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GHG mitigation potentials and costs in Annex 1 countries

IIASA's analysis of GHG mitigation potentials

Objectives



- Impartial, coherent and transparent comparison of GHG mitigation potentials and costs in Annex 1 countries
 - Independent assessment, financed through IIASA's core funds (IIASA is funded by scientific organizations of its member countries in Asia, Europe, North America, Africa),
 - based on publicly available data,
 - taking into account co-benefits on air pollution.
- Results, input data and an interactive calculator freely available in the public domain:

<http://gains.iiasa.ac.at/Annex1.html>

Methodology

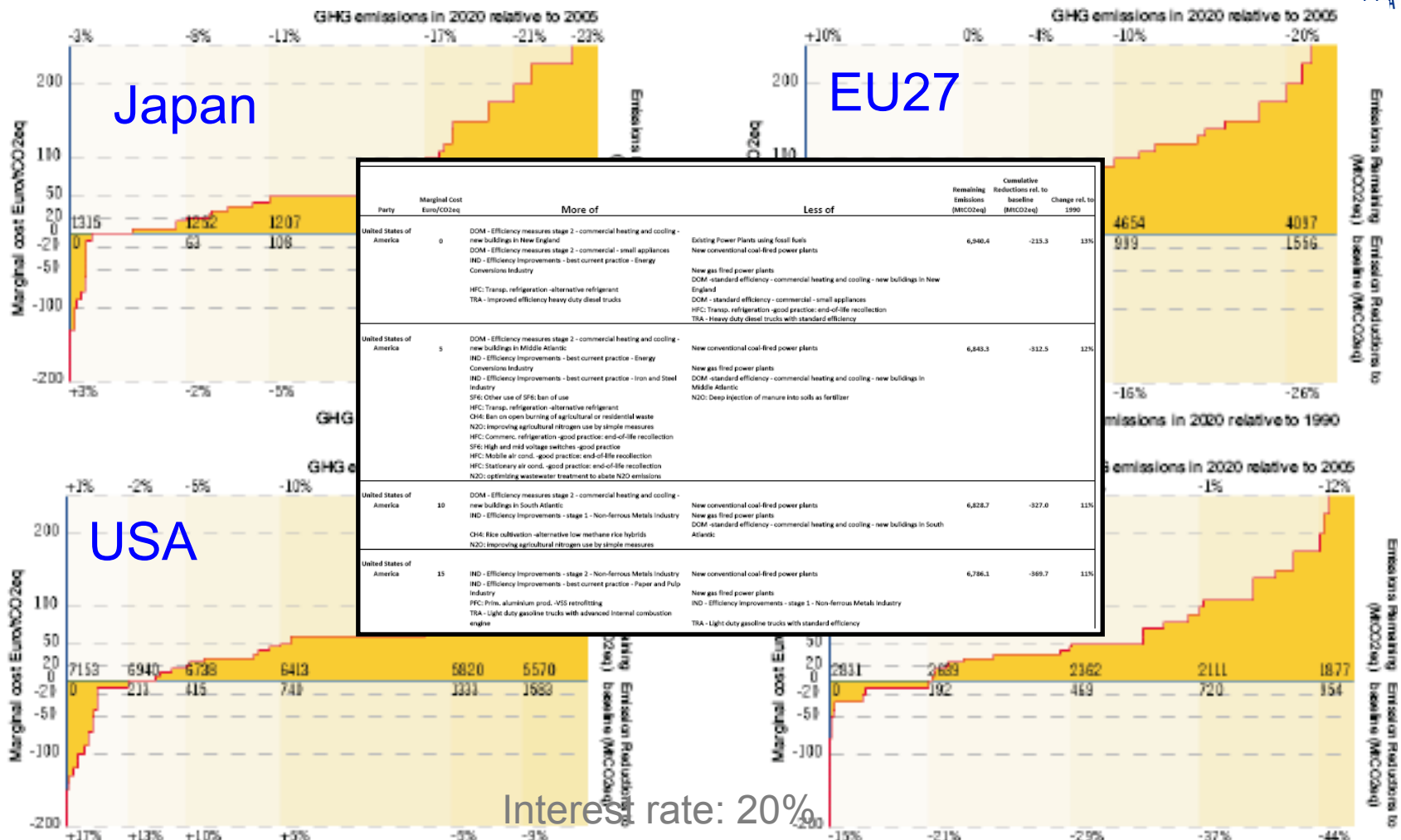


Bottom-up approach:

- All gases and sectors,
- at detailed technical level (several 100 source categories, 300+ mitigation measures, etc.),
- systems approach (interactions between demand and supply sectors),
- consistent with UNFCCC 2005 inventories,
- employing exogenous activity projections.

