




Policy update: COP21 outcomes



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- What should we do to achieve 2 C?
- What do the INDC pledges add up to?
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Ambition: Why 2° C?

Where could our emissions pathway lead us?



2 billion people
with increased
water scarcity



70-90 million
people/year
affected by river
flooding



50% of plant
species lose >
half habitat

10-12 billion
people/year
exposed to
heatwaves



Cooling
demands 2x



60% of cropland
less suitable for
agriculture

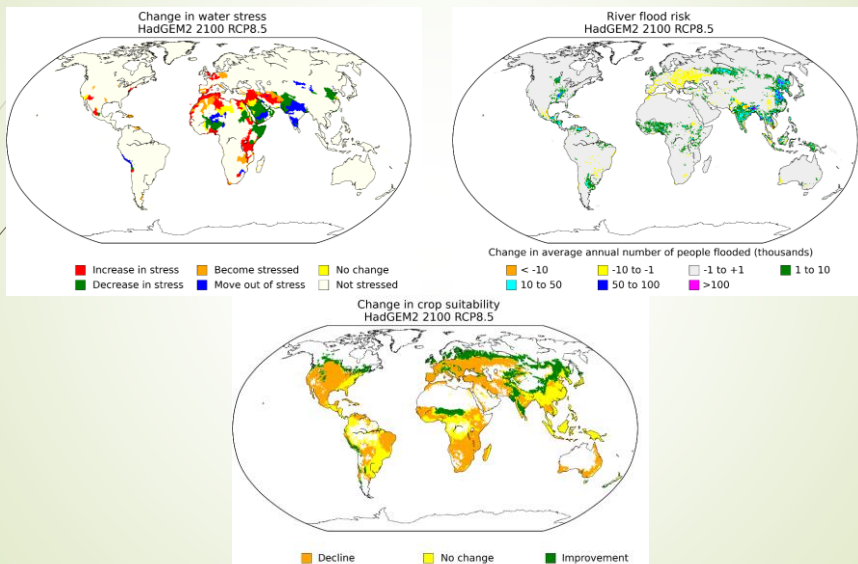


There are some potential benefits

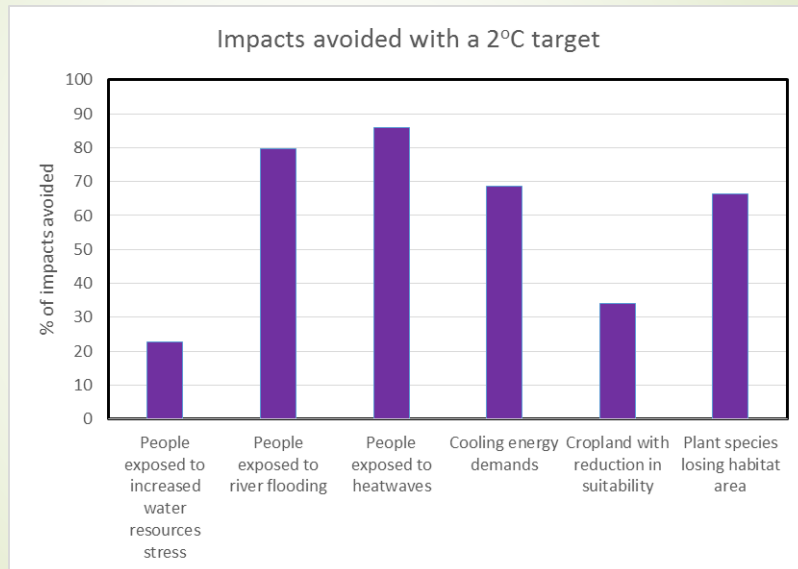
- Some water-stressed people may have more water
- Some flood-prone people could be flooded less frequently
- Some cropland would see an improvement in suitability for agriculture
- Higher CO₂ concentrations could improve the productivity of some crops

But not all of these benefits may be realised in practise

Impacts vary between regions



Which impacts could we avoid if we achieve 2°C?

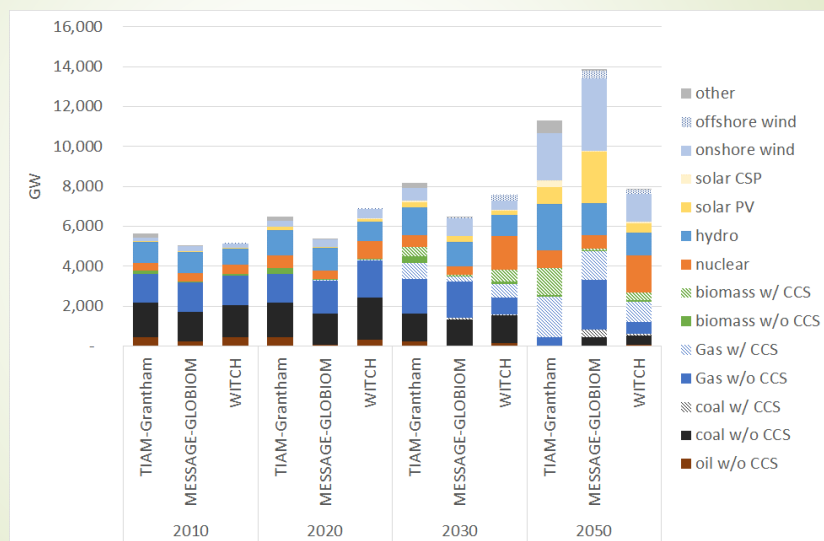


What should we do to achieve 2°C?

