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# Negotiating a new UN climate agreement

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Challenges on the road to Paris

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IN-DEPTH ANALYSIS

The purpose of this document is to give an overview of the ongoing negotiations aiming to conclude a new international legally binding agreement on climate change by December 2015. The document describes the current climate change agreements and summarises the state of negotiations. Furthermore, it analyses the elements of the new proposal and the Parties' negotiating positions, and outlines the challenges facing EU climate diplomacy.

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## EXECUTIVE SUMMARY

A new international agreement to combat climate change is due to be adopted in December 2015 at the 21st Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). The current climate agreements commit developed countries to take climate action, but not developing countries, some of which have become major emitters of greenhouse gases. After the 2009 Copenhagen climate conference failed to adopt a new agreement, the 2011 Durban conference decided that a new agreement applicable to all countries should be concluded in 2015 and enter into force in 2020.

COP 20, held in December 2014 in Lima, concluded with the adoption of the 'Lima Call for Climate Action', a document inviting all Parties (countries) to communicate their intended contributions to post-2020 climate action well before the Paris conference. Besides action to counter global warming, it should also cover adaptation to climate change.

An annex to the 'Lima Call' contains elements of a draft negotiating text for the Paris Agreement (revised in February 2015). The text contains many options reflecting the divergent negotiating positions of the various countries and country groups. A new negotiating text for the Paris Agreement (hereinafter referred to as 'the Agreement') should be made available by May 2015.

The Lima Conference left a number of important issues unresolved. First of all, the nature of countries' contributions is not clearly specified, which will make them hard to compare and assess. It is likely that they will not add up to the emissions reductions required to keep global warming below the internationally agreed limit of 2°C. A process for the periodic assessment and strengthening of national efforts will therefore be an important element of the Agreement. Processes for monitoring, reporting and verification of national contributions will also have to be agreed.

Another unresolved issue is the Agreement's legal form. While some negotiators favour a strong, legally binding agreement, others prefer a bottom-up approach based on voluntary contributions. Finally, issues of fairness and equity need to be addressed, acknowledging that developed countries have a greater historical responsibility for climate change and stronger capabilities for taking action. They can therefore be expected to make a larger contribution to emissions reductions as well as to provide finance for developing countries' climate action, although the size and extent of these contributions is far from being agreed.

The outcome of the Lima Conference presents EU climate policy with new challenges as regards shaping the Paris Agreement, and once the Paris Conference is over, to building collaborations with partners worldwide.

The probable shift from a legally binding environmental treaty towards a 'soft' agreement based on national contributions presents both risks and opportunities. Continued engagement with international partners is needed to achieve the transformations of the economies and energy systems required to make sure that the risks of global warming remain manageable.

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### Glossary and acronyms

**Adaptation:** adjustment of behaviour to limit harm, or exploit beneficial opportunities, arising from actual or expected climate change.

**Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP):** a subsidiary body under the UNFCCC whose mandate is to develop a new global climate agreement, to be adopted in 2015, and come into effect from 2020.

**Anthropocene:** the present time period, in which many geologically significant conditions and processes, including the climate system, are strongly influenced by human activities.

**Carbon capture and storage (CCS):** a technology for removing CO<sub>2</sub> from the exhaust gas of power plants and factories, and storing it underground or in the ocean.

**Carbon dioxide equivalent (CO<sub>2</sub>e):** the global-warming potential of greenhouse gases other than CO<sub>2</sub> is expressed in carbon dioxide equivalents (CO<sub>2</sub>e).

**Clean development mechanism (CDM):** a UNFCCC mechanism under which emission reduction projects in developing countries can earn certified emission reduction credits.

**Common but differentiated responsibilities (CBDR):** a principle in international law which recognises differences in the contribution of developed and developing nations to global environmental problems, and differences in their respective capacities to take action.

**COP:** Conference of the Parties (to the UNFCCC).

**Developed country (Annex I country):** in the context of climate negotiations, this refers to countries with a long history of industrialisation, listed in Annex I to the UNFCCC.

**Developing country (non-Annex I country):** in the context of climate negotiations, this refers to countries without a long history of industrialisation. It includes countries at various levels of economic development and with very different greenhouse-gas emissions levels.

**Greenhouse gas (GHG):** gas in the earth's atmosphere which traps heat and prevents it from escaping into space. An increase in GHG concentrations leads to warming of the planet. The most common GHG is carbon dioxide (CO<sub>2</sub>).

**Holocene:** the present geological epoch – characterised by a relatively stable climate – which started 11 700 years ago, and in which the development of human civilisations and all recorded human history has occurred.

**INDC:** intended nationally determined contribution.

**IPCC:** Intergovernmental Panel on Climate Change, a UN scientific advisory body.

**Kyoto Protocol:** an international agreement linked to the UNFCCC that commits developed nations to cut their greenhouse gas emissions.

**Loss and damage:** costs of climate impacts that are not prevented by mitigation or adaptation.

**Mitigation:** actions to limit dangerous climate change, notably by reducing the emission of GHGs into the atmosphere.

**Net-zero emissions:** a situation in which any GHG emissions are compensated by removal of GHGs from the atmosphere, for example by the carbon-absorbing action of forests.

**Resilience:** the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change.

**UNFCCC:** United Nations Framework Convention on Climate Change, an international agreement aiming to prevent dangerous man-made climate change.

## 1. Introduction: the climate change challenge

Despite 20 years of intensive negotiations, the world's nations have yet to come to an agreement that would effectively prevent dangerous climate change. Global emissions of greenhouse gases (GHG) keep rising, which means that the world is headed for a 4°C temperature rise by 2100, if current trends continue.

Five elements make it very challenging to find an agreement that is both effective and politically acceptable to the concerned parties:

1. There is (still) a close link between prosperity (GDP), energy use, and GHG emissions. While a certain uncoupling of GDP and GHG emissions has been achieved, most economies cannot achieve deep reductions in GHG emissions in the short term without negative impacts on GDP growth. Deep uncoupling would require a fundamental transformation of energy generation and transport systems, which would take decades, trillions of euros of infrastructure investment, and breakthroughs in energy technologies to achieve.
2. Local greenhouse-gas emissions have global effects (unlike air or water pollution, whose effects are more local). Local efforts on reducing GHG emissions benefit the whole planet and are not effective unless other regions make similar contributions. The atmosphere is a 'global commons'.<sup>1</sup>
3. The impacts of GHG emissions are not felt immediately, but materialise some time afterwards. Rises in temperature peak within decades after GHGs are emitted, while sea levels rise over centuries. Most of today's decision-makers will no longer be in positions of power when the effects of today's policies on the climate are felt.
4. Some GHGs (notably CO<sub>2</sub>) remain in the atmosphere for a very long time. Their impacts therefore continue, even when emissions are halted. Today's climate change is caused by cumulative GHG emissions from the past two centuries. Today's rich countries owe their infrastructure, technology and prosperity (at least in part) to their past energy use and GHG emissions.
5. Richer, highly developed societies are less vulnerable to the impacts of climate change. Therefore, sacrifices in economic development, which are made to slow down climate change, increase vulnerability.<sup>2</sup> There may be a risk that slow economic growth will make it more difficult for economies to mobilise the investment needed for the transformation to a low-carbon economy.

All these elements make it hard to agree on a distribution of the GHG reduction effort that all parties concerned would perceive as fair. On the one hand, the largest historic GHG emitters are broadly agreed to have caused most of today's climate change. On the other hand, participation of the largest current emitters is required to limit future climate change. Moreover, with global trade, production of goods causes GHG emissions in one region, yet these same goods are exported to, and consumed in, other regions of the world.

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<sup>1</sup> Domain or area outside the political reach of any one nation state. International law identifies four global commons: the high seas; the atmosphere; Antarctica; and outer space.

<sup>2</sup> Some Economics of Global Warming, Thomas Schelling, American Economic Review, vol. 82(1), pp 1-14, March 1992.

Unilateral reduction of GHG emissions may place a region at an economic disadvantage compared to regions that make less effort to reduce their emissions. As a result, energy-intensive industries (which cannot easily reduce their GHG emissions) lose competitiveness against companies in regions with less ambitious climate policies and may close down or relocate their production to such regions. In either case, production and GHG emissions take place in regions with less strict climate policies, a process referred to as 'carbon leakage'.

These factors have made it difficult to reach an effective global climate agreement in the past, and have to be tackled by negotiators from all the countries who come together to conclude an agreement in Paris in December 2015. The new agreement must not only be effective in containing climate change and enabling the low-carbon transformation of the economy and energy system, but its consequences must also be politically acceptable to voters (in democratic nations) and governments.

## 2. Climate science and climate action

### 2.1. Greenhouse gases and the climate system

There is consensus among climate scientists that it is very likely that human activity, notably the emission of greenhouse gases (GHG), causes climate change. In the atmosphere, these gases trap heat (like the glass panes of a greenhouse), and cause global warming ('radiative forcing', measured in Watts per square metre).

The most important GHG is carbon dioxide (CO<sub>2</sub>), which persists in the atmosphere for thousands of years. In 2014, the average atmospheric concentration of CO<sub>2</sub> was almost 400 parts per million (ppm), up from 280 ppm in pre-industrial times. In 2013, CO<sub>2</sub> concentrations increased at the fastest rate in 30 years. Other important GHGs are methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and fluorinated gases.

Since 1880, the earth's average surface temperature has risen by about 0.8°C, and most of that warming has occurred in the past three decades. The ten warmest years since recording began have occurred since 1998, and 2014 was the year with the highest recorded temperatures. In Europe, the past decade was the warmest on record, with temperature on land measuring 1.3°C above pre-industrial levels.

#### **The Intergovernmental Panel on Climate Change (IPCC)**

The IPCC was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988. Its task is to review and assess scientific evidence on climate change, based on the voluntary participation of thousands of scientists. The IPCC publishes regular assessment reports which sum up the current scientific knowledge about climate change and its impacts. The fifth assessment report was published in 2014.

The IPCC process has been criticised as being too slow, since it may take several years before an IPCC assessment report reflects the latest scientific findings. The process of drafting the 'summary for policy-makers' has been criticised as being overly political, as it requires unanimity of the representatives of national governments.

However, temperatures would continue to rise even if GHG emissions were stopped immediately, due to the inertia of the climate system. Oceans have so far taken up some of the heat and absorbed part of the CO<sub>2</sub> emissions. Nevertheless, the probability remains that warmer oceans will contribute to warmer surface temperatures later, and will also be able to store less carbon.

## 2.2. Impacts of climate change

The current and expected impacts of climate change include:

- heatwaves, causing drought, forest fires, and affecting the health of vulnerable persons;
- melting of glaciers and ice caps;
- rising sea levels (3 mm a year in the past two decades), leading to coastal erosion, storm floods and flooding of coastal areas;
- changing rainfall patterns, leading to reduced restocking of groundwater reservoirs, floods, droughts and desertification, reduction of snowpack and glaciers;
- increased ocean acidity;
- more extreme weather-related events such as storms, floods, and mudslides;
- species may become extinct or migrate to other areas, with impacts on biodiversity;
- pests, deadly fungi and diseases may expand their range, with impacts on human health and agriculture.

