

What does the Paris Agreement mean for the EU?

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- I will talk about the bigger picture, not specifically about compliance with the EUETS rules
- But this bigger picture of implementing the Paris agreement certainly has implications for the EUETS

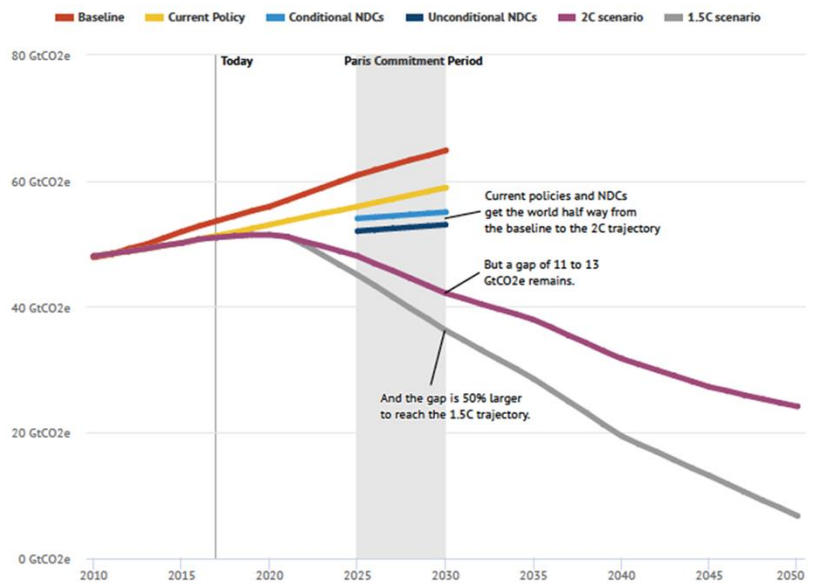
Paris Agreement long-term objective:

“Keep warming to well below 2 degrees C compared to pre-industrial and pursue efforts to keep it below 1.5 degrees C”

- In the Paris Agreement the global goal was strengthened: in 2010 it was decided not to go beyond 2 degrees
- Now it is : not to go “well below 2”, practically speaking: not beyond 1.75C
- 1.5 degrees as the level to try and achieve

Current pledges put us on track to a warming of more than 3 degrees C by 2100

Global greenhouse gas emissions under different scenarios



Source: UN Environment
Emissions Gap Report 2017/
Carbon Brief

The UN Emissions Gap report evaluates how the world is doing in implementing the Paris agreement

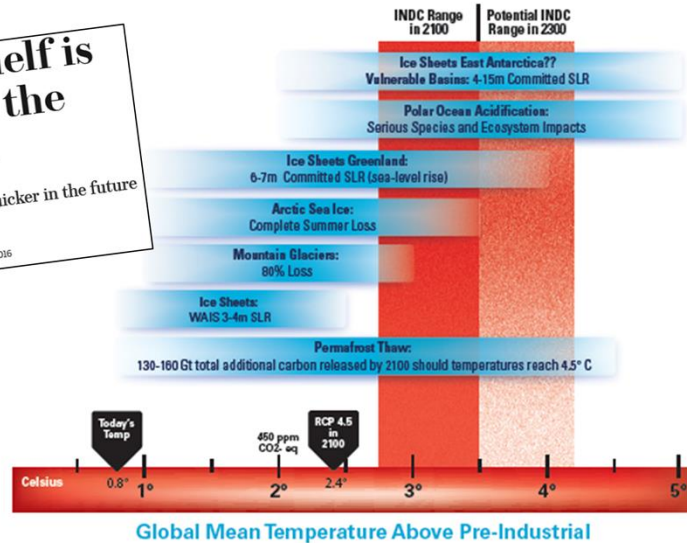
- Lower lines (simplified by leaving out uncertainty bands) what ought to be done for 2C (not well below 2C) and 1.5C
- 66% probability for 2; 50-66% probability for 1.5
- Blue lines: what Paris pledges (NDCs= Nationally Determined Contributions) would deliver if fully implemented (unconditional vs conditional)
- Yellow: what currently agreed measures would deliver
- Red: what was the baseline with all measures agreed in 2007
- GAP: 2/3 of the reductions needed
- Extrapolate, assuming policies will be continued: Temp > 3C by 2100