Based on earlier work with IIASA's GAINS (Greenhouse gas – Air pollution Interactions and Synergies) model

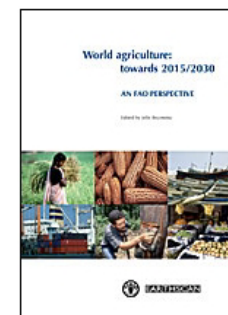
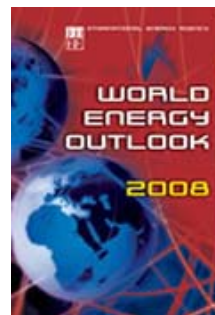
Marginal cost curves for each Annex 1 Party



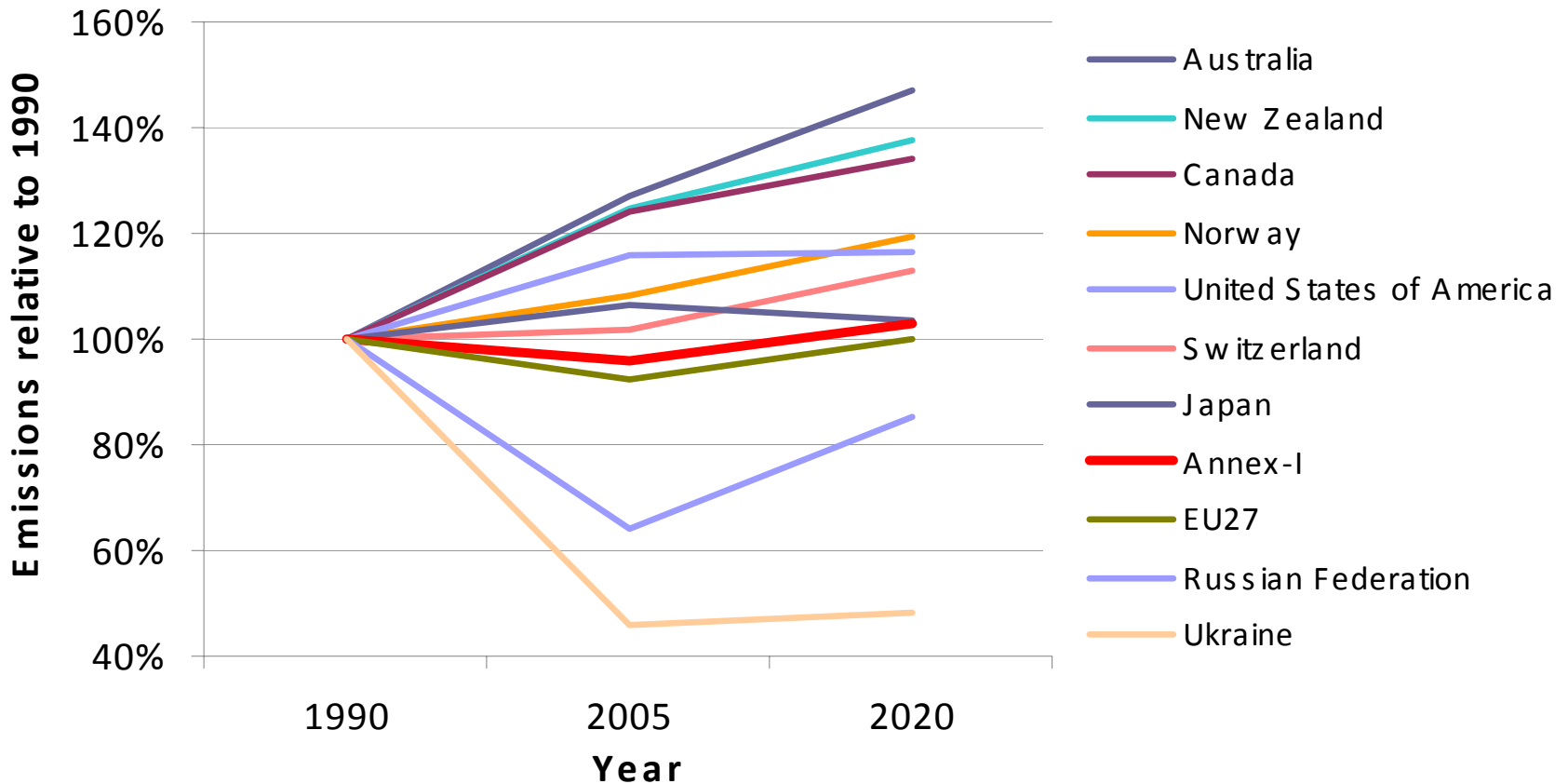
Interest rate: 20%

An initial implementation

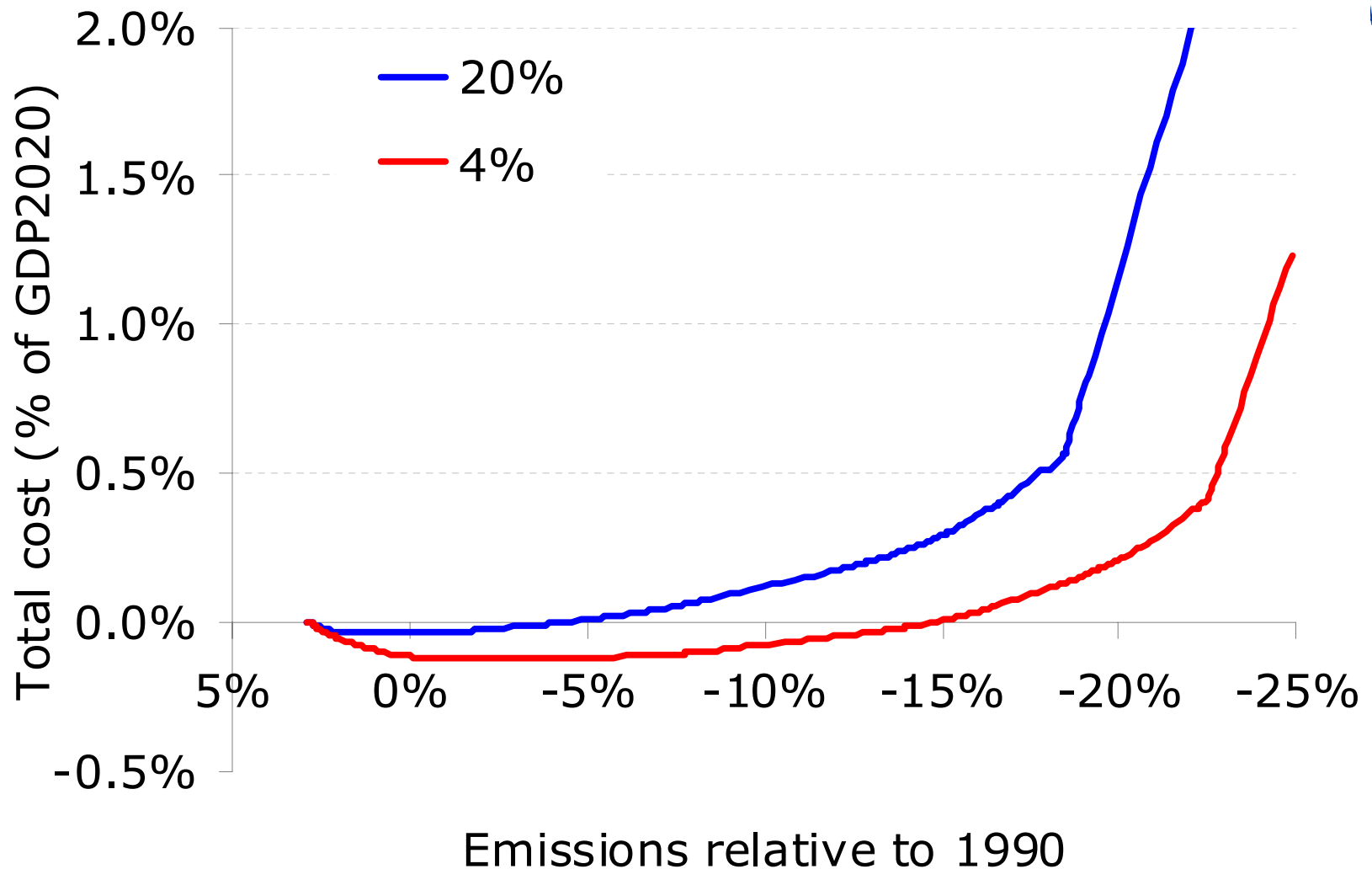
- For almost all Annex 1 countries (98% of 1990 emissions), here EU27 presented in aggregate
- Based on activity projections of IEA World Energy Outlook 2008 and FAO World Agriculture Perspective
- Key assumptions:
 - Only currently available technologies, CCS as in IEA 'blue scenario'
 - Natural turnover of capital stock, no premature scrapping
 - No behavioural changes
 - Domestic measures only
 - LULUCF excluded for now
- Initial analysis compiled from publicly available information, received only limited review by national experts up to now