Climate change has already had wide-ranging impacts in Europe and worldwide.<sup>3</sup> Climate change-linked impacts include melting glaciers in the Andes and Himalayas, drought in California, and typhoons in the Philippines.

Poor countries are more at risk from climate change impacts than developed countries, which are better able to adapt.

### The two-degrees Celsius target

In the 2009 Copenhagen Accord, the UNFCCC agreed a target to 'hold the increase in global temperature below two degrees Celsius' (2°C). The same target underlies the EU objective for 2050 of reducing emissions by 80–95%.

However, in the light of scientific uncertainty about climate change impacts, 2°C is not necessarily a safe limit, and severe impacts of climate change are expected at lower levels of temperature rise. A strengthening of the target to 1.5°C is therefore possible, although it would be extremely hard to achieve. On the other hand, a temperature rise beyond 2°C is not guaranteed to be catastrophic. The 2°C limit is however considered as one at which the risks of climate change may still be manageable. At higher temperatures, the impacts are not only larger, but also less predictable. Moreover, higher temperatures mean a higher risk of feedback effects, which can lead to further temperature rises. Examples of such self-reinforcing feedbacks are release of carbon from forest fires and of methane from melting permafrost.

The 2°C target also serves an important political function by guiding discussions about climate change mitigation.<sup>4</sup> While some commentators argue that 2°C is no longer a realistic target and call for its modification,<sup>5</sup> others point out that it is unlikely that the world's nations will ever come to an agreement on any other target.

A recent US Government study, based on the results of three widely used economic impact models, concluded that each additional tonne of CO<sub>2</sub> emitted in 2015 would cause US\$37 worth of economic damage. The costs of impacts depend on the magnitude of climate change and on the preparedness of societies. The former is addressed through mitigation and the latter through adaptation.

<sup>3</sup> [Climate change, impacts and vulnerability in Europe 2012](#), European Environment Agency, 2012.

<sup>4</sup> [2°C: the history of a policy-science nexus](#), Béatrice Cointe, Paul-Alain Ravon and Emmanuel Guérin, IDDRI Working Paper 19/11, December 2011.

<sup>5</sup> [Modifying the 2°C Target](#), Oliver Geden, SWP Research Paper, June 2013.



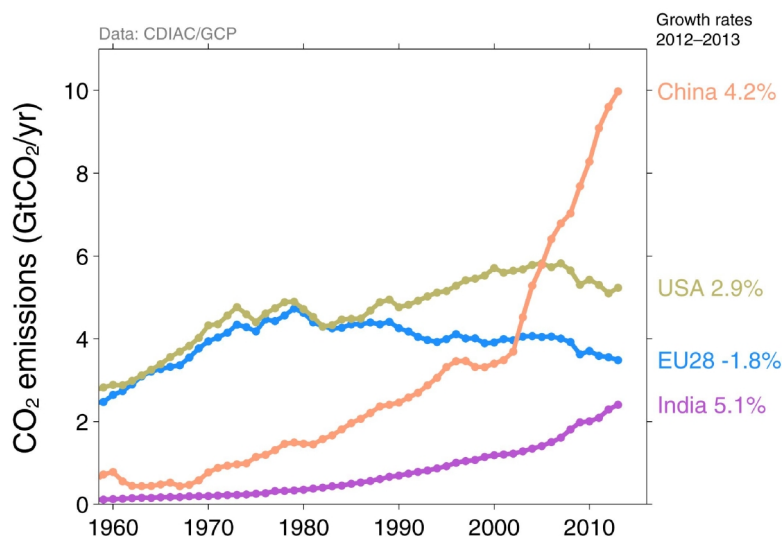
### 2.3. Current, historic and projected emissions

From 1990 to 2012, global GHG emissions have grown by almost 50% to 54 billion tonnes CO<sub>2</sub>e. GHG emissions in the EU fell by 12% in the same period. Falling emissions in Europe and the US are more than compensated by rapidly rising emissions in other parts of the world, notably in Asia.

China's GHG emissions in 2012 were larger than those of the EU and US combined. China now emits more CO<sub>2</sub> per person than the EU, but it is a major exporter of manufactured goods consumed in other parts of the world.<sup>6</sup>

Most CO<sub>2</sub> emissions come from energy use. Cement production and land-use change (e.g. deforestation) are also significant. Large emissions of other GHGs come from fossil-fuel production (e.g. methane leaks), agriculture (especially livestock), and refrigerants.

**Figure 1: CO<sub>2</sub> emissions of China, US, EU, India (58% of global emissions)**

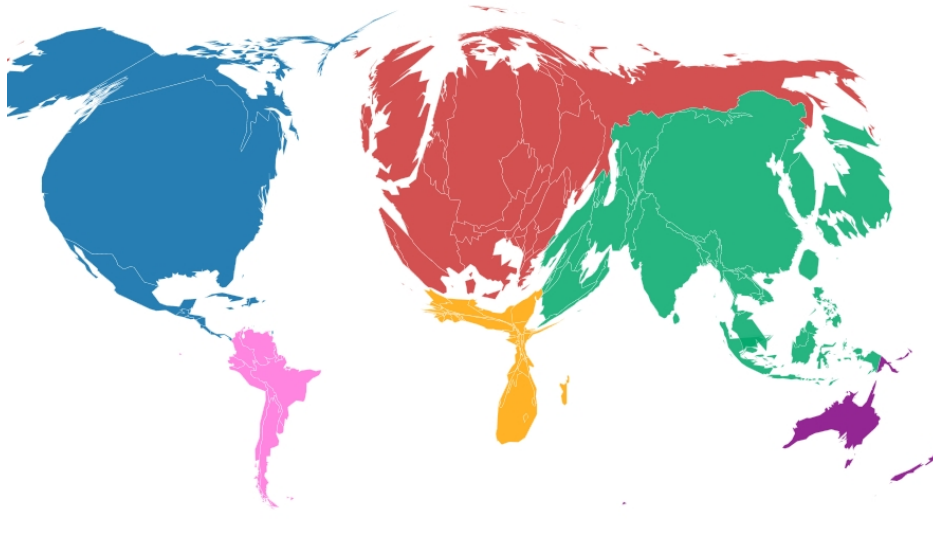


Source: [Global Carbon Project](#).

A different picture emerges when considering which countries are responsible for the emission of the current stock of CO<sub>2</sub> in the atmosphere. Countries with a long history of industrialisation and fossil-fuel use have made major contributions to current CO<sub>2</sub> levels (Figure 2). It is for this reason that developing countries feel that they should not be denied the right to use fossil fuels in their own economic development.

Future emissions are of course dependent on the action countries take to reduce their climate impact, and on the outcome of the current climate negotiations. However, a significant decline in the short term is unlikely because energy infrastructure has a lifetime of many decades. Economic growth and growing energy demand in Asia (based mostly on coal) will lead to increased emissions. Carbon prices in Europe and elsewhere, intended to encourage emission reduction, are too low to incentivise investment in low-carbon technologies. If current trends continue, emissions in Europe would continue to decline, emissions in the US would decline slowly, while emissions in many other parts of the world would continue to grow strongly, setting the world on a path to 3–6°C global warming by 2100.

<sup>6</sup> With GHG accounting based on consumption, the EU's emissions would be about a quarter higher.

**Figure 2: Historic CO<sub>2</sub> emissions from energy use 1850–2011**

Country sizes show CO<sub>2</sub> emissions from energy use 1850–2011. These historical (or 'cumulative') emissions remain relevant because CO<sub>2</sub> remains in the atmosphere for centuries. Europe and the US dominate, having released around half the CO<sub>2</sub> emitted since 1850.

Source: [Carbonmap.org](http://Carbonmap.org), Data source: Climate Analysis Indicators Tool ([CAIT 2.0](#)).

## 2.4. Carbon budget

The IPCC states that cumulative global carbon emissions since 1860 must not exceed a trillion tonnes of carbon (3.67 trillion tonnes CO<sub>2</sub>e) if aiming for a two-thirds chance of keeping warming below 2°C.<sup>7</sup> With 515 billion tonnes having already been emitted by 2011, the remaining carbon budget comes to less than 500 billion tonnes.<sup>8</sup> According to the IPCC, to stay within this budget, worldwide carbon emissions must be cut by 40-70% between 2010 and 2050, and become zero or negative by 2100. This requires effort in all regions of the world.

### Decoupling emissions from economic growth

There is a strong link between economic prosperity (GDP), energy consumption, and GHG emissions. Although some nations have reduced their carbon intensity (GHG emissions per unit of GDP), none have yet achieved an absolute decoupling. Reductions in carbon intensity are to a great extent compensated by GDP growth, so that overall emissions are not reduced to the extent needed to meet the 2°C target. However, lack of GDP growth makes it more difficult to mobilise investment in low-carbon infrastructure.

On the other hand, the New Climate Economy Report concludes that countries can achieve lasting economic growth at the same time as reducing the risks of climate change. This requires a deep structural transformation of the world economy, high levels of innovation and trillions of euros in infrastructure investments. Investors and entrepreneurs would play a central role in this vision, supported by governments and a strong international climate agreement.<sup>9</sup> Analysis based on the DECC Global Calculator<sup>10</sup> indicates that growing prosperity and decarbonisation can be compatible, provided that effective measures are chosen and implemented.

<sup>7</sup> This corresponds to a greenhouse-gas level in the atmosphere of around 450 ppm CO<sub>2</sub>e.

<sup>8</sup> Other studies come up with slightly different numbers, depending on assumptions about the role of other greenhouse gases, deforestation and reforestation.

<sup>9</sup> [Better growth, better climate: the new climate economy report](#), Global Commission on the Economy and Climate, September 2014.

<sup>10</sup> <http://www.globalcalculator.org/>.

The cumulative stock of carbon in the atmosphere is what counts, rather than the annual emissions flow. Therefore, the timing of emissions reductions is of critical importance. The later emissions are reduced, the deeper the cuts will have to be in future. If the carbon budget is exceeded, emissions would have to drop below zero, by removing CO<sub>2</sub> from the atmosphere.

The UNEP Emissions Gap Report concludes that the carbon budget would be exceeded even if countries meet their current pledges. A further emissions reduction of 8–10 billion tonnes CO<sub>2</sub>e by 2020, and 14–17 billion tonnes by 2030, would be required.

The world's available fossil fuel resources far exceed the 2°C carbon budget. A large part of them must therefore not be used unless the CO<sub>2</sub> emissions are captured and safely stored. According to recent research, this concerns 30% of oil, 50% of gas and over 80% of coal reserves.