1.5°C limit reduces risks, particularly from sea level rise

Antarctica Ice Shelf is Breaking from the Inside Out

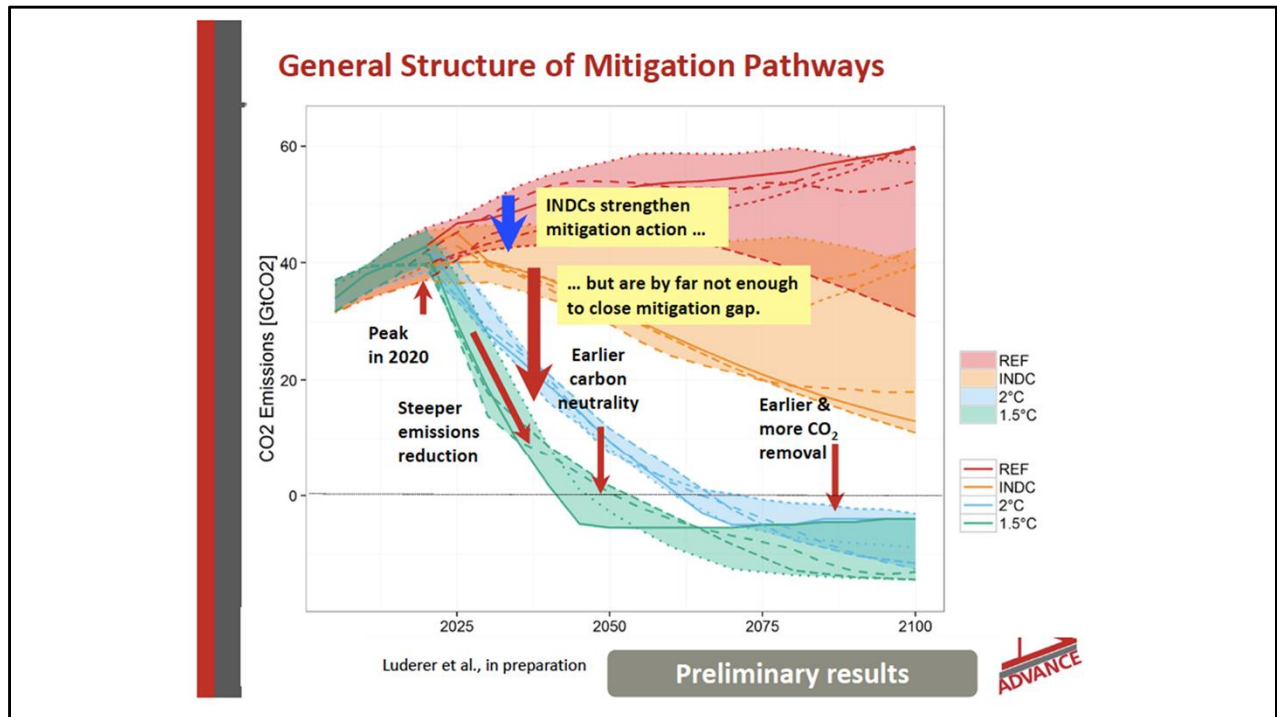
The connected ice sheet could retreat even quicker in the future