Baseline GHG emissions projections for IEA WEO 2008 projection (excl. LULUCF)

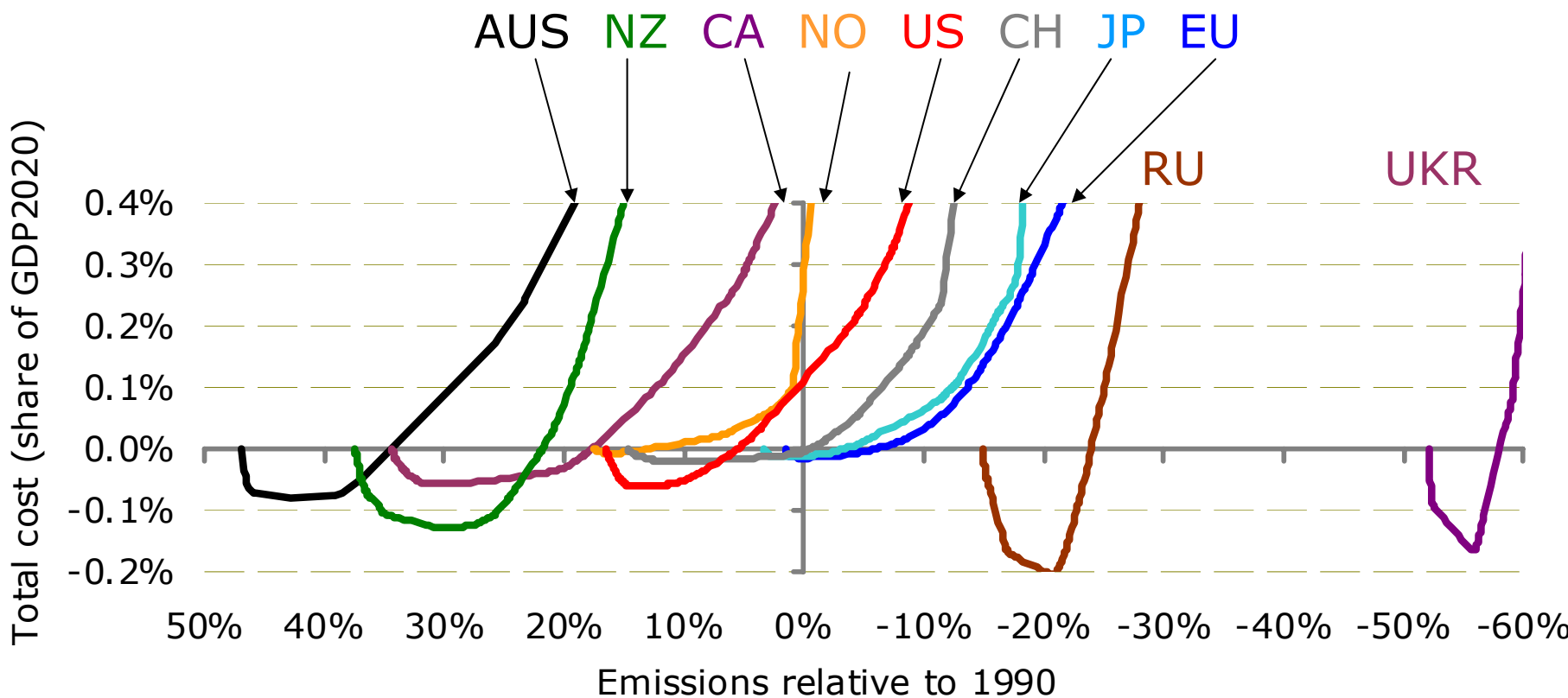


Total costs for GHG mitigation, Annex 1, 2020 for different interest rates (excl. LULUCF)



Total cost curves for 2020 (% of GDP)

(10% interest rate, excl. LULUCF)



