TABLES & FIGURES CHAPTER 3

Table 3.1. *Drivers of land-use change*

High-level drivers	Market representation	Bottom-up emissions/seq drivers
Population/demographic composition GDP - world and regional Per capita income ration (Annex-I/N on-Annex-I) Structural and technological change Final energy intensity Primary energy use Share of coal in primary energy Share of zero carbon in primary energy Policies - non-climate & future climate	*Preferences* - Food demands - Wood products demands - Energy demand - Recreation demand - Nature demand - Urban land demands - Trade *Production possibilities* - Land-use physical potential - Technology paths - Climate assumptions - Resource availability *Climate markets & offset demand*	- Livestock populations, type, productivity, husbandry - Feed selection - Shares of manure management systems (includes land disposal) - Crop production, acreage, variety, residue management - Soil and climatic conditions - Fertilizer use (type and level) - N-fixing crop and forage production - Sewage and manure field application - Histosols - Tillage practice - Cropping system - Acreage type burned - Forest biomass - f (composition, acreage, management - Wood disposition - Land constraints

Table 3.2. *Technologies contributing to GHG emission reduction in short and medium-term*

Sector	Technologies
Steel Industry	Large size equipment (Coke Oven, Blast furnace, Basic oxygen furnace ,etc.), Equipment of coke dry quenching, Continuous casting machine, TRT. Continuous rolling machine, Equipment of coke oven gas, OH gas and BOF gas recovery, DC-electric arc furnace.
Chemical Industry	Large size equipment for Chemical Production, Waste Heat Recover System, Ion membrane technology, Existing Technology Improving.
Paper Making	Co-generation System, facilities of residue heat utilization, Black liquor recovery system, Continuous distillation system.
Textile	Co-generation System, Shuttleless loom, High Speed Printing and Dyeing.
Non-ferrous metal	Reverberator furnace, Waste Heat Recover System, QSL for lead and zinc production.
Building Materials	dry process rotary kiln with pre-calciner, Electric power generator with residue heat, Colburn process, Hoffman kiln, Tunnel kiln.
Machinery	High speed cutting, Electric-hydraulic hammer, Heat Preservation Furnace.
Residential	Cooking by gas, Centralized Space Heating System, Energy Saving Electric Appliance, High Efficient Lighting.
Service	Centralized Space Heating System, Centralized Cooling Heating System, Co-generation System, Energy Saving Electric Appliance, High Efficient Lighting.
Transport	Diesel truck, Low Energy Use Car, Electric Car, Natural Gas Car, Electric Railway Locomotives.
Common Use Technology	High Efficiency Boiler, FCB Technology, High Efficiency Electric Motor Speed Adjustable Motor, Centrifugal Electric Fun, Energy Saving Lighting.

Table 3.3. *Emission inventories for black and organic carbon*

Source	Year	Black carbon	Organic carbon
Penner *et al.*, 1993	1980	12,610	-
Cooke & Wilson 1996	1984	7,970*	-

Cooke *et al.*, 1999	1984	5,100*	7,000*
Bond *et al.* (using Cooke *et al.*, 1999 efs)	1996	9,122	26,936
Bond *et al.*, 2004	1996	4,626(3,132-10,048)	8,856 (5,141-17,419)
Liousse, Guillaume *et al.*		10,200	
RAINS	1995	5,000	12,848

Table 3.4. *The main advantages and disadvantages of using different stabalisation targets*

Target	Advantages	Disadvantages
Concentrations of different greenhouse gasses	Can be translated relatively easily into emission profiles (reducing uncertainty on costs)	Does not allow for substitution among gasses (thus loosing the opportunities of cost reduction of what flexibility)
Radiative forcing	Relatively easy translation to emission targets (thus not including climate sensivity in costs calculations)	Does allow for full flexibility in substitution among gasses; Connects well to earlier work on CO_2 stabilisation; Allows for easy connection to work with GCMs/Climate models Can be expressed in terms of CO_2-equivalent concentration target (if preferred for communication with policy-makers)
Global mean temperature	Metric is also used to organize impact literature; and as has shown to be a reasonably proxy for impacts	Large uncertainty on required emissions reduction (as result of the uncertainty in climate sensitivity) and thus costs
Impacts	Direct link to objective of climate polices	Very large uncertainties in required emission reductions and costs
Emissions	Lower uncertainty on costs	Very large uncertainty on global mean temperature increase and impacts Either needs a different metric to allow for aggregating different gasses (e.g. GWPs) or forfeits opportunity of substitution
Costs	No uncertainty on costs	Very large uncertainty on global mean temperature increase and impacts

Table 3.5. *Land-based greenhouse gas mitigation options*

Carbon sequestration
Afforestation
Avoided deforestation
Forest management (rotation length, age composition, species, input management)
Agricultural soil carbon sequestration (tillage practice)
Grassland/rangeland conversion
Grazing management
Riparian buffer establishment
Emissions reductions
CO_2 from fossil fuel combustion
Reductions of non-CO_2 GHG emissions
• Cropland soil N_2O
- Spreader maintenance
- Fertilizer management
• Enteric CH_4
- Improvements in food conversion efficiency
- Supplements to increase animal productivity
- Feed supplementation
- Herd management
• Rice CH_4
- Water management
- Amendment and fertilizer management
- Planting practice
- Rice cultivar selection
• Manure CH_4
- Farm-scale anaerobic digesters
- Centralized anaeorobic digesters
Biofuel offsets of fossil fuels
Bioenergy crops - biomass energy and liquid biofuels

Sources: Compiled from USEPA (forthcoming), DeAngelo *et al.* (forthcoming)