By Scott Waldman, ClimateWire on November 29, 2016



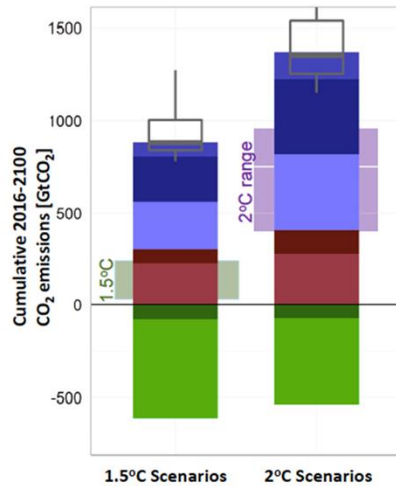
Source: International Cryosphere Climate Initiative, 2015

- Half a degree (1.5 vs 2) does matter when looking at impacts of climate change
- Look at West Antarctic Ice Sheet (good for 3-4 me sea level rise): much higher risk of melting at 2, than at 1.5
- Greenland Ice Sheet (good for 6-7 m) same conclusion
- Many other indicators: same story
- So it does matter to go to 1.5



- What does it mean for emission reduction?
- For 1.5: CO₂ to zero 2040-2060
- For 2: zero by 2060- 2075
- Negative emissions (remove CO₂ from the atmosphere) thereafter

Remaining CO₂ budget vs. residual fossil emissions



Residual emissions determined by

- Pace of decarbonization
- Configuration of (net) zero-carbon and zero-emissions society

Main mitigation options:

- Demand reductions & efficiency improvements
- Electrification
- switch to biomass / hydrogen / other carbon-neutral fuels
- Dietary changes, *Synthetic feed and meat*
- Carbon Dioxide Removal



Luderer et al., in preparation

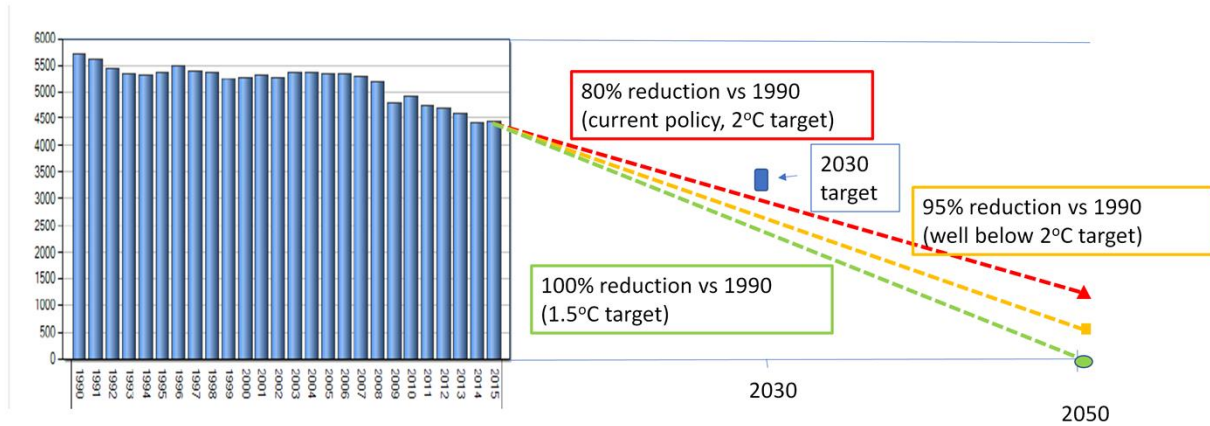
Preliminary results



Carbon budget

- LT global temp increase directly related to cumulative amount of CO₂ (long lifetime)
- Remaining CO₂ budget for 2C: (point out): ~800 Gt (=20 years current emission)
- For 1.5C: ~200 Gt (=5yrs)
- Only way to stay within budget: reduce as fast as possible (red and blue) + remove CO₂ from the atmosphere (green)
- Move from 2 to 1.5: primarily faster reductions and limited increase of CO₂ removal

GHG emissions EU28 and 2050 targets



Source: EEA, 2017 (historic data)

What are the consequences of the WB2C/1.5 target for the EU?