On-line calculator on the Internet

<http://gains.iiasa.ac.at/MEC>



GAINS - GHG Mitigation Target Calculator for cc

File Edit View History Bookmarks Tools Help

http://gains.iiasa.ac.at/MEC

GAINS • MITIGATION

Scenario

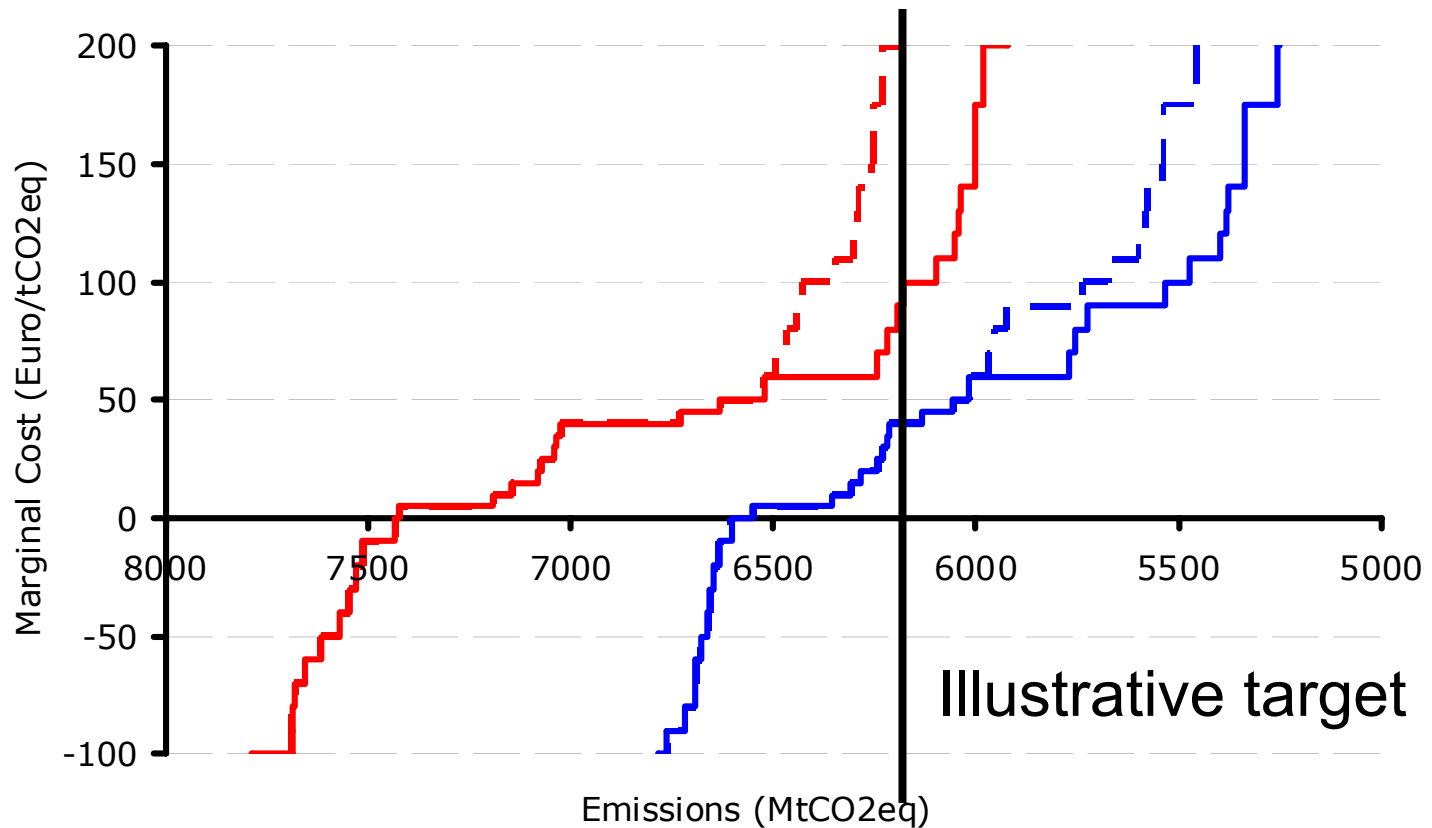
Party	Base year	Mt CO2eq
	1990	
Target for each Party		
Australia		416
Canada		592
EU 27*		5568
Japan		1272
New Zealand		62
Norway		50
Russian Federation		3326
Switzerland		53
Ukraine		922
United States of America		6135
Total for Annex I		18396

