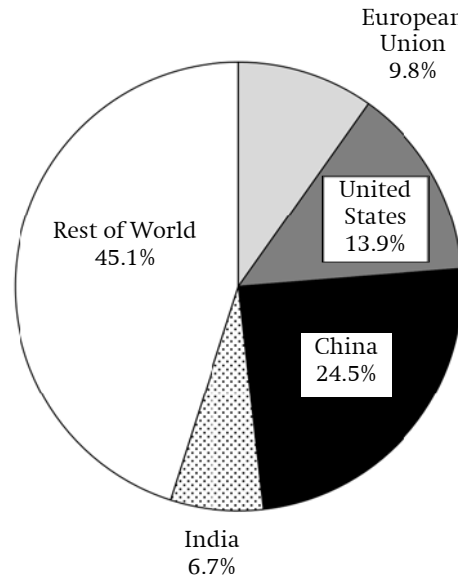


Figure 4
Share of global GHG emissions in 2012 (%)



Source for Figs 3 and 4: Own calculations; data from Climate Analysis Indicators Tool (CAIT) (Washington, D.C.: World Resources Institute, 2015), <http://cait.wri.org> (accessed 22 November 2015).

... As Will India's Growing Demand for Energy

India takes place number four in the ranking of global greenhouse gas emitters, behind China, the United States and the European Union, and could move up the list even further in the coming years (see Figs 3 and 4).

The Indian government under Narendra Modi is prioritising economic development and pressing forward with industrialisation, promoting foreign direct investment and accelerating technology transfer. Its aim is above all to bring economic growth, which was about 5 percent in 2014, back up to an annual rate of 7 or 8 percent.³² Alongside the liberalisation and opening of India's markets, improving the energy supply will be a crucial precondition for such an upturn.³³

The Indian energy market is, however, characterised by fragmentation and confusion of responsibilities over which central and state governments compete. A shortage of generating capacity and the lack of reliable energy infrastructure mean that the Indian authorities have difficulty guaranteeing adequate electricity supply to major industrial facilities.

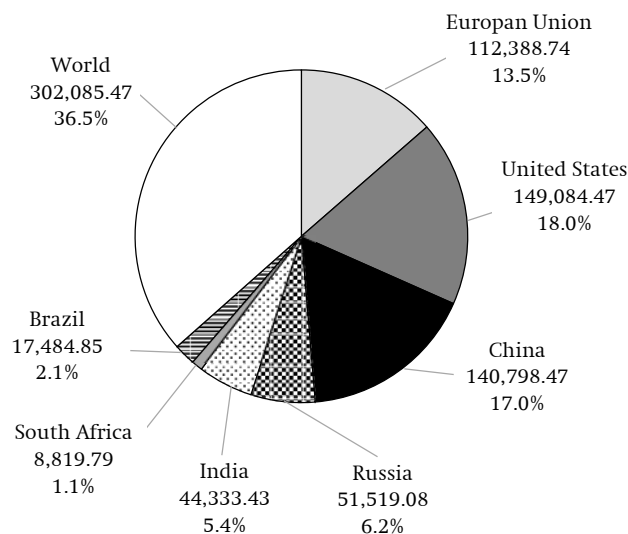
In order to satisfy the rapidly growing demand for electricity, the Modi government is pursuing the expansion of renewables, alongside the use of coal. In September 2015 the Indian cabinet decided – with an eye to the Paris COP21 – to expand solar and wind capacity by 350 GW over the next fifteen years. In its INDCs India sets a target of producing 40 percent of its electricity from renewables by 2030.³⁴

³² "India's Growth Rate Set to Surpass China this Year: World Bank", *Economic Times*, 11 November 2015, <http://economictimes.indiatimes.com/news/economy/indicators/indias-growth-rate-set-to-surpass-china-this-year-world-bank/articleshow/47621953.cms> (abgerufen 28 October 2015).

³³ Piyush Pandey, "China to Invest \$100 Billion in India over 5 Years", *Times of India*, 13 September 2014, <http://timesofindia.indiatimes.com/business/india-business/China-to-invest-100-billion-in-India-over-5-years/articleshow/42386772.cms> (accessed 28 October 2015).

³⁴ "India to Set 35% Carbon Intensity Reduction Target by 2020 – Media", *Carbon Pulse*, 22 September 2015, <http://carbonpulse.com/india-to-set-35-carbon-intensity-reduction-target-by-2020-media/> (accessed 28 October 2015); UNFCCC, *INDCs as Communicated by Parties*, as of 28 October 2015, <http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx> (accessed 28 October 2015).

Figure 5
Cumulative GHG emissions 1850 to 2012
(Mt, country shares in %)



Source: Own calculations; data from Climate Analysis Indicators Tool (CAIT) (Washington, D.C.: World Resources Institute, 2015), <http://cait.wri.org> (accessed 22 November 2015). Without land use, land use change and forestry (LULUCF).

Energy Transition Made in the U.S.

The U.S. energy supply has witnessed fundamental change since 2009 through the rise of shale gas production and its growing share of energy consumption.³⁵ In 2011 U.S. emissions of greenhouse gases were 6.9 percent lower than in 2005, also due to the economic crisis. However, according to the UNFCCC emissions in 2011 were 8 percent above the Kyoto base year of 1990.³⁶ Emissions from the energy and transport sector declined again in 2012, falling by a further 3.4 percent according to the U.S. Environmen-

³⁵ Shale gas production increased tenfold between 2005 and 2012. Susanne Dröge and Kirsten Westphal, *Shale Gas for a Better Climate? The US Fracking Revolution Challenges European and International Climate Policy*, SWP Comments 25/2013 (Berlin: Stiftung Wissenschaft und Politik, August 2013), 2.

³⁶ UNFCCC, Subsidiary Body for Implementation, Thirty-ninth Session, Warsaw, 11–16 November 2013, *Item 3(b) of the provisional agenda. National communications and greenhouse gas inventory data from Parties included in Annex I to the Convention. Report on national greenhouse gas inventory data from Parties included in Annex I to the Convention for the period 1990–2011. National Greenhouse Gas Inventory Data for the Period 1990–2011, FCCC/SBI/2013/19* (Warsaw 2013), Tab. 5, 14, <http://unfccc.int/resource/docs/2013/sbi/eng/19.pdf> (accessed 28 October 2015).

tal Protection Agency (EPA).³⁷ Under the Copenhagen Accord of 2009 the United States agreed to reduce its GHG emissions voluntarily by 17 percent by 2020 (compared to 2005). That target is thus within reach.³⁸

The key drivers of the shale gas (and shale oil) revolution were advances in extraction technology and a market environment characterised by favourable political and legal circumstances offering the necessary investment security, a developed infrastructure and gas market, the proximity to consumers, and not least the U.S.-specific land ownership rights.³⁹

However, unlike the German energy transition this development is not based on any long-discussed concept, or on a vision of greening energy sources. Instead it stems above all from Washington pursuing greater independence from imported oil and gas. Under the Obama administration, Washington has explicitly turned attention to promoting clean energy and improving energy efficiency. As well as natural gas, the share of nuclear in the energy mix is to increase; coal-fired power plants are to be equipped with CCS (carbon capture and sequestration) and energy efficiency massively improved, including in buildings, in the transport sector and in product standards.⁴⁰

The U.S. production of unconventional gas has worldwide repercussions via the energy markets. The rapid U.S. switch to gas for electricity generation was – besides the impact on oil markets – especially important, with a drop of about 12 percent in domestic coal consumption in 2012. U.S. coal production fell by only 7.5 percent and the rest was exported.⁴¹ This has contributed to the international rise of coal use and falling coal prices.

³⁷ Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2012. Executive Summary* (Washington, D.C. 2014), 4, <http://epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2014-Chapter-Executive-Summary.pdf> (accessed 28 October 2015).

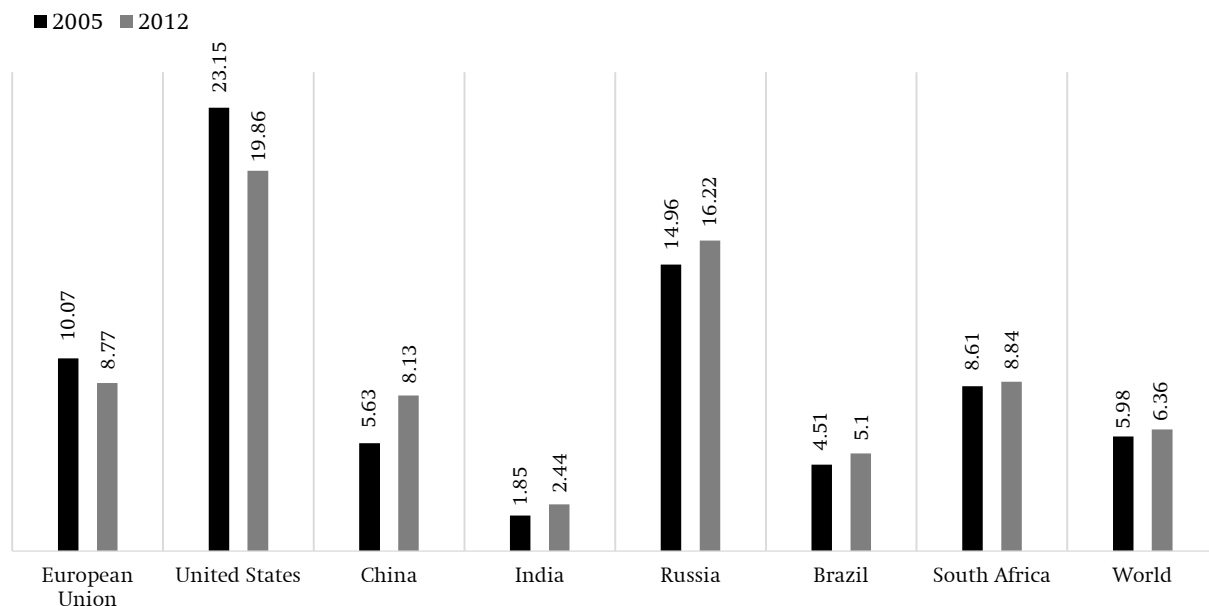
³⁸ According to the World Resources Institute (WRI) the present legal basis is sufficient to expand climate protection, but achieving the 2020 target would require additional regulatory efforts. See Nicholas M. Bianco, Franz T. Litz, Kristin I. Meek and Rebecca Gasper, *Can the U.S. Get There from Here? Using Existing Federal Laws and State Action to Reduce Greenhouse Gas Emissions: Summary for Policymakers* (Washington, D.C.: WRI, 2013).