Table 3.6. *Global long-term land mitigation scenarios*

Source	Modeling type	Climate policies (a)	Land-based GHG abatement	Land types modeled	Cumulative changes in land area (million ha) by		Cumulative changes in land carbon equivalent emissions (MtCE) by	
					2050	2100	2050	2100
Carbon price policy scenarios(US$ per tonne C)								
Sohngen and Mendelsohn (2003)	Dynamic itegration between partial equilibrium global forestry and energy dynamic optimization models	2 forest carbon price paths: $7.14 (2010) - $61.34 (2100) $21.80 (2010) - $187.54 (2100)	Afforestation, timber harvest rotation length, forest management intensity	Forests - managed and unmanaged unique regional forests	forests: 189.9 - 488.0	416.0 - 962.7	forests: -12,700 to -33,800	-38,600 to -102,100
Sands and Leimbach (2003)	Partial equilibrium global land-use recursive dynamic model	2 biomass carbon price paths: $31 (2005) - $123 (2050), then constant to 2095 $62 (2005) - $246 (2050), then constant to 2095	Biomass energy crop production	Managed forest, crop land, pasture, unmanaged forest	forests: -72.4 to -201.6 cropland: 460 to 1111 pasture: -130 to -359 biomass: 449 to	-350.7 to -777.8 1522 to 2870 -465 to -1046 1700 to 4163	total: 882.0 to 2205.6	1752.5 to 3411.5
Sathaye et al. (forthcoming)	Partial equilibrium global forestry dynamic optimization model	6 forest carbon price paths: $5 (2010); rising at 5% per year $10 (2010); rising at 5% per year $10 (2010); rising at 3% per year $20 (2010); rising at 3% per year $100 (2010); remaining constant over time. $75 (2010); rising by $5 per year through 2050.	Forestation (short and long rotation), avoided deforestation	Forests, wastelands	forests: 190.0 to 664.0	555.0 to 1081.0	forests: -13,570 to -63,300	-50,905 to -113,208
Sohngen and Sedjo (forthcoming)	Partial equilibrium global forestry dynamic optimization model (updated from Sohngen and Mendelsohn, 2003)	Same as Sathaye et al. (forthcoming)	Afforestation, timber harvest rotation length, forest management intensity	Forests - managed and unmanaged unique regional forests	forests: 138.0 to 408.4	1463.5 to 437.1	forests: -11,980 to -42,190	-60,230 to -137,070
Sohngen and Mendelsohn (forthcoming)	Partial equilibrium global forestry dynamic optimization model (updated from Sohngen and Mendelsohn, 2003)	Sohngen and Mendelsohn (2003) price paths	Afforestation, timber harvest rotation length, forest management intensity	Forests - managed and unmanaged unique regional forests		forests: 203.6 to 551.7		forests: -54,710 to -115,610
Climate stabilization policy scenarios								
Sands and Leimbach (2003)	Dynamic iteration between land, economic, and climate models	WBGU (max temperature change of 2 degrees C, max temp change rate of 0.2 degrees C/decade) - energy CO2 mitigation scenarios without non-CO2 reductions and with exogenous non-CO2 reduction	Energy, including bioenergy crops	Managed forest, crop land, pasture, unmanaged forest	Not reported		Not reported	
Kurosawa (forthcoming)	Integrated assessment model	Stabilize radiative forcing at 4.5 W/m2 for 2150 compared to pre-industrialized times	Agriculture (MACs), Forestry (Kurasawa, 2004), Biomass (endogenous)	Forest, others not reported	Not reported		Not reported	
van Vuuren et al. (forthcoming)	Integrated assessment model	Three 2150 stabilization scenarios: Radiative forcing at 3.7, 4.5, and 5.3 W/m2 compared to pre-industrialized	Agriculture (MACs), Afforestation (MACs), Biomass (endogenous)	Food crops, biofuel crops, grass & fodder, forest	Not reported		Not reported	
Rao and Riahi (forthcoming)		Stabilize radiative forcing at 4.5 W/m2 for 2150 compared to pre-industrialized times	Agriculture (MACs), Land use change and forestry (iterated with Sohngen and Sedjo, forthcoming, model), and biomass/geologic sequestration option (endogenous)	Not explicitly modeled	Not reported		Not reported	
Jakeman and Fisher (forthcoming)	Computable general equilibrium model	Stabilize radiative forcing at 3.6 W/m2 for 2050 compared to pre-industrialized times	Land use change and forestry (MACs)	Not reported	Not reported		Not reported	

Table 3.7. Monetized ancillary benefits for a range of studies

Study	Country/Region	Ancillary Benefits [US$/tC]	Pollutant
Aunnan, 1998	China		PM
Barker, 1993	USA	251	VOCs
Boyd *et al.* 1995	USA	40	Criteria pollutants
Burtraw *et al.* 1999	USA	<10	SOX, NOX
Dowlatabadi *et al.* 1993	USA	3	SOX, NOX, PM
Goulder 1993; Scheraga and Leary 1993	USA	33	SOX, NOX, PM, PB, CO, VOCs
Rowe at al. 1995	USA	24	SOX, NOX, PM
Vicussi *et al.* 1994	USA	88	Criteria pollutants
Pearce 1992	UK	195	SOX, NOX, PM
RIVM 2000		53-79	
Syri *et al.* 2001	EU		
van Vuuren *et al.* 2004	EU		SOX, NOX, PM, VOC