Done

Mitigation Cost			
Carbon price	Total costs	% of GDP	Per capita
€/t CO2eq	bln €/yr	%	€/cap/yr
		0.02 %	
25	0.14	0.02 %	6.0
35	0.26	0.02 %	7.1
80	3.14	0.02 %	6.3
50	1.36	0.02 %	10.9
60	0.02	0.02 %	4.3
60	0.08	0.02 %	16.8
45	0.26	0.02 %	1.8

Sensitivity to alternative assumptions

Marginal cost curves for USA 2020, for IEA WEO 2008 and 2007



— WEO2008 — WEO2007 — · WEO2008 - no CCS - · WEO2007 - no CCS

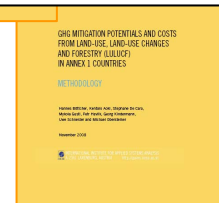
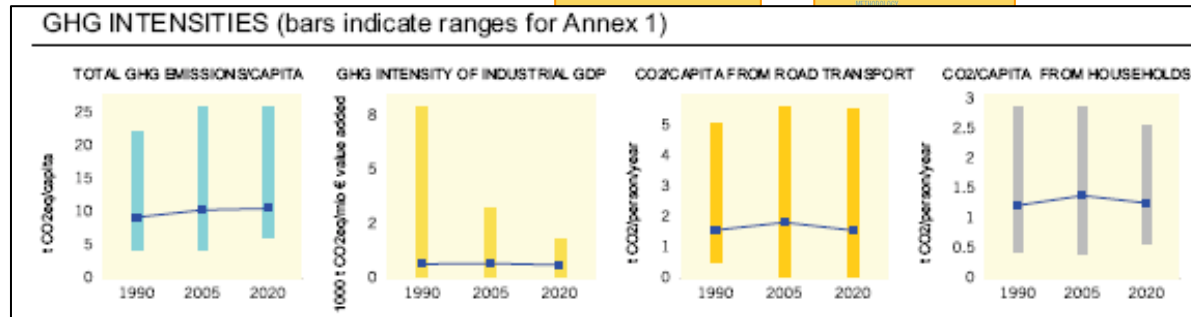
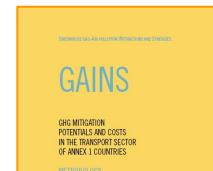
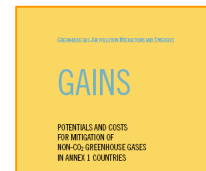
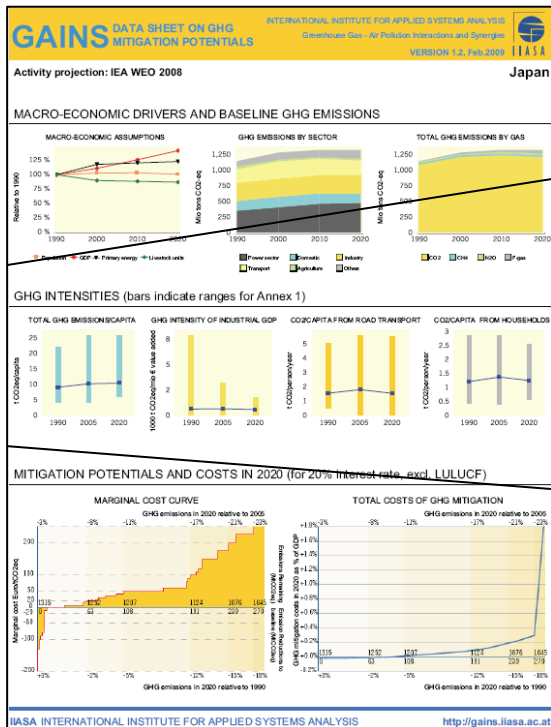
Access to more information

<http://gains.iiasa.ac.at/Annex1.html>



Data sheets on GHG mitigation potentials for all Annex 1 Parties

Methodology documentation



Conclusions



- IIASA's GAINS analysis:
 - Coherent and impartial comparison of mitigation efforts, based on publicly available data
 - Open access to results and input data <http://gains.iiasa.ac.at>
 - Review workshop: May 28-29, 2009
- For IEA WEO2008: Annex 1 mitigation potential <100 €/t
-20% to -25% below 1990
- Estimates for countries are sensitive towards:
 - Economic structures and energy efficiencies
 - Assumptions on future economic development
 - Assumptions on availability of key technologies