³⁹ Dröge and Westphal, *Shale Gas for a Better Climate?* (see note 35), 5.

⁴⁰ White House, *The President's Climate Action Plan 2013* (Washington, D.C., 2013), <http://www.whitehouse.gov/sites/default/files/image/president27climateactionplan.pdf> (accessed 28 October 2015).

⁴¹ *Ibid.*, 6.

Figure 6
Per-capita GHG emissions in 2005 and 2012 (t)



Source: Own calculations; data from Climate Analysis Indicators Tool (CAIT) (Washington, D.C.: World Resources Institute, 2015), <http://cait.wri.org> (accessed 22 November 2015).

The shale gas revolution has attracted the attention of energy policymakers worldwide. First, because this kind of gas extraction would also be possible in other parts of the world and raised hopes of increasing energy security.⁴² Second, a low domestic U.S. gas price has negative implications for the competitiveness of non-U.S. energy-intensive companies, and in Germany and other EU countries this intensified the debate whether climate action is compatible with national economic interests.

Energy Transition Made in Germany

Although the German energy transition (“Energie-wende”) of 2011 was labelled as climate policy project, the specific trigger was the Japanese nuclear disaster at Fukushima on 12 March 2011. Accordingly, the phase-out of nuclear energy production was the immediate first step. The longer-term goal of the energy transition is to improve energy efficiency and expand

⁴² US Energy Information Administration, *Technically Recoverable Shale Oil and Shale Gas Resources: An Assessment of 137 Shale Formations in 41 Countries outside the United States* (Washington, D.C., 2013), <http://www.eia.gov/analysis/studies/worldshalegas/pdf/overview.pdf> (accessed 28 October 2015).

renewables to largely decarbonise electricity generation by 2050 and at the same time reduce German emissions by 80 percent compared to the figure for 1990.⁴³ Renewables should then account for 80 percent of electricity generation.⁴⁴

In 2012 and 2013 the introduction of the energy transition caused greenhouse gas emissions in Germany to rise, mainly due to coal consumption.⁴⁵

⁴³ Erik Gawel et al., “Die Zukunft der Energiewende in Deutschland”, *Energiewirtschaftliche Tagesfragen* 64, no. 4 (April 2014): 37–44, <http://www.et-energie-online.de/Zukunftsfragen/tabid/63/NewsId/914/Die-Zukunft-der-Energiewende-in-Deutschland.aspx> (accessed 28 October 2015); Agora Energiewende, *Das deutsche Energiewende-Paradox: Ursachen und Herausforderungen: Eine Analyse des Stromsystems von 2010 bis 2030 in Bezug auf Erneuerbare Energien, Kohle, Gas, Kernkraft und CO₂-Emissionen* (Berlin, 2014), http://www.agora-energie-wende.de/fileadmin/downloads/publikationen/Analysen/Trends_im_deutschen_Stromsektor/Analyse_Energiewende_Paradox_web.pdf (accessed 28 October 2015).

⁴⁴ The idea of an energy transition was already discussed in the early 1980s: Florentin Krause, Hartmut Bossel and Karl-Friedrich Müller-Reißmann, *Energie-Wende. Wachstum und Wohlstand ohne Erdöl und Uran* (Frankfurt, 1980).

⁴⁵ German CO₂ emissions have risen since 2010. In 2013 the increase was 1.2 percent. Umweltbundesamt, “Treibhausgasausstoß im Jahr 2013 erneut um 1,2 Prozent leicht gestiegen: Kohlestrom erhöht die Emissionen – und gefährdet so das

Internationally this fuelled doubts as to whether climate protection can be compatible with economic growth. However, the reasons for the increase in GHG emissions are to be found in deficits in the embedding and coordination of the energy transition. Neither were the energy policy instruments adjusted in time, nor was a power production and infrastructure investment strategy launched, nor was the German policy coordinated with the European energy and climate policy. The emissions increase stopped after three years in 2014, due to a mild winter and increasing consumption of renewables.⁴⁶

For 2020 Germany has announced a target of reducing emissions by 40 percent compared to 1990 levels.⁴⁷ The gap of 5 to 8 percent identified by the German Environment Ministry in 2014 is to be closed by improving energy efficiency, regulating the electricity sector, and by stipulating action in housing, transport, agriculture, waste disposal and industry. A reform of the European emissions trading system (EU ETS) is also on the agenda.⁴⁸ After the Paris Agreement, the German discussion about whether and how to phase out coal-based power production altogether has intensified.⁴⁹

nationale Klimaschutzziel", press release, 10 March 2014, <http://www.umweltbundesamt.de/presse/presseinformationen/treibhausgasausstoss-im-jahr-2013-erneut-um-12> (accessed 28 October 2015).

⁴⁶ Umweltbundesamt, "UBA's 2014 Emissions Data Indicates Trend Reversal in Climate Protection. Emissions at Lowest Point since 2010", <https://www.umweltbundesamt.de/en/press/pressinformation/ubas-2014-emissions-data-indicates-trend-reversal> (accessed 15 January 2016); Agora Energiewende, *Die Energiewende im Stromsektor: Stand der Dinge 2014: Rückblick auf die wesentlichen Entwicklungen sowie Ausblick auf 2015* (Berlin, 2015), http://www.agora-energiewende.de/fileadmin/downloads/publikationen/Analysen/Jahresauswertung_2014/Agora_Energiewende_Jahresauswertung_2014_web.pdf (accessed 28 October 2015).

⁴⁷ Julia Repenning, Lukas Emele, Sibylle Braungardt and Wolfgang Eichhammer, *Klimaschutzszenario 2050: Zusammenfassung*, Studie im Auftrag des Bundesministeriums für Umwelt, Naturschutz, Bau und Reaktorsicherheit (Berlin, 15 April 2014), 32, <http://www.oeko.de/oekodoc/2019/2014-604-de.pdf> (accessed 28 October 2015).

⁴⁸ Bundesumweltministerium, *Aktionsprogramm Klimaschutz 2020* (Berlin, 2014), http://www.bmub.bund.de/fileadmin/Daten_BMU/Download_PDF/Aktionsprogramm_Klimaschutz/aktionsprogramm_klimaschutz_2020_broschuere_bf.pdf (accessed 28 October 2015).

⁴⁹ Climate Action, "Germany to Scrap Coal by 2050", 15 December 2015, http://www.climateactionprogramme.org/news/germany_to_scrap_coal_by_2050 (accessed 11 January 2016).

From an international perspective the German energy transition is unique, but it matters for international climate policy to the extent that the German pathway could demonstrate that economic growth and a climate-friendly energy sector are in fact compatible with one another. The German project therefore encounters great interest in a range of countries. Experts from the emerging economies of Brazil, China and South Africa see it having great long-term potential for the German economy and security of supply, but regard the model as only partially transferable.⁵⁰

⁵⁰ Konrad-Adenauer-Stiftung, *Wahrnehmung der deutschen Energiewende in Schwellenländern: Ergebnisse einer qualitativen Expertenbefragung in Brasilien, China und Südafrika* (Berlin, 2013), http://www.kas.de/wf/doc/kas_34940-544-1-30.pdf?140403125805 (accessed 28 October 2015).

Before Paris: Priorities of the Four Biggest Emitters

China, the United States, the European Union and India top the list of the biggest GHG emitters (see Table 1, p. 11, figures for 2012) and have influenced directly and indirectly how the climate negotiations progressed in 2015 – be it by virtue of their positions as leading regional powers or by taking a leading role for a negotiating group such as the G77.⁵¹ The European Union, for example, championed the interests of the Least Developed Countries (LDCs), above all those of the Alliance of Small Island States (AOSIS). China and India are members of the Like-Minded Developing Countries on Climate Change (LMDC), and traditionally also represent the interests of the G77. The UNFCCC encompasses a multitude of other groups that often meet informally to advance particular objectives in the talks.⁵²

The U.S. Took the Lead

In 2009 in Copenhagen the United States announced it would reduce its GHG emissions by 17 percent by 2020, compared to 2005 levels. After failing to get a climate bill through the Senate in 2009, U.S. President Barack Obama launched a new climate agenda in 2013, leveraging the Clean Air Act of 1970. Climate change now became the focus of growing attention in the United States and was stimulated inter alia by the third joint climate report by a group of thirteen federal agencies, warning of the consequences of climate change for the United States in May 2014.⁵³

With foreign policy initiatives in 2014 and 2015, Washington took decisive steps in setting the stage for

the UNFCCC process. Secretary of State John Kerry's engagement in China brought a breakthrough in November 2014: for the first time the two biggest global emitters jointly announced the climate targets they intended to pursue after 2020. Washington notified its post-2020 climate target (INDC) to the UNFCCC on 3 March 2015. By 2025 the United States plans to reduce its emissions by 26 to 28 percent compared 2005 levels.⁵⁴ Also, President Obama sought to cooperate similarly with India. In 2015 his engagement has had a growing impact on the preparations for the Paris conference.

