

Warsaw unpacked: A race to the bottom?

Climate Action Tracker

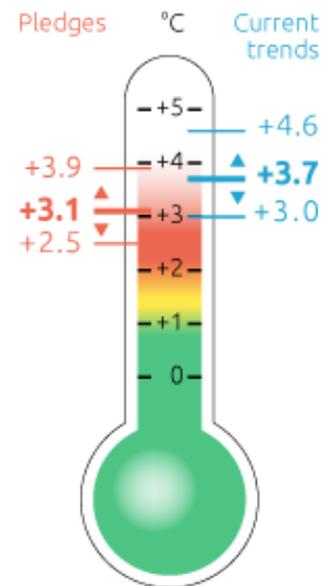
Policy Brief

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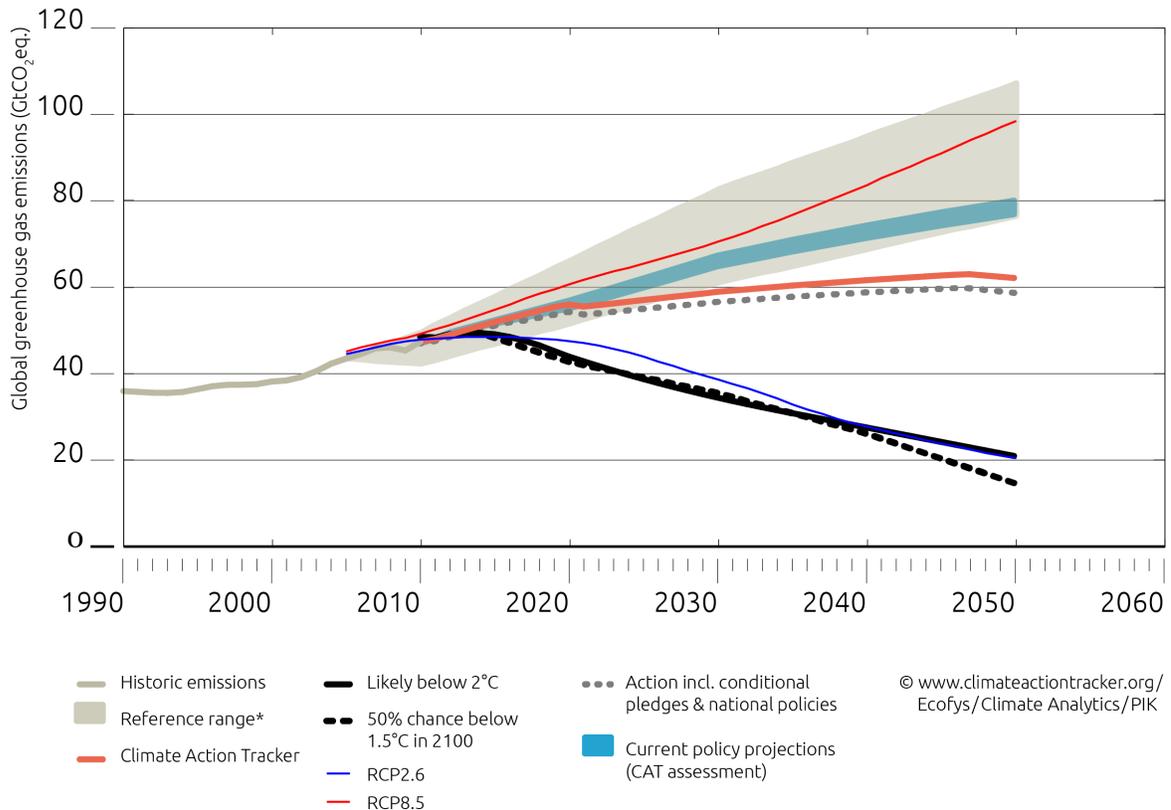
Summary

