Governments still set on 3°C warming track, some progress, but many playing with numbers

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The Climate Action Tracker has updated our analysis on national greenhouse gas emission reduction proposals for 2020 under the international climate negotiations. We find that governments are taking action to implement their reduction proposals, but many are set to fail in reaching those proposals. Recent highlights include the agreed link between the EU and Australia's emission trading systems and the adoption of a new US car standard.

Meanwhile, a new report by Canada's government uses uncommon methods of comparing and projecting emissions, while its 2020 reduction target is unchanged and still estimated as "inadequate" by a wide margin. Time is running out for Canada and the majority of other governments to adopt policies that significantly change greenhouse gas emission in 2020. Current global greenhouse gas emissions in aggregate are likely to produce a warming above 3°C.

Despite this lack of political will, it is still technically possible to meet the goal of 2°C or lower. The evidence from robust scientific analysis clearly shows that it is a question of political will - not technological feasibility – as whether 2°C – or 1.5°C is still achievable.

In the first part of this briefing we take a look at the global picture and the UNFCCC negotiations. We discuss the 2°C and 1.5°C limits, the future of the Kyoto Protocol and recent clarifications of Parties' conditionality to move to their higher ambition pledges. In the second part we take a look at developments at the national level that are interesting for the international climate negotiations.

The bigger picture

The 2°C and 1.5°C limits: still technically and economically achievable but political will is falling short

Despite lack of political will, it is still technically possible to meet the limit of a 2°C warming above pre-industrial levels - or lower. However, if no further action beyond current pledges within the context of UNFCCC is taken, the global mean temperature will increase by as much as 2.6 - 4.1 degrees Celsius above pre-industrial levels by 2100. If the pledges are not met, warming will be even higher.

The Climate Action Tracker has looked at three issues relating to the feasibility of limiting warming below 2°C or 1.5°C:

- The role of Non-CO_2 gases and so-called short term forcers or air pollutants
- Is it still realistic to limit warming to 2°C and 1.5°C?
- Is the emissions gap due to a lack of ambition or a lack of participation?

The role of Non-CO_2 gases and so-called short term forcers or air pollutants

There has been much discussion recently about the role of methane, HFCs and air pollutants (such as black carbon and ozone precursors, often called "short-lived climate forcers") in meeting the 2°C or 1.5°C goal. The 2020 emissions gap is the discrepancy between 2020 emission levels on the long term pathway to hold warming below 2°C or to 1.5°C, and the emission levels expected for 2020 - based on current emission-reduction pledges by all governments. The emissions gap is 6-11 billion tonnes of CO2 equivalent (GtCO2e/year) - much more action is needed before 2020 to close this gap:

- The warming limit cannot be achieved without deep reductions in CO_2. Science does not support diverting from action on deeply reducing CO_2. Delaying action on CO_2 by just ten years (from today) would more than double the chances (from 20% to 50%) of global warming exceeding 2°C . It would also require much steeper reductions of CO_2 post-2030: much riskier, more costly and/or possibly technically infeasible.
- Reductions of non-CO_2 gases are necessary but would be totally **insufficient** in terms of meeting warming limits. A comprehensive climate change mitigation strategy requires measures to reduce both CO_2 and non-CO_2 emissions. Crucially, by CO_2 measures alone, global warming by 2100 can be reduced by at least 1°C. Deep methane reductions (consistent with the reductions assumed in 2°C and 1.5°C scenarios) could reduce the total temperature increase by 0.3°C. A phase-out of HFCs could avoid a 0.05°C increase in temperature, up to 0.5°C for the highest estimate of future business-as-usual growth of these gases found in the scientific literature.
- **Additional air pollution** measures beyond those that come from a low emission pathway are beneficial for health and agriculture and can have a small (yet uncertain) additional climate benefit.
    - A mix of measures to simultaneously cut air pollution and greenhouse gas emissions yields the cheapest and most efficient air pollutant reduction.
    - Given that short-lived climate forcers can have a warming (e.g. black carbon) or cooling effect (e.g. sulphur-dioxide), deep reductions in emissions may not yield a significant net decrease in global-mean warming.

- A low-carbon pathway would reduce air pollutants like sulphur-dioxide and black carbon, because the technologies producing them are linked to CO_2-emitting infrastructure that will be phased-out in such a pathway.
- Decarbonisation policies alone are effective in reducing co-emitted air pollutants.

- Action on short-lived climate forcers does not represent an **additional** option for closing the Gap in 2020, because strong action on these species is already considered in the 2 and 1.5°C scenarios used as benchmarks for estimating the extent of the gap.
  - Not reducing air pollutants would mean that further reductions in greenhouse gases would need to be taken to compensate for that.

Is it still realistic to limit warming to 2°C and 1.5°C?

Recent media articles have argued that the 2°C limit is "unrealistic"[1]. Our analysis consistently indicates that not even current pledges - let alone action - will achieve the **2°C or 1.5°C** goals. On the other hand, robust scientific literature shows the goal can still be achieved if action is increased.

With respect to increasing overall mitigation ambition, the recent "Energy Technology Perspectives 2012" from the International Energy Agency[2] shows, for example, that: "a technological transformation of the energy system is still possible, despite current trends. […] Investing in clean energy makes economic sense – every additional dollar invested can generate three dollars in future fuel savings by 2050. By 2025, the fuel savings realised would outweigh the investments".