In view of the elections in November 2016 and a new president taking office in January 2017, Obama is forging ahead. The more measures already initiated, the stronger the criticism to which a potential Republican president would be exposed if he sought to reverse them.⁵⁵ Before Paris, the key issue was to further national legislation on climate protection to increase the chances of President Obama signing an international agreement via his executive authority. For the current Administration, Congress was the limiting factor in the 2015 climate talks.⁵⁶ An international treaty like the Kyoto Protocol would not find the necessary two-thirds majority in the Senate. Wishing to bypass Congress, Obama was pushing for the agreement in Paris to adopt a legal form that requires only the President's signature. The only option for the U.S. ratifying is the "presidential executive agreement",

⁵⁴ UNFCCC, *INDCs as Communicated by Parties* (see note 34).

⁵⁵ Erica Martinson, "EPA Carbon Proposal Faces Major Hurdles", *Politico*, 2 November 2014, <http://www.politico.com/story/2014/06/epa-carbon-proposal-global-warming-climate-107348.html> (accessed 28 October 2015).

⁵⁶ Susanne Dröge and Sonja Thielges, *New Climate Leadership: "Yes We Can ... After All" – the United States Is Caught between International Ambitions and Domestic Challenges*, SWP Comments 34/2014 (Berlin: Stiftung Wissenschaft und Politik, July 2014); see also Center for Climate and Energy Solutions, *Q&A: EPA Regulation of Greenhouse Gas Emissions from Existing Power Plants*, (Arlington, VA, n.d.), <http://www.c2es.org/federal/executive/epa/q-a-regulation-greenhouse-gases-existing-power> (accessed 28 October 2015); Kyle Danish, Stephen Fotis, Ilan Gutherz, Avi Zevin, and Gabriel Tabak, *EPA Issues Proposed Clean Power Plan to Limit Greenhouse Gas Emissions from Existing Power Plants* (N.p.: Van Ness Feldman, LLP, 2 November 2014), <http://www.vnf.com/2929> (accessed 28 October 2015).

⁵¹ Other key actors include Russia, Brazil, Mexico, South Africa and various countries that also represent the climate interests of their region, for example the Philippines, Indonesia, Egypt, Colombia and Chile.

⁵² "Infographic: Mapping Country Alliances at the International Climate Talks", *Carbon Brief Blog*, 10 December 2014, <http://www.carbonbrief.org/blog/2014/12/infographic-mapping-country-alliances-at-the-international-climate-talks/> (accessed 28 October 2015); AOSIS, <http://aosis.org> (accessed 28 October 2015).

⁵³ US Global Change Research Program, *Advance Global Change Science*, <http://www.globalchange.gov/what-we-do/advance-global-change-science> (accessed 28 October 2015).

which falls under the President's constitutional foreign policy powers. It applies only if the Paris Agreement is in accord with existing U.S. law and can be implemented under existing legislation.⁵⁷

The cornerstones of the U.S. position have not in fact fundamentally changed since Copenhagen. International cooperation and support for the UNFCCC process are building blocks of the Climate Action Plan, which continues the strategy already applied successfully in 2009 at the Copenhagen climate summit:⁵⁸ voluntary reduction targets, technological solutions for reducing emissions, bilateral cooperation with emerging economies and developing countries, forest conservation, transparency, and action on so-called "short-lived climate pollutants" (such as black carbon and ozone). Energy efficiency and "clean" energy (including gas and nuclear) are regarded as important levers for cooperation on climate protection.

Any decision on funding international climate policy, however, must be made by Congress in the scope of the budget negotiations, which continue into 2016. In the course of the Paris talks, President Obama could therefore only announce that the United States intended to participate in funding global climate policy, including by bilateral channels.⁵⁹

China: Economic Uncertainty Hindered International Commitment

Beijing announced in November 2014 that it wanted to achieve its peak year of absolute CO₂ emissions by 2030 and thereafter reverse the trend. Although Washington pressed for an earlier target, the Chinese leadership declined on account of the great uncertainty in its growth forecasts. A second reason why a dependable statement about the development of Chinese

GHG emissions is not possible is that industrial structural reforms are overdue.⁶⁰ Nevertheless China's growth will most likely be associated with further industrialisation and urbanisation, and per-capita emissions are therefore likely to increase.⁶¹

The question of the peak year and trend reversal has been frequently and hotly debated in China in the context of the international climate negotiations.⁶² Reductions in coal consumption and/or new utilisation methods are equally controversial.⁶³ Delays in implementation arise above all at the local level, where control is also lacking. Moreover, the conflicting goals that exist between the drive for growth and urbanisation on the one side and sustainability and environmental protection on the other have not been resolved.⁶⁴

In the 2015 negotiations under the UNFCCC Beijing has operated above all in the context of the usual interest groups (the G77), but made early commitments on the international stage from which it traditionally shies away. After the bilateral talks with the United States at the beginning of 2014, China agreed to support a new climate agreement and to announce its peak year at an early stage.⁶⁵ Well before the climate summit in Paris it announced its climate target and notified the INDCs to the UNFCCC on 30 June 2015, including 2030 as "peak year".⁶⁶ Despite growing economic problems since mid-2015, the Chinese government has announced its decision to start national emissions trading from 2017, and to contribute US\$3.1 bil-

⁵⁷ Daniel Bodansky, *Legal Options for U.S. Acceptance of a New Climate Change Agreement*, C2ES Brief (Arlington, VA, 2015), <http://www.c2es.org/docUploads/in-brief-legal-options-us-acceptance-new-climate-change-agreement.pdf> (accessed 28 October 2015).

⁵⁸ Center for Climate and Energy Solutions, *Summary: Copenhagen Climate Summit* <http://www.c2es.org/international/negotiations/cop-15/summary> (accessed 28 October 2015); White House, *The President's Climate Action Plan 2013* (see note 40).

⁵⁹ Suzanne Goldenberg, "White House Unveils \$34m Climate Plan to Disaster-Proof Developing Countries", *Guardian*, 9 November 2015, <http://www.theguardian.com/environment/2015/jun/09/white-house-climate-plan-developing-countries> (accessed 28 October 2015).

⁶⁰ Neil Gough, "For Chinese Economy, Strengths Are Now Weaknesses", *New York Times*, 11 March 2015, <http://www.nytimes.com/2015/03/12/business/international/for-chinese-economy-steel-goes-from-strength-to-weakness.html> (accessed 28 October 2015).

⁶¹ CAIT, cited in: Wang et al., "China's Carbon Mitigation Strategies" (see note 26), 51.

⁶² Wang et al., "China's Carbon Mitigation Strategies" (see note 26); according to scenarios prepared by the International Energy Agency (IEA): 2035, 2030 or already in the course of the 2020s.

⁶³ Dröge and Wacker, *China's Approach to International Climate Policy* (see note 25); "China Confronts Its Coal Problem", *New York Times*, 16 August 2014; Chris Buckley, "China's Plan to Limit Coal Use Could Spur Consumption for Years", *New York Times*, 24 July 2014.

⁶⁴ Wang et al., "China's Carbon Mitigation Strategies" (see note 26).

⁶⁵ National Development and Reform Commission, "U.S.-China Joint Statement on Climate Change", press release, Beijing, 15 February 2014, http://en.ndrc.gov.cn/newsrelease/201402/t20140218_579304.html (accessed 28 October 2015).

⁶⁶ UNFCCC, *INDCs as Communicated by Parties* (see note 34).

lion for funding climate policy through the GCF (see “Financing Climate Policy”, pp. 27f.).⁶⁷ Also shortly before the Paris summit there was a demonstration of unity between François Hollande and Xi Jinping, the French and Chinese presidents, who laid out in detail what they expected of the new climate regime in a Joint Presidential Statement.⁶⁸

India: Moving towards the International Regime?

In the international climate negotiations India has in the past operated in an erratic manner, but always heel-dragging. India has always been a strong proponent of a climate policy shaped by the CBDR&RC principle (see “The Paris Climate Summit”, pp. 23ff.). Persistently, the Indian negotiators argued for the industrial countries to lead the way. Since the developing countries suffer from poverty and are not responsible for historical GHG emissions, India insisted no climate targets should be fixed for them.⁶⁹ Although India increasingly sees itself as a global actor, it insists on its status as a developing country and absolutely rejects any external interference. In the light of its growing share of global GHG emissions (see Figs 3 and 4, p. 15), however, it is essential to demand from India an active role and responsibility in the new climate regime.

The country’s willingness to cooperate in international climate policy has picked up since 2015.⁷⁰ Modi’s first step, in response to U.S. overtures, has been to implement the 1986 Montreal Protocol on Substances That Deplete the Ozone Layer, which is a substantial contribution to global climate protection.

⁶⁷ Joachim Wille, “Chinas Sensation”, *Frankfurter Rundschau*, 1 October 2015; Julie Hirschfeld Davis and Coral Davenport, “China to Announce Cap-and-Trade Program to Limit Emissions”, *New York Times*, 24 September 2015.