- With currently implemented government policies, greenhouse gas emissions are projected to lead to a warming of 3.7°C, about 0.6°C higher than that under the Copenhagen pledges. Under present policies there is about a one in three chance of exceeding 4°C by 2100.
- Since the Warsaw COP began, the announcement by Japan effectively enlarged the 2020 emissions gap by 3-4% or 356 MtCO₂e in 2020. Australia's backtracking on implementation could widen the gap by another 25 MtCO₂e. These negative developments tend to outweigh some positive signals: the US could - if policies were fully implemented - reduce the gap by around 523 MtCO₂e; and policy developments in China, including the ban on new coal-fired power plants in some regions, could deliver additional reductions in the near future.
- Instead of developing domestic policies to meet ambitious international reduction pledges, recent policy development in some countries point to a weakening of action, widening the 2020 emissions gap. The recent degradation of the pledges has led to the highest 2020 emissions level implied by international reduction pledges the Climate Action Tracker (CAT) has ever assessed
- Due to the degradation of the pledges - including some governments dropping the high end of the ambition ranges of their pledges for 2020 - this report indicates that current policies and actions may meet the lowest-ambition 2020 pledges. Emissions are likely to be far above 2020 levels consistent with pathways that would limit warming to 1.5-2°C.
- Beyond 2020, policies are inconsistent with the emissions reductions required for 1.5-2°C pathways. There is a growing disconnect between current policies and 2020 pledges, and the longer-term reductions needed for 1.5-2°C.
- Countries are unilaterally degrading their pledges made under the “bottom up” Copenhagen approach without review by, or recourse to, the UNFCCC. These



developments provide support for concerns that a “bottom up,” (pledge first, review later) approach to commitments may lead to a very weak agreement in 2015.

- There is a major risk of downward spiral in ambition, a retreat from action and re-carbonisation of the energy system led by coal re-entering energy markets in Europe (Germany, UK), Japan and the undermining of efforts to reduce coal use. The fact that the Polish Government has co-hosted a Coal Summit at the Warsaw COP sends a clear signal in this direction.
- These developments point towards warming of about 5°C with a sixfold increase in coal use under the highest of the new IPCC Scenarios by 2100. Under all 2°C consistent scenarios, coal is likely to be phased out rapidly. The lowest IPCC scenario shows that coal use is basically eliminated by mid-century, and even earlier if measures to significantly ratchet up energy efficiency are implemented.
- This situation flies in the face of plentiful opportunities for action such as in the latest UNEP Gap Report, and the continuing rally of renewables globally and regionally:
 - In 2012, total renewable power capacity worldwide grew 8.5% from 2011.
 - The most dynamic technologies – onshore wind and solar PV – have reached, or are approaching, competitiveness in a number of markets and have demonstrated significant development benefits for energy security, local pollution and others.
 - In China, wind power generation in 2012 increased more than generation from coal and passed nuclear power output for the first time.
 - In the European Union, renewables accounted for almost 70% of additional electricity capacity in 2012.



* Harmonized 90% range of recent reference scenarios from the literature.

Action and ambition going in the wrong direction

The 2013 UNEP Emissions Gap Report estimates the gap between the unconditional pledges and the 2020 emissions level consistent with 2°C at around 12 GtCO₂e, which is in line with our current estimate. For 1.5°C the emissions gap is larger.

However, since the beginning of the Warsaw COP, the pledge gap has increased by 356 MtCO₂e (3-4% depending on the scenario used) due to Japan's announced new target change upwards in 2020 pledge.

Our analysis of current policies - a measure of how the pledges are being implemented - shows that these could lead to 2020 **global aggregate** emissions levels in line with the low ambition end of the range of pledge. Below the **global aggregate** the picture is very different for individual countries.

Some recent policy developments could impact this assessment in different directions. Last week's formal introduction of legislation to repeal the existing climate laws by the Australian Government points more towards the upper end of the present policy pathway range which shows a total gap of almost 13 GtCO₂e.

On the other hand, the measures as suggested by the Obama government in "The President's Climate Action Plan" (CAP) in June 2013 could - if fully and ambitiously implemented - could provide a more positive trend. Equally, policy developments in China, including the ban on new coal-fired power plants in some regions could deliver additional reductions in the near future.

In short: the confirmed low ambition end of the pledges seems to be met, but the pledges themselves are too weak by far to be in line with a 2°C or 1.5°C pathway.

For 2050, several countries have goals in place (e.g. a 80% reduction by 2050) that we incorporate in our assessment of the pledges. Currently implemented policies are not ambitious enough by far to reach such long-term goals. Emissions in 2050 implied by current policies are therefore much higher than the sum of the pledges and this points

to a growing disconnect between 2020 emission levels associated with current policies and longer-term reductions both pledged and shown to be needed for 1.5-2°C by e.g. the 2013 Gap report.