One option to increase ambition would be to scale up initiatives complementary to the UNFCCC with specific actors (like cities or regional states), or sectors (such as renewable energy, transport or deforestation). In a separate paper in *Nature Climate Change*, Ecofys showed that such initiatives, if started immediately, would have the potential to significantly decrease the gap by 2020[3].

The evidence clearly shows that it is a question of political will - not technological feasibility – as to whether 2°C – or 1.5°C is "out the window"[1].

Is the emissions gap due to a "Participation Gap" rather than an "Ambition Gap"[4]?

If all Parties not yet participating joined in pledging reductions at levels others have already committed to, this would only yield **0.2 $GtCO_2e$** under the most likely scenarios we assume, i.e. lowest ambition and lenient rules.

Even if strict accounting rules and assuming high ambition pledges were to be met, we expect that full participation of all Parties not yet included can help close the 2020 Emissions Gap by about **1.2 $GtCO_2e$**.

On the other hand, a move to the high ambition / strict rules scenario by the *already participating governments* would deliver 2-3 $GtCO_2e$, two to three times as much as the inclusion of non-participating Parties at that higher-ambition level.

We conclude that it is not the *number of governments*, but the *level of ambition* of governments that have already pledged reductions that would make the biggest difference in closing the gap.

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[1] Prof Sir Bob Watson in a recent BBC interview: http://www.bbc.co.uk/news/science-environment-19348194

[2] IEA (2012). "Energy Technology Perspectives 2012. Pathways to a Clean Energy System", International Energy Agency (IEA), Paris, France, 688 pp.

[3] Blok et al. 2012: Bridging the greenhouse-gas emissions gap, Nature Climate Change 2, 471–474 (2012) http://www.nature.com/nclimate/journal/v2/n7/full/nclimate1602.html

[4] Implied by statement of the US at the ADP round table on 31 August

Kyoto or not Kyoto? Future of surplus AAU's needs clarity

The Kyoto Protocol is the only legally binding regime for controlling greenhouse gas emissions and has spurred international emission trading, rigorous and binding accounting, and emission reporting monitoring and verification systems. These characteristics are seen as vital architectural components of the new international agreement to be developed under the ADP (the "Durban Platform") negotiations within UNFCCC by 2015.

Politically, a post-2012 second commitment period for Kyoto is seen as an essential pre-condition for success in the ADP negotiations. At the upcoming top-level climate talks (COP) in Doha it is essential that the emissions targets and other key issues for the KP second commitment period are finalised.

Why it matters

Durban saw a firm commitment from the EU for a second commitment period (CP2) of the Kyoto Protocol. Other governments, like the US, Canada and Japan, have been very clear that they will not take part. There remains uncertainty as to whether Australia, New Zealand, Kazakhstan and the Russian Federation and some others will join a second commitment period.

In total, the emissions from the Annex I Parties that have committed to the second commitment period – the EU-27, Norway, Belarus, Ukraine and Liechtenstein amount to 12% of 2010 global emissions. If Australia, New Zealand, Kazakhstan and the Russian Federation joined, this would increase to 20% of 2010 emissions.

Establishing a viable second commitment period of the Kyoto Protocol, whether it covers one tenth or one fifth of global emissions is widely recognised as very important politically, legally and substantively for the development and expansion of a multilateral approach to preventing dangerous climate change.

An important issue is what are the real emission reductions that would be achieved for the group of Kyoto CP2 countries?

Nominally the pledges put forward by EU-27, Norway, Belarus, Ukraine, Australia, New Zealand, and the Russian Federation amount to a reduction of 15-24 % from 1990 levels by 2020. However, the existence of surplus emission allowances (AAU's) and land use, land-use change and forestry (LULUCF) credits will cause a deterioration of this nominal reduction.

The key issues that remain to be resolved in this context are:

- *The emission reduction targets*: Weak targets for CP2 can lead to further creation of surplus AAUs
- *The carry over of surplus AAUs from CP1 to CP2*: The final decision of some countries regarding their participation, and their quantified emission limitation and reduction commitment (QELRC)[5], can increase available AAU surplus within the Kyoto system substantially if not addressed.

To examine these issues we look at several countries.

[5] The QELRC represents the average emission level of a country over a commitment period expressed in per cent of base year emissions. They are different from pledges made for 2020, which represent reductions in a given year (2020) compared to a defined reference.

Taking a closer look at indecisive countries

Australia and **New Zealand** have made their submissions on Quantified Emission Limitation and Reduction Commitments (QELRCs), but left the crucial question open - will they join and what would be the target? Together they are estimated to end CP1 with a surplus of around 150 $MtCO_2e$. This number has a high uncertainty attached, due to the large amount of LULUCF credits/debits and removal units from New Zealand and Australia.