## 2.5. Climate action

### 2.5.1. Mitigation of climate change

Mitigation means action to limit dangerous climate change, notably by reducing the emission of GHGs into the atmosphere. It is important to note that emissions from one country contribute to climate change for the entire planet. Conversely, mitigation efforts by one country benefit all others, whether they contribute or not. A country that unilaterally adopts ambitious mitigation measures may be at an economic disadvantage compared with countries with lower ambition. As the EU is only responsible for some 11% of global GHG emissions, EU mitigation action alone can have only a limited impact, and must be matched by comparable efforts by other countries.

Measures to reduce carbon emissions from energy use include promoting low-carbon energy sources (renewables, nuclear, natural gas), energy conservation and energy efficiency.<sup>11</sup> Carbon capture and storage (CCS) can help reduce emissions from the continued use of fossil fuels, but some argue that CCS capacities should be preserved to build carbon-negative power plants (bio-energy with CCS) in the future. The International Energy Agency proposes a decarbonisation strategy based on energy efficiency, electrification of transport and heating, and low-carbon electricity generation. Emissions from existing high-carbon assets, which have a lifetime of many decades, must also be reduced, and subsidies for fossil fuels phased out.

Outside the energy sector, reducing meat consumption can lead to reduced emissions, according to a recent Chatham House report. Land use, agriculture and forestry are other sectors that can achieve significant emissions reductions or even carbon removal.

Nations around the world take different approaches to dealing with climate change. A number of organisations have analysed the approaches and performance of individual countries. The Climate Change Performance Index ranks countries every year according to emissions level, emissions trend, renewable energy development, energy efficiency and climate policy. In the 2015 ranking, 11 of the 12 best-performing countries are European countries taking part in the EU ETS.<sup>12</sup>

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<sup>11</sup> However, lower costs resulting from improvements in energy efficiency can lead to higher demand. This 'rebound effect' has been shown to limit the overall impact of energy efficiency measures.

<sup>12</sup> [The Climate Change Performance Index 2015](#), Jan Burck, Franziska Marten, Christoph Bals, Germanwatch, December 2014.

A number of organisations have produced decarbonisation scenarios showing the action needed to achieve the required emission reductions.<sup>13</sup> To outline the path towards a low-carbon future in Europe, the European Commission presented roadmaps for a competitive low-carbon economy, resource efficiency, energy and transport.

The Deep Decarbonisation Pathways Project has developed strategies for deep decarbonisation for a number of countries. It concludes that the task is so large that no country can achieve decarbonisation alone, and that international collaboration and technology transfer are needed.<sup>14</sup>

However, an analysis of 17 decarbonisation scenarios shows that these strategies assume historically unprecedented reductions in carbon intensity (GHG emissions per unit of GDP) and energy efficiency, and do not take account of social, economic and political constraints that may hold back the speed of decarbonisation.<sup>15</sup> Indeed, analysis by PricewaterhouseCoopers indicates that global economies would have to reduce their carbon intensity by 6.2% every year from now until 2100 – more than five times the rate currently achieved. Most published decarbonisation plans are thus best-case scenarios, which may be hard to achieve in practice. Decarbonisation scenarios that focus on renewable energies and exclude nuclear energy and CCS must make particularly optimistic assumptions about reductions in carbon intensity and limitations in energy demand.

Researchers disagree whether decarbonisation can be achieved with known technologies, or whether technological breakthroughs are needed. Google engineers who had worked on an unsuccessful project aiming to produce renewable energy more cheaply than existing coal-fired power plants, conclude that research in breakthrough energy technologies must be greatly increased.<sup>16</sup> A recent research article proposes making energy technology research and innovation the subject of an international agreement.<sup>17</sup>

The International Energy Agency estimates that US\$44 trillion in additional investment is needed to decarbonise the energy system by 2050, but this investment would be offset by over US\$115 trillion in fuel savings. Carbon pricing or alternative policies would be required to mobilise investment on this scale.

According to the World Economic Forum, projected worldwide infrastructure investment until 2020 will be around US\$5 trillion per year, and an additional US\$700 billion per year would be needed to make this investment climate-friendly. The Global Commission on the Economy and Climate estimates that there is a unique opportunity to shift US\$90 trillion in investment over 15 years towards a low-carbon economy. Current low-carbon investment falls far short of these numbers. The current

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<sup>13</sup> To allow for comparison of the effects of different decarbonisation actions and policies, the UK government has published an interactive tool based on the latest scientific information (<http://www.globalcalculator.org/>).

<sup>14</sup> [Pathways to Deep Decarbonization 2014 Report](#), SDSN and IDDRI, September 2014.

<sup>15</sup> [A critical review of global decarbonization scenarios: what do they tell us about feasibility?](#), Peter J. Loftus et al., Wiley Interdisciplinary Reviews: Climate Change, Volume 6, January/February 2015.

<sup>16</sup> [What it would really take to reverse climate change](#), Ross Koningstein & David Fork, IEEE Spectrum, November 2014.

<sup>17</sup> [Making climate leadership meaningful: energy research as a key to global decarbonisation](#), Rasmus Karlsson and Jonathan Symons, Global Policy (2015).

level of climate finance worldwide is in the range of US\$340–650 billion annually, including private investment.

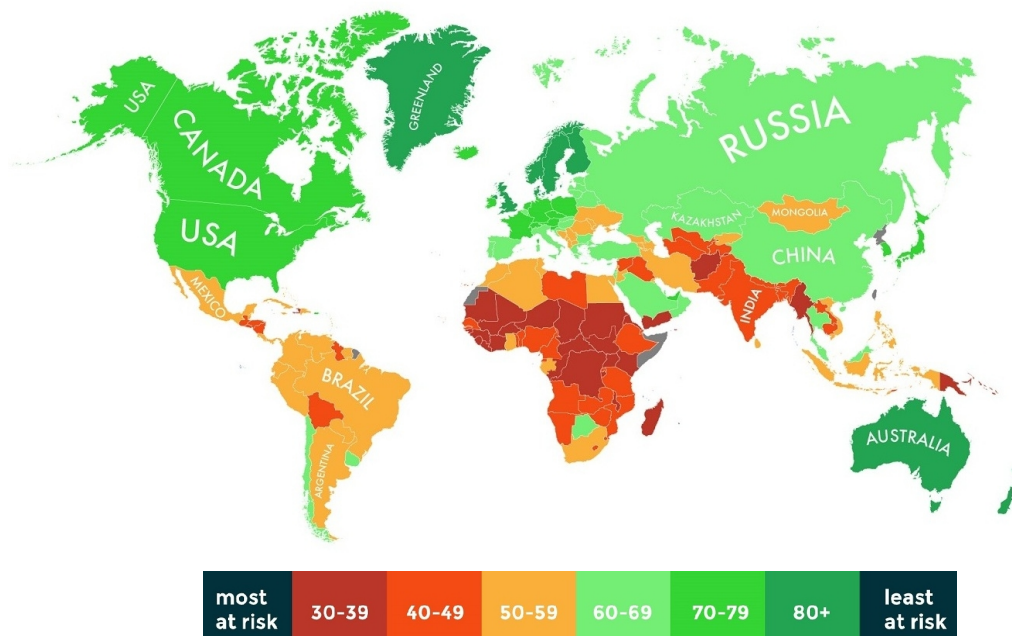
Mitigation benefits arise from reduced climate impacts. A 2013 study concludes that strong mitigation can reduce the impacts expected for the year 2100 by up to 65%. The Stern Review concludes that losses from climate impacts would amount to 5-20% of global GDP if GHG emissions are not reduced. Apart from reducing climate change, mitigation is considered to bring further benefits such as less air pollution (a major public health problem in China and India), technology leadership, 'green' jobs and reduced dependence on energy imports (for countries without primary energy resources).

However, it is far from clear that such co-benefits outweigh the cost of mitigation action under current policies. The fact that many countries and companies do continue investing in fossil-fuel assets suggests they consider these as more advantageous technically and economically than going for a low-carbon transition. The EU, which has implemented strong mitigation policies, has higher energy costs than some economies with less ambitious mitigation targets.

#### 2.5.2. Adaptation to climate change

Adaptation is the adjustment of behaviour to limit harm, or exploit beneficial opportunities, arising from actual or expected climate change. Most adaptation measures need to be carried out at a local level by individuals, companies, cities and regional authorities. National governments and international organisations can play a role in providing information, coordinating action, and adapting major infrastructures.

**Figure 3: Climate risk index**



Source: [Eco experts blog](#); data source: [University of Notre Dame Global Adaptation Index \(ND-GAIN\)](#), based on vulnerability and readiness to adapt.

Adaptation is particularly challenging for developing countries which have little historical responsibility for climate change, are often located in regions that are exposed to climate impacts, and have fewer capacities and resources than developed countries.

Adaptation actions have a local effect and are often motivated by self-interest (for instance farmers switching to more drought-resistant crops). In contrast to mitigation,

adaptation helps reduce risk and cost locally, which explains why countries are often reluctant to contribute to adaptation efforts elsewhere.

Adaptation and mitigation are complementary risk reduction strategies. Mitigation can reduce the impacts of climate change, and thereby also the costs of adaptation. According to a World Bank report, a temperature rise of 4°C could exceed the adaptive capacity of many societies.

### *2.5.3. Role of cities and regions*

Non-state actors have increasingly been recognised as critical in dealing with the challenges of mitigation and adaptation. While national governments can set the regulatory framework, most of the operational decisions are taken by regions and cities, investors and businesses.

A number of sub-national governments worldwide have formed the 'R20 Regions of Climate Action' network to facilitate regional low-carbon investments. One of the founding members is the State of California, which aims to generate 50% of its electricity from renewable sources by 2030, reduce the petroleum use of cars and trucks, and double the efficiency of existing buildings.

Cities have a major impact on climate change, and many opportunities for contributing to solutions. Urban planning, public transport systems, and building codes are examples of areas where cities can act to reduce their carbon emissions. Cities are also major actors in adaptation, for example through the creation of green infrastructure which can limit the impact of heatwaves and rain storms. The Covenant of Mayors is a European initiative of local and regional authorities that voluntarily commit to energy efficiency and use of renewable energy sources. A group of 2 000 cities launched the 'Compact of Mayors' at the 2014 UN Climate Summit. The group has 200 targets and strategies to reduce emissions by 454 million tonnes of CO<sub>2</sub>e by 2020.

### *2.5.4. Business and investors*

Speaking in January 2015 at the World Economic Forum in Davos, UNFCCC Executive Secretary Christiana Figueres pointed out the fundamental role of business, and called for private-sector engagement in vision, action and voice. A year earlier, at the Investor Summit on Climate Risk in New York, she urged investors to shift investment away from fossil fuels towards renewable energies. A divestment campaign aims to push institutional investors to reduce investment in fossil-fuel companies.

A coalition of businesses published a report outlining the economic opportunities arising from low-carbon investment. They call on policy-makers to create policies encouraging such investment on a large scale. They advocate carbon pricing and scrapping of fossil-fuel subsidies, stronger energy-efficiency standards and support for scaling up use of low-carbon energy.<sup>18</sup> In February 2015, influential business leaders called for the Paris Agreement to target net-zero emissions by 2050.