⁶⁸ “China and France Joint Presidential Statement on Climate Change (Beijing, 2 November 2015)”, *France Diplomatie*, <http://www.diplomatie.gouv.fr/en/french-foreign-policy/climate/2015-paris-climate-conference-cop21/article/china-and-france-joint-presidential-statement-on-climate-change-beijing-02-11> (accessed 6 November 2015).

⁶⁹ Susanne Dröge and Christian Wagner, *India’s Position in International Climate Negotiations: No Shift under Modi*, SWP Comments 14/2015 (Berlin: Stiftung Wissenschaft und Politik, March 2015).

⁷⁰ “Govt Advisor Urges Full Revamp of India’s UN Climate Talks Strategy – Media”, *Carbon Pulse*, 12 August 2015, <http://carbon-pulse.com/govt-advisor-urges-full-revamp-of-indias-un-climate-talks-strategy-media/> (accessed 28 October 2015).

On 1 October 2015, Delhi submitted its INDCs: by 2030 40 percent of its electricity demand is to be supplied by renewables while the emissions intensity per unit of GDP is to be cut by 35 percent. Contrary to previous announcements, India is not making its INDCs contingent on financial contributions from the industrialised countries.⁷¹ Thus, it is supporting – if hesitantly – the emergence of the new climate regime and meeting the demand for the emerging economies to participate in climate protection.

The European Union: Host, Driver, Role Model

As in 2009, when Denmark held the COP15, an EU member state was the host of the Conference of Parties in 2015. The European Union and France had to satisfy three demands: Firstly, as the third-largest emitter of greenhouse gases itself, to make a meaningful contribution to reducing GHG emissions; secondly, to ensure the negotiations were a success by skilfully mediating between parties pursuing diverging interests; secondly; and thirdly to advance as such the conclusion of an agreement.

The European Union notified its INDC to the UNFCCC in March 2015. By 2030 it plans to cut greenhouse gas emissions by at least 40 percent compared to 1990.⁷² The Council conclusions on the EU mandate for COP21 reiterated this target.⁷³

However, the European Union’s role as driving force in the negotiations was no longer as pronounced as it was for Copenhagen. Whereas in 2009 the European Union entered the Copenhagen talks with a package of legislation already adopted, in 2015 there was no decision taken on the implementation of the 2030 climate target. Neither did the European Council promise to increase its targets in the event of a successful Paris Agreement, as it had in 2007.⁷⁴ Many northern

⁷¹ UNFCCC, *INDCs as Communicated by Parties* (see note 34).

⁷² Latvian Presidency of the Council of the European Union, *Submission by Latvia and the European Commission on Behalf of the European Union and Its Member States*, Riga, 6 March 2015, http://ec.europa.eu/clima/news/docs/2015030601_eu_indc_en.pdf (accessed 28 October 2015).

⁷³ Council of the European Union, “EU Position for the UN Climate Change Conference in Paris: Council Conclusions”, press release, 18 September 2015, <http://www.consilium.europa.eu/en/press/press-releases/2015/09/18-conclusions-un-climate-change-conference-paris-2015/> (accessed 28 October 2015).

⁷⁴ Council of the European Union, “Brussels European Council, 14 December 2007, Presidency Conclusions” (Brussels,

and western member states are open to an upward correction and emphasise that 40 percent should be seen as the minimum. But numerous central and eastern European states want to prevent any increase in ambitions. The decisions of the European Council will be revisited in 2018 the latest (following the Paris Agreement's decision 20 on stocktaking).⁷⁵

Altogether the EU position on the character of the new global agreement had converged with the realities of the UNFCCC process in 2015, with the European Council not following the Commission's proposal to seek a "protocol" in Paris (the strongest option under international law). The Council Decision of September 2015 speaks of "the importance of agreeing [...] an ambitious and durable legally-binding agreement under the UNFCCC".⁷⁶

Nevertheless, the European Union and its member states were heavily committed to make Paris a diplomatic success, for example by insisting on post-2020 climate policy ambitions by the developed countries – a view shared by many developing countries – and to raise adequate climate financing. As such, already before the COP21 the European Union generated expectations among its international partners that in 2016 and thereafter new legislation for implementing climate targets will be passed rapidly and financial commitments will be met.

14 February 2008); 1661671/07 REV 1; http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/97669.pdf (accessed 28 October 2015)

⁷⁵ European Commission, *A Policy Framework for Climate and Energy in the Period 2020 to 2030*, COM(2014) 15 final (Brussels, 22 January 2014), <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0015&from=EN> (accessed 28 October 2015).

⁷⁶ Council of the European Union, "EU Position for the UN Climate Change Conference in Paris" (see note 72), item 4.

The Paris Climate Summit 2015: Fundamentals and Elements of the New Regime

Since 2009 the UNFCCC process has prepared for a regime change: the global burden-sharing approach to mitigation was abandoned, and under the principles of the Framework Convention on Climate Change of 1992 a new direction was taken for reconciling interests around responsibilities and capacities for climate change policy. Components of the new regime have been elaborated at the annual Conferences of the Parties (COPs), including the long-term two degree target, an increasing adaptation agenda, the Green Climate Fund, the INDCs, and the recognition that loss and damage are associated with climate change.

In this section the principles of the UNFCCC are outlined, the importance of the Kyoto Protocol illustrated and finally the components of the newly adopted post-2020 Paris Agreement explained.

The Framework Convention on Climate Change (UNFCCC)

The UN Framework Convention on Climate Change was adopted in 1992 in Rio de Janeiro and came into force in 1994. By 2015 195 states (196 parties) had ratified.⁷⁷ The objective of the UNFCCC is “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (Article 2, UNFCCC).⁷⁸

The fundamental principles for climate action and burden-sharing are laid out in Article 3. The principle of fairness is spelled out in Article 3.1 as “common but differentiated responsibilities and respective capabilities” (CBDR&RC), and is decisive for burden-sharing rules. Article 3.2 stipulates a specific status for those developing countries that are especially affected by climate change:

⁷⁷ 195 member states plus the European Union. See UNFCCC, *Status of Ratification of the Convention*, http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php; see also UNFCCC, *Background on the UNFCCC: The International Response to Climate Change*, http://unfccc.int/essential_background/items/6031.php (both accessed 2 November 2015).

⁷⁸ United Nations Framework Convention on Climate Change, <https://unfccc.int/resource/docs/convkp/conveng.pdf>.

The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.⁷⁹

Article 3.3 names precaution and cost-efficiency as additional principles.

Following the CBDR&RC principle an Annex categorises the parties. Annex I lists the industrialised and transition countries. Parties not listed in Annex I are the developing countries (Non-Annex I). The OECD countries in Annex I form another group (Annex II) that is obligated to supply the financial resources for global climate policy. To date there is no further subdivision of parties to the UNFCCC.

Emissions Reductions: From the Kyoto Protocol to INDCs

In order to achieve the objective formulated in UNFCCC Article 2 (stabilisation of greenhouse gas emissions), the parties to the UNFCCC negotiated the Kyoto Protocol and signed it in 1997. The Kyoto Protocol came into force in 2005 following ratification by Russia, and 192 parties had ratified by 2015. The Kyoto Protocol follows the approach of multilateral environmental agreements of the 1990s, which was to resolve a specific global environmental problem, in this case excessive emissions of greenhouse gases, through international cooperation under a legally binding treaty. Under the Protocol the industrialised and transition countries agreed to reduce emissions of six greenhouse gases.⁸⁰ The reduction commitments came in

⁷⁹ Ibid.

⁸⁰ The six greenhouse gases are carbon dioxide (CO₂, serves as reference value), methane (CH₄), nitrous oxide (laughing gas, N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). They are quantified as CO₂ equivalents. See *Kyoto-Protokoll*, Annex A, 1997, <http://unfccc.int/resource/docs/convkp/kpeng.html> (accessed 28 October 2015).

two periods. The decision on the second commitment period, extending through to 2020, was made in Doha (Qatar) in 2012 and is currently undergoing the ratification process in those states that are still pursuing reduction targets.⁸¹

Following the logic of the CBDR&RC principle, the classification of UNFCCC states as Annex I (industrialised and transition countries) and Non-Annex I states (developing countries) was maintained in the Kyoto Protocol (Annex B). The targets were negotiated by all parties to the UNFCCC, including the developing countries and emerging economies.

However, already in 1997 the United States was highly critical about the lack of obligations for developing countries. In March 2001, the Administration of President George W. Bush withdrew the U.S. from the Kyoto process altogether. Canada followed in 2011.

In its assessment reports, the IPCC repeatedly stated that the industrialised countries needed to reduce their emissions by between 25 and 40 percent by 2020 (compared to 1990 levels) if average global warming was to be limited to a maximum of two degrees.⁸² The commitments in the first Kyoto period (2008–2012) amounted to a reduction of just 5.2 percent vis-à-vis 1990, with different targets for individual states listed in Annex B. Consequently, the targets for the Annex I countries would have had to increase sharply in the second period. However, when the second commitment period (for 2013–2020) was adopted at the end of 2012, again some countries (including Japan and Russia) withdrew their support. Apart from the EU-28 and its member states, the current Annex B lists only Australia, Belarus, Iceland, Kazakhstan, Liechtenstein, Monaco, Norway, Switzerland and Ukraine.⁸³ Their

⁸¹ UNFCCC, „Status of the Doha Amendment“, as of 21st December 2015, http://unfccc.int/kyoto_protocol/doha_amendment/items/7362.php (accessed 15 January 2016);

Oliver Geden, *Die Implementierung der „Kyoto-II“-Verpflichtungen in EU-Recht: Enger werdende Spielräume für eine klimapolitische Vorreiterrolle Deutschlands*, SWP-Aktuell 69/2013 (Berlin: Stiftung Wissenschaft und Politik, November 2013).

