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sustainable energy for everyone

From Scenarios to Emission Reduction Pledges

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Overview

- A pledge – What is this?
- The „ambition gap"
- The link between scenarios and pledges
- Key design parameters of pledges
- Effort sharing approaches
- Interactive exercise: design your own pledge
- Discussion

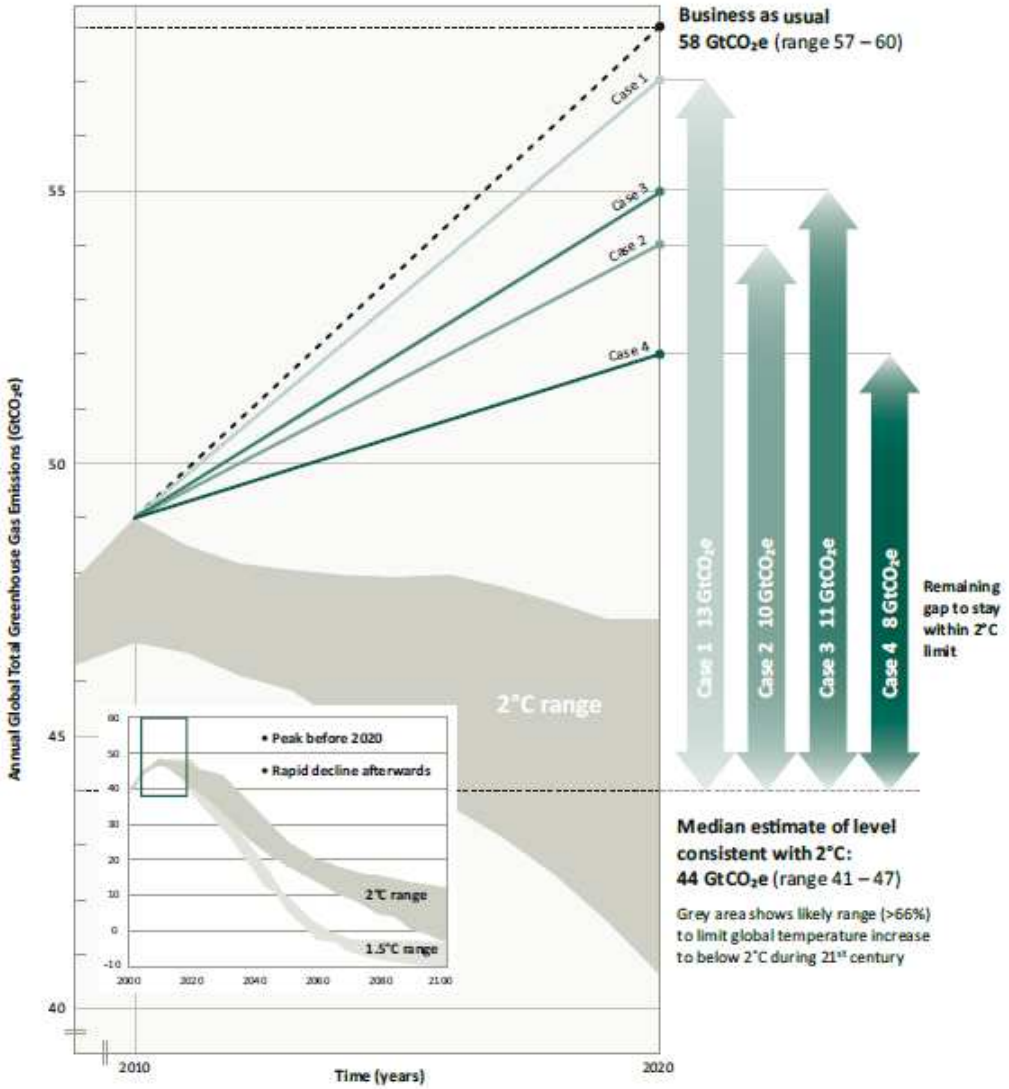
What is a pledge?

Pledge =
Voluntary commitment under the UNFCCC to reduce national GHG emissions

- Copenhagen Accord (2009): Agreement to limit global warming to max. 2°c above preindustrial level
- Many countries have put forward pledges for 2020, e.g. *)
  - carbon neutrality (Maldives);
  - 20% - 30% reduction below 1990 levels (EU);
  - improvement of carbon intensity by 40% to 45% in comparison to 2005 (China).
- Diverse pledges – difficult to compare – call for clarification
- Pledge and review has not produced results so far
- For the new agreement under the UNFCCC, binding commitments beyond 2020 will be negotiated

*) Source: Climate Action Tracker 2013: http://www.climateactiontracker.org/

Current status of pledges – the „Ambition Gap"



> UNEP Gap report gathers results from research teams around the world related to global emission scenarios