- Current policy (=for 2C): 80% reduction by 2050 (compared to 1990)
- Officially 80-95, but current target derived from 80%
- For WB2C: at least 95%
- For 1.5C: 100% (zero NET GHG)
- Clear that current 2030 target is not logical

Consequences of the “well below 2/ 1.5°C” target

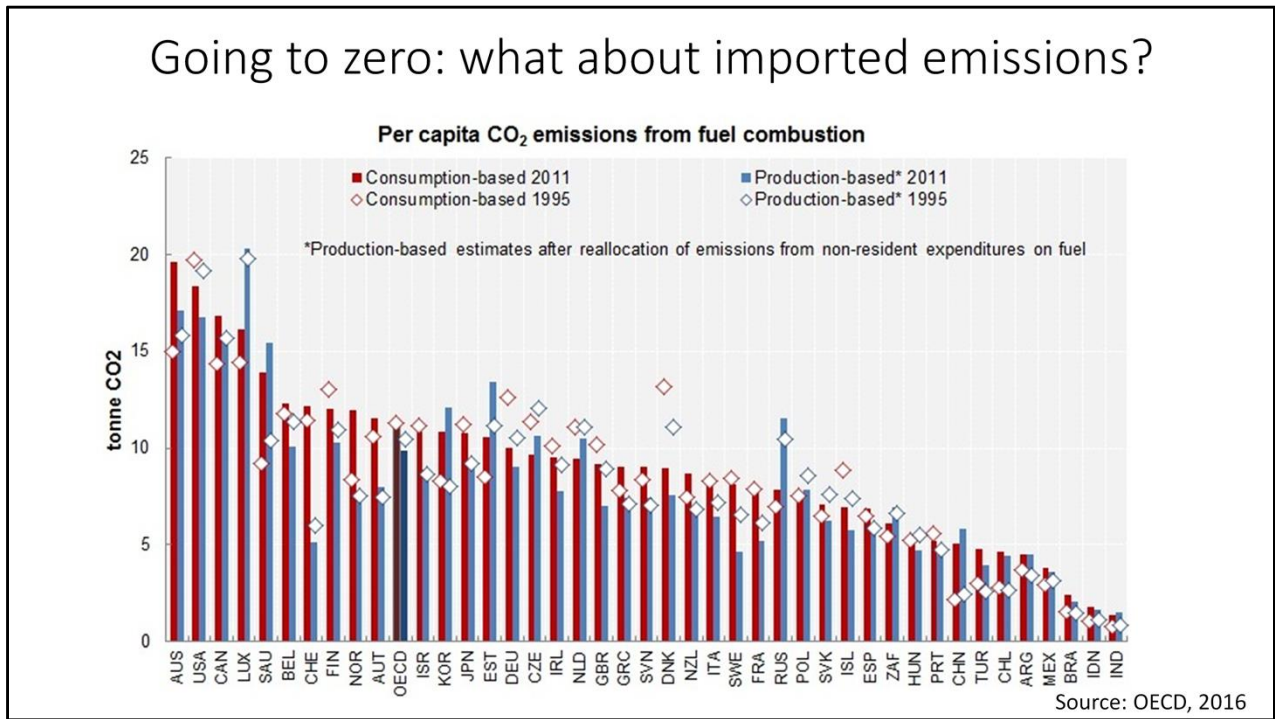
2030 targets and policies to be strengthened substantially

- ETS:
 - Larger reduction percentage
 - Faster reduction of surplus
 - Accounting methods needed for negative emissions
 - Introduce a border adjustment
- Effort Sharing Regulation: stronger reductions
- LULUCF: net negative emissions needed, in addition to emission reductions elsewhere