⁸² United Nations Environment Programme (UNEP), *The Emissions Gap Report: Are the Copenhagen Accord Pledges Sufficient to Limit Global Warming to 2° C or 1.5° C? A Preliminary Assessment, Technical Summary* (Nairobi, 2010), http://www.unep.org/publications/ebooks/emissionsgapreport/pdfs/EMISSIONS_GAP_TECHNICAL_SUMMARY.pdf (accessed 28 October 2015); UNEP, *The Emissions Gap Report 2014: A UNEP Synthesis Report* (Nairobi, November 2014), http://www.unep.org/publications/ebooks/emissionsgapreport2014/portals/50268/pdf/EGR2014_HIGHRES.pdf (accessed 20 September 2015).

⁸³ *Doha Amendment to the Kyoto Protocol: Article 1: Amendment A: Annex B to the Kyoto Protocol*, http://unfccc.int/files/kyoto_

emission reductions commitments add up to at least 18 percent by 2020 (compared to 1990), but represent a global share of less than 15 percent.⁸⁴

The Kyoto Protocol: Impact and Legacy

The Kyoto Protocol represents the most binding option under international law. All states that have ratified it are obliged to implement the negotiated targets by taking national policy measures, report regularly to the UNFCCC and ensure verifiable recording of their territorial greenhouse gas emissions. Such a global climate regime comes closest to the idea of a coordinated and controlled reduction in global emissions. However, shrinking participation in the second commitment period and the inflexible division of the world into two groups of countries suggested that this type of global agreement is not a viable model, as do the inadequately small reduction targets for the Annex I countries.

Nevertheless the Kyoto Protocol has also had very positive effects that are of importance for the new regime. In a number of countries, above all the European Union, it has inspired climate policy. Its “flexible mechanisms” (emissions trading, the Clean Development Mechanism and Joint Implementation), which allow for trading of certified emission reductions, have brought forth both national and international CO₂ markets and ensured the emergence of a price for GHG emissions.⁸⁵

Moreover, the developing countries regard the Kyoto Protocol as a manifestation of the historical responsibility of the industrialised countries for global greenhouse gas emissions. They demanded that this responsibility should carry over into the Paris Agreement, in particular the INDCs, with the industrialised

[protocol/application/pdf/kp_doha_amendment_english.pdf](http://unfccc.int/kyoto_protocol/items/2830.php) (accessed 28 October 2015); World Bank Ecofys, *Mapping Carbon Pricing Initiatives: Developments and Prospects 2013* (Washington, D.C., 2013), 19.

⁸⁴ UNFCCC, *Kyoto Protocol and Doha Amendment*, http://unfccc.int/kyoto_protocol/items/2830.php (accessed 10 November 2015), Romain Morel and Igor Shishlov, *Ex-post Evaluation of the Kyoto Protocol: Four Key Lessons for the 2015 Paris Agreement*, Climate Report 44 (cdc climat research, May 2014), http://www.cdclimat.com/IMG/pdf/14-05_climate_report_no44_-_analysis_of_the_kp-2.pdf (accessed 10 November 2015).

⁸⁵ Organisation for Economic Co-operation and Development (OECD), *Climate and Carbon: Aligning Prices and Policies*, OECD Environment Policy Paper 1 (Paris, 2013).

countries making a larger contribution than the emerging and developing economies.

The COP20 in 2014 in Lima again confirmed the need to set higher targets *before 2020* as the second Kyoto period does not deliver enough ambition.⁸⁶ However, progress has been held back by the search for a new post-2020 climate regime. In particular the introduction of the INDCs in Warsaw in 2013, which all 195 participating states were supposed to submit to the UNFCCC by March 2015, had the effect of focusing national processes more on this long term climate policy agenda than on short-term ambitions.

Ultimately, the Kyoto Protocol's second commitment period has become the transition phase from the "top down" mitigation approach to the "bottom up" approach of the Paris Agreement for the post-2020 period, characterised by comprehensive pledges, reviews and means of implementation.

Broadening the Mandate for a New Regime: From a Bali Action Plan to the ADP

In 2007 the Bali Action Plan was adopted with a mandate to stabilise the concentration of greenhouse gases in the atmosphere through a more comprehensive agreement. The mandate was also to include in the negotiations countries without a mitigation commitment under the Kyoto Protocol. The Ad Hoc Working Group on Long-term Cooperative Action began negotiations on long-term emissions reductions, adaptation to climate change, financial and technology transfers, and a shared long-term vision.⁸⁷ The objective was to prepare an agreement for adoption by 2009.

But after this failed at the Copenhagen summit in 2009, it was not until 2011 in Durban that a new integrated negotiating format was set up: the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP). Its task was to draft a new agreement to come into effect from 2020. The legal form of such an

agreement was left open.⁸⁸ It could be "a protocol, another legal instrument or an agreed outcome with legal force" under the UNFCCC applying to all participating states.⁸⁹

The core of the future agreement was concretised in Warsaw in 2013: instead of commitments and a top-down approach to allocation of mitigation action, there should be contributions which are "intended" and "nationally determined" (INDCs).⁹⁰ These contributions were not restricted to mitigation measures. As there was no guideline or blueprint, countries could submit various national climate policy measures and targets. This also strengthened the interests of the developing countries that wanted to place greater weight on adaptation measures, loss and damage, and financial and technological support, which they could include in their INDCs.

Adaptation to Climate Change

Since 2009 many developing countries have felt a growing need to identify climate change impacts and to call for international assistance in addressing them (see Fig. 1, p. 7).⁹¹ Climate policy has become a part of development cooperation, and adapting to the consequences of climate change and providing funds have become core concerns in the negotiations on a new comprehensive global agreement. Thus the consensus on a new regime was only possible if these concerns were recognised to be equally important as the need for mitigation.

Adaptation to climate change is understood as activities aiming to minimise the negative repercussions of global warming on people and the natural environment.⁹² In view of the increasing frequency of

⁸⁶ UNFCCC, *Lima Call for Climate Action. Decision 1/CP.20*, <http://unfccc.int/resource/docs/2014/cop20/eng/10a01.pdf#page=2> (accessed 28 October 2015); on ADP and Workstream 2 see <http://unfccc.int/bodies/body/6645.php#ws2> (accessed 28 October 2015).

⁸⁷ International Institute for Sustainable Development (IISD), "Summary of the Warsaw Climate Change Conference: 11–23 November 2013", *Earth Negotiations Bulletin* 12, no. 594 (26 November 2013): 1, <http://www.iisd.ca/download/pdf/enb12594e.pdf> (accessed 28 October 2015).

⁸⁸ UNFCCC, *Report of the Conference of the Parties on Its Seventeenth Session, Held in Durban from 28 November to 11 December 2011*, 15 March 2012, therein: *Decision 1/CP.17: Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action*, 11 December 2011, <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf> (accessed 28 October 2015).

⁸⁹ *Ibid.* 2; decision 2/CP.17 2.

⁹⁰ IISD, "Summary of the Warsaw Climate Change Conference" (see note 87), 2.

⁹¹ The World Bank supplies comprehensive country profiles listing adaptation needs and measures, http://sdwebx.worldbank.org/climateportal/index.cfm?page=climate_country_adaptation (accessed 28 October 2015).

⁹² The IPCC defines adaptation as the "process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit

extreme weather events, as listed for example by the IPCC in its latest assessment report in 2014, addressing the topic had become increasingly urgent.

The potential measures to address climate change impacts are very diverse. They include responses to extreme weather events, but in the longer term also to rising sea levels, land loss, material damage, supply risks and other vulnerabilities. The consequences of climate change can be ameliorated, for example, by adapting land and water use (settlement, management of rivers and coasts, access to fresh water). According to the IPCC, the different degrees of national vulnerability are based not only on geographical features, but above all on factors that have nothing to do with climate change. The report lists intersecting socio-economic factors including income, health conditions, ethnicity, age and actual exposure to the impacts. Countries with multidimensional inequalities and uneven development are especially affected to the extent that they are both highly vulnerable and lack resources for adaptation.⁹³

Even if adapting to climate change is a global challenge, there is no uniform solution or set of recommendations for action as is the case for mitigation. Rather, the differences in local conditions demand conceptions and action at the local, national and regional level, often in combination with sectoral strategies, such as agricultural techniques. This implies that climate policy will gain further importance for the international development agenda and bilateral development cooperation.

UNFCCC negotiations only started to include adaptation measures after more than ten years. A first low-level debate started in 2005 with the “Convention Dialogue” on longer-term issues of climate policy.⁹⁴ In 2007 the adoption of the Bali Action Plan placed adaptation on the UNFCCC agenda alongside mitigation.⁹⁵

beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects. IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability: Summary for Policymakers*, Fifth Assessment Report, Working Group II (2014), 5, http://ipcc-wg2.gov/AR5/images/uploads/IPCC_WG2AR5_SPM_Approved.pdf (accessed 28 October 2015).

⁹³ Ibid., 6.

⁹⁴ IISD, “Summary of the Warsaw Climate Change Conference” (see note 87): 2.