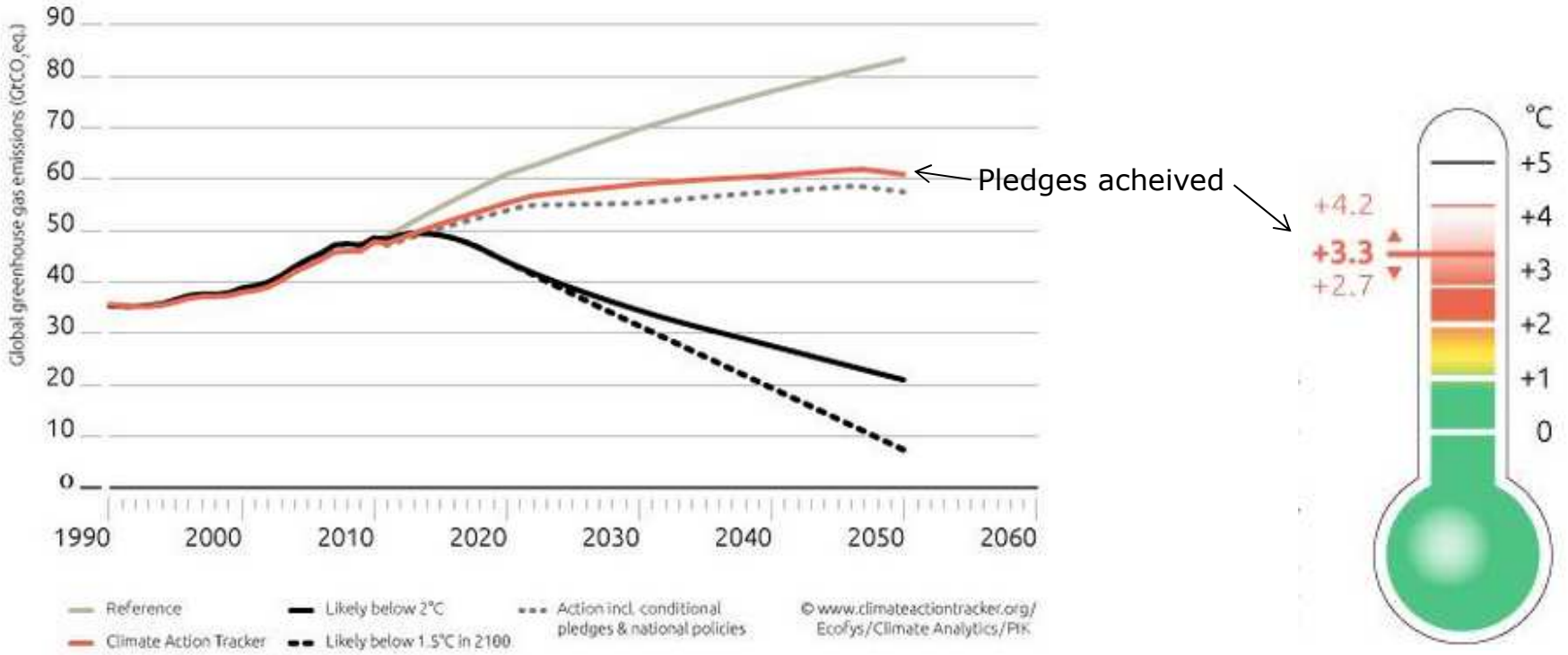
→ „Ambition gap" of 8-14 Gt in 2020, depending on stringency of accounting and conditionality of targets

UNEP Gap report 2012: http://www.unep.org/publications/ebooks/emissionsgap2012/

Current status of pledges – impact on temperature

> The Climate Action Tracker aggregates countries‘ pledges and determines resulting global average temperature increase

→ Current pledges will lead to approx. 3.3°C increase in 2100 above preindustrial levels



Climate Action Tracker 2013: http://www.climateactiontracker.org/

The link between scenarios and pledges

> Factors influencing the determination of the pledge:
  - necessary global efforts (**science**);
  - technical mitigation **potential**;
  - **capacities**;
  - **responsibilites** of individual countries;
  - **equal rights** for development;
  - **Political** considerations

> National emission scenarios can give insight to
  - on national (development) priorities and capacities
  - the mitigation potential

  → National emission scenarios can thus be one of the input for designing the pledge

Considerations when designing a pledge

- What **type** of pledge should be put forward?
  - Examples include absolute GHG or energy targets, relative targets (e.g. BAU), commitment to policies or activities
  - Conditions

- How **stringent** should the pledge be?
  - Binding or voluntary
  - Choice of reference year

- Type and stringency determines level of ambition (e.g. absolute GHG vs relative GHG targets)

- What role does **international support** play?
- How can we **monitor** progress towards the pledge?