The global temperature increase resulting from implemented policies is projected to be 3.7°C, with a 35% probability of exceeding 4°C. This is 0.6°C higher than what the implementation of the pledges including the long-term goals would deliver.

The longer implementation of more ambitious reduction pledges is delayed the more unlikely it seems that the ambitious long-term target will be achieved and the more expensive it will become.

Are we seeing a downward spiral?

The backwards movement by Australia, Canada, Japan and some other governments creates an adverse picture at a point when negotiations in Warsaw focus on increasing pre-2020 ambition and on a new, post 2020 legal agreement.

Carbon-intensive fuel sources, most notably coal, have become more price-competitive over the past two years. The infrastructure associated with these sources is long-lived and mean that a shift towards a dirtier fuel mix, commensurate with the current lack of ambition, is not easily reversed in the near term.

In a recent policy briefing,¹ the CAT has taken a careful look into the consequences of **Japan** walking away from its 2020 emissions reduction target (25% reduction below 1990, one of the few targets evaluated as sufficient by the CAT) and adopting a much less ambitious target of 3.8% below 2005 emissions level in 2020.

As a result of the Fukushima disaster in 2011, Japan has revised its energy policy and has had to consider a nuclear free scenario. However, the loss of nuclear from the potential energy mix cannot explain more

¹ <http://climateactiontracker.org/news/147/Japan-reverses-Copenhagen-pledge-widens-global-emissions-gap-nuclear-shutdown-not-to-blame.html>

than around 10% of the full reduction in ambition of the revised target.

Japan's short-term solution to reduced nuclear capacity has been a large increase in coal use for electricity consumption. The year-on-year increase in coal consumption in Japan in 2012 was 5.4-6%. More worryingly, coal consumption in the first half of fiscal year 2013 (April – Sep, 2013) was 21% higher than the same period in 2012 (FEPC). If Japan becomes increasingly reliant on coal, it may become challenging for it to meet even its new, weaker 2020 target.

Australia is an example of backtracking on promising action. Its 5% emissions reduction below 2000 levels by 2020 target for the second commitment period is rated inadequate. In 2011, the government put in place the Clean Energy Package legislation which, according to a detailed CAT assessment² (Australia report/ CAT 2012), would enable Australia to meet its Kyoto target.

The newly elected government aims to replace it with the 'Direct Action Plan', a policy package including a limited incentive scheme and sequestration activities which have both been assessed as not allowing Australia to meet its inadequate pledge.

Furthermore, the currently implemented legislation includes a clear directive to close inefficient fossil-fuel power plants and provides the framework for long-term incentives for renewable sources. Should this legislation be replaced by the Direct Action Plan, the power sector will most likely revert back to relying on more carbon-intensive sources for power generation in order to meet the currently forecasted growth in electricity demand, leading to higher emissions.

The recently released IEA World Energy Outlook 2013 predicts that Australia's coal production will grow by almost 50% between 2011 and 2035, mainly fuelled by rising exports (New Policy Scenario). Other

countries will also see a process of re-carbonisation.

This is also driven by a projected net increase in global oil demand, which will be met by supply from non-OPEC, particularly light tight oil production in the United States, oil sands exploitation in Canada, and deepwater pre-salt oil in Brazil (WEO, 2013).

The increase in production and supply of oil by these countries clearly demonstrates that carbon-intensive sources are far from being phased out as required to enable emissions pathways that enable a limitation of temperature increase below 2°C or 1.5°C.

Coal is still the most abundantly available fossil fuel worldwide so resource availability will not constrain coal use in the near to medium term. Supply costs, such as fuel, explosives, and labour costs increase and may limit competitiveness. Coal price, demand, and investment may also be significantly affected by environmental policies and competition with other fuels, particularly the booming natural gas sector.

Finally, significant CO₂ pricing levels would reduce the extent to which coal is used to meet energy demands in the next decade. However, current prices are too low to effectively limit emissions. For example, at less than \$6/tonne, CO₂ prices in the EU during the summer of 2013 often resulted in coal being the lowest-cost option for power generation (IEA WEO, 2013). The IEA estimate that CO₂ prices would need to be \$60/tonne in order for gas to compete against a 1980s coal-fired power station in the Atlantic basin (IEA WEO, 2013)

Where could this spiral lead...