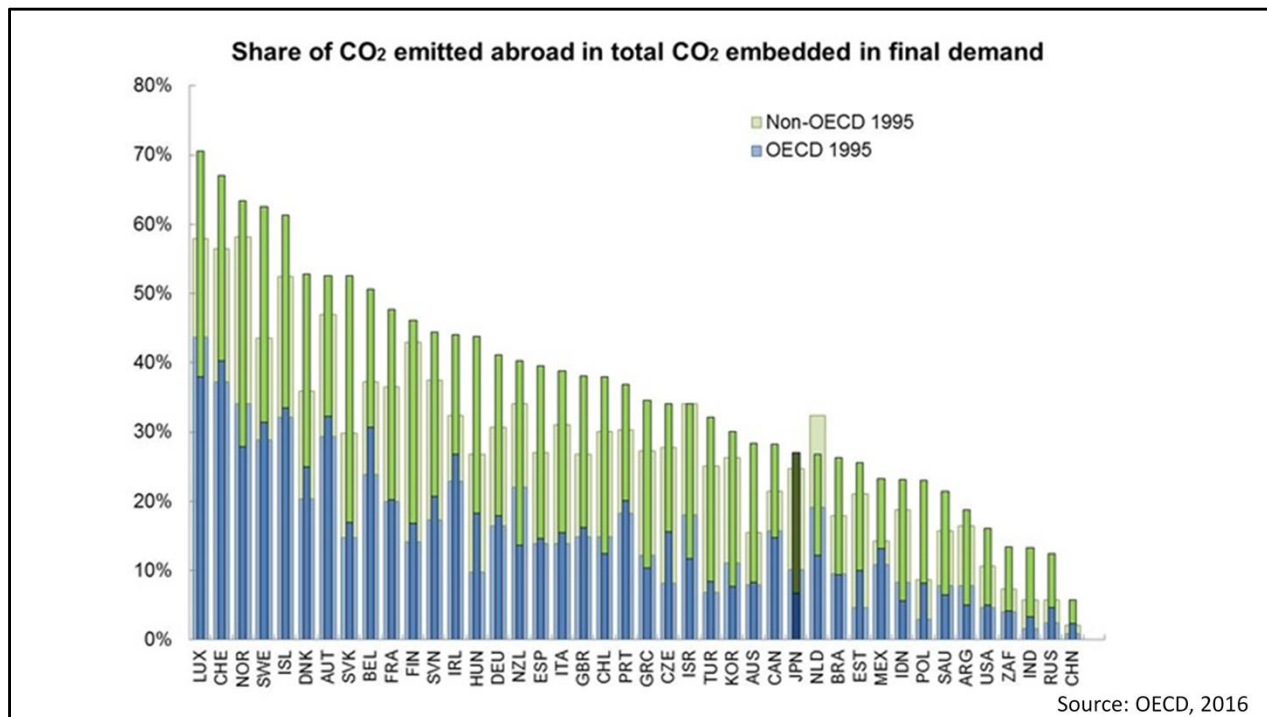
What does this mean for 2030 target:

- ETS to be strengthened
 - Sharper annual reduction %
 - Faster reduction of surplus
 - System should be able to handle negative emissions (allowances to be earned)
 - For industry critical to raise CO₂ price: can only be done if importers are treated similarly as domestic producers >> border adjustments (WTO proof)
- ESR: sharper reductions
- LULUCF: net negative emissions

Going to zero: what about imported emissions?