The types of pledges

Determine the form of the commitment to reduce emissions

- Emission reductions
  - Absolute reductions
  - Relative to BAU
  - Emission intensity
- Commitment to activities
  - Implementation of climate policies or programmes
  - Development of strategies or plans
- Conditional/Unconditional pledges, e.g.
  - Conditional to international support
  - Conditional to commitments of other countries

Conditional vs unconditional pledges

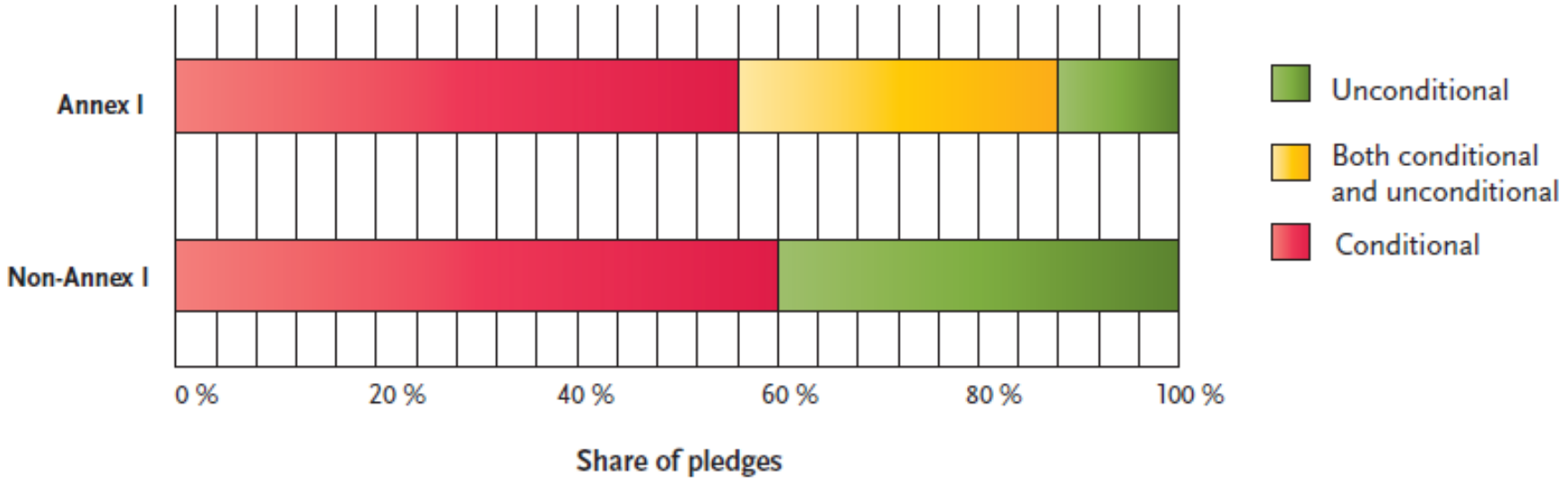


Figure 5: Conditional and unconditional pledges by Annex I and Non-Annex I parties.