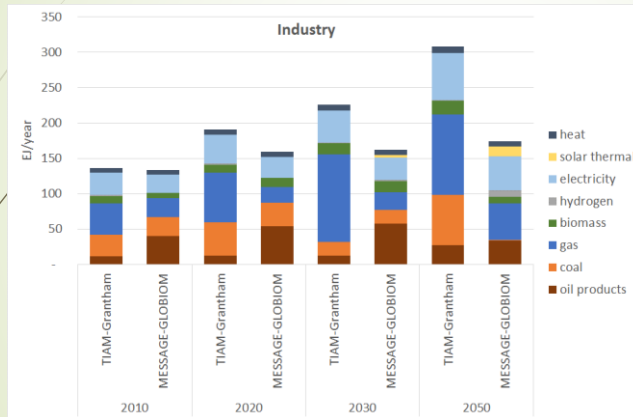
Sidenote - from the news:

- „Climate Models May Overstate Clouds' Cooling Power, Research Says"
- balance of water and ice in clouds affects the impact that carbon dioxide levels have on atmospheric temperatures, a factor known as equilibrium climate sensitivity
- Water droplets reflect more solar radiation back into the sky than ice crystals do. As the atmosphere warms, clouds tend to have more water and less ice in them, and the more watery clouds prevent solar radiation from reaching the earth.
- With less ice in the mix to start, however, there is less capacity for water to replace ice

In a 2°C scenario, electricity is highly decarbonised by 2050

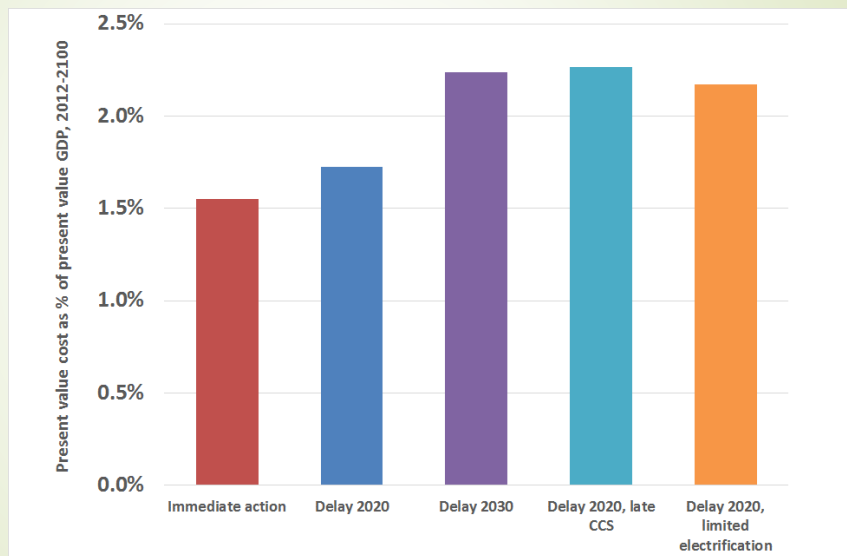


In a 2°C scenario, the fuel mix in end-use sectors shifts to electricity and other low-carbon fuels



- **Industry** sees increasing:
 - electrification
 - gas replacing coal
 - CCS (not shown)
- **Transport** sees oil replaced by:
 - biofuels
 - electricity (electric vehicles, plug-in hybrids)
 - hydrogen (fuel cell vehicles)
- **Buildings** see increased:
 - electrification (heat pumps)
 - less coal and oil for heating

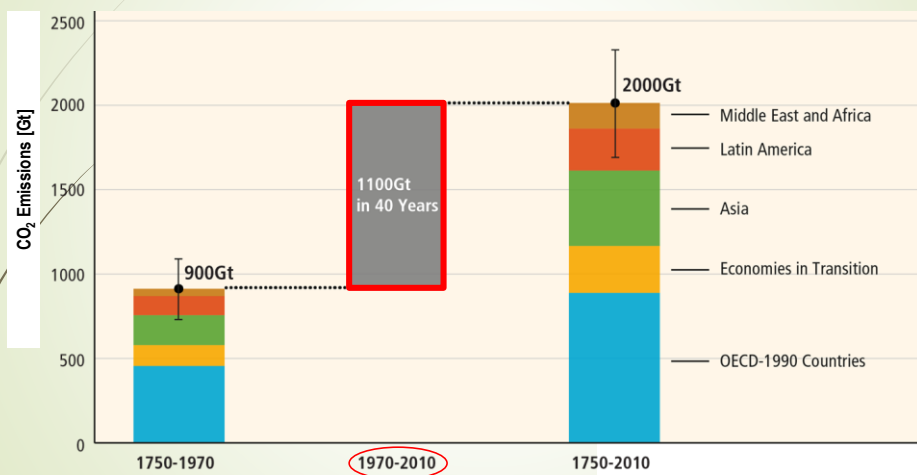
2°C could cost of the order 2% of GDP



What do the INDC pledges add up to?

