Mitigation potential of Annex-I Parties

Information from the IPCC Working Group III AR4 contribution

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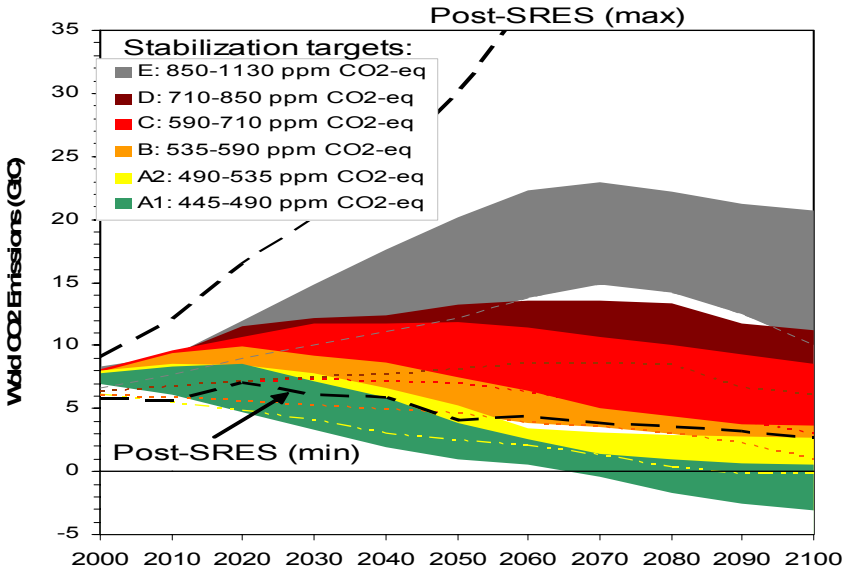
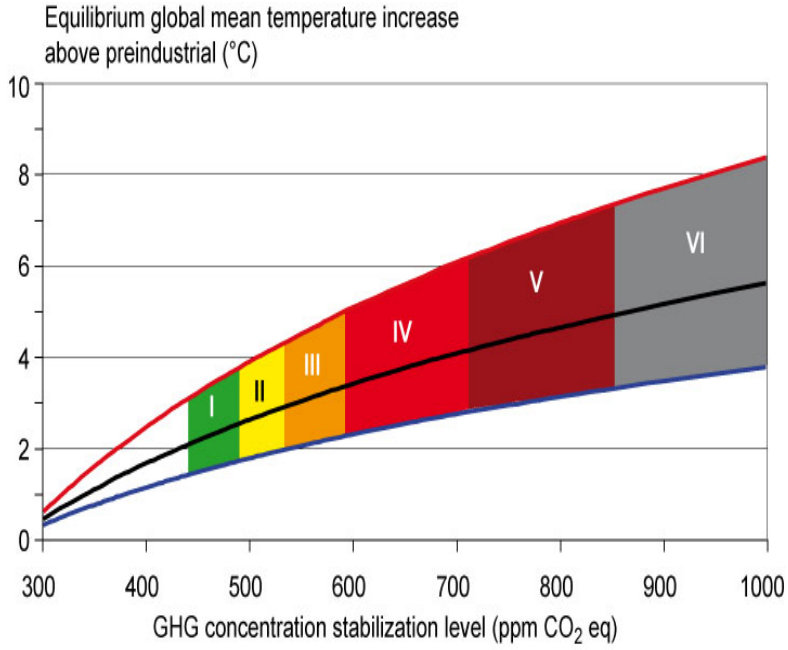
First segment

Long-term mitigation: stabilisation and equilibrium global mean temperatures

- The lower the stabilisation level the earlier global CO2 emissions have to peak