Source: OECD, 2000; RIVM *et al.*, 2000; van Vuuren *et al.*, 2004

Table 3.8. List of national scenarios

	Author/Agency	Model	Type	Horizon	target	base year	reduction	a number of scenario
U.S.A.	Brown et al (2001)	CEF-NEMS	top-down, bottom-up	1997-2020	-			3
	Mintzer et al.(2003)	AMIGA	top-down (CGE)	2000-2035	at least 70% by 2100 annual reduction rate			6
	Hanson et al (2004)	AMIGA	top-down (CGE)	2000-2050	-			7
Canada	Natural Resource Canada (NRCan)	N.A.		2000-2050	-	2000	about 50%	4
	Loulou et al (1999)	Extended MARKAL (Minimax Regret criterion)	bottom-up	1995-2035	CO_2 emission	N.A.		7
India	Nair et al (2003)	Integrated Modeling Framework	top-down, bottom-up	1995-2100	550 ppm, 650ppm (cumulative CO_2 emission)			6
	Shukla et al (2004)	AIM/ENDUSE	top-down, bottom-up	2000-2030	-			4
	Garg et al. (2003)	MARKAL, AIM/ENDUSE	bottom-up	2000-2035	cumulative CO_2 emission			5
China	Wenying Chen (2005)	MARKAL-MACRO	bottom-up, top-down	2000-2050	CO_2 emission	reference	5%-45%	30
	van Vuurena et al (2003)	IMAGE/TIMER	top-down, bottom-up	2000-2050	-			5
	Jiang et al (2003)	IPAC-emission	top-down, bottom-up	1990-2100	-			6
Finland	TEKES (Finnish National Technology Agency) (2003)	TIMES (The Integrated MARKAL-EFOM System)	bottom-up	2000-2030	CO_2 emission	1990	20%	5
the Netherland	COOL			1990-2050	CO_2 emission	1990	80%	2
Germany	Enquete Commission	WI, IER	bottom-up	2000-2050	CO_2 emission	1990	80%	4
UK	Department of Trade and Industry	MARKAL	bottom-up	2000-2050	CO_2 emission	2000	60%	12
Sweden	MOE	EMEC		2000-2050	4.5tCO_2eq / capita	1990		N.A
France	Interministerial Task Force on Climate Change (MIES)	N.A.		2000-2050	0.5 tC/cap	2000	about 75%	9
Japan	Kainuma et al (2003)	AIM/Enduse	bottom-up	1990-2020	-			8
	Advisory Committee for Natural Resources and	N.A.	top-down, bottom-up	1990-2030	-			8
	Citizens' Open Model Projects for Alternative and Sustainable Scenarios	ECONOMATE	top-down, bottom-up	1990-2030	CO_2 emission	1990	53%	3

(Note: a number of scenarios include BaU cases)

Table 3.9. *Examples of Physical Metrics Used in Climate Change IA Literature [to be completed]*

Natural systems		
Habitats	Change in area extent for wetlands	Nicholls and Lowe 2004
	Shift in area extent by type of ecosystem	Leemans and Eickhout 2004
Plant and animal species	Number of species lost	Thomas 2004
	Shifting range	Parmesan and Yohe, 2003; Root *et al.* 2003
Key ecosystem vulnerabilities or sensitivity of key systems	Coral reefs decline (1 C); adaptive capacity of majority of ecosystems limited (1-2 C)	Hoegh-Guldberg, 1999; O'Neill and Oppenheimer, 2002; Leemans and Eickhout 2004; Hare 2003
Ecosystem productivity	Net ecosystem productivity ; net primary productivity	Leemans and Eickhout 2004;
Bio-reserves	Shift in number of ecosystem types within existing bioreserve area	Leemans and Eickhout 2004; White x
Human systems		
Agriculture	Change in number of people at risk of hunger	Parry *et al.* 2002;
	Change in agricultural production by crop type (e.g. wheat, corn, etc.)	Fischer *et al.* 2002;
	Economic losses (or gains) from changes in aggregate crop production (by region and global)	
Forestry	Change in forest harvest	
Water	Change in number of people at risk of water stress (measured by water available per capita per year)	Arnell 2004; Arnell *et al.*, 2002 Parry *et al.* 2001 - to check metric
Human health	Change in number of people at risk of malaria (measured by number of people living in areas where the climate is suitable for transmission of malaria) or death due to malaria	van Lieshout et al, 2004; Dowlatabadi and Tol, 2002
	Change in number of deaths due to heat stress or cold	
	Loss of human life	WHO 2002
Coastal zones	Change in number of people at risk of flooding in coastal zones (aggregate and distribution)	Nicholls and Lowe 2004;
	Aggregate and distribution of cost of dryland protection, economic loss of dryland property	Fankhauser
Socially contingent impacts	Number of people subject to migrate as a result of climate change, resource shortage, and resource conflict	Barnett, 2004

Table 3.10. *Conceptual summary of integrated assessment modelling output*

Scenario	CO_2 (eq) stabilization level	Stabilisation date	Repre-sentative base line impacts	Avoided impacts compared to baseline	Mitigation costs **	Uncertainty analysis (Yes/no)?	Reference literature
HIGH BASELINE							
e.g. SRES A1F1	None						A.N.Other 200x
MITIGATION SCENARIOS RELATIVE TO BASELINE HIGH							
	500 ppm						A.N. Other
	450 overshooting to 500 ppm						A.N. Other
	Etc.						
INTERMEDIATE BASELINE							
e.g. SRES B2	None						A.N. Other2
MITIGATION SCENARIOS RELATIVE TO BASELINE INTERMEDIATE							
							A.N. Other2
LOW BASELINE							
e.g. SRES B1	Approx xx ppm						A.N. Other 3
MITIGATION SCENARIOS RELATIVE TO BASELINE LOW …etc, etc.							