Cumulative CO₂ emissions between 1750 and 2010

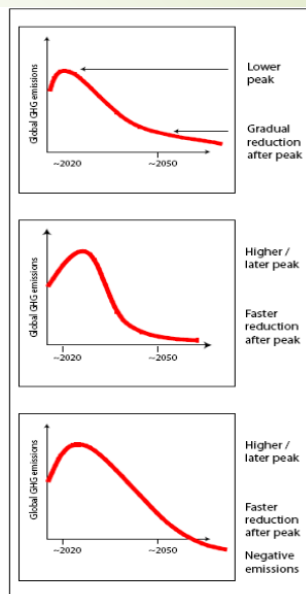
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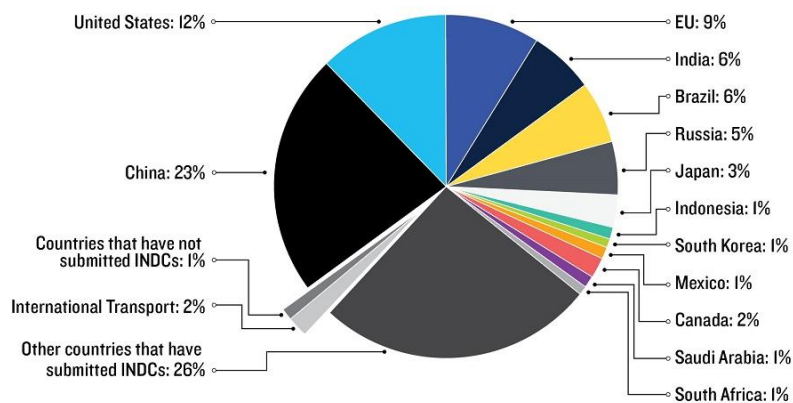
IPCC, 2014

Cumulative emissions count

1. Meeting a temperature target depends largely on *cumulative* emissions
2. Different pathways of annual emissions can lead to same cumulative emissions



SHARE OF GREENHOUSE GAS EMISSIONS BY COUNTRIES WITH CLIMATE TARGETS



Source: Natural Resources Defense Council, as of December 15, 2015.

Countries' share of emissions was calculated as a share of the world total GHG emissions for 2012, as reported by EDGAR.

Countries that have not submitted targets are: Uzbekistan, North Korea, Libya, Syria, Nepal, Nicaragua, Panama, and Timor-Leste.

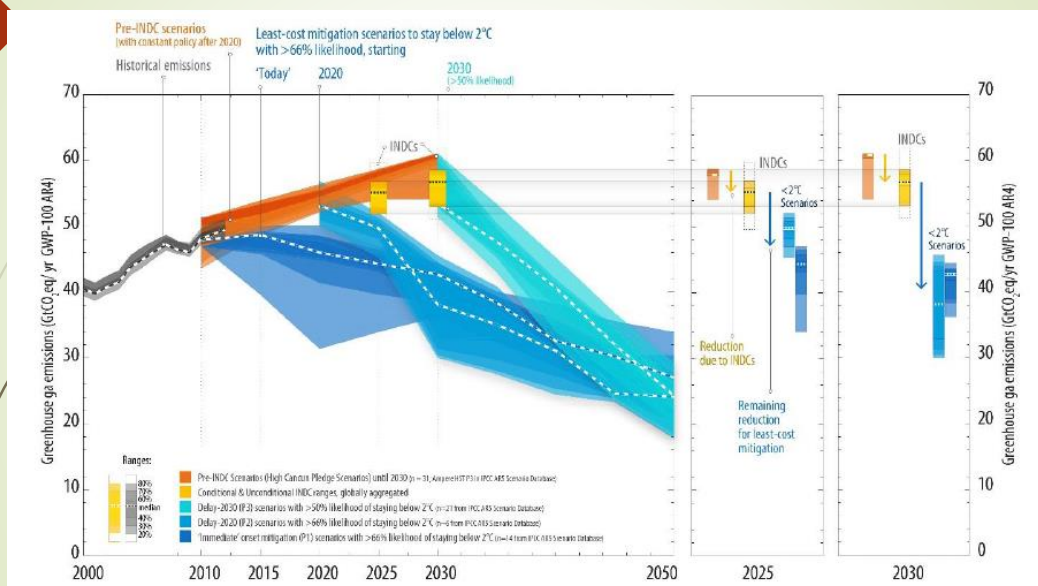
Emissions Database for Global Atmospheric Research, "GHG (CO₂, CH₄, N₂O, F-gases) emission time series 1990-2012 per region/country," European Commission Joint Research Centre, <http://edgar.jrc.ec.europa.eu/overview.php?v=GHGts1990-2012>. (Accessed December, 2015.)