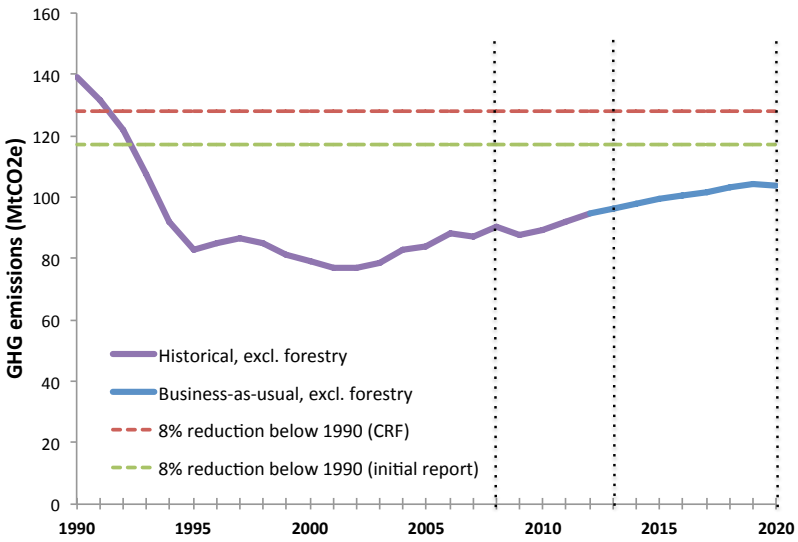

Figure 1 The Belarus pledge under different assumptions

Belarus has also made a submission and did specify a QELRC, but there seems to be some confusion on the actual length of their proposed commitment period. While the original submission (in Russian) indicates openness on the **end date** of the CP by stating both 2017 and 2020[6], it **starts** in 2008, i.e. it includes the first commitment period. Belarus did not take part in the first commitment period. It had put forward a target of 8% reduction below 1990 for the first commitment period, but the related amendment was never ratified. The Secretariat's summary of QELRC numbers (UNFCCC summary paper) only looks at the second commitment period, ignoring the starting date of the submission by Belarus. But why does it matter, given that the first commitment period is already over?

Figure 1 illustrates the problem. Belarus' emissions are below the pledged emission level during the first commitment period (blue line). Including the first commitment period would therefore deliver additional surplus units for the country. An additional uncertainty connected to the effect is that it is unclear whether Belarus would apply emissions as reported in its initial report (green line) or the latest CRF data provided in 2012 (red line) which are around 12 $MtCO_2e$ higher as a basis for determining their AAUs. Table 1 summarises the effects of the different scenarios. In the worst case the Belarus QELRC would add around 433 $MtCO_2e$ of surplus to the system from 2008 to 2020, almost as much as it is expected to emit during five years. It is not impossible that the starting date 2008 in Belarus' submission is caused by a typing error. Given the potential consequences, however, this needs to be clarified urgently.

Table 1 Quantification of surplus for Belarus under different scenarios

Total surplus in $MtCO_2e$	**CP1** (2008-2012)	**CP2** (2013-2020)	**CP1 and CP2** (2008-2020)
Using CRF 2012	185	247	**433**
Using initial report	131	160	**291**

Russia had so far been counted amongst those opting out of the second commitment period. Press reports indicate that the door may not be fully shut. In light of discussions on the adoption of a

[6] The English translation adds to the confusion by indicating a commitment period from "2008 to [2017] [2012]". To simplify the analysis we subsequently only look at 2020 as the end date for CP2

binding national target and the implementation instruments to achieve it, we deem it possible that Russia could propose a 20% target under the KP. This would be in line with their pledge under the Copenhagen Accord to reduce 15% to 25% below 1990 by 2020 and would allow further access to the Joint Implementation mechanism. Russia is expected to come out of CP1 with a surplus of 6.3 $GtCO_2e$[7]. It is not yet clear how far they would be able to make use of this, if they do not commit to a target for CP2. Additional to these recent estimates of CP1 surplus we expect a 20% reduction target for 2020 to generate a further 6.9 $GtCO_2e$ of new "hot air", given that the resulting target levels are still below business-as-usual projections, thus requiring no real mitigation effort to be achieved.

Ukraine has now stated in the UNFCCC negotiations in Bangkok on the Kyoto Protocol that they intend to put forward a QELRC before Doha. This is a new, positive and rather unexpected announcement. The impact on the surplus situation will highly depend on the actual target they put forward. In the absence of a clear statement regarding the actual level of ambition we can only assume a target in line with their pledge under the Convention of -20% below 1990 by 2020. CP1 is projected to deliver a 2.6 $GtCO_2e$ surplus for the Ukraine, which would be supplemented by a 2.9 $GtCO_2e$ surplus from CP2 under a -20% target.

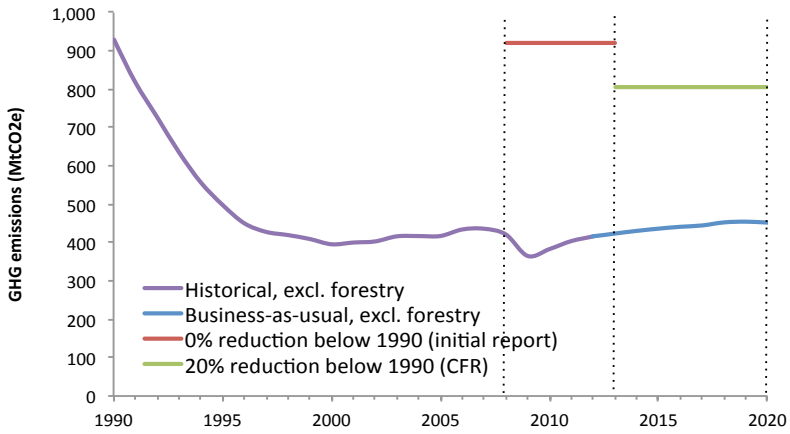

Figure 2 Ukraine QELRC in line with pledge to reduce 20% in 2020

What are the consequences?