** To be completed and refined for Second Order Draft

FIGURES CHAPTER 3

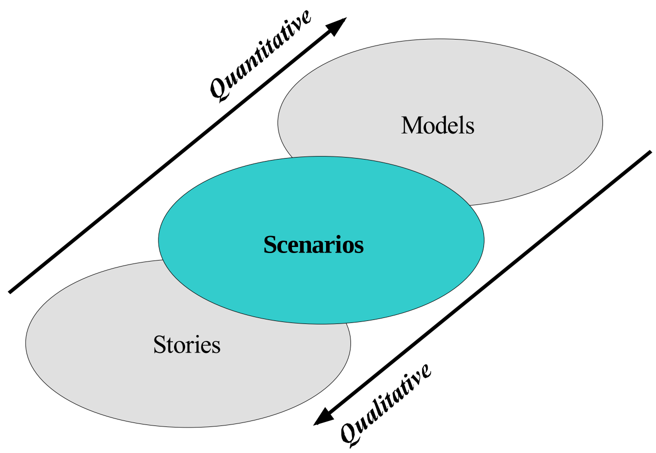
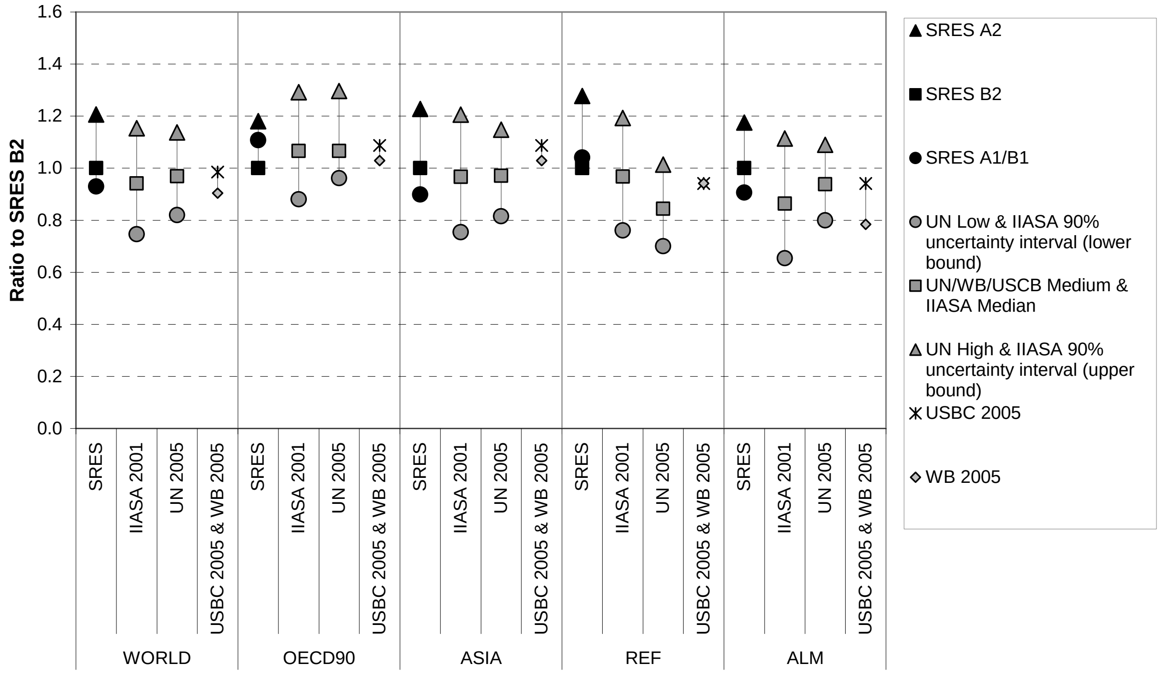


Figure 3.1. *Schematic illustration of alternative scenario formulations, from narrative storylines to quantitative formal models.*
Source: Nakicenovic *et al.*, 2000

(a)



(b)

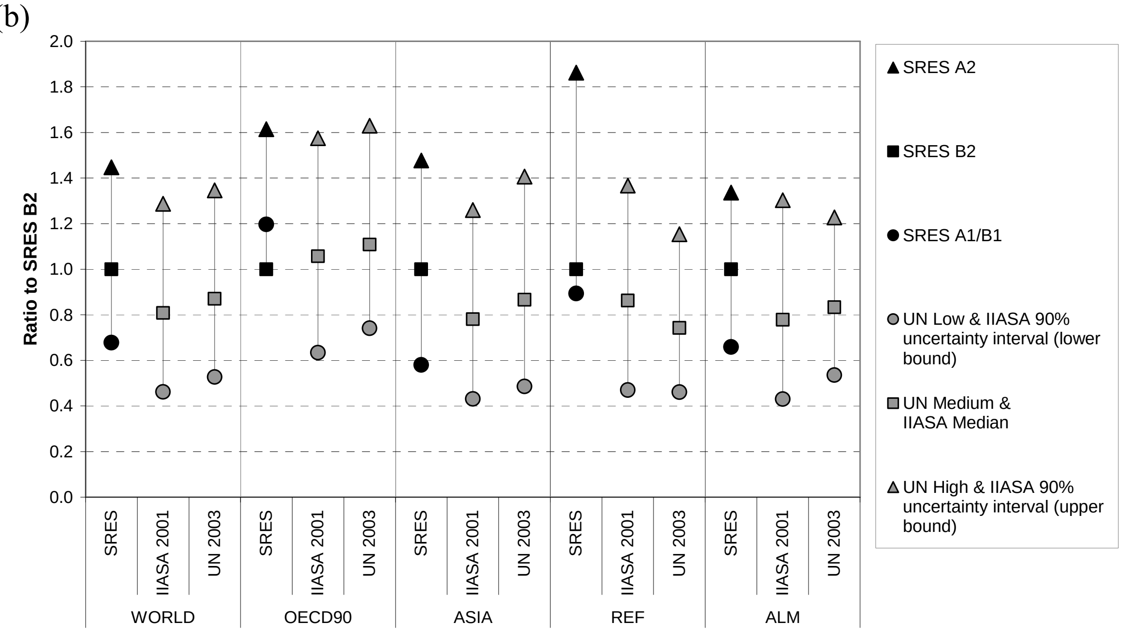


Figure 3.2. *Population size worldwide and for four SRES macro regions, relative to the population size in the SRES B2 projection for (a) 2050 and (b) 2100. Source: van Vuuren and O'Neill, in press, based on data from (Nakicenovic, 2000;Lutz et al., 2001;UN,2003, 2005;US.BoC, 2005;WorldBank, 2005)*