INDC analysis – summary of outcomes for 2030

- UNFCCC synthesis report (30 October 2015)
 - As at 1st October, 148 Parties' INDCs submitted, covering 87% of global population, 94% of global GDP, 80% of global emissions
 - 2030 median estimate is 57 GtCO₂e (range 53-59 GtCO₂e)
 - 2.8 GtCO₂e below pre-INDC level of 2030 emissions
- Climate Action Tracker
 - INDCs lead to a 53-55 GtCO₂e level of 2030 emissions
- AVOID 2:
 - INDCs lead to a 54 GtCO₂e level of 2030 emissions
- Differences and uncertainties result from:
 - LULUCF accounting,
 - Estimates of future GDP growth
 - Estimates of future Business-as-Usual emissions
 - Conditionality of estimates

Comparison of INDCs to 2°C mitigation pathways

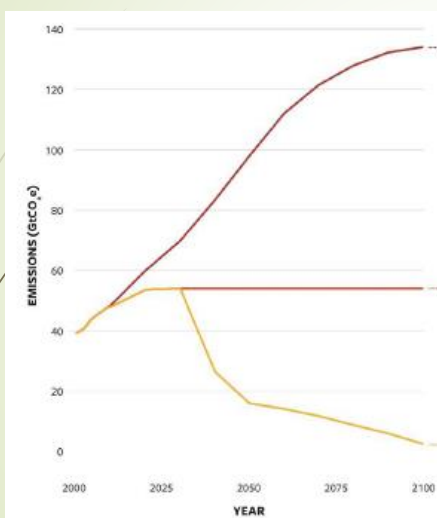


Source: UNFCCC synthesis report on INDCs

What 2100 temperature changes could the INDCs lead to?

- JRC: “around 3°C”
- AVOID 2: no back-tracking = 3°C
- IEA World Energy Outlook (special report): 2.6°C
- Climate Action Tracker: 2.7°C
- MIT Energy and climate outlook: 3.9°C (assumes no new policy beyond 2030)
- Methods vary, but rely heavily on assumptions around post-2030 trajectory, following:
 - Energy intensity improvements
 - Continued phase-out of fossil fuels
 - Increasing CO₂ pricing in line with initial efforts

INDC analysis – summary of outcomes for 2100



Reference – what if
no mitigation action?

5.3°C

What if no backtracking?

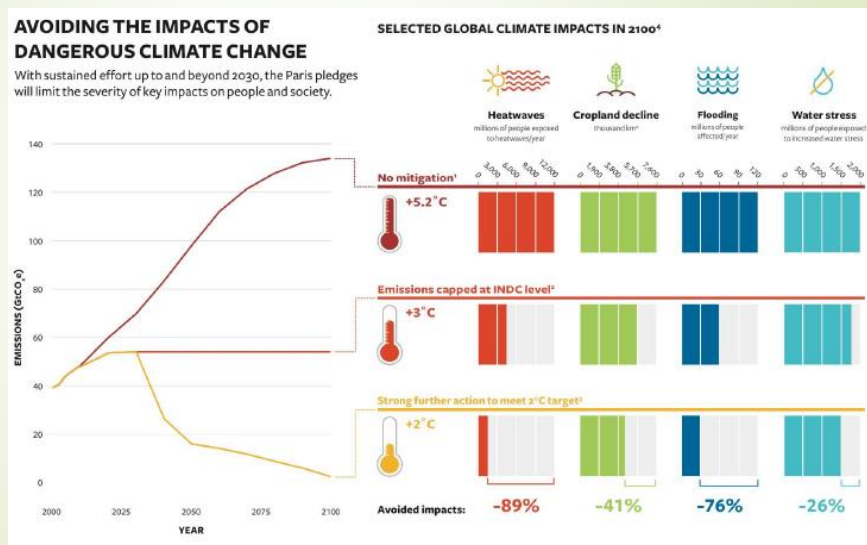
3.0°C

What if global coordinated
action to 2°C?

2.0°C

What benefits could these pledges have?