Adding up all the surplus from countries with their expected QELRCs could bring up to 19 $GtCO_2e$ of 'old' and 'new' surplus to the Kyoto system up to 2020. The participation of all countries discussed above would nevertheless be an important political step towards an agreement under the ADP in 2015. It would reinforce the importance of the robust accounting system under the Kyoto Protocol and send a positive signal on the sincerity of Parties' pledges.

It is also not clear what happens to surplus units, if some Parties do *not* sign up to the next Kyoto commitment period. There is some indication they expect to be able to use their units towards meeting their pledge under the Convention.

There are many ways to mitigate the potentially huge environmental impact of the surplus units. The rules currently discussed under the Kyoto Protocol all have the goal to increase the environmental integrity of the Kyoto system and to limit the amount of surplus used for reaching emission targets (without reductions in 'real' emissions). From the scientific perspective, a full elimination of carry over would be the preferable option, while maintaining rigorous national accounting, including LULUCF rules. Other options are likely to be more politically acceptable. Proposals include a number of different elements, among them strict limits on the use of surplus AAUs, differentiating between 'hot air' and 'overachievement' and restrictions on tradability of surplus units.

[7] Den Elzen et al. (2012) The impact of surplus units from the first Kyoto period on achieving the reduction pledges of the Cancún Agreements, Climatic Change Letter

The effectiveness of the different proposals strongly depends on how the individual parameters are set, for example per cent limits for the use of surplus AAUs. All proposals on the table deliver a substantial improvement over the status quo, i.e. full carry over and unrestricted use. To ensure environmental integrity and increase the credibility of the Kyoto accounting system, it is paramount that a sufficiently ambitious regulation is adopted in December 2012 in Doha.

Australia and Switzerland add more conditions than actions…

A recent technical paper[8] from the UNFCCC secretariat provided additional information on the conditionalities connected to the pledges of two governments, Australia and Switzerland. The information indicates that their conditions will be even harder to meet than earlier anticipated. It is therefore highly unlikely that these governments will move towards the higher end of their pledges.

Australia's update included adding **a strong international financing and technology cooperation framework** to their condition on moving to a 15 per cent reduction compared to 2000 by 2020. They added numbers to their previous condition, under which **advanced economies** take on commitments "**in the range of 15–25 per cent below 1990 levels"**, which is suggested to be **"**comparable to Australia's".

While Australia requires other countries to make an effort in line with this range, its own pledge is nowhere near it. Their associated pledge of a 15% reduction below 2000 would translate into a 3-13% increase above 1990. Australia would also expect progress on the inclusion of forests and the land sector (including REDD+) in a global agreement and access to deeper and broader functional carbon markets.

They also specified the conditions for moving to a target of 25% below 2000. These conditions include an ambitious global deal capable of stabilising levels of GHGs in the atmosphere at 450 ppm CO_2 eq or lower. It would need to **include a clear pathway to achieving an early global peak in emissions, advanced economy reductions, in aggregate, of at least 25 per cent below *1990* levels by 2020, major developing economies making a collective reduction of at least 20 per cent below business as usual by 2020, and the nomination of a peaking year for major developing economies**.

Australia's 25 per cent reduction target from 2000 levels translates into a 1-10% cut from 1990 levels. Australia also makes this conditional on the inclusion of forests (reducing emissions from deforestation and forest degradation in developing countries) and the land sector in the global agreement. Australia expects global action that mobilises greater **financial resources, including from major developing economies**, and results in fully functioning global carbon markets to move to their high ambition pledge.

Yet, despite the existing and added conditionality, even this last level falls short of what would be Australia's contribution to move the developed countries as a group into the IPCC range of a 2020 reduction to 25-40% below 1990, agreed in Bali in 2007.

Switzerland has added a new condition that bunker fuels have to form part of global reduction objectives covered under a sectoral approach. International bunker fuels are not included in the global climate regime. The 2011 UNEP Gap report found that aviation and shipping have the technical potential to contribute a further emissions reduction of about 0.3–0.5 Gt of CO2 equivalent in 2020 to address the ambition gap.

These additional conditions come at a time when governments have been asked to *remove* such conditions and increase their pledges to close the ambition gap. While the stated intention of the conditions is to increase mitigation ambition for all Parties, having additional conditions attached to the pledges decreases the likelihood of their achievement.

[8] UNFCCC Technical Paper FCCC/TP/2012/5 23 August 2012

Spotlight on national activities

Is Canada really halfway to meeting its target?

In a recent speech, Environment Minister of Canada Peter Kent claimed that "Canada is now halfway to its target of reducing GHG emissions by 17% below 2005 levels."[9]

We have taken a closer look at this claim and find that is not correct. We find that emission trends from both 2011 and 2012 indicate that, without further measures, Canada will not meet its target in 2020. At present Canada is only a third of the way towards its target of 17% below 2005 levels. Canada's emissions in 2010 were 692 $MtCO_2e$, a decrease of 6% below 2005 emissions level.

The claim that Canada is halfway to meeting its targets comes from comparing apples and oranges: it relies on a change in projections from one year to another, which results in lower projected emissions, due to the recession, and changes in emission data (inventory) and methodology. Given the changes in emissions in 2010 and changes in LULUCF accounting rules, our analysis concludes that more than half of the difference between 2011 and 2012 projections for 2020 can be attributed to artifacts of accounting rules and not to projected climate/decarbonisation policies to be implemented by the government.