Multigas and CO2 only studies combined

Stabilisation and emission reductions

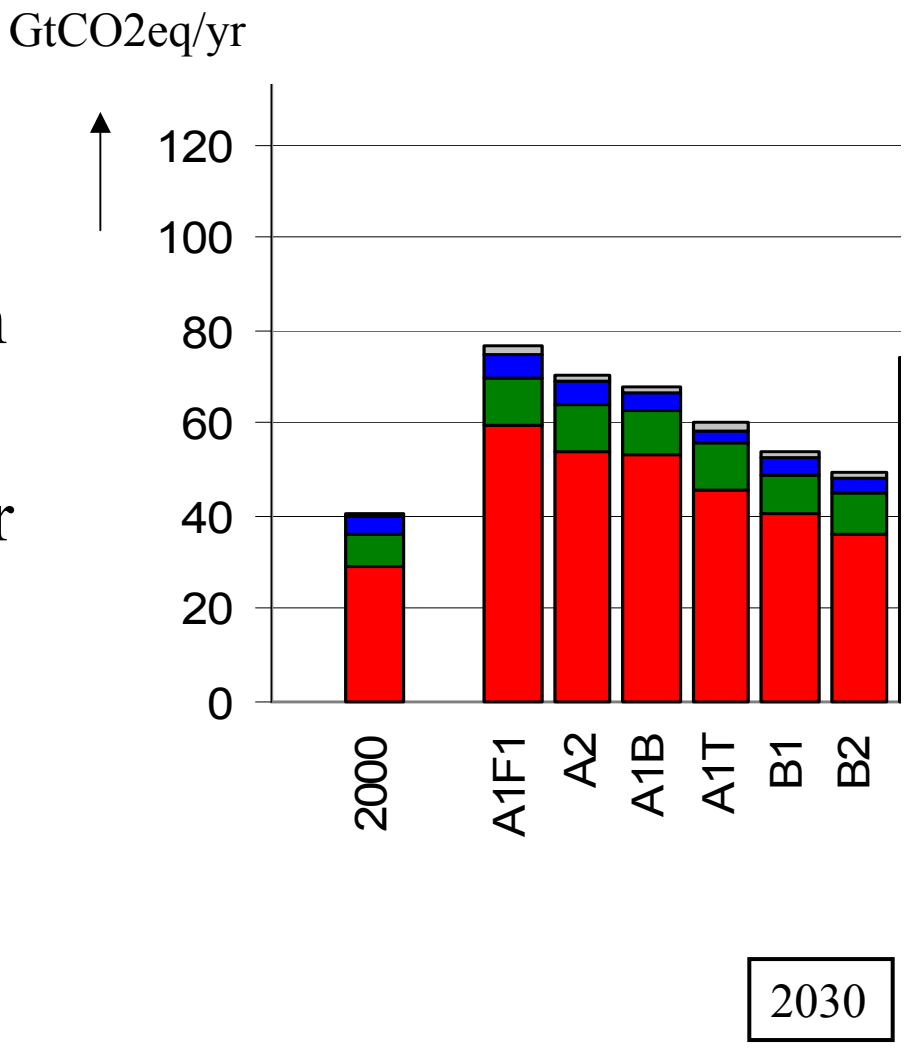
•Mitigation efforts over the next two to three decades will have a large impact on opportunities to achieve lower stabilization levels

Stab level (ppm CO2-eq)	Global Mean temp. increase at equilibrium (ºC)	Year CO2 needs to peak	Year CO2 emissions back at 2000 level	2030 CO2 emissions compared to 2000 (%)	2050 CO2 emissions compared to 2000 (%)
445 – 490	2.0 – 2.4	2000 - 2015	2000- 2030	-45 to 0	-85 to -50
490 – 535	2.4 – 2.8	2000 - 2020	2000- 2040	-20to +15	-60 to -30
535 – 590	2.8 – 3.2	2010 - 2030	2020- 2060	-15 to +30	-30 to +5
590 – 710	3.2 – 4.0	2020 - 2060	2050- 2100	+15 to +55	+10 to +60

Projected CO2 increase

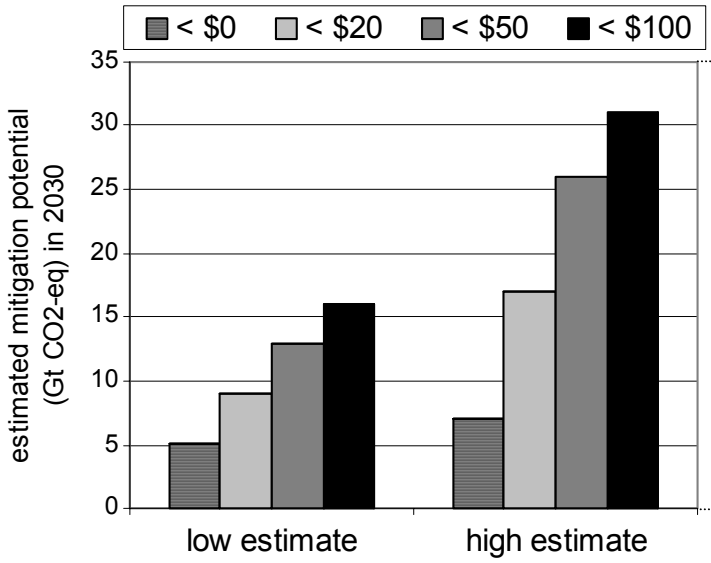
- CO2 increase between 2000 and 2030:

  ~20 (8-30) Gt CO2/yr

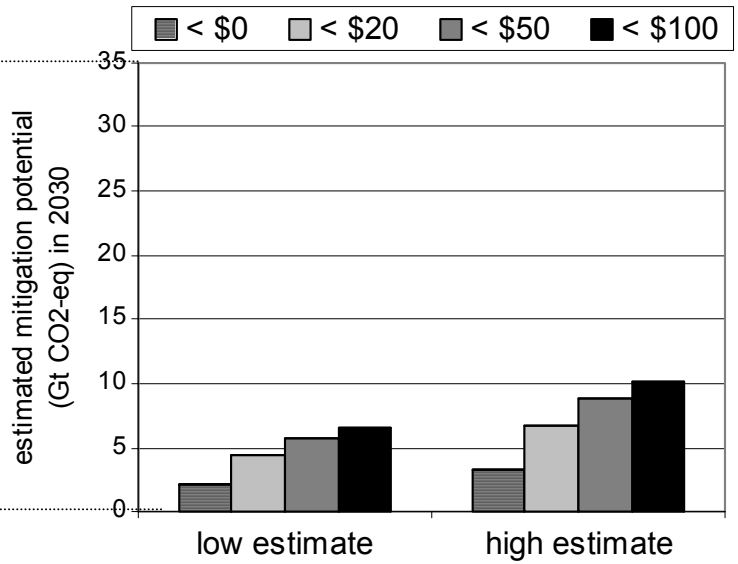


Economic mitigation potential in 2030 (bottom-up)