### *2.5.5. Public opinion and political feasibility*

Countries can only agree to ambitious climate action if the commitments are supported domestically by a majority of citizens. A recent survey in 12 countries worldwide shows that a majority in all countries think that human activities cause climate change and are willing to do something to limit GHG emissions. According to a 2014 Eurobarometer

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<sup>18</sup> [The climate has changed: why bold low carbon action makes good business sense](#), We Mean Business, 2014.



survey, 80% of Europeans agree that climate action and energy efficiency can contribute to growth and employment.

In global public opinion (UN 'My World 2015' survey), other development issues (notably education, healthcare and job opportunities) are given higher priority than climate change, especially in low-income countries.

Concerned citizens are also making their voice heard. Ahead of the September 2014 climate summit in New York, hundreds of thousands of people took part in a People's Climate March in New York and other cities.

### 3. Climate change agreements and institutions

Although the effects of greenhouse gases on the global climate have been known since the 19th century, man-made climate change was only recognised as a problem in the second half of the 20th century. In 1988, the Intergovernmental Panel on Climate Change (IPCC) was established to assess the scientific evidence.

#### 3.1. United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC) was adopted at the 1992 Earth Summit in Rio, and entered into force in 1994. Its objective is the 'stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system'. The UNFCCC acknowledged that countries have common but differentiated responsibilities. Developed nations, responsible for most of the greenhouse gases in the atmosphere and with more capacity to act, were therefore expected to take the lead in the fight against climate change by reducing their own GHG emissions, as well as providing support (including financial) to developing countries. These countries are listed in Annex I to the Convention.<sup>19</sup>

In 1995, the first Conference of the Parties (COP 1) in Berlin agreed on a negotiation process to strengthen commitments for developed countries. These negotiations resulted in the Kyoto Protocol, which was adopted in 1997 (COP 3, Kyoto), and entered into force in 2005. The Kyoto Protocol commits developed nations (specified in Annex I) to quantified reduction of their collective carbon emissions – by 5.2% by 2012, compared to the base year (1990). It established an international emissions-trading system and a Clean Development Mechanism which allows developed countries to meet their commitments with emissions-reduction projects in developing countries. However, the US – at the time the world's number one emitter – did not ratify the protocol, seriously limiting its effectiveness.

In 2009, COP 15 in Copenhagen set out to reach a new climate agreement for the post-Kyoto period that would commit developed as well as developing countries, but ended in failure. The conference did result in the Copenhagen Accord, a non-binding document that mentions the 2°C target, establishes the Green Climate Fund, and agrees a goal to provide climate finance, from 'a wide variety of sources', worth US\$100 billion per year to developing countries by 2020. Countries made voluntary

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<sup>19</sup> The developed countries listed in Annex I are most European countries (including all EU Member States and the European Economic Community itself), Russia, Turkey, Japan, the USA, Canada, Australia, and New Zealand.

mitigation pledges for the period up to 2020. However, the current pledges are insufficient to meet the 2°C target, and would lead to a projected 3.7°C global warming.

In 2011, COP 17 in Durban resolved to conclude a new agreement by 2015, to enter into force in 2020. This agreement should be legally binding and applicable to all Parties, and is being prepared by the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP). COP 17 established a Technology Mechanism to facilitate technology development and transfer.

In 2012, COP 18 in Doha agreed on a second commitment period (2013–20) for the Kyoto Protocol ('Doha Amendment'). However, it affects only 14% of global emissions because only EU Member States, other European countries and Australia have assumed commitments, while the US, Russia, Canada and Japan have not. The Doha Amendment has not yet entered into force, as only 23 of 144 Parties have ratified it so far.

In 2013, COP 19 created the Warsaw International Mechanism for Loss and Damage, aiming to address climate change damage in developing countries. The mechanism will be reviewed in 2016 (COP 22).

In September 2014, world leaders together with business representatives met in New York for a UN climate summit and laid out their visions for future climate action. Initiatives launched at the summit include the Global Alliance for Climate-Smart Agriculture; the New York Declaration on Forests, a commitment by palm-oil producers and traders to stop deforestation; and an energy-efficiency initiative by 40 countries, 30 cities and dozens of corporations.

### **3.2. Climate finance for developing countries**

In 2013, OECD countries and multilateral development banks provided US\$37 billion in climate-related external development finance to developing countries. Some 61% of this sum addresses mitigation only, 26% adaptation only, and 13% concerns activities that address both adaptation and mitigation.

By December 2014, countries had pledged over US\$10 billion to the Green Climate Fund (GCF), a financing mechanism established in 2009 within the UNFCCC to support mitigation and adaptation in poorer countries. Although most contributions come from developed countries, four Latin American countries (Columbia, Mexico, Panama, and Peru) also pledged contributions to the GCF. The fund is designed to allow for investment of public money as well as private finance. It can help reduce risk for private low-carbon investments in developing countries. However, there is not yet a clear path for achieving the US\$100 billion per year by 2020 promised at the climate conferences in Copenhagen (2009) and Cancún (2010).

The Chinese government will not contribute to the Green Climate Fund, preferring instead to establish a South-South Cooperation Fund to continue work with developing nations.

Development banks can play a role in facilitating low-carbon investments. The European Investment Bank (EIB) pioneered Green Bonds for financing climate-related projects without exposing investors to project risks. The EIB has raised €7 billion to date, across ten currencies. In December 2014, the Asian Development Bank launched an online marketplace for clean energy projects that links global clean-tech companies with prospective clients in the region. The Global Environment Facility serves as a financial mechanism for UNFCCC and other international environmental conventions.



### 3.3. European Union

While most nations decide their own national climate policy, EU Member States have long had a common climate policy.<sup>20</sup> The European Commission has been active in climate policy since 1991. With the adoption of the Lisbon Treaty in 2009, combating climate change became an explicit EU objective.<sup>21</sup> Ahead of the 2009 Copenhagen COP, the European Council agreed the long-term objective of reducing EU GHG emissions by 80-95% by 2050, compared to 1990 levels, in the context of similar reductions by other developed countries.

For the period to 2020, the EU's targets are a 20% reduction in GHG emissions, a 20% market share for renewable energy sources, and a 20% improvement in energy efficiency. These so-called '20-20-20' targets, part of the Europe 2020 strategy, were enacted in the 2009 climate and energy package, and are supported by various instruments such as the EU Emissions Trading System and the Energy Efficiency Directive.

In October 2014, before the UN climate summit, the European Council agreed on climate and energy policies up to 2030: a GHG reduction target of at least 40% for 2030, complemented by a 27% target for renewable energy sources (binding at EU level only) and a non-binding 27% target for energy efficiency.

EU climate and energy policies for the period to 2020 are translated into targets for individual Member States. However, for the post-2020 period, there are currently no binding targets for individual Member States for renewable energies or energy efficiency. According to press reports, the UK and the Czech Republic are preparing a proposal to limit the powers of the European Commission to control national climate policies.<sup>22</sup> The EU dedicates almost €6 billion to research in clean energy technologies through the research framework programme, Horizon 2020 (7.7% of the programme's budget).

### 3.4. US-China announcement

In November 2014, ahead of the Lima Conference, China and the US announced their intention to address climate change. China aims to reach peak carbon emissions in 2030 or earlier, and increase the share of non-fossil fuel energy sources (including nuclear) to 20% by 2030. The US intends to reduce emissions by 26–28% below 2005 levels by 2025. In addition, the two countries agreed to expand their cooperation on clean energy technologies and carbon capture and storage.<sup>23</sup>

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<sup>20</sup> EU Member States define national climate policies within the EU framework. For example, Germany agreed new action plans in December 2014, intended to result in €70-80 billion in public and private investment.

<sup>21</sup> Article 191 of the Treaty on the Functioning of the European Union (TFEU) lists climate action as one of the objectives of EU environmental policy. Like other environmental policies, climate policies are a shared competence between EU and Member States, and subject to codecision by European Parliament and Council (ordinary legislative procedure).

<sup>22</sup> [UK accused of hypocrisy over plans to limit enforcement of EU climate goals](#), The Guardian, 6 January 2015.

<sup>23</sup> [Fact sheet: US-China Joint Announcement on Climate Change and Clean Energy Cooperation](#), The White House, 11 November 2014.

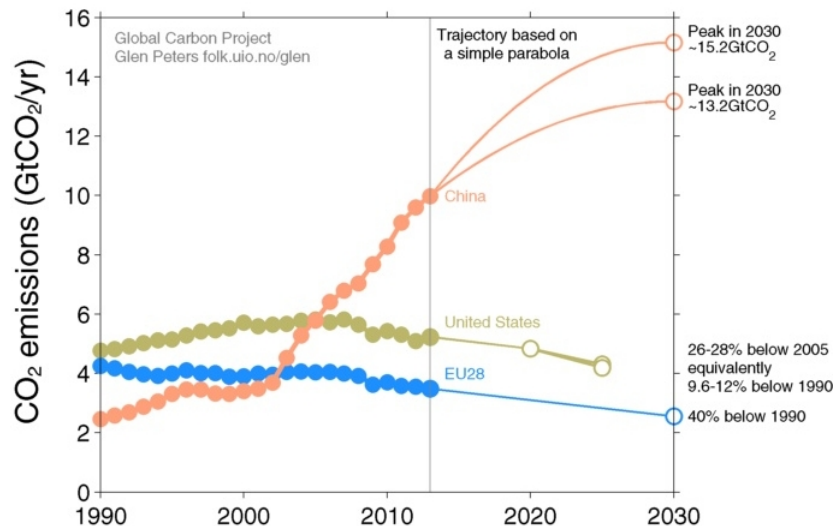
**Figure 4: Projected effect of EU, US and China announcements on CO<sub>2</sub> emissions**

Image source: [Glen Peters](#).

The announcement was received with much enthusiasm, since it commits the world's major emitters to mitigation – when they previously held opposing positions and resisted mitigation commitments – and makes it harder for other developed and developing nations to resist mitigation commitments. Chatham House considers that the US-China deal marks the beginning of a new era in climate diplomacy.<sup>24</sup> Professor Steven Cohen (Columbia University) believes that the US-China deal indicates a trend away from global climate negotiations towards bilateral and small-scale multilateral discussions, and argues that the intended cooperation in clean energy technologies will have the greatest impact.<sup>25</sup>

Climate Action Tracker, a consortium of research organisations, projects that the emissions reductions pledged by the EU, China and the US (accounting for 52% of global GHG emissions) will lead to approximately 3°C global warming – 0.2 to 0.4 degrees less than previous commitments, but still far above the 2°C target.<sup>26</sup>

The Chinese pledge is regarded as vague since China's CO<sub>2</sub> emissions can keep growing for another 15 years, and it is not clear at what level they would peak, and whether, and how quickly, they would decline after 2030. To meet the target of 20% zero-carbon energy sources by 2030, China must install an additional 800–1 000 gigawatts of nuclear, wind, solar and other zero emission generation capacity – more than all the coal-fired power plants that exist in China today.