Figure 3 shows the data supporting Canada's statement. Based on the fact that the most recent projections of emissions ("2012 Trend Line") are lower than the projections from last year ("2011 Trend Line"), and much lower than the 'business-as-usual' (BAU) projections ("2011 No Government Actions"), Canada's Emissions Trends Report concludes that Canada is halfway to meeting its target.

Unlike other developed governments, Canada is using (old) BAU projections as the benchmark for evaluating achievement of their target, whereas their target is for an absolute emissions reduction from a fixed base year. From this perspective, and based on the data provide in the report, Canada's target of 17% below 2005 levels translates into a 30% reduction from the 2011 BAU. This is exactly what Mexico has pledged and less ambitious than Brazil has pledged (36 to 39% below BAU)[10]. According to their most recent projections, Canada will remain at a range of reduction of 15% below BAU.

For the first time, Canada has taken into account the contribution of the LULUCF sector to achieving its target and this contribution is projected to result in a credit of 25 $MtCO_2e$ in 2020. In the report this credit is applied to the 2012 projection[11]. The contribution results almost exclusively from the difference between the new projections for Forest Management activity in 2020 and 2005 base-year emissions[12]. These are derived from projected harvests to 2020 and assume no natural disturbances from 2010 onward, except a low background level, consistent with the new rules on LULUCF agreed in Durban

These forest management credits are to be compared to those that would have resulted from the reference levels published by Canada in 2011: up to -78 $MtCO_2e$ in 2020. The forest management reference level (from which credits or debits are calculated) for 2020 provided in November 2011 was -114 to -70 $MtCO_2e$ (without and with instantaneous oxidation of harvested wood products

[9] http://www.cbc.ca/news/politics/story/2012/08/08/pol-emissions-report-kent.html

[10] These pledges are conditional to financial support.

[11] It is unclear which methodology was used to incorporated this LULUCF credit in 2020 into the projection pathway. Generally, such credits are applied directly to the target as they do not influence the pathway a country will take towards its target as opposed to e.g. new policies.

[12] In Durban, parties agreed to LULUCF accounting rules for the Kyoto Protocol's second commitment period. Parties to the UNFCCC that will not take a second commitment period may follow these rules but are not bound to do so. Canada's submission stated that LULUCF will be accounted for using either a 2005 base-year or a reference level.

respectively). The projection for Forest Management for 2020 used in the new report is -148.7 MtCO2e: it is unclear why these numbers are different, given that they have the same definition and were made less than a year apart.. A lot more clarity on the assumptions made and accounting rules used is needed, especially since the report states that they are working to "analyze alternative accounting approaches,[…] and adjustments to the accounting approach" which will be reported in future Emission Trends reports.

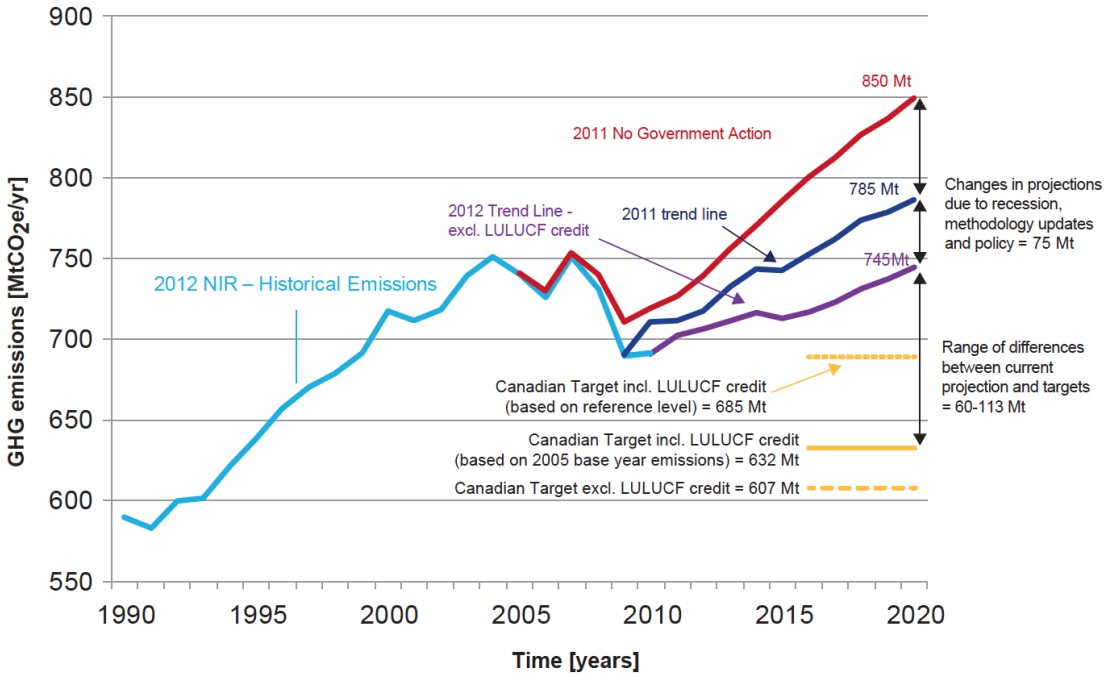

Figure 3 Scenarios of Canadian industrial GHG emissions for 2020 ($MtCO_2e$) extracted and modified from Canada's Emissions Trends Report).