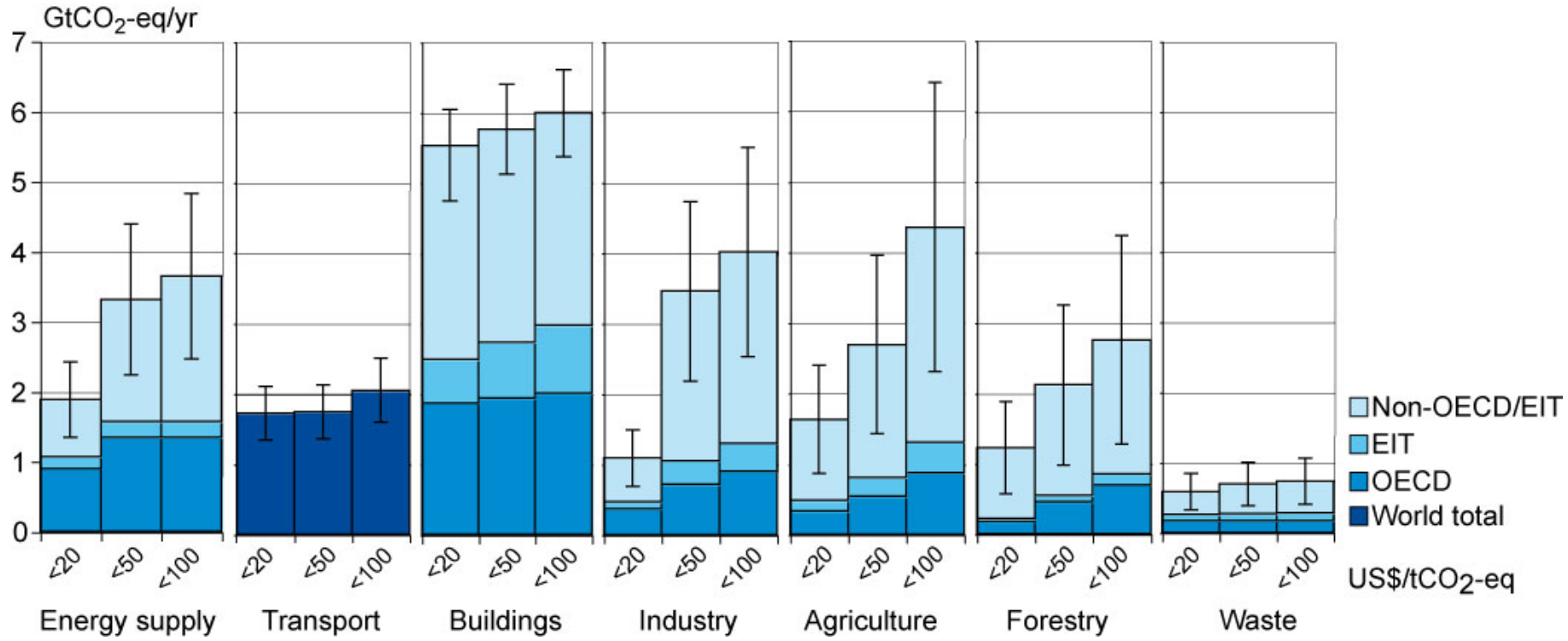
World



OECD + EIT

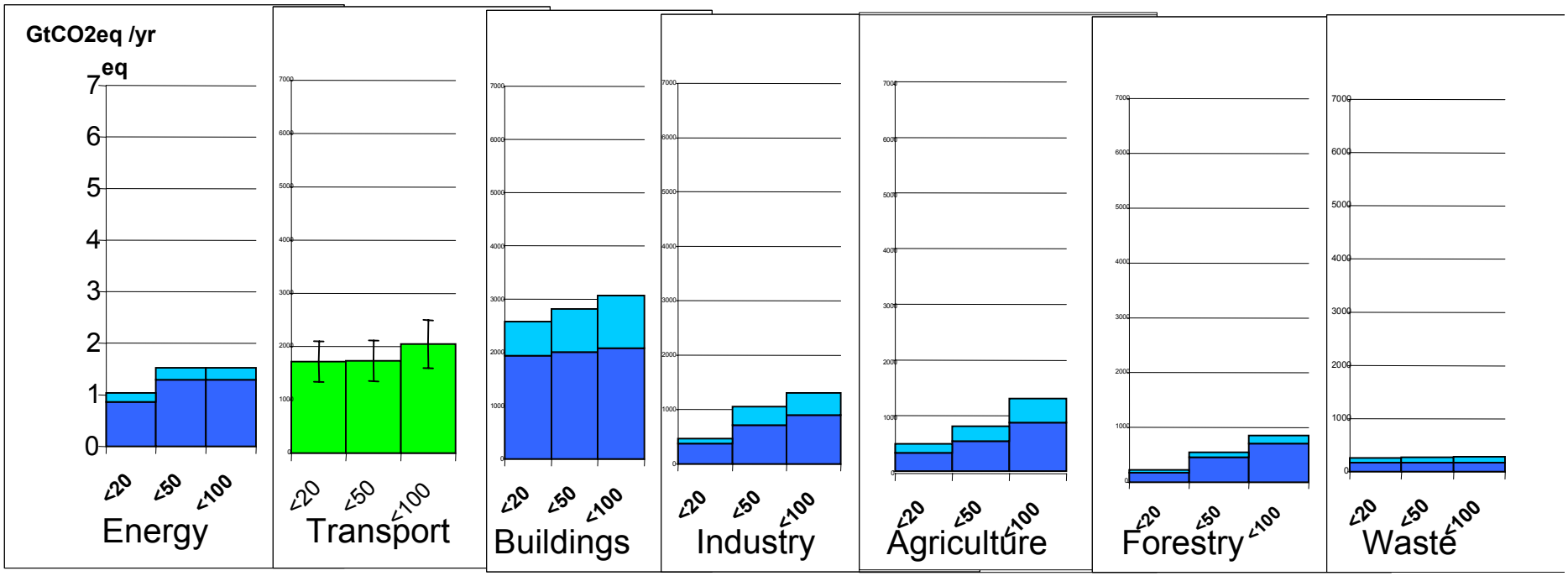


All sectors and regions have the potential to contribute (2030World)



Note: estimates do not include non-technical options, such as lifestyle changes.

All sectors and regions have the potential to contribute (2030:OECD + EIT)



Note: estimates do not include non-technical options, such as lifestyle changes.