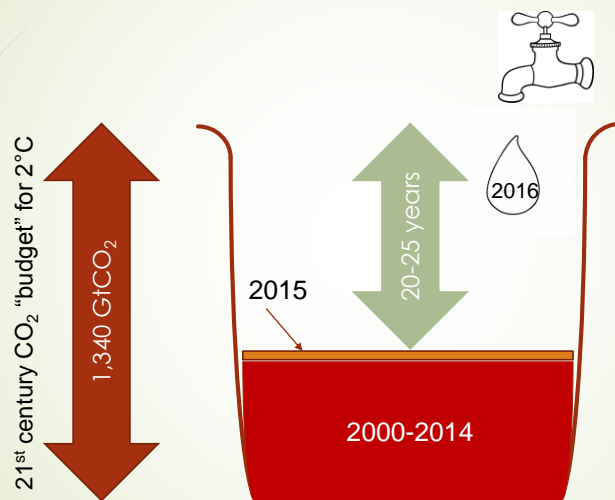
What impacts do the different scenarios avoid?





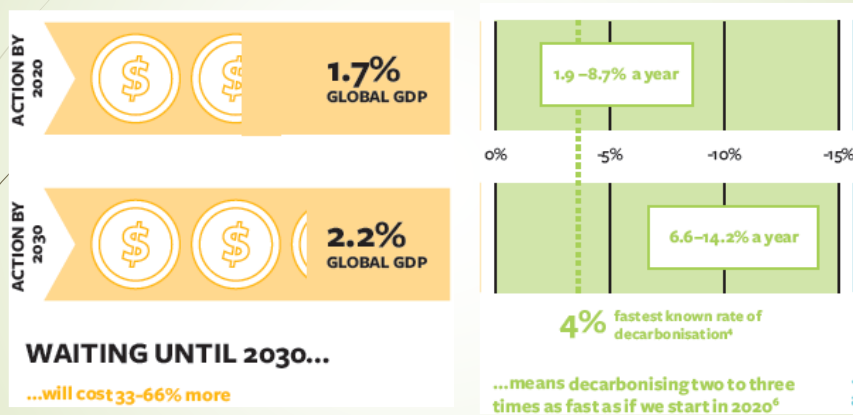
What more needs to be done?

Are the INDCs 2°C-consistent?

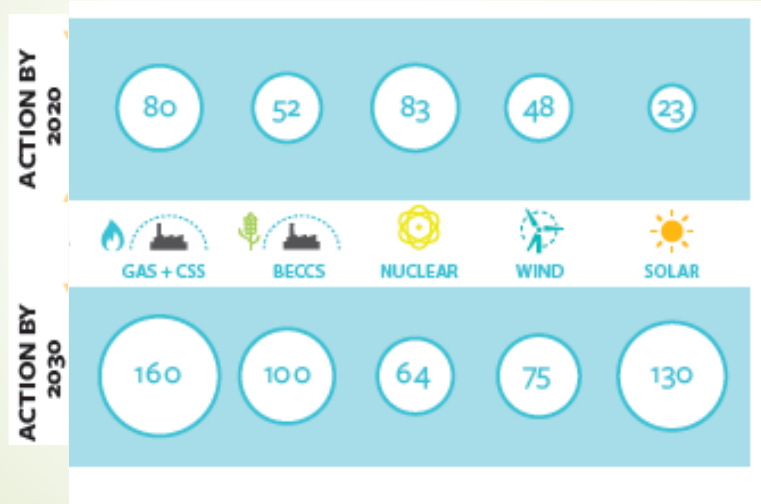


We should be significantly reducing emissions by 2030

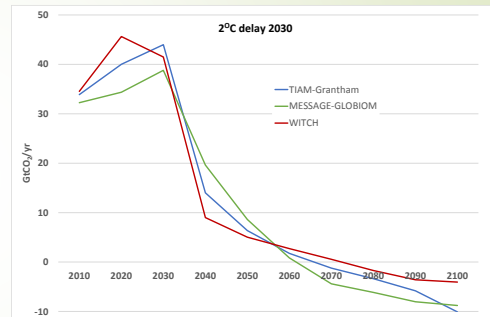
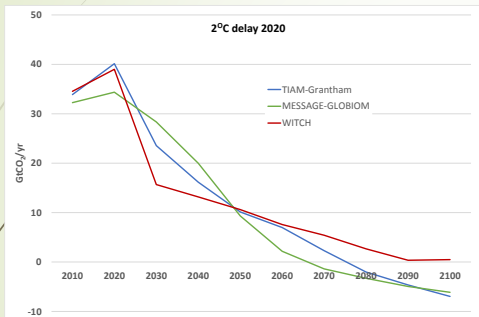
Earlier action = lower costs and slower rates of decarbonisation