What becomes of the US pledge depends on the US Congress, which is sceptical of climate action. On 22 January 2015, the US Senate rejected an amendment to annul the US-China agreement by 51 to 46 votes.

### 3.5. Main international agreements and organisations

**International Maritime Organization (IMO).** In 2007, international shipping was responsible for around 2.7% of global CO<sub>2</sub> emissions. The IMO has developed energy-

<sup>24</sup> [US and China Launch a New Era of Climate Diplomacy](#), Chatham House, 14 November 2014.

<sup>25</sup> [The Importance of the US-China Climate Accord](#), Steven Cohen, HuffPost blog, 17 November 2014.

<sup>26</sup> [China, US and EU post-2020 plans reduce projected warming](#), Climate Action Tracker policy brief, December 2014.

efficiency measures, and continues to work on market-based measures to achieve emissions reductions.

Aviation is a fast-growing industry that accounts for around 2% of global CO<sub>2</sub> emissions. The **International Civil Aviation Organization (ICAO)** aims to agree global market-based measures for carbon neutral growth by 2016, to take effect in 2020.

The UN REDD (Reducing Emissions from Deforestation and Forest Degradation) programme creates financial value for carbon stored in forests; REDD+ aims for the conservation and sustainable management of forests.

The **Montreal Protocol** for the protection of the stratospheric ozone layer was agreed in 1997. The resulting reduction of halocarbon emissions has also resulted in a significant reduction in global warming, even though it was not explicitly intended in the protocol. However, some of the ozone-destroying substances were replaced with fluorinated gases whose global warming potential is hundreds to thousands of times higher than that of CO<sub>2</sub>. The EU, G20, US, China and India support international efforts to limit the use of hydrofluorocarbons (HFC) – the most important group of fluorinated gases – under the Montreal Protocol.

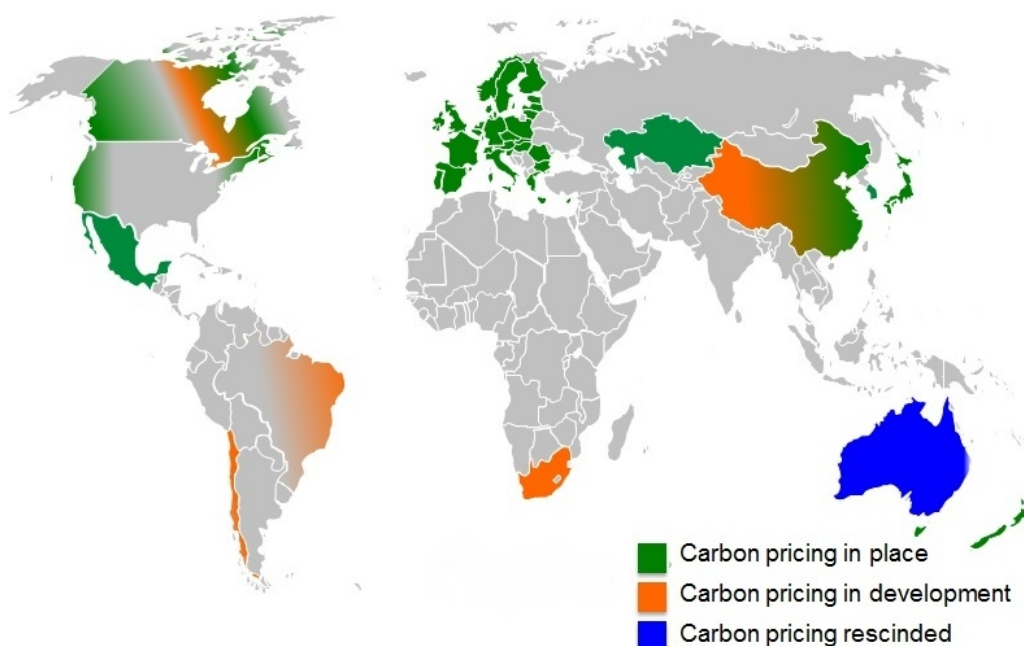
Other international groups, such as the G7, the G20 and ASEAN, also have climate policy on their agenda.

Climate action (under UNFCCC leadership) is listed as one of 17 goals for the post-2015 development agenda, to be adopted during a UN Special Summit on Sustainable Development in September 2015.

### 3.6. Carbon markets

The idea behind carbon pricing is to put a price on GHG emissions that reflect their true cost. Some 39 countries and over 20 cities and regions have put a price on carbon, either in the form of a carbon tax or through emissions trading, in which markets place a price on the available emission allowances.

**Figure 5: Carbon markets in January 2015**



Source: David Hone, [Carbon pricing in 2014](#).

Currently, 18 emissions trading schemes have been implemented or are in preparation around the world. Three of these are in North America. South Korea opened a nationwide carbon market in January 2015. China has established six carbon markets and plans to open a nationwide carbon market in 2016, but is not ready for a global or regional carbon market. Australia repealed its carbon pricing mechanism in 2014. The EU Emissions Trading System (EU ETS), the world's largest carbon market, suffers from an oversupply of allowances and prices too low to incentivise investments in low-carbon technologies. A proposal for reforming the ETS is currently being debated by the Council and European Parliament. The international carbon-trading mechanisms established under the Kyoto Protocol are linked with the ETS. Discussions on new market mechanisms are being held within the UNFCCC framework.

## 4. COP 20 outcomes

The Lima conference in December 2014 included the 20th session of the Conference of the Parties (COP 20) to the UN Framework Convention on Climate Change (UNFCCC), the 10th session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 10), a meeting of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), as well as meetings of the UNFCCC subsidiary bodies.

### 4.1. Lima Call for Climate Action

COP 20 concluded with the adoption of the 'Lima Call for Climate Action',<sup>27</sup> a document that invites all Parties (countries) to communicate their intended contributions to post-2020 climate action well before the Paris conference, and an annex with elements of a draft negotiating text.

While the document leaves many issues unresolved, it contains some decisions that are important for further progress towards an agreement in Paris in 2015. The Lima Call deliberately leaves the legal form of the 'Paris Agreement' open and notes that the arrangements for submitting intended nationally determined contributions (INDCs) 'are without prejudice'. The agreement should address mitigation, adaptation, finance, technology development and transfer, capacity-building, and transparency 'in a balanced manner'. A draft negotiating text for the agreement should be made available by May 2015. On intended nationally determined contributions (INDCs), it specifies that:

- each Party's INDC will represent a progression beyond its current undertaking;
- adaptation efforts can be included in INDCs;
- no strict deadline is fixed for communicating INDCs; they should be communicated 'well in advance' of COP21, (by first quarter 2015 for those parties ready to do so);
- as to the contents of INDCs there are no mandatory requirements (there is a list of information that the INDC 'may include, as appropriate, inter alia');
- INDCs will be published on the UNFCCC website, and a summary report of the INDCs communicated by 1 October 2015 will be prepared by 1 November 2015. No formal assessment process for INDCs is planned.

Given the lack of a strict submission deadline for INDCs, some Parties may be tempted to wait for the INDCs of other Parties before they submit their own.

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<sup>27</sup> [Decision -/CP.20: Lima call for climate action](#), UNFCCC COP 20, December 2014.

The Lima call urges developed countries to provide and mobilise financial support to developing countries, but without giving any numbers or timescales for reaching the promised US\$100 billion per year by 2020. It makes reference to some points considered important by developing countries:

- determination to strengthen adaptation action through the Paris Agreement;
- Warsaw International Mechanism for Loss and Damage.

It also encourages ratification of the Doha Amendment to the Kyoto Protocol, as well as enhanced ambition for the pre-2020 period and continued technical expert work.

The Lima conference also conducted a multilateral assessment of how developed countries implement their mitigation pledges – an assessment of finance flows from developed to developing countries – and adopted a work plan for the loss and damage mechanism. Peru and France, the host countries of COP 20 and COP 21, launched the Lima-Paris Action Agenda which aims to strengthen pre-2020 ambition, and promote action by nations, regions, cities and the private sector.

## 4.2. Reactions

The European Union welcomed the outcome of the Lima conference as a step towards a global climate agreement. EU Climate Action and Energy Commissioner Miguel Arias Cañete stated that, 'although the EU wanted a more ambitious outcome from Lima, we believe that we are on track to agree a global deal in Paris next year'.

EP Environment Committee Chair, Giovanni La Via, considers that the outcome 'represents the lowest common denominator, but it is important to keep the process going in order to reach a global agreement in Paris'. Vice-Chair Jo Leinen said, 'the European Union will have to be a bridge builder between developing countries on one side, and developed countries on the other'. Both consider climate finance a critical challenge.

Xie Zhenhua, China's climate negotiator, qualified the Lima outcome as 'balanced', but was of the opinion that developed countries should do more to support developing countries.

India's Environment Minister, Prakash Javadekar said India's concerns have been addressed and 'we got what we wanted'.

Laurence Tubiana, the French lead negotiator for COP 21, suggested the Lima outcome was generally positive. She concedes that the idea of a global carbon market had been abandoned, along with a global limit for carbon emissions, but sees a role for regional carbon markets. She considers bilateral agreements as useful and complementary to a global agreement, and does not rule out an EU-China agreement. France's Foreign Minister, Laurent Fabius identified climate change as a risk to global security. Speaking in India, he said each country's right to develop must be recognised.

The German government viewed the Lima outcome as a foundation for a global climate agreement, and praised the efforts made to overcome the long-standing division between developed and developing countries.

Achim Steiner, Executive Director of the United Nations Environment Programme, reckons that the disputes at the Lima conference go beyond the climate change issue and are the reflection of deeper geo-economic and geo-political changes, and as such the international climate change negotiations are also relevant for the future of multilateral cooperation.

BusinessEurope calls for an agreement that creates a level playing field, with EU efforts and ambition matched by China, the US, India and all other large carbon emitting economies. Business representatives want a stronger role in the climate negotiations, as they are affected by the outcome and can contribute expertise.

A number of environmental NGOs regret that Lima did not result in a stronger draft text, and did not strengthen pre-2020 climate action. The Pan-African Climate Justice Alliance and other NGOs expressed disappointment with the Lima outcome, arguing that it weakens international climate rules and ignores the needs and rights of impacted people. Corporate Europe Observatory denounces the influence of polluting corporations on the climate negotiations, and calls for their exclusion.

Other commentators voiced their satisfaction with the Lima outcome, seeing it as an important step towards an agreement in Paris, and consider it more important to get all Parties on board than to have an agreement that is ambitious and legally binding, but which conflicts with domestic political realities.

According to Professor Robert Stavins (Harvard), a hybrid architecture combining bottom-up elements (INDCs) with top-down reporting and synthesis of contributions by the UNFCCC Secretariat represents 'the best promise in many years of a future international climate agreement that is truly meaningful'. He points out that difficult negotiations between rich and poor countries are required before an agreement can be concluded in Paris.