The red '2011 No Government Action' corresponds to the 'business-as-usual' projection, the '2011 Trend Line' (blue) to last year's projection and '2012 Trend Line' (purple) to this year's projection. We have modified '2012 Trend line' to exclude LULUCF credits, leading to a level of emissions of 745 $MtCO_2e$ in 2020 (instead of 720 $MtCO_2e$ originally reported). These credits are instead applied to the "Canadian Targets excl. LULUCF credit". There are two ways to calculate LULUCF credits: either considering Forest Management emissions in 2005 base year (yielding a credit of 25 $MtCO_2e$) or Forest Management Reference levels (yielding a credit of up to 78 MtCO2e). We provide the three types of targets in yellow: Canadian targets excl. LULUCF (long-dashed lines), Canadian Target incl. LULUCF credit (based on 2005 base year emissions – solid line) and Canadian Target incl. LULUCF credit (based on reference level – short dashed line).

Given all these factors, it is scientifically correct to make the assertion that Canada is 'closer' to meeting the target than projected in recent estimates, but it is not correct to derive the conclusion from the graph that Canada is 'halfway' to meeting its pledge.

Indeed, what is safe to infer from Figure 3 is that both 2011 and 2012 Trend Lines project that Canada will not meet its target in 2020. In 2011 the country projected to stay above its target by 178 MtCO2 and in 2012 by 113 MtCO2e. Using the metric of absolute current emissions, Canada is only a third of the way towards its target of 17% below 2005 levels: Canada's emissions in 2010 were 692 MtCO2e, a decrease of 6% below 2005 emissions level

Canada's decreasing emissions: sign of decarbonisation or simply artifacts of accounting rules?

The report shows that since last year, when projected emissions for 2020 were 785 MtCO2e, several developments have led to lower projections of 2020 GHG emissions - 65 MtCO2e lower than in 2011. Canada has updated its projections over time and the 2012 report seems to be based on lower economic growth and starts its projection from a lower level of emissions in 2010. It is unclear to what extent the lower values for 2020 are due to these methodological changes, but those are potentially large and likely amount to more than half of the difference between 2011 and 2012 projections.

One of these factors were changes in the current emission inventory, which translate into substantial "reductions" in 2020 when projected forward compared to earlier projection based on higher present starting emissions. Emissions for 2010 were estimated to be at 718 $MtCO_2e$ in the old projections used for the BAU scenario and 710 $MtCO_2e$ for 2011 projections. Since then, in the latest National Inventory Report, the value for 2010 emissions has been reported to be 692 $MtCO_2e$. A difference of 26 $MtCO_2e$ compared to the shown 'BAU' and 18 $MtCO_2e$ to the 2011 trend (see Figure 1). This difference in starting points alone translates into substantial reductions of at least this magnitude in 2020.

Another factor is methodological where current data are compared to old projections, also leading to potentially spurious reductions for 2020. Projections are a useful tool to estimate where countries expect to be at a given point in the future, compared to where they would like to be. But to do this, projections of both business-as-usual and policy pathways need to be consistent, scientifically robust and reflect the most recent available data as well as realistic assumptions on future developments.

It is unclear why the scenarios used in the latest report and shown in Figure 3 only use historic data up to 2009 for the "2011 Trend Line" and even only apparently up to 2007 for the "No Government Actions" scenario. Reality has overtaken old projections and the effects of the economic crises and past efforts have changed the starting point for evaluating the future. Such reductions can by no means be interpreted as improvement in climate and decarbonisation policy. An adjustment of the two scenarios to the observed 2010 emissions level would highly improve the clarity and the credibility of Canada's numbers.

From the 65 MtCO2e originally reported difference in projected values for 2020 between 2011 and 2012 Trend lines, 25 Mt can be attributed to changes in the LULUCF accounting rules and up to 18 Mt to differences in historical data. It is therefore safe to infer only at most half of the reductions in 2020 projections can actually be due to policy.

Trends in emissions intensity

Canada's Emissions Trends report states that "emissions are becoming increasingly decoupled from economic growth" and that "projected sectoral shifts in the economy are also contributing to this improvement in emissions intensity".

Table 2 Emissions intensity trend (excluding LULUCF)

	1990	1995	2000	2005	2010
Emissions intensity ($MtCO_2e$/Billion 2005 USD)	738.3	734.7	674.1	612.9	538.6

Sources: CRF 2012 (GHG emissions) and USDA 2011 (GDP)

While the emissions intensity trend does indeed demonstrate improvement, it remains doubtful how much of that can be attributed to actual policies. A shift from coal to natural gas is seen in many parts of the world and is mostly attributed to the development of fuel prices and the

comparative economic advantage of gas under current and projected economic conditions. Measures that are expected to influence emissions intensity are the federal Emissions Performance Standard for coal-fired electricity generation and provincial measures to shift away from coal as a fuel source and measures to encourage the development of renewables.