Earlier action means less aggressive technology deployment

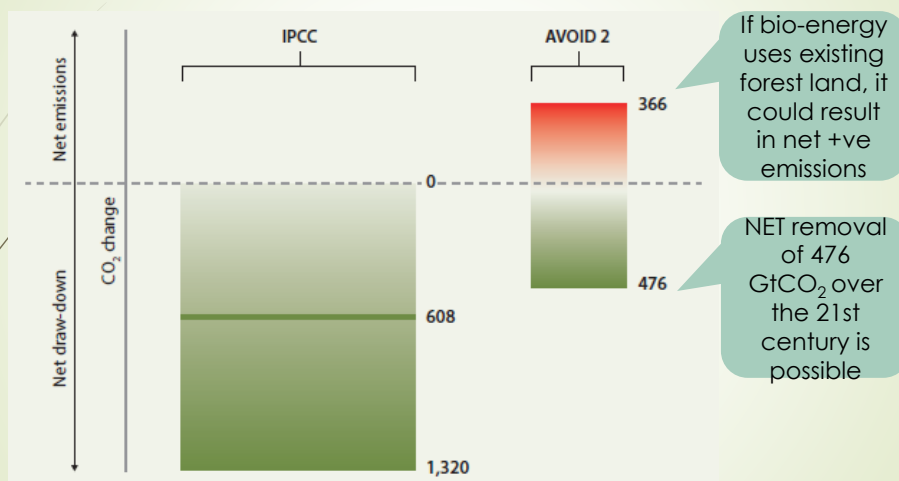


Earlier action means less negative emissions

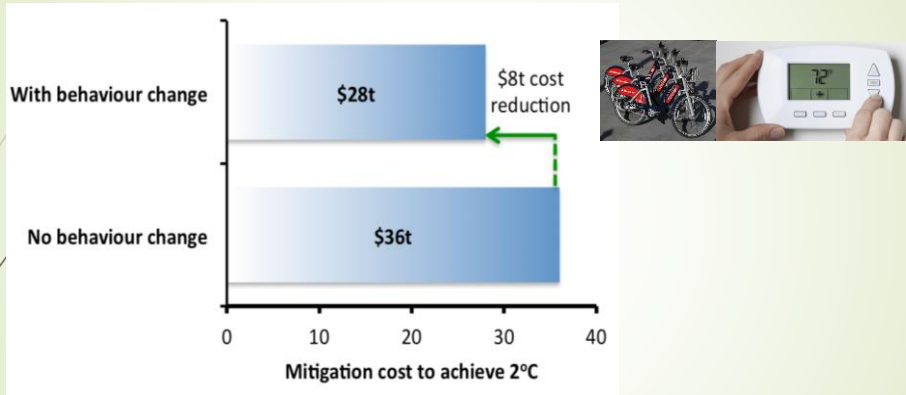


Delaying action 10 years (i.e. to 2030) means three times as much negative emissions in the 21st century

Bio-energy with CCS (BECCS) is key to achieving 2°C - but several uncertainties remain



Energy efficiency can help keep costs manageable



We have the policies to fulfil significant energy efficiency potential

Paris



The Convention

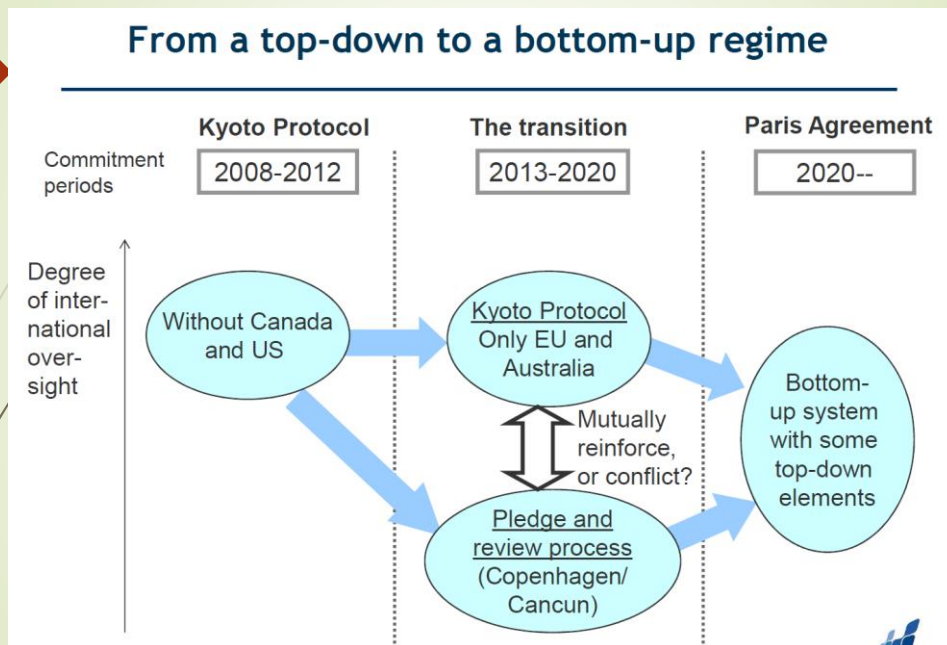
- During the 1980s, scientists warned that changes were occurring in global climate patterns owing largely to changes in the composition of gases that constitute the atmosphere;
- In May 1992 the UNFCCC was adopted as one of the Rio Conventions and it entered into force in 1994.
- **Objective of the UNFCCC is (Article 2 of the Conv)**