Professor David Victor (University of California, San Diego) is optimistic that a more flexible bottom-up approach, under which countries can make different contributions, increases the chances of reaching an agreement and of promoting meaningful action by large emerging countries. He considers that further climate diplomacy is needed after the Paris conference to build a serious review procedure.<sup>28</sup>

Andrew Revkin of the *New York Times* believes it is time to stop regarding climate change as a problem to be solved, and start viewing it as a legacy issue that needs to be addressed by managing the risks and seizing opportunities for action.

### 4.3. Next steps

Further meetings and events throughout the year will be critical for preparing COP 21 in Paris. Details of the Paris Agreement will be worked out in negotiations at meetings throughout the year, but commentators consider it likely that some issues will not be resolved, and will have to be agreed at ministerial level or by national leaders at COP 21 in December 2015. The following events and deadlines are scheduled:

March 2015	Indicative date for submission of INDCs
3 – 14 June 2015	UNFCCC meeting in Bonn
29 June 2015	High-level UN climate change event
September 2015	UN development summit decides on post-2015 development goals
1 October 2015	Cut-off date for INDCs to be included in summary report
1 November 2015	Summary report on INDCs
30 November – 11 December 2015	COP 21 in Paris

<sup>28</sup> [Climate Consensus: Signs of New Hope on Road to Paris](#), David Victor, Yale Environment 360, February 2015.



## 5. Elements of a new agreement

The ADP meeting in Geneva (8–13 February 2015) adopted a negotiating text for the Paris Agreement that leaves all options open.<sup>29</sup> The sticky issues of differentiation, finance and parity of mitigation and adaptation still require further negotiation.

### 5.1. General issues

#### 5.1.1. Function and objectives

The draft text annexed to the Lima Call for Climate Action mentions the 2°C target, but also leaves many options open for the reduction of GHG emissions over time. It also mentions 'universal participation' and 'low-greenhouse gas climate-resilient economies and societies' as objectives.

The Agreement on Climate Transformation 2015 (ACT 2015), a consortium of experts from developed and developing countries,<sup>30</sup> suggests – based on meetings with stakeholders around the world – that the agreement should 'send a clear signal to policy-makers, businesses and the public that the low-carbon, climate-resilient economy is inevitable', 'accelerate the shift to low-carbon and climate-resilient economies', and 'connect to the 'real economy' and 'real people'".<sup>31</sup>

#### 5.1.2. Legal nature of the Agreement

The Durban Decision and subsequent UNFCCC documents describe the Agreement as 'a protocol, another legal instrument or an agreed outcome with legal force'. This can be achieved by a number of legal instruments, such as a protocol, an amendment to the Convention, annexes, COP decisions, political declarations, schedules and registries – or a combination of these instruments. Which of these are chosen depends on a variety of factors, including whether provisions should be legally binding or not, fixed or changeable, mandatory or optional. The choice of legal instruments also has an impact on the credibility of the agreement and perceptions of parity between different elements. Certain choices may facilitate or hinder national ratification.

#### 5.1.3. Approach and architecture

The Agreement should apply to all countries, unlike the Kyoto Protocol, which commits developed nations only. It will be based primarily on a bottom-up approach, under which each country submits its Intended Nationally Determined Contribution (INDC). This can include emissions targets, policies and projects. The extent to which top-down elements (such as information requirements for contributions, ex-ante assessment and ex-post review) come into play is still open to negotiation.

While some parties, including the EU, favour a strong, legally binding agreement committing all parties to quantifiable mitigation commitments, others prefer a softer bottom-up approach based on voluntary contributions. A 'Kyoto-style' top-down agreement which divides a fixed carbon budget among the Parties is unlikely (although

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<sup>29</sup> Ad Hoc Working Group on the Durban Platform for Enhanced Action, [Negotiating Text](#), 12 February 2015.

<sup>30</sup> [Elements and ideas for the 2015 Paris agreement](#), Jennifer Morgan, Yamide Dagnet and Dennis Tirpak, Agreement on Climate Transformation 2015 (ACT2015), December 2014.

<sup>31</sup> This signalling function contrasts with the Kyoto Protocol, whose purpose is to commit governments of developed countries to reduce GHG emissions on their territory. The Kyoto Protocol is thus a classical environmental treaty which commits parties to certain pollution limits and guides national policies, while carbon emissions markets translate these commitments into price signals for economic actors.

listed as one of the options in the draft text), as it is not supported by major economies such as China and the US. Moreover, developing countries are unlikely to commit to emissions reductions that may hinder their economic development.

Another objection to legally binding commitments is that countries may weaken their ambitions if they face international sanctions for non-compliance. Indeed, it may be difficult to agree on an effective mechanism for enforcing the commitments.<sup>32</sup> Yvo De Boer, former UNFCCC Executive Secretary, argues that national legally binding INDCs are much stronger than international legally binding commitments, in the absence of effective enforcement mechanisms.

Analysis by Massachusetts Institute of Technology (MIT) researchers suggests that a voluntary approach based on national contributions can indeed lead to reductions in GHG emissions, but is expected to fall short of the reductions required to achieve frequently proposed climate goals, notably keeping temperature rises below 2°C.<sup>33</sup>

In 1998, Richard Schmalensee of MIT noted that the Kyoto Protocol had a narrow scope (committing only developed countries), but a high ambition for that small set of nations. He argued for the opposite approach, namely broad participation, even if the initial ambition is less. He considered it most important to set up institutions that provide a framework for an incremental strengthening of ambition.<sup>34</sup>

#### 5.1.4. Scope

The Agreement will have a broad scope. The draft text includes chapters on mitigation, adaptation and loss and damage, technology development, capacity building and finance. The open question is how these elements are going to be balanced. Many developing countries insist on giving adaptation and loss and damage a central role, accompanied by financial support. Many developed countries, including the EU, see mitigation as the central element, although they acknowledge the importance of adaptation and support. The balance between the different elements, and especially the question of legal parity between mitigation and adaptation, will be the subject of further negotiations.

#### **Geo-engineering is not on the agenda**

The UNFCCC negotiations address mitigation and adaptation, but not geo-engineering – proposed, but untested methods for removing atmospheric CO<sub>2</sub> or reducing the amount of sunlight that reaches the earth by injecting reflective particles into the atmosphere. These climate interventions pose incalculable environmental and other risks, and potential for international conflict. A recent report by the US National Academy of Sciences concludes that these methods are no substitute for mitigation or adaptation.

## **5.2. Fairness and equity**

Fairness and equity are central issues in the negotiations. Under the principle of 'common but differentiated responsibilities and respective capabilities', developed countries are expected to make larger contributions to emissions reductions and to climate finance for developing countries, but the size and extent of these contributions is far from agreed.

<sup>32</sup> Canada avoided sanctions by withdrawing from the Kyoto Protocol in 2011.

<sup>33</sup> [Expectations for a New Climate Agreement](#), Henry D. Jacoby and Y.-H. Henry Chen, MIT, August 2014.

<sup>34</sup> [Greenhouse Policy Architectures and Institutions](#), Richard Schmalensee, in *Economics and Policy Issues in Climate Change* (W.D. Nordhaus, ed.), Resources for the Future, 1998, pp. 137–158.



As many countries develop and get richer, the traditional binary division into developed (Annex I) and developing countries is put into question, and gives way to a more dynamic understanding of 'common but differentiated responsibilities' which encompasses historical responsibility, as well as differing capacities, capabilities, and national circumstances.<sup>35</sup>

However, difficult negotiations will still be required to translate this new understanding into an agreement that is effective, and perceived as fair and equitable. Various proposals have been made. ACT 2015 proposes a multi-dimensional approach to equity that takes various factors into account, such as emissions responsibility (including historical responsibility), economic and development capabilities, vulnerability to climate impacts, costs and benefits of action.

The Harvard Project on Climate Agreements proposes that fairness should be based on three principles:

- countries that have increased their emissions rapidly should bring them back down, but it is not practical for them to reverse fully and instantly;
- rich countries should accept larger reductions than poor countries, measured relative to their 'business as usual' emissions paths;
- countries should not accept reductions that would result in disproportionately large economic costs for them.

The project finds that mitigation commitments that countries have made in the past tend to be statistically consistent with a formula that quantifies the above three principles.<sup>36</sup>

Brazil proposed a model of concentric circles, in which developed countries in the centre have economy-wide absolute mitigation targets. Least developed countries in the outer circle contribute non-economy-wide actions. Developing countries in the middle have economy-wide relative targets (in relation to GDP, population or projected emissions). As countries progress in their development, they move towards the centre, but they cannot move towards the outside.

The Climate Economics Chair (CEC) at Paris Dauphine University proposed a global CO<sub>2</sub> pricing scheme, under which countries with higher-than-average per-capita CO<sub>2</sub> emissions should pay for emissions above the global average while countries with emissions below the global average should receive payments. The proposed system would involve large financial transfers, mostly from developed to developing countries.<sup>37</sup>

### 5.3. National contributions

INDCs may include, among other things, mitigation, adaptation and financial support. The Lima Call for Climate Action left it up to the individual countries to decide the content, time frames and format of their INDCs. Contributions which are conditional on support or action by other parties are not excluded. Nevertheless, the Lima Call

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<sup>35</sup> The Lima Call refers to the 'principle of common but differentiated responsibilities and respective capabilities, in light of different national circumstances' – the draft text contains various options.

<sup>36</sup> [A pre-Lima scorecard for evaluating which countries are doing their fair share in pledged carbon cuts](#), Valentina Bosetti and Jeffrey Frankel, Harvard Project on Climate Agreements, November 2014.

<sup>37</sup> [Economic instruments and the 2015 Paris Climate Conference: the catalyst of carbon pricing](#), Christian de Perthuis et al., Climate Economics Chair, 2014.

suggests information elements: quantifiable information on the reference point; time frames for implementation; scope and coverage; planning processes; assumptions and methodology; fairness and ambition of the INDC; contribution towards the objective of the Convention. The lack of strict information requirements may make INDCs hard to compare and assess. The EU and South Africa were in favour of requiring upfront information requirements for INDCs, as well as a review of INDCs in advance of COP 21, however India and China opposed such a review, while the US said it was 'not fundamental'. Even if INDCs are not formally reviewed within the UNFCCC framework, they will be scrutinised and commented upon by researchers, NGOs and other nations, putting pressure on countries to demonstrate true ambition.

#### **5.4. Initial ambition and dynamic strengthening**

As countries' voluntary contributions will not be formally assessed or revised before the Paris conference, it is likely that they will not add up to the emissions reductions required to keep global warming below the internationally agreed limit of 2°C. The process of taking voluntary national contributions (INDCs) from all countries as a starting point has been characterised as 'first broad, then deep'. A process for the periodic assessment and strengthening of the national efforts will therefore have to become an important element of the Agreement, on the basis of transparency achieved through monitoring, reporting and verification.