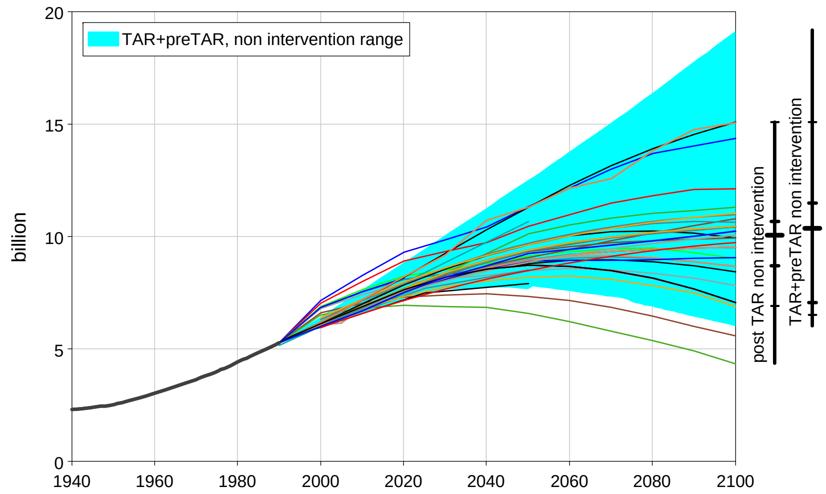


Figure 3.3. *Comparison of population assumptions in post-TAR emissions scenarios with those used in previous scenarios. Blue shaded areas spans range of 115 population scenarios used in TAR or pre-TAR emissions scenarios; individual curves show population assumptions in 64 emissions scenarios in the literature since 2001. Two vertical bars on the right extend from the minimum to maximum of the distribution of scenarios by 2100. The horizontal bars indicate the 5th, 25th, 50th, 75th and the 95th percentiles of the distributions.*
Source: Nakicenovic *et al*., 2005, and
http://iiasa.ac.at/Research/TNT/WEB/scenario_database.html.

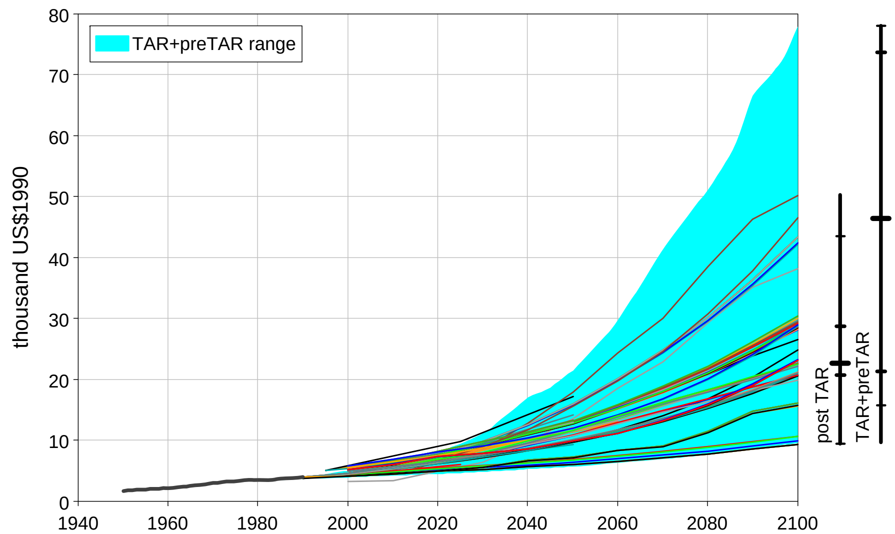


Figure 3.4. *More recent scenarios in the literature since the publication of SRES (Post-SRES) do not extend to the highest GDP growth rates in the Pre-SRES literature, but extend marginally below the lowest level. Medians are comparable and the distribution is quite even across the whole range. Two vertical bars on the right extend from the minimum to maximum of the distribution of scenarios by 2100. The horizontal bars indicate the 5th, 25th, 50th, 75th and the 95th percentiles of the distributions.*

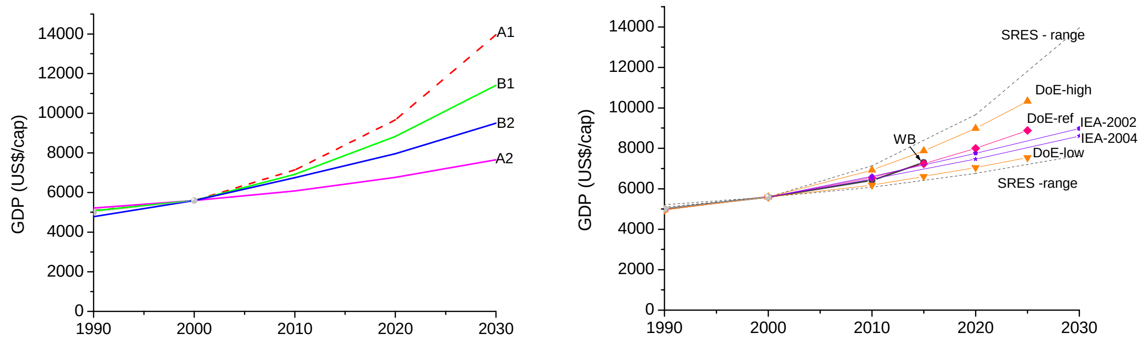


Figure 3.5. *Comparison of global GDP growth in the SRES scenarios and more recent projections. SRES = (Nakicenovic et al., 2000), WB = World Bank (World Bank, 2004), DoE = assumptions used by US.Department of Energy (US.DoE, 2004a), IEA assumptions used by IEA (IEA, 2002;IEA, 2004).*