Source: Swedish Environmental Research Institute/ Swedish Energy Agency, 2012

The stringency of pledges

Determine a „fair" level of the country's emission reductions

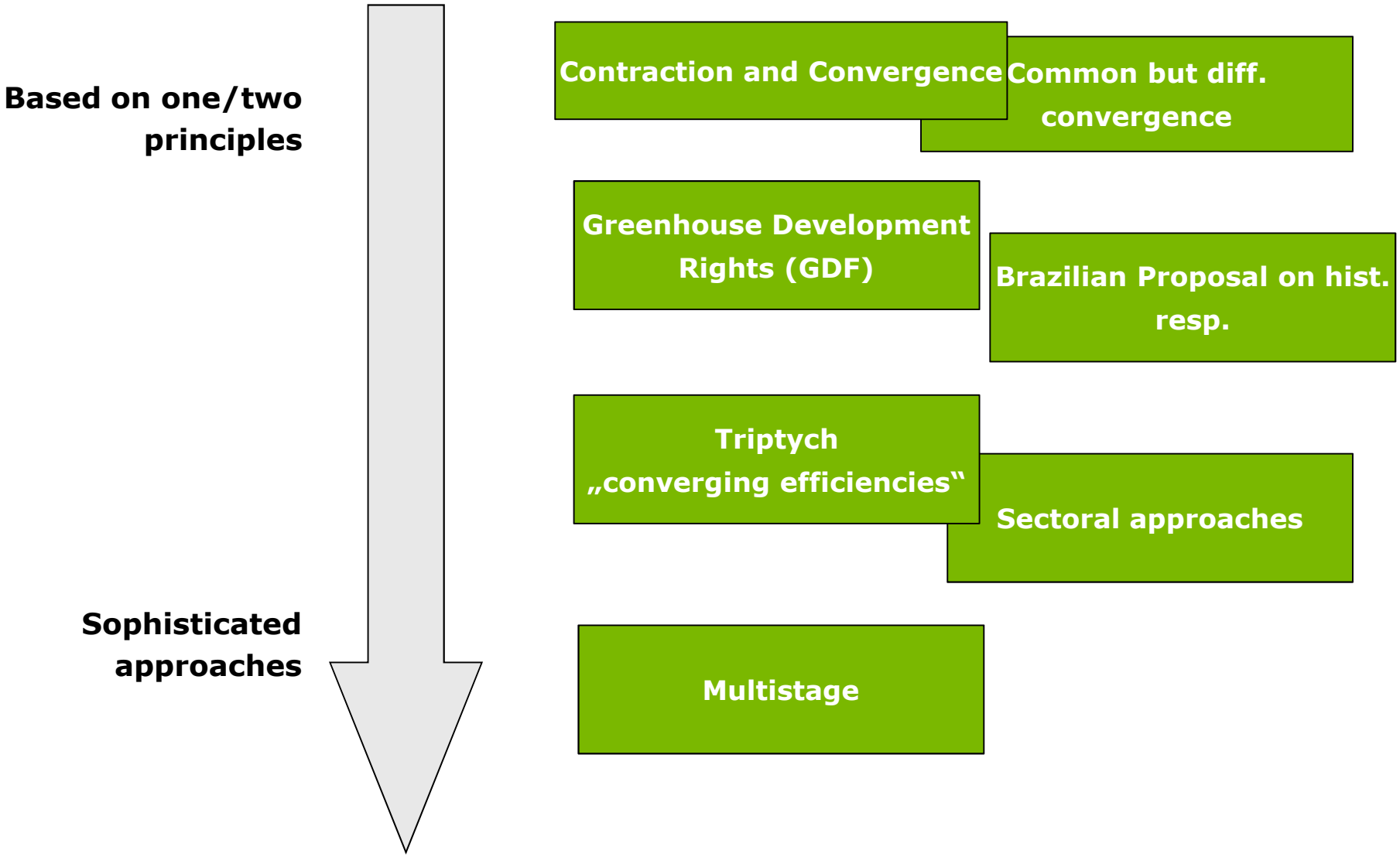
- Choice of reference year
  - Significant impact
  - Countries with decreasing emissions trend generally benefit from using an earlier reference year and vice versa
  - E.g. U.S. pledge of 17% relative to 2005 converts to a 4% reduction with 1990 as reference year.
- Equity principles
  - Potential (e.g. mitigation potential)
  - Capability (e.g. GDP)
  - Responsibility (e.g. historic emissions)
  - Equal rights (e.g. per capita emissions)
  - → Based on these, different „effort sharing approaches" have been developed to distribute necessary global efforts to individual countries

Overview on effort sharing approaches

- Effort sharing approaches quantitatively distribute global efforts to countries
- Discussions first started in Rio 1990, up to today a number of approaches have been developed

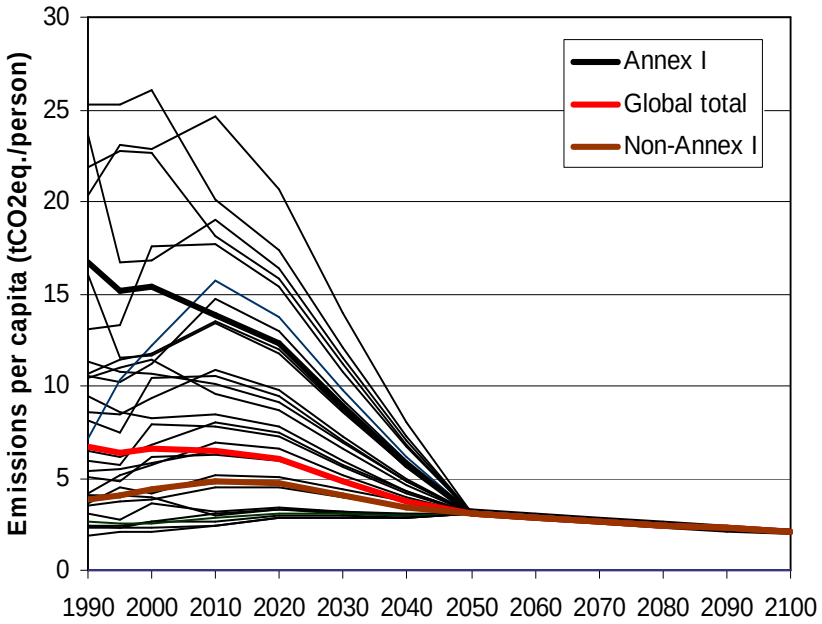
- Calculations based on different parameters, e.g.:
  - Per capita emissions
  - BAU emissions
  - Per capita income
  - Human development index
  - Gini Index
  - Etc.