The draft text contains numerous options for modalities and timeframes for such periodic assessment and revisions. ACT2015 proposes five-year cycles for reviewing contributions on mitigation, adaptation, and finance.

#### **5.5. Mechanisms**

There is a general expectation that many of the existing UNFCCC mechanisms (reporting and verification, Green Climate Fund, Technology Mechanism) will continue to play a role under the Agreement.

There is no clarity and no agreement about the role of emission trading systems (carbon markets) in the Agreement. In a top-down agreement where a fixed carbon budget is allocated to participants, emissions trading can help ensure that this carbon budget is used in the most efficient manner. In a bottom-up agreement where each Party puts forward voluntary contributions, the role of carbon markets is less clear. Instead of creating an international carbon market, the focus could be on linking regional carbon markets. This approach is pursued by the World Bank,<sup>38</sup> a leading advocate of carbon pricing.

Ahead of the UN Secretary-General's Climate Summit, 74 countries, 23 subnational jurisdictions, and more than 1 000 companies and investors expressed support for a price on carbon. Representing more than US\$24 trillion in assets, 340 institutional investors, called on governments to establish carbon pricing, abolish fossil fuel subsidies and provide regulatory support for energy efficiency and renewable energies.

The International Emissions Trading Association (IETA) urges a solid accounting framework and a unified project crediting system, as well as elements to encourage harmonisation of national programmes. The Harvard Project on Climate Agreements (in cooperation with IETA) analyses the problem of linking separate national and regional

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<sup>38</sup> [Networking Climate Actions for a Stronger, International Carbon Market](#), Vikram Widge, World Bank, 28 January 2015.

schemes, in order to enhance cost-effectiveness. They propose to make parts of INDCs transferable between countries, so that the receiving country can use them to achieve its own contribution. They warn that rules which require countries to achieve their INDCs on their own territory would inhibit such linking.<sup>39</sup>

ACT2015 proposes incorporating relevant Kyoto mechanisms in the agreement, to enable linkage of mitigation efforts between different groups of countries.

David Hone, Shell's climate change advisor, considers that pricing emissions is not enough, but that capture and storage of carbon should be made mandatory, starting with a small percentage of each tonne of CO<sub>2</sub> emitted and gradually increasing until 100% of emissions are captured. He proposes a market for tradable CCS certificates would allow operators that cannot perform CCS themselves to fulfil their obligations.<sup>40</sup>

## 5.6. Climate finance

The transformations of economies and energy systems needed to meet the 2°C target are going to be costly. Figures in the order of a trillion euros per year have been given, mostly for clean energy and infrastructure investments, as well as for adaptation. Many of these infrastructure investments are needed anyway, but the agreement can play a role in transforming these investments in a climate-friendly way, for example by investing in energy-efficient buildings or low-carbon energy technologies.

How to share the costs between the different parties is one of the main issues under negotiation, as developing countries state their needs for the support that they expect developed countries to provide. The draft text leaves all options open in this respect.

More than US\$10 billion of funding for developing countries has been pledged so far for the Green Climate Fund, but there is no plan as yet as to how to come up with the US\$100 billion annually that was promised by 2020. As the state budgets of developed countries are limited, private finance is expected to play a major role. The Yale Climate Dialogue suggests using limited public finance to reduce barriers to private investments, notably by reducing the risk of clean-energy investments in developing countries. Jon Williams of PricewaterhouseCoopers agrees that there is enough liquidity to achieve an additional US\$1.2 trillion in annual investments, but risk is a barrier.

ACT2015 suggests that the Agreement should commit developed countries, and invite other countries, to make contributions that are increased at least every five years. Another proposal is to broaden the finance debate, and agree to hold all financial flows, not just climate finance, accountable to climate targets.

## 5.7. Transparency and accountability

Transparency and accountability provisions are needed to allow governments, stakeholders and citizens to understand how countries would fulfil their pledges to cut emissions, transform their economies, build resilience and – in the case of developed countries – provide support to poorer countries. Such provisions are also essential for building trust among parties, and for the credibility of the Agreement.

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<sup>39</sup> [Facilitating Linkage of Heterogeneous Regional, National, and Sub-National Climate Policies through a Future International Agreement](#), Daniel Bodansky et al., Harvard, September 2014.

<sup>40</sup> [Two views on mitigation economics](#), David Hone, 12 November 2014.

The UNFCCC already has well-developed frameworks for monitoring, reporting and verification of GHG emissions, which could continue to function under the new Agreement. In contrast, transparency and accountability for adaptation and finance would be new elements. Accountability for climate finance is of particular importance to developed countries, who want to be assured that developed countries would meet their commitments, and that there would be no double counting of contributions. The draft text leaves numerous options open for the arrangements and how they would apply to developed and developing countries respectively.

ACT2015 considers it essential that non-state actors such as NGOs and think-tanks are formally included in the assessment process. Former IPCC Chairman Rajendra Pachauri suggests that the IPCC could play a role in assessing how the summed-up INDCs relate to the 2°C target.

## 5.8. The role of non-state actors

Cities, regions, investors and industry will all have an important role to play in future climate action, beside nation states. The inclusion of their contributions is still an open issue, not addressed in the draft text (with the exception of private finance).

The Yale Climate Dialogue proposes formal recognition of these actors in a policy framework that provides mechanisms to 'connect, aggregate, organise, and order commitments across scales and sectors'. This could be in the form of an Agreement or annexes open for signature by non-state actors, or in the form of networked agreements linked to the core Agreement.<sup>41</sup> Non-state actors can also be part of transparency and accountability arrangements. ACT2015 proposes that the Agreement establish a process to explore engagement of non-state actors.

## 6. Positions of countries and alliances

### 6.1. Key players

#### 6.1.1. European Union

On 25 February 2015, the European Commission published a communication<sup>42</sup> outlining its position on the Agreement, as well as its INDC. The EU's INDC commits to an emissions reduction of at least 40% by 2030, as agreed by the October 2014 European Council. The EU urges the Parties to submit ambitious INDCs well in advance of the Paris conference, preferably by the first quarter of 2015.

The EU supports a transparent and dynamic legally binding agreement, preferably in the form of a protocol. Its long-term goal should be to reduce global emissions by at least 60% below 2010 limits by 2050. In order to join the protocol, a Party would have to make a legally binding mitigation commitment.<sup>43</sup> G20 and other high-income countries should have economy-wide absolute emissions targets, by 2025 at the latest. With regard to differentiation, the communication states that, 'countries with the highest responsibilities and capabilities need to have the most ambitious mitigation commitments'. The EU advocates robust rules and procedures for measuring,

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<sup>41</sup> [Lifting the Ambition of the Paris 2015 Agreement: An Agenda for Lima](#), Yale Climate Dialogue, November 2014.

<sup>42</sup> [Communication from the Commission to the European Parliament and the Council: The Paris Protocol – A blueprint for tackling global climate change beyond 2020](#), 25 February 2015.

<sup>43</sup> This position mirrors the EU's internal climate policy with binding targets for all Member States.

reporting, verification, accounting and compliance, as well as a five-year cycle for regularly reviewing and strengthening mitigation commitments in line with science, and evolving responsibilities, capabilities and national circumstances. Linking of carbon markets and transfers of mitigation commitments between countries should be allowed.

The EU considers that the Agreement should provide a framework for shifting investment towards low-emission climate-resilient programmes and policies. All Parties should improve the environment for climate-friendly investments. The amount of climate finance would depend on the ambition and quality of INDCs, investment plans and national adaptation plans.

#### *6.1.2. China*

China is the world's largest GHG emitter, but also the country with the largest growth of low-carbon energy sources, including hydropower, wind, solar and nuclear. China's five-year plan includes targets for reducing energy and carbon intensity, as well as for increasing the share of non-fossil fuels. China has established regional carbon markets and enacted rules to curb air pollution. As announced in November 2014, China aims to have its emissions peak by 2030, and increase its share of low-emission energy sources to 20%.

China wants the Paris Agreement to address developing countries' needs, and maintain the binary distinction between developed and developing countries.

#### *6.1.3. India*

India's priority is economic growth and the eradication of poverty. A fifth of its population does not have access to electricity, so electrification is a priority for the country. Indian government agencies are preparing plans for domestic climate action, but these would only slow the growth of carbon emissions, not expected to peak within the next 30 years. On 25 January 2015, the US and India announced an informal agreement to boost clean-energy investments in India. The US will provide technology and finance to help India achieve its goal of installing 100 gigawatts of solar power capacity by 2020. India agreed to negotiate the reduction of hydro-fluorocarbons (HFCs), a potent greenhouse gas used in refrigeration equipment.

#### *6.1.4. United States*

US climate policy has been characterised by US Congress opposition to commitments for emissions reduction on the part of the US, and to binding international agreements that do not commit developing countries. In 1998, the US Senate passed the Byrd-Hagel resolution which blocks ratification of any agreement that commits the US to reducing emissions without commitments for developing countries, or harms the US economy. As a result, the US did not sign the Kyoto Protocol (but nevertheless happened to meet the emission targets by switching electricity generation from coal to shale gas). President Barack Obama presented a climate action plan in 2013 comprising measures that do not need congressional approval, including rules for emissions from power plants and fuel efficiency standards for cars and trucks. On 22 January 2015, the US Senate rejected amendments for a US transition away from fossil fuels and for supporting research on carbon capture and storage technologies.

Speaking at the Lima conference, Secretary of State, John Kerry insisted that developing countries, which account for more than half of the world's emissions, must also take action. He considered energy policy as the solution, and climate action as 'one of the greatest economic opportunities of our time'. However, US ambition in international

negotiations is limited by the attitude of the Republican majority in the US Congress. The US does not support binding targets or mandatory assessment of INDCs.

#### 6.1.5. Other countries

Some industrial countries have lowered their ambition to reduce GHG emissions. **Canada** withdrew from the Kyoto Protocol in 2011, **Australia** repealed its carbon tax in 2014, and **Japan** weakened its targets following the Fukushima nuclear accident.

**Brazil**, a major developing country, pledged to reduce its emissions by more than 36% by 2020 compared to 'business as usual' projections, and aims to further reduce deforestation. For the Paris Agreement, it proposed a dynamic interpretation of differentiation whereby countries take on progressively more responsibilities in line with their economic development.

**Malaysia's** Prime Minister said that fast-developing nations like Malaysia can show other developing countries that economic growth and carbon emissions need not be linked, and have an important role in helping to bridge the 'trust gap' between 'developed' and 'developing' countries.

**Mexico**, a country experiencing fast economic growth and rising carbon emissions, established climate change as a priority in its 2012 General Law on Climate Change, and pledged to reduce emissions 30% below 'business as usual' levels by 2020. Mexico considers both mitigation and adaptation as central elements of the Agreement, and advocates adequate flexibility for national circumstances, clear and comparable INDCs, and a mechanism for gradually increasing the level of ambition in response to scientific findings, as well as on the basis of countries' levels of development.