Mitigation potential and stabilisation levels

Stabilisation level (ppm CO2-eq)	Global Mean temp. increase at equilibrium (ºC)	Estimated CO2 reduction needed by 2030 compared to baseline	Annex-I 2030 CO2 mitigation potential (bottom-up)		Global 2030 CO2 mitigation potential (bottom-up)	
			<US$50/t	<US$100/t	<US$50/t	<US$100/t
445 – 490	2.0 – 2.4	20-34	6-9	7-11	12-25	15-30
490 – 535	2.4 – 2.8	15-26	6-9	7-11	12-25	15-30
535 – 590	2.8 – 3.2	11-24	6-9	7-11	12-25	15-30
590 – 710	3.2 – 4.0	4- 16	6-9	7-11	12-25	15-30

Changes in lifestyle and behaviour patterns can contribute to climate change mitigation, but this has not been quantified

- Changes in occupant behaviour, cultural patterns and consumer choice in buildings.
- Reduction of car usage and efficient driving style, in relation to urban planning and availability of public transport
- Behaviour of staff in industrial organizations in light of reward systems

Other aspects covered in IPCC presentation May 12

- Costs
- Co-benefits and SD interactions
- Carbon leakage and spill-overs
- Barriers
- Policies and measures and creating a price of carbon

Second segment

A wide variety of national policies and instruments are available to governments to create incentives for action

- Integrating climate policies in broader development policies
- Regulations and standards
- Taxes and charges
- Tradable permits
- Financial incentives
- Voluntary agreements
- Information instruments
- Research and development

- Applicability depends on national circumstances and interaction
- There are advantages and disadvantages for any given instrument
- Instruments can be designed well/poorly, lax/stringent and need to be monitored to improve implementation
- Four main criteria are used to evaluate national (and international) policies: *environmental effectiveness, cost-effectiveness, distributional and equity, institutional feasibility*

An effective carbon-price signal could realise significant mitigation potential in all sectors

- Policies that provide a real or implicit price of carbon could create incentives for producers and consumers to significantly invest in low-GHG products, technologies and processes.

- Such policies could include economic instruments, government funding and regulation

- For stabilisation at around 550 ppm CO2eq carbon prices should reach 20-80 US$/tCO2eq by 2030 (5-65 if “induced technological change” happens).At these carbon prices large shifts of investments into low carbon technologies can be expected

- For lower stabilisation levels higher carbon prices are needed

Government support through financial contributions, tax credits, standard setting and market creation is important for effective technology development, innovation and deployment

- The lower the stabilization levels (550 ppm CO2-eq or lower) the greater the need for R&D efforts and investment in new technologies during the next few decades

- Government support for energy R&D in real terms has been flat or declining for two decades..even after the UNFCCC came into existence. It is now half of the 1980 level

- Public benefits of RD&D are bigger than those captured by the private sector, therefore government support is justified

Two-way Relationship Between Climate Change and Sustainable Development

A. Climate policy can have positive or negative effects on other aspects of SD

-- Ancillary benefits or co-benefits

B. Non-climate policies can influence GHG emissions as much as specific climate policies

-- Requires mainstreaming climate change in decision-making

Examples of side-effects of climate mitigation

OPTIONS	*SYNERGIES*	*TRADEOFFS*
Energy: efficiency, renewables, fuel-switching 	• air quality • supply security • employment • costs (efficiency)	• particulate emissions (diesel) • biodiversity (biofuels) • costs (renewables)
Forestry: reduce deforestation, plant trees 	• soil protection • water management • employment • biodiversity (deforest.)	• biodiversity (plantations) • competition food production
waste: landfill gas capture, incineration 	• health & safety • employment • energy advantages	• ground water pollution • costs

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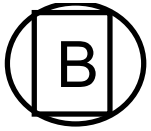

Non-climate policies can influence GHG emissions as much as specific climate policies

Sectors	Non-climate policies -- Candidates for integrating climate concerns	Possible influence (% of global emissions)
Macro-economy	Taxes, subsidies, other fiscal policies	All GHG emissions (100%)
Forestry	Forest protection, sustainable management	GHGs deforestation (7%)
Electricity	Diversification to low-carbon sources, demand management, limit distribution losses	Electricity sector emissions (20 %)
Oil-imports	Diversification energy sources/decrease intensity -> enhance energy security	GHGs from oil product imports (20 %)
Insurance (buildings, infrastructure)	Differentiated premiums, liability conditions, green products	GHG emissions buildings, transport (20%)
Bank lending	Strategy/policy, lending projects accounting for options emission limitations	Notably development projects (25%)
Rural energy	Policies promoting LPG, kerosene and electricity for cooking	Extra emissions over biomass (<2 %)