Effort sharing approaches



Example 1: Contraction and Convergence

- Example for simpler approach
- Contraction: Agreement on a global emission pathway
  (e.g. towards 450ppmv)
- Convergence: Per capita emission converge until, e.g., 2050
- Does not differentiate between country's capabilities or responsibilities



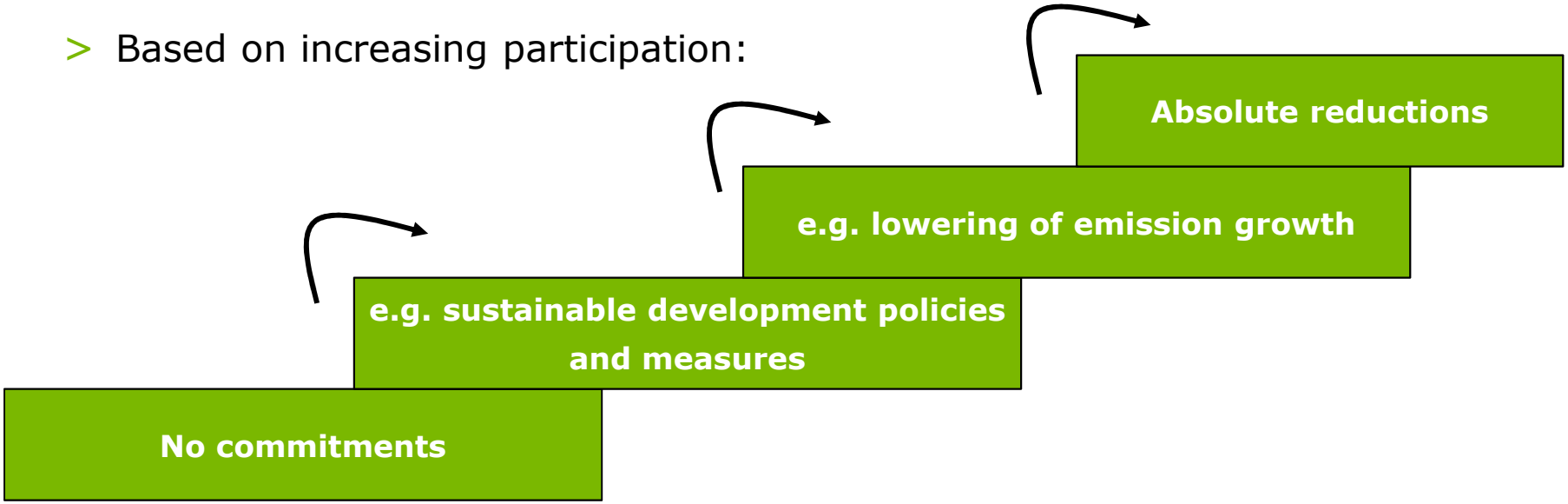
- For 450 ppmv CO2:
- Convergence level 2-3 tCO2eq./cap
  (Global average today ~6)

Origin of the approach: Global Commons Institute www.gci.org.uk/briefings/ICE.pdf

Example 2: Multistage

> Example for more complex approach

> Based on increasing participation:



> Countries "graduate" into the next steps based on thresholds (emissions/cap, GDP/cap, human development index)

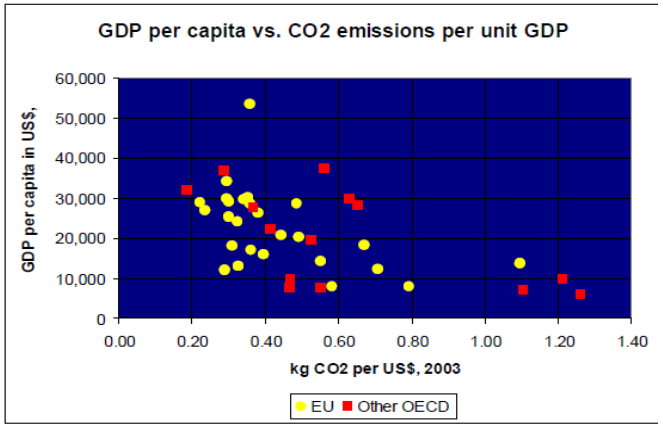
See also EU (EGFA), scientific community (RIVM, Wuppertal Institut), NGOs (CAN proposal)

Example 3: EU Proposal

- Example for an application in policy making: EU's pledge
- Approach combines various principles, using different indicators and weighting their importance
- The approach reflects the EU's commitment to 20% reduction below 1990
- Presentation of EU at Poznan 2008:

Principles for comparable efforts

- **Capability**
  Consider ability to pay for mitigation, Countries with higher GDP/cap may be required to do more
- **Potential**
  High emission intensity may point to mitigation potential
- **Responsibility**
  Take into account past efforts and achievements
- **National circumstances**
  e.g. population growth is key driver for emissions



Source: World Development Report 2007

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Monitoring of pledges

> Monitoring necessary
  - to illustrate progress internationally
  - to adjust future commitments
  - to support national policy making

> Monitoring needs to be adapted to the type of pledge

> Current diversity of pledges makes it difficult to compare and understand progress

> Data uncertainty, underlying assumptions, esp. BAU related pledges

> So far no conclusion on accounting and clarification of pledges – work programme under the UNFCCC

EXERCISE AND DISCUSSION

Exersise: Design a pledge for imaginary country

- 30 minutes discussion in small groups
- 15 minutes presentation of results
- Steps:
  - Divide into 4 groups
  - Go through the information given for the example countries
  - Discuss the different parameters of potential emission reduction pledges for this country
  - Fill out the templates provided (one for each country per group)
  - Present and discuss results in plenary

Type of pledge

> Quantitiave – emission reductions
  - Absolute, relative, intensity
> Qualitative - Commitment to activities
> Conditional – Unconditional

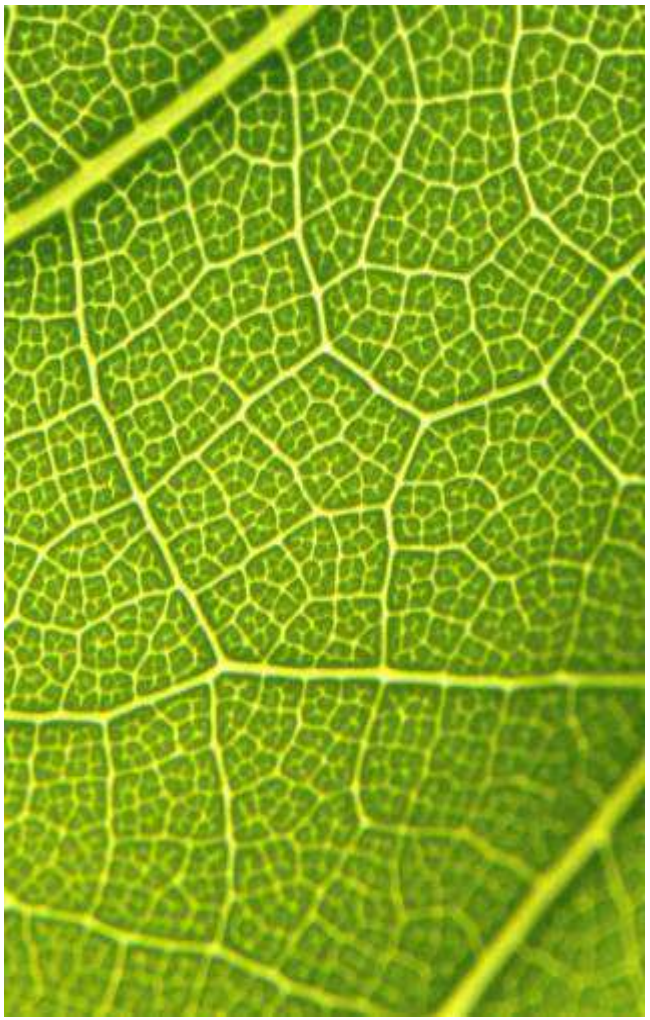
Stringency

> Reference year
> Equity principles – capita, capacity, historic reponsibility
> Staged approach

What parameters should be included for monitoring?

What is the role of international support?