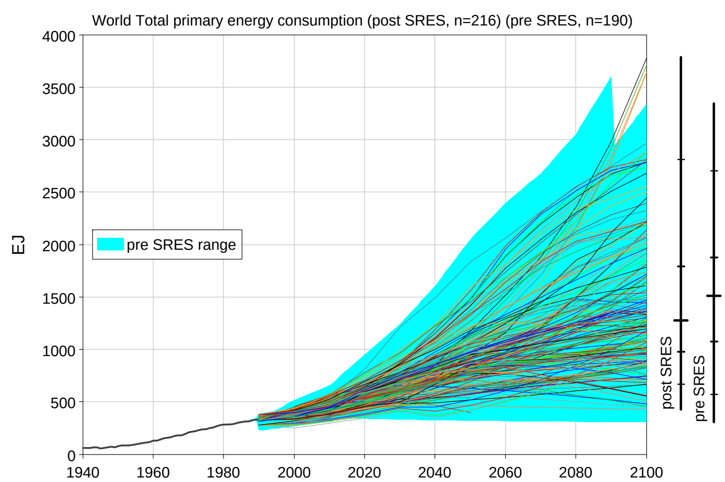


Figure 3.6. *Comparison of 190 pre-SRES energy scenarios in the literature compared with the 216 more recent, post-SRES scenarios. The ranges are comparable, with a very small change that the most extreme high end and low end of the distributions are not represented in the more recent energy scenarios. Two vertical bars on the right extend from the minimum to maximum of the distribution of scenarios by 2100. The horizontal bars indicate the 5th, 25th, 50th, 75th and the 95th percentiles of the distributions.*

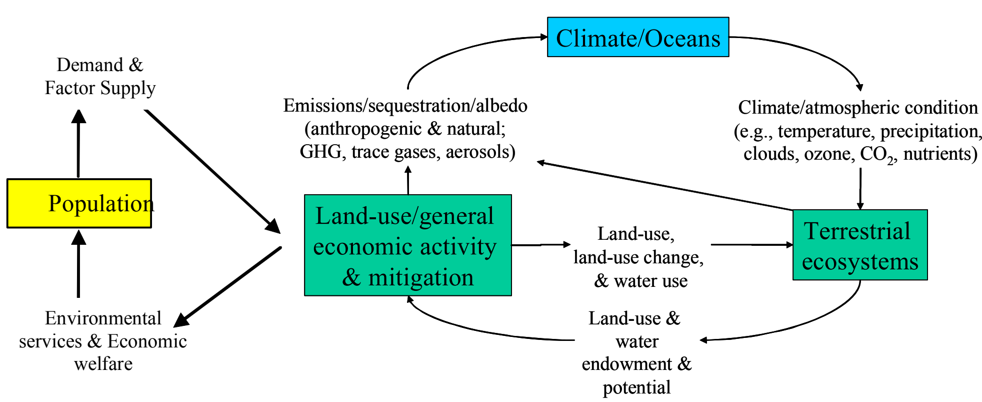


Figure 3.7. *Land in long-term climate modelling*

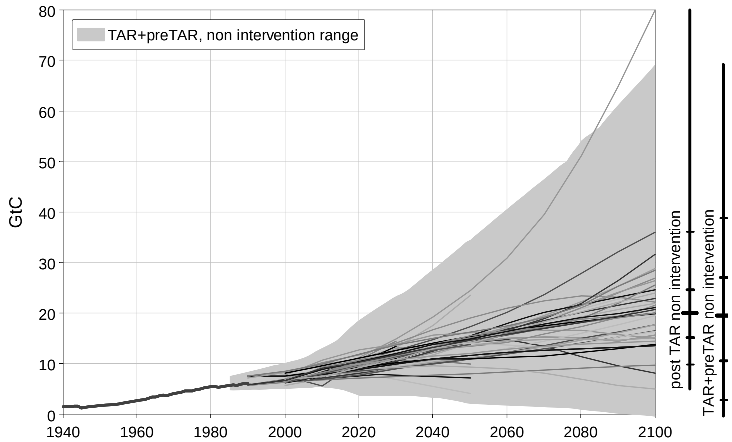


Figure 3.8. *Comparison of the TAR and pre-TAR energy-related and industrial CO_2 emissions scenarios in the literature with the post-TAR, scenarios. The ranges are comparable, with the small change that among the post-TAR scenarios four more extreme high-end scenarios extend somewhat beyond the pre-SRES range. Two vertical bars on the right extend from the minimum to maximum of the distribution of scenarios by 2100. (Nakicenovic et al. 2005)*