⁹⁵ Susanne Dröge, ed., *International Climate Policy: Priorities of Key Negotiating Parties*, SWP Research Paper 2/2009 (Berlin: Stiftung Wissenschaft und Politik, March 2010), 13.

An Adaptation Framework (CAF) was agreed in 2010 as an outcome of the negotiations in Cancún.⁹⁶ It specifies that adaptation must be addressed with the same priority as mitigation and should be designed to reduce vulnerability to climate change impacts as well as strengthen the resilience of affected countries. The Adaptation Committee is responsible for implementing CAF measures under the UNFCCC. Regional and national institutional structures are to be strengthened or created. The focus is on the immediate needs of developing countries.⁹⁷

The actual adaptation demand of most of the UNFCCC parties is clearly reflected in their INDCs. At least one hundred of the INDCs assessed by the UNFCCC Secretariat contain adaptation measures.⁹⁸ The INDCs thus supply, for the first time, an overview of the climate-related challenges faced by developing countries and could be useful for fine-tuning the development cooperation with the OECD donor countries.

Loss and Damage from Climate Change

The IPCC describes loss and damage as the “limits to adaptation”.⁹⁹ Above all small island states and coastal cities must assume that lower-lying parts of their territories will become completely flooded if sea levels continue to rise (so-called “slow onset events”). Some countries will have no alternative to emigration in response to loss of territory. Other poor states, too, will be forced to evaluate whether they can adapt to all the changes or whether there are losses and damage that cannot be averted through financial assistance or technical intervention. The vulnerable countries therefore demanded that short- and long-term losses and damage be recognised as a separate negotiating topic under the UNFCCC, instead of being

⁹⁶ UNFCCC, *Cancún Adaptation Framework*, <https://unfccc.int/adaptation/items/5852.php> (accessed 28 October 2015).

⁹⁷ UNFCCC, *Report of the Conference of the Parties on Its Sixteenth Session, Held in Cancun from 29 November to 10 December 2010*, 15 March 2011, therein: *Decision 1/CP.16: The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*, <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2> (accessed 28 October 2015).

⁹⁸ UNFCCC, *Synthesis Report on the Aggregate Effect of Intended Nationally Determined Contributions (INDCs)* (see note 8).

⁹⁹ “[They] occur when adaptive actions to avoid intolerable risks for an actor’s objectives or for the needs of a system are not possible or are not currently available.” IPCC, *Climate Change 2014* (see note 92), 25.

subsumed within adaptation.¹⁰⁰ Loss and damage is covered by the Cancún Adaptation Framework of 2010. In 2011 in Durban (COP17) a work programme was adopted, in Doha in 2012 (COP18) the issue was recognised by all participating states, and in 2013 in Warsaw (COP19) it was decided to anchor loss and damage institutionally under the UNFCCC with an as yet undefined mechanism (Warsaw International Mechanism, WIM).¹⁰¹ Further actions under the WIM are foreseen in 2016.¹⁰² The Paris Agreement after all includes “loss and damage” in its Article 8 and in decisions that lay out further steps.¹⁰³

Financing Climate Policy

In the early days of international climate policy no financial means were supplied under UNFCCC. The industrialised countries referred to the Global Environment Facility (GEF), which was established in 1991 and supports the implementation of international environmental agreements based on voluntary contributions.¹⁰⁴ Not until the early 2000s were several climate funds established, after demands for support became louder:

- ▶ The UNFCCC Special Climate Change Fund (SCCF, since 2001, budget: US\$333 million as of end of February 2014) supports various sectoral projects for adaptation, policy guidance and technology transfer.

100 Laura Schäfer and Sönke Kreft, *Loss and Damage: Roadmap to Relevance for the Warsaw International Mechanism*, Briefing Paper of Germanwatch and Brot für die Welt (Bonn: Germanwatch, 2014), <http://www.germanwatch.org/en/8366> (accessed 28 October 2015).

101 Ibid., 8, and UNFCCC, “Approaches to Address Loss and Damage Associated with Climate Change Impacts in Developing Countries Particularly Vulnerable to the Adverse Effects of Climate Change”, http://unfccc.int/adaptation/workstreams/loss_and_damage/items/6056.php (accessed 28 October 2015).

102 UNFCCC, *Decisions Adopted by the Conference of the Parties: Decision 2/CP.20*, 2 February 2015, <http://unfccc.int/resource/docs/2014/cop20/eng/10a02.pdf> (accessed 28 October 2015).

103 UNFCCC, *Adoption of the Paris Agreement*, FCCC/CP/2015/L.9/Rev.1, 12 December 2015, <https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf>, decisions 48 to 52 (accessed 19 January 2016).

104 Benito Müller and Luis Gomez-Echeverri, *The Reformed Financial Mechanism of the UNFCCC*, part 1: *Architecture and Governance* (Oxford: Oxford Institute for Energy Studies, April 2009), 2, <http://www.oxfordclimatepolicy.org/publications/documents/EV45.pdf> (accessed 3 November 2015).

- ▶ The Least Developed Countries Fund (LDCF, since 2001, budget about US\$880 million as of April 2014) supports the least developed countries in implementing National Adaptation Programmes of Action (NAPAs).
- ▶ The Climate Investment Funds (CIF) of the World Bank support four key developing countries’ climate policies.
- ▶ The Adaptation Fund (2001) receives revenues from international emissions trading under the Kyoto Protocol and other sources (such as national contributions).¹⁰⁵ Falling revenues from emissions trading have left the Adaptation Fund underfinanced (annual shortfalls of US\$80 million reported for 2014 and 2015).¹⁰⁶

The Bali Action Plan of 2007, which called on the industrialised countries to provide developing countries with “adequate, predictable, and sustainable financial resources and financial and technical support, and the provision of new and additional resources”,¹⁰⁷ marked the beginning of a discussion about broader financing of climate policy under the UNFCCC and defined the benchmark for reaching agreement on climate finance in the Paris Agreement.

According to the OECD, the term “climate finance” comprises all public and private financial resources mobilised by developed countries (from Annex II of the UNFCCC plus voluntary members of the OECD Development Assistance Committee) that target low-carbon or climate-resilient development in developing countries and emerging economies.¹⁰⁸ The funds under the UNFCCC financing mechanism (UNFCCC Article 11) thus contribute only a proportion, alongside private and public financial transfers supplied in parallel for climate policy programmes and projects

105 UNFCCC, *Adaptation Fund*, http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_fund/items/3659.php (accessed 28 October 2015).

106 Ibid.

107 UNFCCC, *Report of the Conference of the Parties on Its Thirteenth Session, Held in Bali from 3 to 15 December 2007*, Addendum, Bali Action Plan, Decision 1/CP.13 para. 1 (e)(i), FCCC/CP/2007/6/Add.1, 5, <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf> (accessed 12 January 2016); UNFCCC, *Climate Change: Impacts, Vulnerabilities, and Adaptation in Developing Countries* (Bonn, 2007), <https://unfccc.int/resource/docs/publications/impacts.pdf> (accessed 28 October 2015).

108 OECD, *Climate Finance in 2013–14 and the USD 100 Billion Goal: A Report by the OECD in Collaboration with Climate Policy Initiative (CPI)* (Paris, 2015), 10, <http://www.oecd.org/env/cc/Climate-Finance-in-2013-14-and-the-USD-billion-goal.pdf> (accessed 12 November 2015).

in recipient countries (also including development funding).

In recent years a broader concept of climate finance has emerged, encompassing global investment – including those *within* industrialised countries – in technologies, infrastructure and other capital and referred to as “shifting the trillions”.¹⁰⁹ Above all, this climate finance is intended to bring about an incisive decarbonisation and a transformation of energy supply and use, resulting in a sharp decline in use of fossil fuels and emission-intensive processes.

The magnitude of the required investments has been calculated in various reports, including the 2014 *New Climate Economy Report* and the 2015 report by the Canfin-Grandjean Commission, but it was not subject to the negotiations as such.¹¹⁰

Current State of Climate Financing under UNFCCC

The sequence of international negotiations resulted in two components for the UNFCCC to determine at the COP21 in Paris:

1. Climate finance pledges *until 2020*: US\$100 billion are to be mobilised each year until 2020;
2. Climate financing *after 2020* as part of the Paris Agreement.

In 2009 the industrialised countries promised to raise climate finance of US\$100 billion annually until 2020. This sum is based on the calculations of a World Bank study, which found that the developing countries would need an *additional* US\$75 to 100 billion

annually if they are to adapt to the consequences of global warming of up to two degrees Celsius by 2050.¹¹¹ In a first step in Copenhagen US\$30 billion were promised for the period between 2010 and 2012 (fast start finance),¹¹² but private funds were also to be mobilised.

Assessments of the order of magnitude of funds used for climate financing had to rely on estimates. There is no standardised method for calculating the public and private financial flows. The reports varied widely on this point.¹¹³ Calculating flows of private funds which are not major energy investment projects is especially difficult. In October 2015 the OECD published the first study proposing a standardised method and presenting figures for pre-2020 climate finance. According to the report US\$61.8 billion were mobilised in 2014. The dynamic increase of almost US\$10 billion compared to 2013 is attributable to the multi-lateral development banks (see Fig. 7).¹¹⁴

In contrast to the “100-billion-dollar question”, climate finance beyond 2020 was difficult to identify and negotiate, but the developing countries expected further reliable funds above and beyond the US\$100 billion. However, given that donor countries generally require approval from their national parliaments before releasing international funding, it was unrealistic to expect them to promise for any period longer than five years. The decisions associated with the Paris Agreement stipulate that this process will continue, that in 2025 a new sum will be presented and that US\$100 billion represents the floor for any further commitment.