Expanding coal use - as proposed by Poland and the World Coal Summit - would widen the Emissions Gap.

Moreover, because coal is one of the most carbon intensive fossil fuels available, an expansion of coal use in the energy mix would lead to a re-carbonisation of the energy system, inconsistent with limiting warming to below 1.5-2°C.

A further focus on coal technologies, together with an upward adjustment of

² <http://climateactiontracker.org/news/144/Australian-climate-move-would-turn-climate-target-into-emissions-increase.html>

pledges, and recent policy developments, indicates that current policy signals are far from sufficient to provide the necessary incentive to move the world towards a low carbon system.

With actual carbon-dioxide emissions estimated to have risen substantially by about 2.1 percent since last year (Global Carbon Project, 2013), there is still no break in the trends away from the highest representative path assessed in the Working Group I contribution to the Fifth Assessment Report (AR5) of the IPCC (RCP8.5, Riahi et al. 2011). This puts out an important warning marker, year after year.

The scenario underlying RCP8.5 sees an almost six-fold increase of coal use in the primary energy mix from now until 2100. The average IPCC AR5 projections show that under such a scenario, global temperatures could rise by 5°C (3.5-6.5°C likely range³) relative to preindustrial by 2100.

On the other hand, under 2°C consistent scenarios, coal is likely to be phased out rapidly. Both the Global Energy Assessment (Riahi et al, 2012) and the scenario underlying the lowest IPCC Working Group I pathway (van Vuuren et al., 2011), show that coal use is basically eliminated by mid-century, and even earlier if measures to significantly ratchet up energy efficiency are not implemented.

Even within the broader range of 2°C in the scientific literature, there are cases in which coal does not disappear entirely from the energy mix. However, its use by 2100 is significantly limited, roughly at today's levels, and is only compatible with such low scenarios when used in combination with carbon-capture and storage technologies.

Plenty of opportunities available to ramp up ambition

Renewables are becoming increasingly competitive

³ This is an approximate estimate based on the results of the emission-driven RCP8.5 runs from the CMIP5 model ensemble, and are provided in terms of global-mean temperature change in 2100 relative to a 1850-1900 base period.

Meanwhile, renewable energy continues to rise in use, and drop in price.

In 2012, total renewable power capacity worldwide grew 8.5% from 2011 (1,470 GW in 2012).

Renewable energy made up just over half of total net additions to electric generating capacity from all sources in 2012.

The most dynamic technologies – onshore wind and solar PV – have reached, or are approaching, competitiveness in a number of markets without generation-based incentives.

In 2012, renewables investment in developing countries represented 46% of the world total, up from 34% in 2011 (USD 112 billion, continuing an 8-year trend). By contrast, renewables investment in developed economies fell 29% to USD 132 billion, the lowest level since 2009.

Subsidies remain unbalanced

For every \$1 spent supporting renewable energy, another \$6 is spent on fossil fuel subsidies (IEA 2013a). Removing fossil fuel subsidies could lead to a 13 percent decline in CO₂ emissions and generate positive spillover effects by reducing global energy demand (IMF 2013).

Plenty of other opportunities have been identified

Many other opportunities have been outlined in various reports. The IEA WEO 2012 identified major energy efficiency opportunities, the UNEP Gap Report 2013 includes a number of promising options and a wide range of country specific modelling exercises have shown more ambitious action is technically and economically feasible and provide a host of co-benefits related to for example health, energy security, access to energy and new areas of economic development.

Emissions trading

While the EU still struggles with low allowance prices, other countries, including China and South Korea, are launching new emissions trading schemes or taking their planning for future implementation significantly forward.

The development of emissions trading schemes has picked up speed globally and more countries are implementing, scheduling or considering this mechanism in order to control GHG emissions.

The new systems yet have to prove that their implementation will actually reduce emissions.

To achieve this, they have to make use of the lessons learned from established systems: ensuring stable prices by dynamic target-setting, floor and ceiling prices and preventing over-allocation of permits to

ensure the long-term environmental integrity.

Implications for ADP Agreement

Countries are unilaterally degrading their pledges made under the “bottom up” Copenhagen approach and also failing to implement without review by, or recourse to, the UNFCCC. These developments point to support for concerns that a “bottom up”, pledge first, review later approach to commitments may lead to a very weak agreement in 2015.