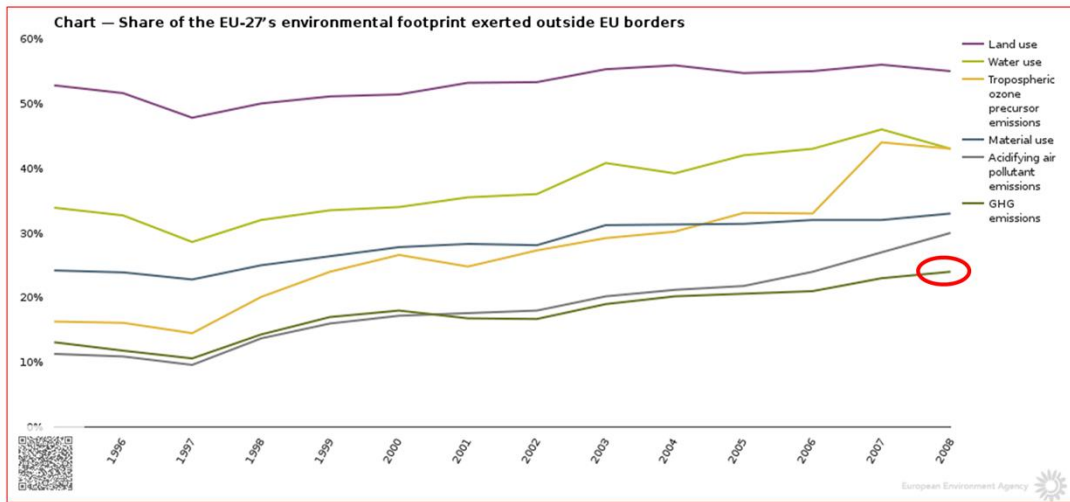


- Emissions accounted on basis of consumption: for most OECD (incl EU as a whole): higher than current (based on territorial production)
- See red versus blue



- But more important: what part of emissions due to consumption are coming from abroad
- For most OECD (incl EU) 25-7-%

About 25% of CO2 from EU consumption is emitted outside EU
 -also has to go to zero!



Source EEA 2015 (https://www.eea.europa.eu/soer-2015/europe/consumption/#t1spu_cookiepolicy_title), based on Global Resources Use and Pollution, Volume 1 / Production, Consumption and Trade (1995-2008), European Commission 2012

Looking at EU: something like 25% from outside EU (lower line)

This also needs to go to zero by 2050:!

What to do about imported emissions?

- Border adjustment of ETS
- Supply-chain policies
- Use trade agreements
- Procurement policies

- You could argue: that is the problem of other countries
- But EU could influence this in several ways:
 - Border adjustment of ETS: incentive for importers to reduce embedded CO₂
 - Supply-chain policies (strengthening what many multinational companies are already doing)
 - Trade-agreements can be an instrument to induce reduction in embedded CO₂
 - Procurement policies can favour lowest CO₂

Key takeaways



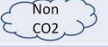



- The world is not on track to meet the Paris Agreement targets
- Moving from a 2°C to a 1.5 °C limit significantly reduces climate change risks
- To meet the well below 2/ 1.5 limit much steeper emission reductions and removal of CO₂ from the atmosphere are needed
- In that context the EU has to aim for net zero GHG's by 2050, with major consequences for the 2030 targets and the ETS, Effort Sharing Regulation and land-use policy
- In addition, emissions outside the EU as a result of EU consumption (a quarter of the total) need to be brought to zero as well; this requires a separate set of policies

Key messages

Thank you

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Alternative pathways to reduce the need for CDR

Scenario	Description
Default	Selection of technologies based on least-cost
Lifestyle change	 less meat-intensive diet (conform health recommendations), less CO ₂ -intensive transport modes, less use of heating and cooling (change of 1°C in heating / cooling reference levels) and reduction of use of several domestic appliances
Renewable electricity	 Higher electrification rates in all end-use sectors, in combination with optimistic assumptions on the integration of variable renewables and on costs of transmission, distribution, and storage
Low non-CO ₂	 Implementation of best-available technologies for reducing non-CO ₂ emissions and complete application of cultivated meat in 2050.
Low population	 Implementation of low population scenario based on SSP1 ¹⁶
Efficiency	 Rapid application of best-available technologies for energy and material use in all relevant sectors
Agriculture intensification	 80% convergence to most efficient livestock system globally by 2050; Yield highest management factor in SSP1 or SSP5, achieved in 2050