*“stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent **dangerous anthropogenic interference** with the climate system. Such a level should be achieved within a time frame that **allows ecosystems to adapt naturally** to climate change, to ensure that **food production** is not threatened and to enable **economic development** to proceed in a sustainable manner”.*



- **The UNFCCC entered into force in 1994**

From a top-down to a bottom-up regime



The Paris COP: event of the decade

- Largest number of participants in UNFCCC history
 - 30,372 total: 19,210 government, 2008 IGOs, 6306 NGOs, 2798 media (Copenhagen: 27,294)
 - Largest COP venue
 - Largest number of heads of state (150) under one roof in world history



Learning from the Copenhagen failure

- After slow start, meticulous French preparation
 - High level involvement (Hollande, Fabius)
 - Four ministerial meeting
 - High level events for scientists, business and religious leaders
 - Strong support of INDC development: 187 of 196 UNFCCC parties provided INDC
 - Full engagement of French embassies
 - No internal divisions in French team
- Supportive US bilateral diplomacy (China, India,...)



Learning from the Copenhagen failure


II

- Clever use of broad new negotiation groups
 - High Ambition Coalition
 - Climate Vulnerable Forum
- High degree of transparency
 - Communiqués of all meetings
 - Small countries felt taken seriously
- Heads of state meeting at the start of the COP
 - Guidance to officials at the beginning instead of hoping for a surprise solution at the end
- Clear commitment to the UNFCCC process as driver
 - No secret text




Leadership at the COP

- No surprise COP
- Presidency provided an exceptionally tight timetable well in advance
- Focusing on text instead of position
- Polite but firm handling of „troublemakers“



Key features of the Paris outcome

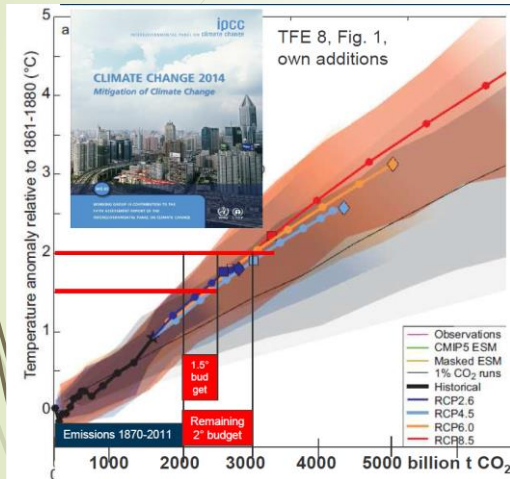
- 20 pp decision
 - Workplan for putting flesh to the bones of the Paris Agreement in the next years
 - Pre-2020 action
- 12 pp Paris Agreement as annex(!)
 - This allows US President to approve the agreement without requiring Congressional ratification (which would be very unlikely)
 - Governance by Conference of Parties to the agreement (CMA)



The Paris Agreement – Huge ambition

- Global goal of keeping warming between 2 and 1.5 C (art. 2)
- Global peaking „as soon as possible“ (Art. 4.1)
- Achieve balance of emissions and sinks by second half of century (Art. 4.1)
 - Excludes solar radiation management
- Global stocktake on progress towards these goals every 5 years from 2023 (art. 14.1 and 2)


The mitigation challenge of 1.5-2 C target



- Remaining emissions budget to reach
 - 2 C target is 1000-1200 billion t CO₂
 - 1.5 C target is 500-600 billion t CO₂
- Current annual global emissions are cca. 50 billion t
- Only 20-25 years left at current rate for 2 C, a decade for 1.5 C
- Massive challenge for decarbonization


The Paris Agreement: Mitigation by everyone

- All countries participate in mitigation by Nationally Determined Contributions (NDCs) Art. 4.2)
 - Shall pursue domestic mitigation measures
 - NDCs are ratcheted upwards every 5 years (Art. 4.3, 4.9)
 - Industrialized countries should have absolute targets (Art. 4.4)
 - Developing countries should „move over time“ towards economywide reduction or limitation targets (Art. 4.4)



The Paris Agreement: Mitigation by everyone

- All countries account for their emissions (Art. 4.13)
 - Environmental integrity, transparency, accuracy, completeness, comparability and consistency of inventories
- Countries can set up a joint NDC (Art. 4.16-18)
- REDD+ (Art. 5): result-based payments encouraged (Art. 5.2)
 - Link to market mechanisms unclear
- Challenge: Huge gap to 2 C paths under current INDCs



INDC/NDC – strong or weak point?

- Countries can strengthen their INDCs even before signature – self-reinforcing circle
- Countries do not put forward strong NDCs and try to hide do nothing behind fake action of business-as-usual

The Paris Agreement: Market mechanisms (Art. 6)

- All countries can use a market mechanism
- Supervised by a body, payment of adaptation tax (Art. 6.6)
- Authorization of public and private entities by Party (art. 6.4b)
- Allocation of credits to buyer and seller countries to prevent double counting (Art. 6.4c, 6.5)
- „overall mitigation“ of global emissions (art 6.4d)
- Rules to be developed by CMA based on the following principles:
 - Real, measurable and long-term reduction (38b dec.)
 - Definition of scopes of activities (38c dec.)
 - Additionality (38d dec.)
 - Verification and certification by DoEs (38e dec.)
 - Apply experience from Kyoto Mechanisms (38f dec.)