## 6.2. Alliances

Climate negotiations are characterised by a large number of groups and alliances among nations that pursue common goals.<sup>44</sup> Most of these groups are made up of developing countries, but some also comprise developed nations. As developing countries may have different positions on different issues, they may be part of several groups. The positions of the major groups are outlined below.<sup>45</sup>

The **G77** group, founded in 1964 by 77 developing countries, now comprises 134 countries, including China, India, Brazil and South Africa. The group insists on equity, and developed countries taking the lead in mitigation and providing financial support for mitigation and adaptation in developing countries. The **BASIC** group (Brazil, South Africa, India and China) advocates a clear link between the actions of developing countries and support for implementation. The **Like-Minded Developing Countries (LMDC)** group includes 26 developing countries. They insist that developed countries meet their mitigation commitments, increase contributions to UN climate funds and give greater assurances that such financing would be delivered.

African countries united in the **Africa Group** advocate climate finance and mitigation action by developed countries, and push for the ratification of the Doha Amendment, to build confidence.

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<sup>44</sup> [Infographic: Mapping country alliances at the international climate talks](#), Rosamund Pearce, The Carbon Brief, 10 December 2014.

<sup>45</sup> A complete account of country positions can be found in the European Parliament study [The development of climate negotiations in view of Lima \(COP 20\)](#).



**AILAC**, the Independent Alliance of Latin America and the Caribbean, comprises middle-income states that have committed to reducing their emissions and urge all countries to strengthen their mitigation commitments. They want to bridge the divide between developed and developing countries and favour a dynamic interpretation of differentiation. They put emphasis on adaptation in the Agreement. The **Pacific Alliance** countries (Chile, Colombia, Mexico and Peru) represent 40% of Latin American GDP and are among the countries most vulnerable to climate change. The Presidents of the Pacific Alliance have called for concrete action in all countries. **ALBA**, the Bolivarian Alliance for the People of Our America, opposed the Copenhagen Accord and led resistance, calling for global warming to be limited to below 1.5°C, drastic emission reductions by developed countries, and massive financial support. The group rejects flexible mechanisms and carbon markets. In Lima, Bolivian President Evo Morales declared that the solution to global warming was to end the capitalist system, which, he said, fails to understand that life is more important than money.

**AOSIS**, the Association of Small Island States, comprises islands whose survival is threatened by rising sea levels. They favour a 1.5°C temperature limit and therefore want all countries to greatly reduce their emissions. They seek support for adaptation and have strongly advocated the creation of the loss and damage mechanism. **SIDS**, Small Island Developing States, often takes the same position as AOSIS. Working together to defend their interests, particularly in the areas of adaptation, and loss and damage, are 48 **Least Developed Countries (LDC)**.

Other groupings include the Umbrella Group, a loose coalition of developed countries outside the EU, the Organization of Petroleum Exporting Countries (OPEC), and the Environmental Integrity Group (EIG), comprising Mexico, Liechtenstein, Monaco, South Korea and Switzerland. The Cartagena Dialogue for Progressive Action, a forum for open discussion, comprises 40 Parties (including some EU Member States and the European Commission) seeking ambitious outcomes from the UNFCCC negotiations.

## 7. Role of the European Union

### 7.1. EU climate diplomacy

Acting as a strong bloc with a common ambitious climate policy, the EU has long played a leading role in international negotiations. In October 2014, the EU was the first economy to decide and announce its climate policies for the post-2020 period, and in February 2015, the first UNFCCC Party to publish its INDC.

Climate diplomacy is one of the priority issues for the Latvian Presidency of the EU. On 19 January 2015, the Foreign Affairs Council expressed support for the Commission's action plan for climate diplomacy in 2015. France, which hosts COP 21, also intends to reinforce its climate diplomacy.

The EU has historically had a strong leadership role in international climate negotiations. European climate policies are often seen to have set an example for other countries. However, research suggests that the EU's perceived legitimacy and credibility have started to decline as the economic crisis has led to a more negative attitude towards climate-policy proposals which may undermine European

competitiveness.<sup>46</sup> As pointed out in the European Parliament resolution of 26 November 2014, 'the EU's credibility in international negotiations depends on its ambition for domestic action'.

The recent bilateral US-China announcement indicates a willingness by these major emitters to take on a leadership role. The Heinrich-Böll-Stiftung suggests that the EU should build alliances and reinforce its climate diplomacy. The Institute for European Studies proposes that the EU should strengthen its climate diplomacy through smart coalition building and renewed leadership by example.

Former Environment Minister of Bulgaria, Julian Popov, thinks that the EU needs ambitious clean-energy diplomacy, to develop cooperation with developing countries on clean-energy development.

Should the Paris conference fail to reach an ambitious agreement, Liz Gallagher, leader of E3G's Climate Diplomacy programme, argues that the future of the entire international rules-based regime is at stake, threatening Europe's strategic interests. Therefore, Europe should understand its strategic interest in an ambitious climate agreement and re-engage its former allies.

## 7.2. European Parliament

EP delegations regularly participate in UN climate change conferences. The delegation to COP 21 in Lima was chaired by Giovanni La Via (EPP, Italy), Chair of the Environment Committee. The European Parliament favours a 'more ambitious' EU climate policy. Its February 2014 resolution considered the Commission's proposal for the 2030 climate and energy framework 'short-sighted and unambitious', and called for at least a 30% market share for renewables and a 40% improvement in energy efficiency by 2030.

The European Parliament resolution of 26 November 2014 on COP 20 calls for a climate agreement that is ambitious from the outset, and responsive to new scientific findings and changing circumstances. It advocates up-front information requirements for INDCs (which should include a land use component), and their assessment before COP 21. It calls for the climate and post-2015 development agendas to be linked, and finding innovative sources for climate finance. A global carbon market is seen as a sound basis for emissions reductions. Important instruments would be a circular economy with increased recycling rates, sustainable breakthrough technologies, energy savings, efficiency and low-energy transport. Pre-2020 ambition should be strengthened through carbon pricing and phasing out of fossil fuel subsidies.

## 8. Outlook

In the light of the Lima outcome and the negotiating positions of several major parties, it becomes increasingly likely that the Paris Agreement will take a more bottom-up approach, based on voluntary nationally determined contributions rather than a top-down Kyoto-style regime with precisely quantified emissions reductions. Many analysts expect a 'soft' agreement, in which emissions targets are made binding only through national legislation, but not enforced by the international community.

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<sup>46</sup> [Legitimacy, credibility and coherence – perceptions of EU roles in global climate change negotiations](#), Ole Elgström, EUI Working Paper RSCAS 2015/06, 2015.



The diminished enthusiasm for legally binding commitments goes along with a changing perception of the climate change issue. Increasingly, dealing with climate change is not seen primarily as a matter of gradually reducing GHG emissions (a pollution problem), but as a grand challenge to transform entire economies and their energy systems to become carbon-neutral later in this century. The main elements of the two views are summarised in the table below.

'Pollution' approach	'Transformational' approach
2°C limit as a target that determines emission reductions	Net zero emissions after 2050 as a vision that puts economies on the path to below 2°C
Short/medium term targets for gradual emission reductions drive the incremental transformation to a low-carbon society	Radical transformation to carbon-neutral economy and energy system enables deep emission reductions over the long term
Mitigation action as a burden	Mitigation action as an opportunity for transformation and investment
Limitation and pricing of GHG emissions	Support and incentives for investments and low-carbon innovation
International framework constrains emissions through binding commitments	International framework supports and enables global transformation
Commitments for nation states to take action	Clear signals to investors that the future will be carbon-neutral
Safe climate is more important than GDP, emission cuts may result in reduced growth	Economic growth and poverty reduction as primary objectives, growth enables breakthrough low-carbon innovation
Risk-averse – protect the climate for future generations	High-risk gamble – a successful transformation will leave future generations much better off; but failure would be catastrophic
Preserve the holocene climate which has supported human civilisation	Accept the anthropocene, learn to live with a new climate by moving to a new economic and energy system

Both mind-sets have their merits and drawbacks. The 'pollution' approach is safe, scientific and predictable, but may not be appropriate to drive the radical transformations required. The 'transformational' approach is visionary and motivating, but bound to fail if bold action and massive investment cannot be mobilised quickly.<sup>47</sup>

Even if countries' contributions are voluntary, there is added value in an international agreement:

- reassurance that there is a common will to work towards a low-carbon future, sending a strong signal to investors, businesses and other actors;
- a framework in which contributions and their outcomes can be reported, verified, compared, reviewed and eventually strengthened;
- a framework for technological, logistical and financial assistance to countries;
- a forum for the exchange of experiences and best practice;
- a platform for cooperation in research, innovation and technology development;
- openness to contributions by and cooperation among non-state actors such as regions, cities and companies.

<sup>47</sup> EU climate policies combine both approaches by capping emissions through national targets and carbon markets on the one hand, and driving the transformation to a low-carbon economy through sectoral regulations, research and investments, on the other.

An international agreement can be an important element in enabling the necessary cooperation, closing of knowledge gaps, and shifting trillions of euros in investment.

Disappointing as a 'soft' agreement may be to those who want to see the world firmly on a clearly defined low-carbon path, it will certainly not spell the end of EU climate diplomacy. On the contrary, it means that the EU will have to remain engaged over the long run, to take advantage of new opportunities to cooperate with developed and developing countries on low-carbon innovation and transforming energy systems and entire economies.

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A new international agreement to combat climate change is due to be adopted in December 2015 at the 21st Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). Besides actions to stop global warming, it should also cover adaptation to climate change.

The 20th Conference of Parties, which was held in Lima in December 2014, concluded with the adoption of the Lima Call for Climate Action, a document that invites all Parties (countries) to communicate their intended contributions to post-2020 climate action well before the Paris Conference.

The Lima conference left a number of important issues unresolved. First of all, the content, form and timescale of countries' contributions is not clearly specified, which will make them hard to compare and assess. It is likely that the individual contributions will not add up to the emissions reductions required to keep global warming below the internationally agreed limit of 2°C. A process for the periodic assessment and strengthening of national efforts will therefore have to be an important element of the new agreement. Another unresolved issue is the legal form of the agreement. While some negotiators favour a strong, legally binding agreement, others prefer a bottom-up approach based on voluntary contributions. Finally, issues of fairness and equity need to be addressed, acknowledging that developed countries have a greater historical responsibility for climate change and stronger capacity for taking action.

The October 2014 European Council agreed on a greenhouse-gas reduction target of at least 40% by 2030. In November, the US and China – the world's major emitters – announced targets that are less ambitious, but still considered as important building blocks to a climate agreement with global reach.

The leadership role of the EU in international climate action is being challenged by the latest developments. EU climate diplomacy will have to adapt to the new situation if the EU wants to retain its leadership role, and remain a major player in the global transition towards a zero-carbon economy and energy system.

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