Emissions from tar sands more than double since 2005

Another important factor in the Canadian emissions equation is the oil and gas sector. Tar sands in the 2011 projections accounted for 92 $MtCO_2e$ of emissions representing 46% of the oil and gas sector. The new projections increase expected emissions from tar sands to 104 $MtCO_2e$ and 51% of the sector's emissions up from a share of only 20% in 2005. This steep increase will have a negative impact on the future development of emissions intensity in Canada. **Measures to prevent the emissions from tar sands could in fact lead to Canada almost achieving its pledge.**

The EU struggles to align emission trading, energy efficiency policies and their climate targets

While the EU is on track to meet and overachieve its 20% GHG reduction pledge by 2020, it faces political difficulties in efforts to increase the ambition of their international reduction proposal. The decision on the new Energy Efficiency Directive represents a lost opportunity to reach its national energy efficiency goal. More ambitious 2020 targets are still within reach.

In 2008, the European Union (EU) agreed on a package of targets for 2020: 20% reductions in GHG emissions below 1990 level, 20% energy saving compared to business as usual and 20% share of renewable energy. It internationally pledged the 20% GHG target, offering to move to 30% conditional on an international legally binding agreement.

The EU is on track to meet and overachieve its 20% GHG reduction pledge by 2020. Projections of GHG emissions by the European Environment Agency of October 2011[13] see the EU almost meeting its 20% target (19% reduction), even achieving 25% reductions with the policies that member states already have planned.

Yet the probability that the EU will officially move to a 30% target remains relatively low. The EU has made no such offer at the ongoing Bangkok climate talks.

Nevertheless, EU is going forward with implementing national climate policies.

The European Commission published its proposal for an Energy Efficiency Directive (EED) on 22 June 2011 and is scheduled for a Ministerial vote in September. This new EED is needed to help overcome the barriers to tapping Europe's cheapest, cleanest, safest solution to energy and climate challenges.

The final Energy Efficiency Directive is significantly less ambitious than earlier versions and represents a lost opportunity to reach its energy efficiency pledge or to achieve more ambitious GHG reductions in 2030 and beyond.

The European Commission published an analysis of an earlier version of the Directive in April, which estimated that if all components being considered were implemented, energy consumption would reduce about 20%.[14] With the significantly weaker measures agreed upon in the final version, we can expect savings now to be significantly below target. Without the energy efficiency directive, EU will achieve only half of its non-binding 20% energy savings target for 2020 in comparison to business as usual, according to the EU Commission's (EC) latest estimates.

[13] http://www.eea.europa.eu/publications/ghg-trends-and-projections-2011

[14] European Commission, 2011, http://ec.europa.eu/energy/efficiency/eed/doc/2011_directive/sec_2011_0779_impact_assessment.pdf

Nevertheless, to achieve all feasible impacts, the EU must ensure that the EU energy efficiency policy and the EU Energy Trading Scheme (ETS) function effectively together. Using less energy, for example less electricity, will impact the emissions by electricity companies that are covered by the emission trading system.

Already, without the new EED, the European Commission estimates that the companies will greatly overachieve their targets under the Emission Trading System, generating a surplus in EU ETS allowances by 2020 of 2150 million. If EU climate and energy policies are misaligned, regulatory certainty and confidence for investors will be undermined and the potential ETS auction revenue will be significantly reduced.[15] The EC published a proposal on 25 July 2012 to delay ETS auctioning, which partially addresses the problem.[16]

It is important to note that each Member State has an individual target for direct emissions from buildings, transport and waste (sectors not covered by the EU-wide emission trading system). Trading of units under such a system between Member States is possible. These national targets will also be overachieved, creating additional anticipated surpluses by 2020.

The bottom line is that while the EU clearly recognizes the need to address energy efficiency and have a fully functioning ETS, significant opportunities are being missed and there is more work to do to reach more ambitious GHG reduction targets in 2020 and beyond.

Australia taking the next step: linking between emission trading systems

After the Australian carbon price scheme came into force on 1 July 2012, the Australian Government and the EU announced that the two carbon trading schemes will link from as early as 2015. While this was expected in the long term the speed of the agreement has come as a surprise. To enable the linkage Australia dropped the intended floor price and increased restrictions on the use of CDM credits. The carbon price in the Australian system will now largely be determined by the price for EU units (EUAs).

There are two questions related to this new development. One is how it effects the national implementation of Australia's pledge. The other is how this step influences the international climate change negotiations?

To evaluate the effects on Australia's ability to achieve their pledge we need to take a close look at the details of the agreement and changes to the Australian carbon trading scheme compared to the original setup as decided in November 2011.

One of the uncertainties connected to the effectiveness of the Australian carbon scheme is the fact that the opposition has announced they will repeal the legislation should they come into power in the next elections, due sometime next year. However, an agreement with the EU makes the unravelling of the legislation even more complex, thus making repeal less likely. Increasing certainty should have a positive effect on clean energy investments .