The Paris Agreement: Transparency (Art. 13)

- Both for action and support (Art. 13.1)
 - Clarity and progress of NDCs (Art. 13.5), achievement of NDC (art 13.12)
 - Mandatory inventory as per IPCC good practice guidance (13.7a)
 - Support provided – finance, TT (Art 13.9)
- Build on UNFCCC approaches used to date (Art. 13.4)
- Very weak principles
 - Non-intrusive, non-punitive, national sovereignty (Art 13.3)
 - Technical expert review, not defined in detail (Art. 13.11)
- Flexibility for developing countries (art. 13.2)
 - In light of their capacities – difficult to operationalize

The Paris Agreement: Finance (Art. 9)

- Industrialized countries shall provide finance (Art. 9.1)
 - Biennial communication of volumes and forecasts (Art. 9.5 and 7)
- Developing countries can provide climate finance voluntarily and report on it (Art. 9.2 and 9.5)
- Vague wording!
- Should aim for balance of mitigation and adaptation (art 9.4)
- Industrialised countries should „continue to take the lead“, progression beyond current efforts (Art. 9.3), intend to continue 100 bln USD, to be increased from 2025 (54 dec.)

The Paris Agreement: Adaptation

- Adaptation (Art. 7)
 - Global goal, very fluffy (Art. 7.1)
 - Formal recognition of developing country efforts (Art. 7.3)
 - Cooperation (Art. 7.7), improved effectiveness/durability (Art. 7.7e)
 - Adaptation plans (Art. 7.9) with prioritization (Art. 7.9c) to be communicated periodically (Art. 7.10 and 11)

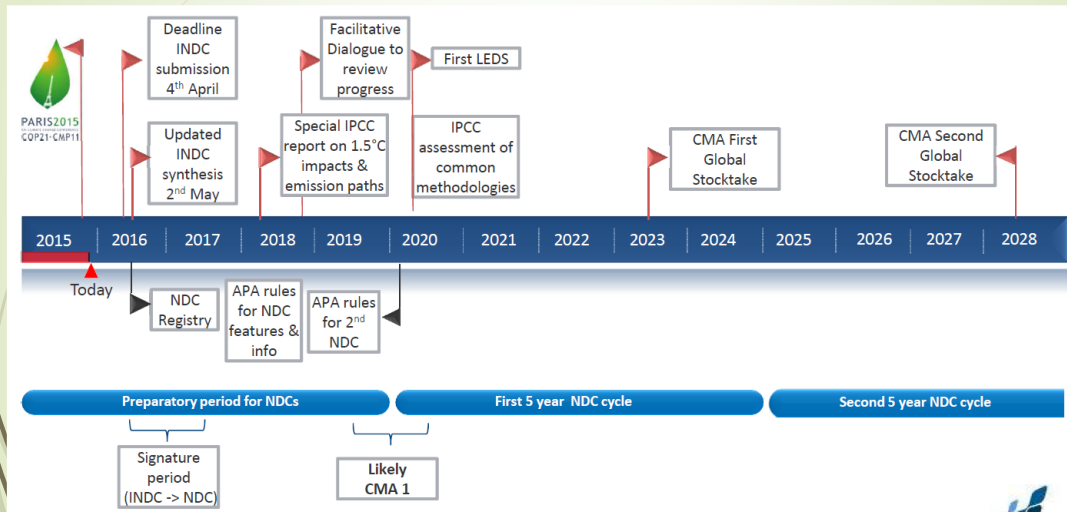
Workplan

- Ad-Hoc Working Group on Paris Agreement (APA) set up
- Ambition
 - Special IPCC report on impacts of 1.5 C and required emission paths by 2018
- NDCs
 - Updated INDC synthesis by Secretariat 2 May 2016, cutoff of information 4 April 2016
 - INDCs can be converted to NDCs immediately upon signature of PA
 - INDCs with 2025 target replaced by new NDC by 2020
 - APA to develop rules for NDC features and info („/,28)
 - NDC registry at UNFCCC from 2016

Workplan II

- Accounting
 - APA to develop rules (31) applicable from second NDC (32)
 - Common methodologies assessed by IPCC (31a)
 - Methodological consistency, including on baselines (31b)
 - Once category is in NDC it needs to remain there (21c)
 - Explanation on reasons for exclusion of categories required (31d)
 - Double counting avoidance (35)
 - Mid-century LEDS can be communicated by 2020 (36)
 - Framework for non-market approaches (40)
- Adaptation
 - Methodologies for assessing adaptation needs (43b)
 - Methods for adequacy and effectiveness of adaptation (46b)

Timeline



Thank you for your attention!