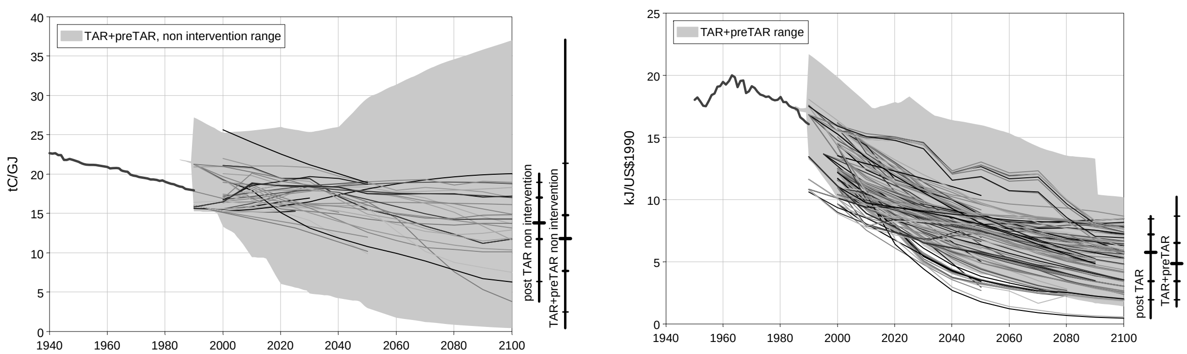


Figure 3.9. *Development of carbon intensity of energy (left) and primary energy intensity of GDP (right). Historical development and projections reported for and after the Third Assessment Report. The gray range illustrates the range of 160 pre 2001 non-intervention scenarios.*
Source: Nakićenović *et al.* 2005.

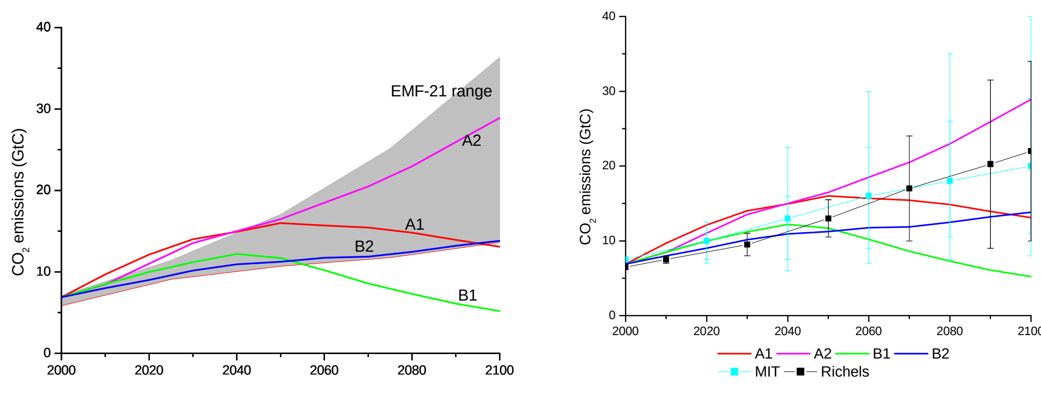


Figure 3.10. *Comparison of the SRES scenarios to recent long-term scenarios for CO_2 emissions.*

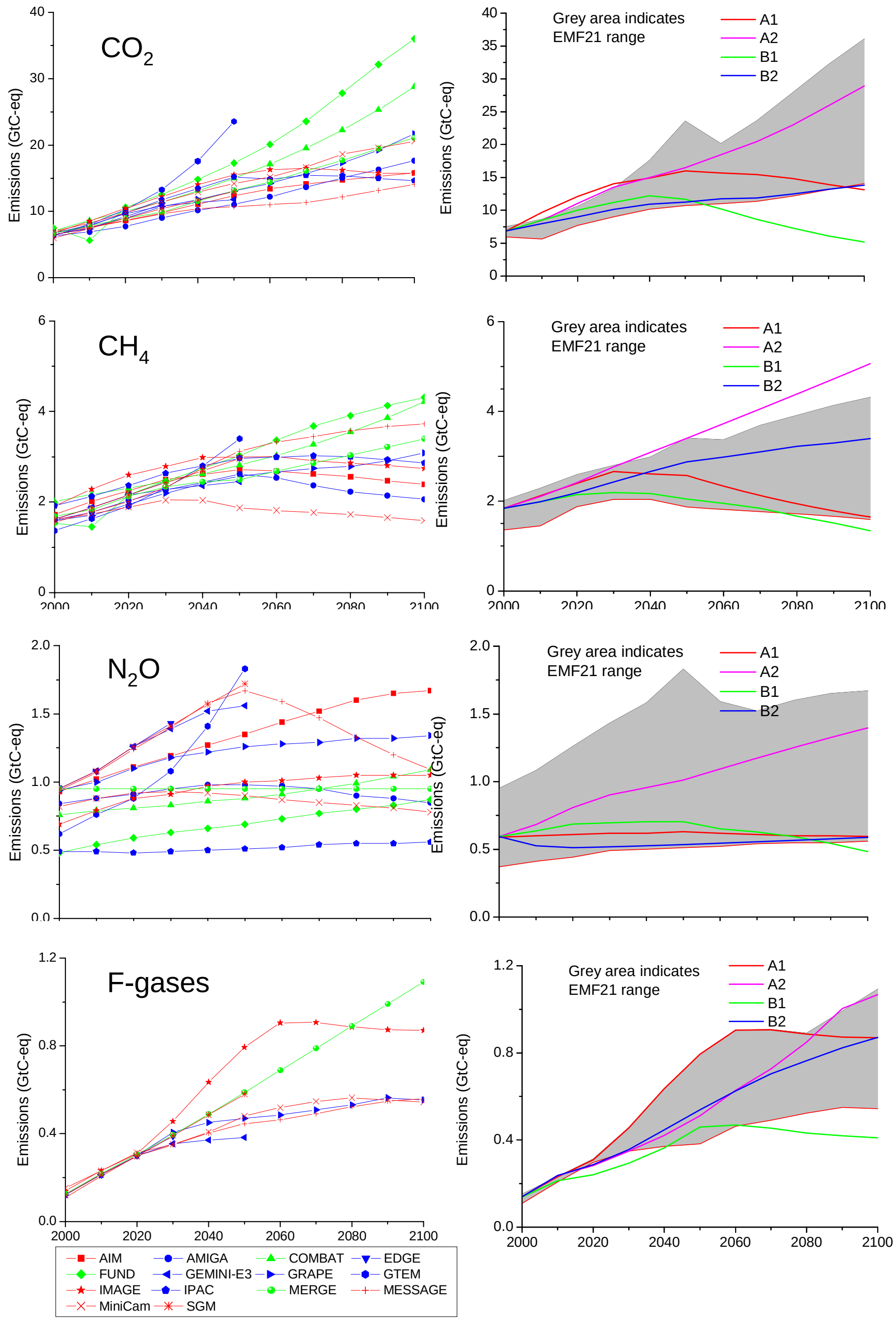


Figure 3.11. *Development of baseline emission in the EMF-21 scenarios (left) and comparison between EMF21 and SRES scenarios (right).*