109 World Bank, “Mobilizing the Billions and Trillions for Climate Finance”, 18 April 2015, <http://www.worldbank.org/en/news/feature/2015/04/18/raising-trillions-for-climate-finance> (accessed 28 October 2015).

110 One measure of decarbonisation is the degree to which GDP growth becomes separated from the GHG emissions trend. See Pascal Canfin and Alain Grandjean, *Mobilizing Climate Finance: A Roadmap to Finance a Low-Carbon Economy*, Report of the Canfin-Grandjean Commission (Paris, June 2015), <http://de.scribd.com/doc/269455753/Mobilizing-Climate-Finance-A-Roadmap-to-Finance-a-Low-carbon-Economy> (accessed 28 October 2015); Nicolas Stern, “Finance”, in *The New Climate Economy*, (2014), chapt. 6, http://static.newclimateeconomy.report/wp-content/uploads/2014/08/NCE_Chapter6_Finance.pdf (accessed 28 October 2015); Barbara Buchner, Martin Stadelmann, Jane Wilkinson, Federico Mazza, Anja Rosenberg and Dario Abramskiewh, *The Global Landscape of Climate Finance 2014*, Climate Policy Initiative Report, November 2014, v, <http://climatepolicyinitiative.org/wp-content/uploads/2014/11/The-Global-Landscape-of-Climate-Finance-2014.pdf> (accessed 28 October 2015).

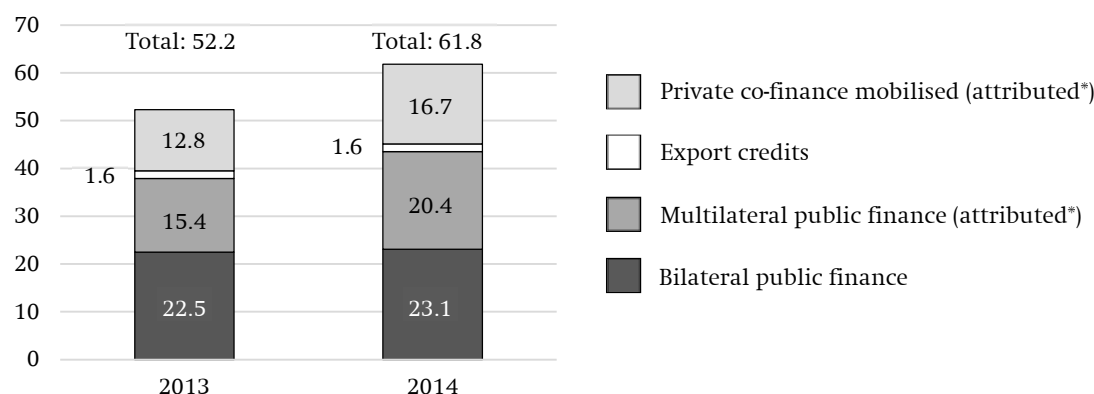
111 World Bank (Hg.), *Economics of Adaptation to Climate Change. Synthesis Report* (Washington, D.C., 2010), xix, <http://documents.worldbank.org/curated/en/2010/01/16436675/economics-adaptation-climate-change-synthesis-report> (accessed 28 October 2015), and World Bank, *The Cost to Developing Countries of Adapting to Climate Change: New Methods and Estimates* (Washington, D.C., 2010).

112 OECD, *Financing Climate Change Action: Policy Perspectives 2014* (Paris, November 2014), 5, <http://www.scribd.com/doc/239900170/Financing-Climate-Change-2014-Policy-Perspective> (accessed 3 November 2015).

113 Especially the OECD and the Climate Policy Initiative have reported regularly on climate financing, but their reports are largely incompatible. Buchner et al., *The Global Landscape of Climate Finance 2014* (see note 110), v; OECD, *Financing Climate Change Action* (see note 112), 5 and 15.

114 OECD, *Climate Finance in 2013–14 and the USD 100 Billion Goal* (see note 108).

Figure 7
Funds mobilised for climate finance in 2013 and 2014, by source (US\$ billion)



* Attributed to donor countries (developed countries) in the estimates.

Source: OECD and CPI, *Climate Finance in 2013–14 and the USD 100 Billion Goal: A Report by the OECD in Collaboration with Climate Policy Initiative* (Paris, 2015), 10 (differences result from rounding).

The Green Climate Fund

The 2009 announcement for climate finance was associated with calls for the UNFCCC to operate its own fund instead of relying on the GEF and the World Bank. In 2010 in Cancún a Green Climate Fund (GCF) was introduced to administer climate finance under the UNFCCC alongside the GEF. The GCF (based in Songdo district in the South Korean city of Incheon) has an Executive Board comprising twelve representatives from industrialised countries and twelve from developing countries. Thus, recipient countries co-decide on the distribution of funds. A first package of thirty-seven projects was presented in October 2015,¹¹⁵ and the first eight were approved at the beginning of November.¹¹⁶ In the course of setting up the GCF in 2011, comprehensive reporting obligations for the OECD countries (UNFCCC Annex II) were agreed to ensure greater transparency with respect to resources

originating from various funds, multilateral financial institutions and bilateral commitments.¹¹⁷

In order for the GCF to operate, US\$10.2 billion were required, almost all of which had been pledged by the end of 2014.¹¹⁸ In July 2014 Germany, as the first major industrialised country, pledged to contribute US\$1 billion by 2020; other states followed. At the Petersberg Climate Dialogue in 2015 Germany doubled its promised contribution and also pledged to increase its development aid by €8.3 billion between 2016 and 2019.¹¹⁹ China has announced it will contribute US\$3.1 billion to the GCF (see “China”, pp. 20f.). This

¹¹⁵ “GCF Publishes First Funding Proposals for Board Consideration”, press release, 16 October 2015, <http://news.gcfund.org/gcf-publishes-first-funding-proposals-for-board-consideration/>, and GCF, *Governing Instrument for the Green Climate Fund*, http://www.gcfund.org/fileadmin/00_customer/documents/pdf/GCF-governing_instrument-120521-block-LY.pdf (accessed 19 October 2015).

¹¹⁶ Green Climate Fund, “Green Climate Fund Approves First 8 Investments”, press release, 6 November 2015, <http://bit.ly/1MYSfWh> (accessed 12 November 2015).

¹¹⁷ UNFCCC, *Report of the Conference of the Parties on Its Seventeenth Session, Held in Durban from 28 November to 11 December 2011*, 15 March 2011, here: *Addendum: Part Two: Action Taken by the Conference of the Parties at Its Seventeenth Session*, <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf> (accessed 28 October 2015).

¹¹⁸ GCF, “First Pledging Conference of Green Climate Fund Yields Unprecedented US\$ 9.3 Billion”, press release, 20 November 2014, http://www.gcfund.org/fileadmin/00_customer/documents/Press/GCF_Press_Release_2014_11_20_Berlin_pledges.pdf (accessed 28 October 2015); GCF, “GCF Set to Allocate Resources before Paris Climate Change Conference: Board Accredits First Entities”, press release, 26 March 2015, http://news.gcfund.org/wp-content/uploads/2015/03/GCF_press_release_2015_03_26.pdf (accessed 28 October 2015).

¹¹⁹ The [German] Federal Government, “Germany Increases Funding for Climate Action”, 19 May 2015, http://www.bundesregierung.de/Content/EN/Artikel/2015/05_en/2015-05-19-rede-merkel-pkd_en.html (accessed 30 November 2015).

support from emerging economies is now part of the Paris Agreement (Article 9) on a voluntary basis.

Given that the total of US\$100 billion annually will not be mobilised from public sources alone, the GCF will set up conditions for projects and programmes in such a way as to encourage private investment in climate protection and adaptation. However, the priorities of the donor and recipient countries continue to diverge. The donors regard the GCF as an institution that advances climate protection and make a contribution to closing the emissions gap by 2020. The developing countries, especially the LDCs and small island states, want above all to finance adaptation measures through the GCF. There is also debate over the financial tools. The funds could for example be used to leverage private investment through specific loans or loan guarantees. The developing countries view this critically, expecting that only a few major companies would be able to benefit. They also still highlight that most climate finance will not be additional, but will be part of existing official development assistance budgets.¹²⁰

The Paris Agreement 2015

The Paris outcome agreed on 12 December 2015 consists of two key components:¹²¹

- ▶ A Paris Agreement securing a binding framework for climate policy after 2020. The Paris Agreement is an annex to the adopted document, but is actually the core achievement and point of reference for climate policy after 2020.
- ▶ Various COP21 decisions (140 in total) lay out a workplan for the immediate way forward under the UNFCCC, both for details not elaborated in the Paris Agreement text and for climate policy action before 2020.

The Paris Agreement has three purposes: limiting the global average temperature increase, improving adaptation abilities, and securing consistent finance flows for both challenges. It includes the following building blocks:¹²²

¹²⁰ Sustainable Development Solutions Network (SDSN), *Framing a Long-Term Response to Climate Finance. What Can We Expect the Green Climate Fund to Deliver?* SDSN Germany Round Table Summary Report (Berlin, 20 November 2014).

¹²¹ UNFCCC, *Adoption of the Paris Agreement* (see note 5).