Contact



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Choice of reference year

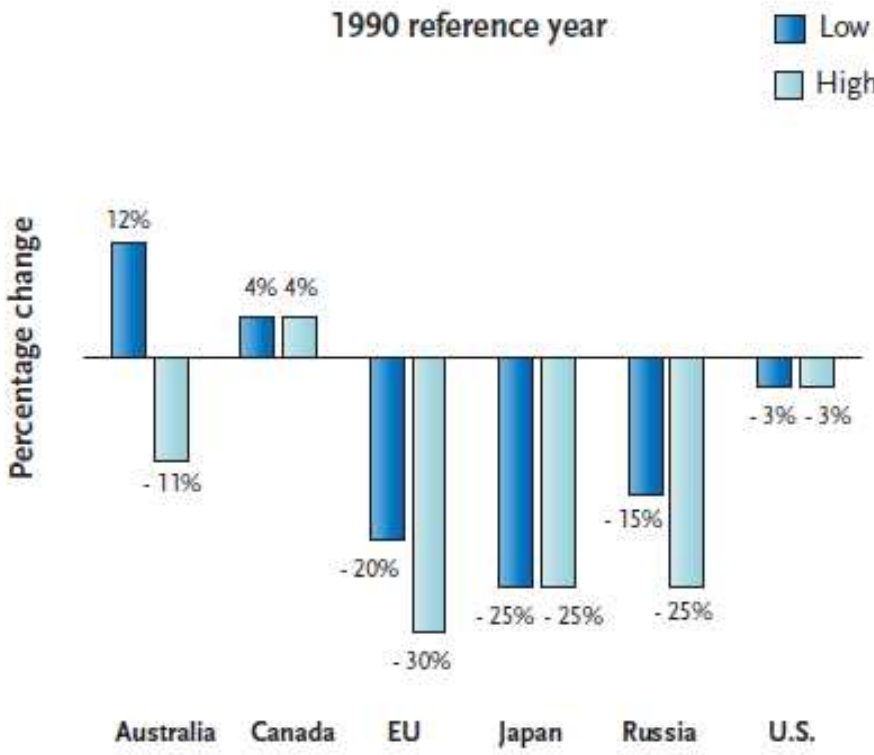


Figure 1: Pledges' percentage change relative emissions level 1990, excluding LULUCF[ii].

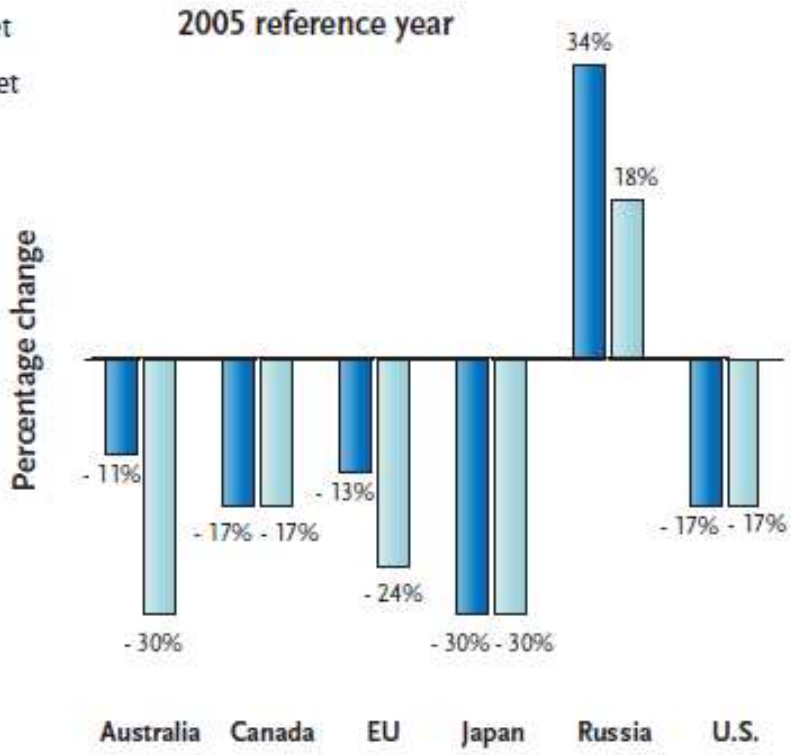


Figure 2: Pledges' percentage change relative emissions level 2005, excluding LULUCF.

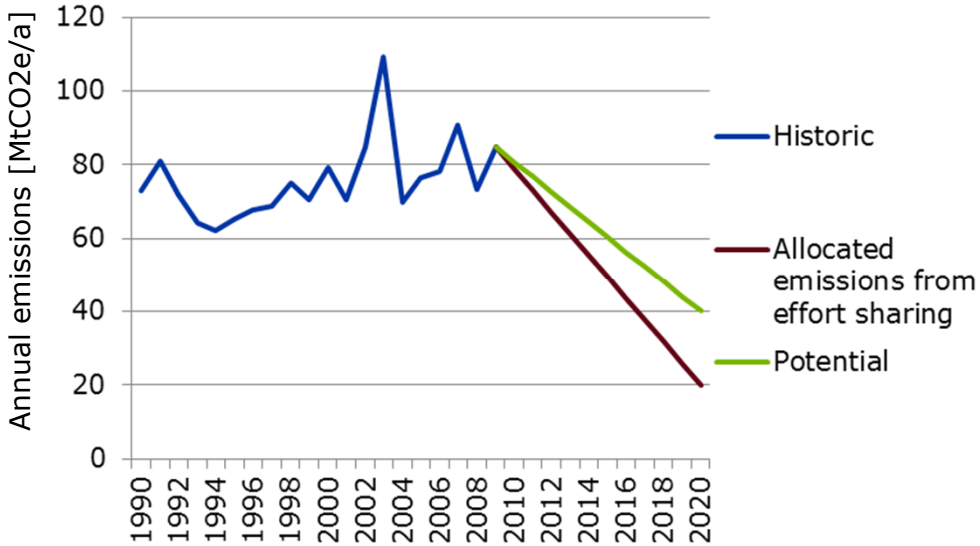
Source: Swedish Environmental Research Institute/ Swedish Energy Agency, 2012