[15] http://www.eceee.org/EED/ETS-EEDletterbarroso.pdf

[16] COMMISSION STAFF WORKING DOCUMENT Information provided on the functioning of the EU Emissions Trading System, the volumes of greenhouse gas emission allowances auctioned and freely allocated and the impact on the surplus of allowances in the period up to 2020 http://ec.europa.eu/clima/policies/ets/auctioning/third/docs/swd_20120724_en.pdf

Details of the linking arrangements	Effects
Australian entities can start buying EU permits immediately	Australian entities can take advantage of current low prices, thus reducing cost but also the incentive to invest in new technologies to cut emissions
From 2015, when the fixed-price period ends, Australian businesses will be able to submit EU permits, but not the reverse	Before the negotiated link, it was possible for Australian businesses to purchase EUA's. However, the link now makes this more formal.
Full, bilateral linking expected to be negotiated by mid 2015 and begin operation in July 2018	Issues such as the type of units that will enter into the EU from the Australian scheme will need to be negotiated. For example, the EU does not accept units from land sector projects in the CDM for use in the EU ETS, whereas the Australian scheme includes offsets from forestry activities.
The floor price is abolished, but restrictions in place to prevent purchase of more than 50% eligible international permits and only 12.5% would be "Kyoto units" (down from 50% under the scheme with a floor price)	De-linking of the carbon price in Australia from the CDM price and linking to the EUA price The common carbon price expected to be lower than the floor price, but could go up if steps are taken within the EU. Effects therefore depend on decisions taken in Brussels.
The price ceiling will be set with reference to European allowances. It will be $20 above the expected price for European allowances in the 2015-16 compliance year and will rise by 5 per cent in real terms in the 2016-17 and 2017-18 compliance years.	With current expected price developments this is not likely to have any impact on the effectiveness nor on cost of the system.
CERs not eligible for use: tCERs, long-term CERs, CERs from project types: nuclear, trifluoromethane, destruction of nitrous oxide from adipic acid plants, large-scale hydro not consistent with EU criteria	There is no mention of country scope, i.e. no mention of restricting CERs to come only from LDCs, which is an EU rule. This would likely need to change as the truly bilateral linking comes to effect.

"At the end of the day, what counts for the effectiveness of the carbon pricing mechanism is the forward price curve. There is now greater price uncertainty in the medium-term. But the expected Australian carbon price, averaged over the next decade and taking into account the risks, is probably higher as a result of today's policy change. And it is much higher than the CDM price curve." (Jotzo 2012)

Further weakening the system: New Zealand releases new numbers and makes amendments to its emissions trading system

In early August 2012, the Ministry for the Environment released the numbers on the performance of the New Zealand ETS in 2011[17]. The report shows that 51% of units surrendered are from international units (CERs, ERUs). Under current prices for these units and considering that the ETS covers only 50% of participants' emissions, there is little incentive to reduce emissions domestically. New Zealand remains the only Annex 1 country without an unconditional pledge.

The Government also announced amendments to the ETS to be implemented through legislation this year[18]. The changes and expected impacts are outlined in the table below. Overall, the amendments weaken the effectiveness of New Zealand's ETS.

ETS amendments	Consequences
Keeping the 'one-for-two' obligation in place until after this year. *Participants in the scheme will continue to have to surrender units for only half the carbon they emit.*	➡ This reduces the overall effectiveness, as it keeps coverage of the system low and thus does not provide incentives for larger scale emission reductions
Maintaining the $25 'fixed-price option' until at least 2015. *The fixed-price option in fact constitutes a ceiling price to the ETS scheme. It effectively caps the price firms will face if carbon prices begin to rise internationally.*	➡ With current prices and expected developments this change is not likely to have any effect on emissions
Introducing off-setting for pre-1990 forest land owners, and allocating the full second tranche of compensation where off-setting is not taken. *This allows countries to offset emissions from deforestation of forest lands with sinks projects on another land area. This was part of the decision in Durban that is now implemented nationally;*	➡This reduces the effectiveness of removals from the forest
Leaving agricultural emissions out of the ETS pending a review in 2015. *Adressing of emisions from agriculture will be further delayed.*	➡ The low coverage of the system decreases effectiveness as this regulation leaves out the most substantial part of NZ emissions (47-65%) with no alternative to address these emissions through other climate policies that may provide more certainty to address these emissions rather than under the ETS.

While there are ongoing discussions on how to limit the amount of international units used in the system, there is no agreement on the appropriate measure yet.

[17] http://climatechange.govt.nz/emissions-trading-scheme/building/reports/ets-report/

[18] http://www.climatechange.govt.nz/emissions-trading-scheme/ets-amendments/

USA revisited – New car standard adopted, but will make little change in 2020

The US car standard that had been announced and that we analysed in our last CAT update (June 2012) is now adopted. The emission standards for light duty vehicles have been extended to a second phase, 2017 – 2025 increasing the ambition to 163 g/mile (~101g/km) in 2025 for new vehicles.

While this is a significant step forward, it will make little change in how the US meets its 2020 pledge. The US EPA estimates the impact of phase II to be 29 $MtCO_2e$ below BAU in 2020. This only represents 1.5% of total emissions from the transport sector at 2005 levels. It can contribute to the US pledge of 17% below 2005 in 2020 by only 0.4 percentage points. There is still a gap of around 350 $MtCO_2e$ to meet the current 2020 pledge, while even the pledge itself remains "inadequate" for setting the world on a pathway to limit warming to below 2°C above pre-industrial levels.

The long term effect of the standard may be more significant. The new standard starts only in 2017 with limited time to have an effect by 2020. For 2030, the US EPA estimates the effect to be 297 $MtCO_2e$ below BAU.

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 Tracker[19] 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)[20] and significantly contributed to the UNEP Emissions Gap Report[21].

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

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Dr. h.c. Bill Hare (bill.hare@climateanalytics.org) (PIK and Climate Analytics) was a lead author of the IPCC Fourth Assessment Report, is guest scientist at PIK and CEO at Climate Analytics.

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19 www.climateactiontracker.org

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

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

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Climate Analytics

CLIMATE ANALYTICS GmbH 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