¹²² Also Jennifer Morgan, Yamide Dagnet and Dennis Tirpak, *Elements and Ideas for the 2015 Paris Agreement: Executive Summary*, WRI Working Paper (Washington, D.C.: WRI, November 2014),

1. Integration and progression of the **INDCs** and related support for developing countries (Articles 3 and 4). All parties are to prepare, communicate and maintain “nationally determined contributions” (NDCs) that they intend to achieve, and shall pursue domestic mitigation measures. Each new announcement of an NDC has to go beyond the current NDC (progression) and ambition should be the highest possible, taking into account the CBDR&RC principle. A five-year cycle is established in Article 4.9 and a common timeframe will be set by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) at its first session. In order to make the NDCs as reliable as possible, the parties are invited to submit related long-term development strategies from 2020 onwards.

2. A **long-term** goal for mitigation. The agreement’s Article 2 determines as its purpose holding the global average temperature rise at “well below 2 degrees” and pursuing efforts to limit it to 1.5 degrees Celsius above pre-industrial levels. In order to achieve these targets, two options were discussed: “decarbonisation” by the end of the century, as agreed by the G7 at the June 2015 summit, or – in line with the IPCC’s fifth assessment report – a net zero target (climate neutrality), to be achieved in the second half of the century. The latter made it into the text. Article 4.1 sets the aim of peaking emissions “as soon as possible” and rapid reductions thereafter, again with reference to CBDR&RC. It also refers to the role of science in determining the need for emission reductions, and defines carbon neutrality as a “balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century”.

3. **Adaptation** to climate change, **Loss and Damage**. The Paris Agreement includes the full range of adaptation issues, although in a less specific way than for mitigation. Article 7 focuses on three overarching ways to achieve better adaptation: enhancing adaptive capacities, strengthening resilience and reducing vulnerability. It recognises the challenge as being global, while its dimensions span from the local up to the global level. It highlights the need for finance and the trade-off between mitigation and adaptation pressures. It also includes the full set of actions that need to be undertaken by a great variety of state and non-state actors, integrated in a wider socioeconomic and environmental policy context. Further details of the

http://www.wri.org/sites/default/files/ACT_2015_Elements_Ideas_ExSum_FINAL.PDF (accessed 28 October 2015).

adaptation agenda are left to the CMA negotiations, to the Adaptation Committee and other expert groups (Decisions 42 – 47). Loss and damage is recognised as a separate matter in Article 8. Further details will be discussed by the Warsaw International Mechanism in 2016. Decision 52 specifies that Article 8 does not “involve or provide a basis for any liability or compensation” which was a key concern for the U.S.

4. **Measures to support** poor countries: finance, technology transfer, and capacity-building are elaborated in Articles 9 to 11. The developed countries are obliged to provide financial resources for both mitigation and adaptation in developing countries, while “other parties” are encouraged to support on a voluntary basis. This way the emerging economies’ participation in support schemes (such as China’s contribution to the GCF) has also entered the agreement and they are invited to continue this path. The quantified figures are part of decision 54. The goal of US\$100 billion is prolonged – conditional on creating transparency about purposes and ways the money is being spent – while by 2025 a new collective financial goal will be set by the CMA, with US\$100 billion as the floor. Four funds (GCF, GEF, SCCC, LDCF; see also section on climate finance above) will serve as trustees of the Paris Agreement’s climate finance.

5. **Stocktaking** and regular cycles for future cooperation and transparency. **Verification** and **revision** of mitigation and financial support are fully integrated into the Paris Agreement (NDCs, adaptation, support). Review mechanisms help to systematically ensure that the parties actually fulfil their NDCs through national climate policy measures and deliver the financial contributions. Article 14 sets 2023 as the launch year of a five-year cycle in global stocktaking by the CMA. The global stocktaking exercise is crosscutting and comprises all the purposes of the agreement (mitigation, adaptation and support; Article 2).

The new climate regime established with the Paris Agreement has the potential to live up to the challenge of climate change. Its foundation is the national climate policy action undertaken by the parties to the UNFCCC, with an interwoven set of procedures through which the UNFCCC parties interact regularly to deliver transparency, differentiation, review, and monitoring. This system is a completely new way to address the global challenges around climate change and its incentive structures will need further analysis and elaboration. Especially the two surprising topics included, one being the mentioning of a 1.5 degree temperature goal, another being market and non-market mecha-

nisms (“cooperative approaches”, Article 6), will put high demands on future negotiations as both are highly contentious for some parties.

The stocktaking cycles will set the summits on a different footing, because the COPs with “ultimate” character will become history. Rather the challenge will be to maintain the momentum of ambition and – in the event that public pressure on the heads of state and government wanes in the course of a new routine – the need to search for ways to bring them back on course. The cycles will bind the parties more strongly to the UNFCCC, especially as the new rules for international cooperation combine financial commitments with national deliveries on NDCs and demand more transparency from all parties.

Conclusions and Next Steps

The Paris climate summit in December 2015 brought about a new start for the international post-2020 climate regime. Elements of the new regime have already been agreed in the past six years in the course of the UNFCCC negotiations such as the two degrees target, the Adaptation Framework, and the founding of the Green Climate Fund.

The success in Paris was also based on a very open process where a draft text was only introduced very late and where key players had the flexibility to position themselves literally until the very end of the talks. The willingness of the major players to participate in shaping climate policy internationally has gradually grown during the last years. Here the United States has made the most dramatic turnabout, while the European Union was reluctant to leave the Kyoto model behind and turn to the new concept of voluntary commitments.

The Paris Agreement fits into a broader setting decided in 2015. In September, the Agenda 2030 with the Sustainable Development Goals (SDGs) helped to create more trust that the United Nations could act on the global challenges by including all relevant actors. In particular, the industrialised countries must implement in Agenda 2030 in the same manner as developing countries. And with the Paris Agreement, the emerging economies that have to date been classed as developing countries without obligations in the climate regime will after 2020 participate in containing climate change and tackling its consequences.

The success of the new agreement will be judged in terms of whether it stimulates long-term economic and political changes for the parties to the UNFCCC, for example by investment flowing increasingly into renewables rather than fossil fuels or climate finance increasing the willingness to improve transparency in climate protection and national policies.

For 2016, the negotiations will continue under the UNFCCC, in particular in order to bring further precision to the agreement's clauses. Another update on synthesis of INDCs is due on 4 April 2016. A first formal step in the follow-up timetable will be the signature of the Paris Agreement from 22 April onwards in New York. For its entry into force, it must be ratified by 55 parties with at least a total share of 55 percent of

global GHG emissions. While the U.S. president is expected to immediately also ratify the agreement, other countries' follow-up hinges on their specific domestic ratification procedures.

The implementation of the Paris Agreement will depend on a whole range of factors which will develop over time. Short-term trends will interfere, such as the steep fall of the oil price in 2016 or a dampened business cycle. The attitudes of big emitters to their INDC implementations will be connected to the associated benefits. In China a rethinking already began at national level some time ago: climate protection also has short-term benefits for a population suffering greatly from local air pollution. India still has a longer way to go. But its interest in climate policy is growing steadily because of the energy benefits it offers: greater security, efficiency and technological progress.

For Germany and the European Union 2016 will bring opportunities for cooperation with these important players. Beijing intends to launch its national emissions trading scheme already in 2017, for which it will require considerable support. Delhi will want to advance both the expansion of coal-fired power generation and a more intensive use of renewables, and will welcome support from Germany.

The INDC submissions of some countries were realised with German support, helping poorer countries to set starting points for future development cooperation. The announcement of climate adaptation measures in more than one hundred INDCs demonstrates the priorities of the developing countries in detail and could be useful for optimising development strategies.

For the United States the election year of 2016 will severely limit contributions to the UNFCCC agenda. Continuation of the cooperation would be conceivable in the course of the G20 Presidency, which China holds in 2016, followed by Germany in 2017.

In 2016 the European Union will take legislative steps to further the Energy Union, including the effort sharing of the 40 percent emissions reduction target for 2030. Germany's role is to press for both reforms of the EU emissions trading scheme and the energy policy legislation, and to mediate between the western and eastern member states.

Abbreviations

ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action
AF	Adaptation Fund
APA	Ad Hoc Working Group on the Paris Agreement
AOSIS	Alliance of Small Island States
CAF	Cancún Adaptation Framework
CAIT	Climate Analysis Indicators Tool
CBDR&RC	Common But Differentiated Responsibilities and Respective Capabilities
C2ES	Center for Climate and Energy Solutions (Arlington, VA)
CCS	Carbon Capture and Storage
CIF	Climate Investment Funds
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
CPI	Climate Policy Initiative
EIA	Energy Information Administration
EPA	Environmental Protection Agency
ETS	Emissions Trading System
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse gas
Gt	Gigatonne
IDDRI	Institut du développement durable et des relations internationales (Paris)
IEA	International Energy Agency
IISD	International Institute for Sustainable Development
INDC	Intended Nationally Determined Contribution
IPCC	Intergovernmental Panel on Climate Change
LDC	Least Developed Countries
LDCF	Least Developed Countries Fund
LMDC	Like-Minded Developing Countries on Climate Change
LULUCF	Land Use, Land Use Change and Forestry
MILES	Modelling and Informing Low-Emission Strategies
NAPA	National Adaptation Programme of Action
NDC	Nationally Determined Contribution
OECD	Organisation for Economic Cooperation and Development
REDD	Reducing Emissions from Deforestation and Forest Degradation
SCCF	Special Climate Change Fund
SDGs	Sustainable Development Goals
SDSN	Sustainable Development Solutions Network
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US\$	United States Dollar
WIM	Warsaw International Mechanism
WRI	World Resources Institute (Washington, D.C.)