References

FEPC, Federation of Electric Power Companies of Japan (Electricity Review Japan, 2013)

IEA (International Energy Agency), World Energy Outlook (2013)

Global Carbon Project, <http://www.globalcarbonproject.org/carbonbudget/>, (2013).

Riahi, K. *et al.* RCP 8.5—A scenario of comparatively high greenhouse gas emissions. *Climatic Change* **109**, 33-57, doi:10.1007/s10584-011-0149-y (2011).

Riahi, K. *et al.* in *Global Energy Assessment - Toward a Sustainable Future* Ch. 17, 1203-1306 (Cambridge University Press, Cambridge, UK and New York, NY, USA and the International Institute for Applied Systems Analysis, Laxenburg, Austria, 2012).

van Vuuren, D. *et al.* RCP2.6: exploring the possibility to keep global mean temperature increase below 2°C. *Climatic Change* **109**, 95-116, doi:10.1007/s10584-011-0152-3 (2011).

Background on the Climate Action Tracker

The "Climate Action Tracker", www.climateactiontracker.org, is a science-based assessment by Ecofys, Climate Analytics and the Potsdam Institute for Climate Impact Research (PIK) that provides regularly updated information on countries' reduction proposals.

The Climate Action Tracker⁴ reflects the latest status of the progress being made at international climate negotiations. The team that performed the analyses followed peer-reviewed scientific methods (see publications in Nature and other journals)⁵ and significantly contributed to the UNEP Emissions Gap Report⁶.

The Climate Action Tracker enables the public to track the emission commitments and actions of countries. The website provides an up-to-date assessment of individual country pledges about greenhouse gas emission reductions. It also plots the consequences for the global climate of commitments and actions made ahead of and during the Copenhagen Climate Summit.

The Climate Action Tracker shows that much greater transparency is needed when it comes to targets and actions proposed by countries. In the case of developed countries, accounting for forests and land-use change significantly degrades the overall stringency of the targets. For developing countries, climate plans often lack calculations of the resulting impact on emissions.

Contacts

Dr. Niklas Höhne (n.hoehne@ecofys.com) - Director of Energy and Climate Policy at Ecofys and lead author at the IPCC developed, together with Dr. Michel den Elzen from MNP, the table in the IPCC report that is the basis for the reduction range of -25% to -40% below 1990 levels by 2020 that is currently being discussed for Annex I countries.

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⁴ www.climateactiontracker.org

⁵ e.g. <http://www.nature.com/nature/journal/v464/n7292/full/4641126a.html> and <http://iopscience.iop.org/1748-9326/5/3/034013/fulltext>

⁶ www.unep.org/publications/ebooks/emissionsgapreport

Ecofys – experts in energy

Established in 1984 with the mission of achieving “sustainable energy for everyone”, Ecofys has become the leading expert in renewable energy, energy & carbon efficiency, energy systems & markets as well as energy & climate policy. The unique synergy between those areas of expertise is the key to its success. Ecofys creates smart, effective, practical and sustainable solutions for and with public and corporate clients all over the world. With offices in Belgium, the Netherlands, Germany, the United Kingdom, China and the US, Ecofys employs over 250 experts dedicated to solving energy and climate challenges.

www.ecofys.com

Climate Analytics

CLIMATE ANALYTICS is a non-profit organization based in Potsdam, Germany. It has been established to synthesize climate science and policy research that is relevant for international climate policy negotiations. It aims to provide scientific, policy and analytical support for Small Island States (SIDS) and the least developed country group (LDCs) negotiators, as well as non-governmental organisations and other stakeholders in the ‘post-2012’ negotiations. Furthermore, it assists in building in-house capacity within SIDS and LDCs.

www.climateanalytics.org

Potsdam Institute for Climate Impact Research (PIK)

The PIK conducts research into global climate change and issues of sustainable development. Set up in 1992, the Institute is regarded as a pioneer in interdisciplinary research and as one of the world’s leading establishments in this field. Scientists, economists and social scientists work together, investigating how the earth is changing as a system, studying the ecological, economic and social consequences of climate change, and assessing which strategies are appropriate for sustainable development.

www.pik-potsdam.de