Overview over different concepts for effort sharing

Approach	Historical responsibility	Potential	Capacity	Common endpoint	Indicator	Implementation of the principle	Application in the past
Equal reduction below base year					Emissions (base year)	Equal percentage reduction of emissions by a target year compared to base year emissions	Variation used for target setting of Annex I countries in the first commitment period of the Kyoto Protocol
Equal reduction below reference scenario					Emissions (reference scenario)	Equal percentage reduction of emissions by a target year compared to emissions under a business-as-usual scenario	
Historical responsibility	●				Cumulative emissions (per capita), emission trend	Targets are defined on the basis of responsibility for the anthropogenic greenhouse effect; reduction below reference scenario (reduction below base year also possible)	Applied in Brazilian Proposal and emission budget approaches
Convergence of emissions per capita		●		●	Emissions per capita	Emission allowances per capita converge from the current level to an equal level for all regions in e.g. 2050; variation 1: later start and end year for less developed countries/ regions; variation 2: equal immediate per capita allocation (convergence year now) combined with trading of allowances	Applied in Contraction and Convergence or Common but Differentiated convergence
Reduction based on emissions per capita		●			Emissions per capita	Regions reduce their emissions based on their relative per capita emission levels according to similar rules; e.g. regions with comparatively high emissions per capita reduce emissions by a higher percentage rate	Part of the EU proposal for Annex I effort sharing; used as indicator for non-ETS EU effort sharing
Convergence of sectoral efficiencies		●		●	Emissions per per kWh, km, m^3, energy intensity	Emission allowances per indicator converge from the current level to an equal level for all regions; often used on sector level	Normally used in combination with others; e.g. Triptych
Equal marginal mitigation costs		●			Marginal mitigation costs	Regions reduce emissions up to a level at which equal marginal abatement costs for the reduction of a unit of emissions (i.e. tCO2eq) is reached	
Equal total abatement costs per unit of GHG reduced		●			Abatement costs per unit of GHG reduced	Target is set in a way that total costs per tonne of emissions reduced are the same for all regions	
Convergence of emissions per GDP		●		●	Emissions per GDP	Emission allowances per GDP converge from the current level to an equal future level for all regions	
Equal reduction of emissions per GDP		●			Emissions per GDP	Emission allowances per GDP are reduced (equally) for all regions	
Equal total abatement costs per GDP		●	●		Abatement costs per GDP	Targets are set in a ways that the sum of total abatement costs per GDP is the same for all regions; this means, that each region spends an equal percentage of its GDP on emission mitigation	
Percentage reduction based on indicator for capacity			●		GDP per capita, HDI	Regions with higher GDP per capita or HDI reduce emissions by a higher percentage	Applied for EU effort sharing non-ETS sectors

The difference between emission rights and real emissions

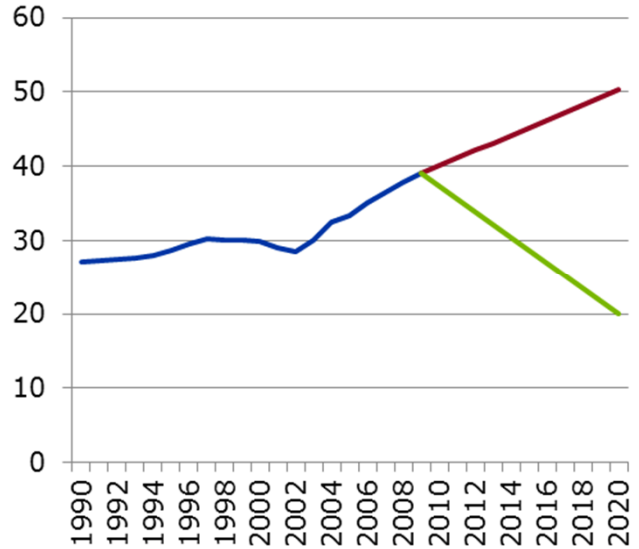
Example 1



> Potential is not enough to achieve reductions implied through effort sharing

→ To comply, the country would need to „offset" part of its emissions.

Example 2



> Potential is bigger than reductions implied through effort sharing

→ Other countries are „responsible" to exploit part of the potential,

→ Country could exploit potential with international support.