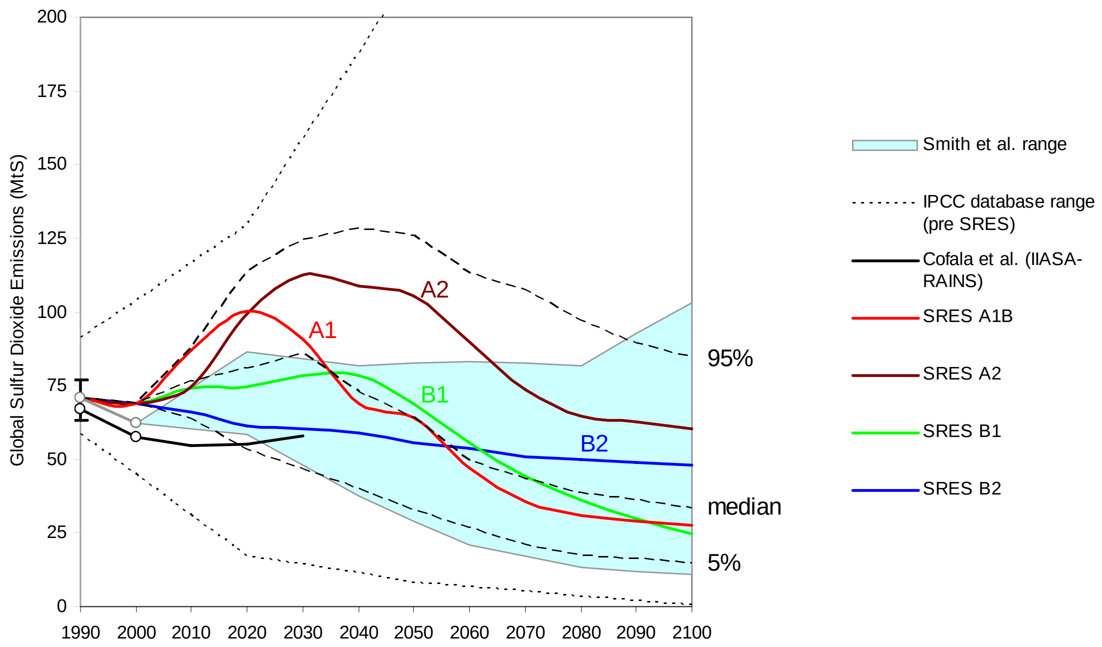


Figure 3.12. *Future sulfur dioxide emissions scenarios. Colored lines depict the four SRES marker scenarios and the dashed lines show the median, 5th and 95th percentile of the frequency distribution for the full ensemble of all 40 SRES scenarios. The blue area illustrates the range of the Smith et al. (2004) scenarios. Dotted lines give the minimum and maximum of sulfur emissions scenarios developed pre SRES.*
Source: Gruebler, 1998.

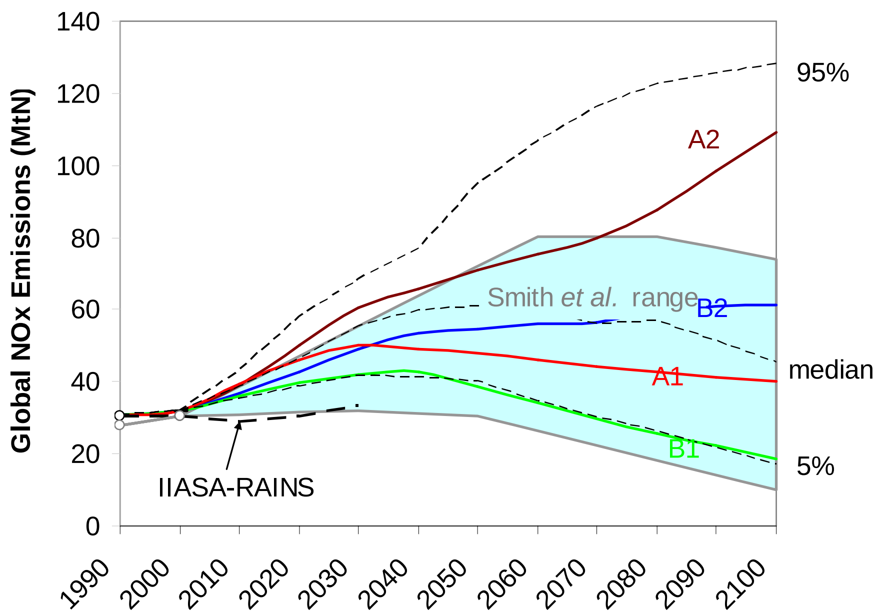


Figure 3.13. *Future NO_x emissions scenarios. Colored lines depict the four SRES marker scenarios and the dashed lines show the median, 5th and 95th percentile of the frequency distribution for the full ensemble of all 40 SRES scenarios. The blue area illustrates the range of the Smith et al. (2004) scenarios.*

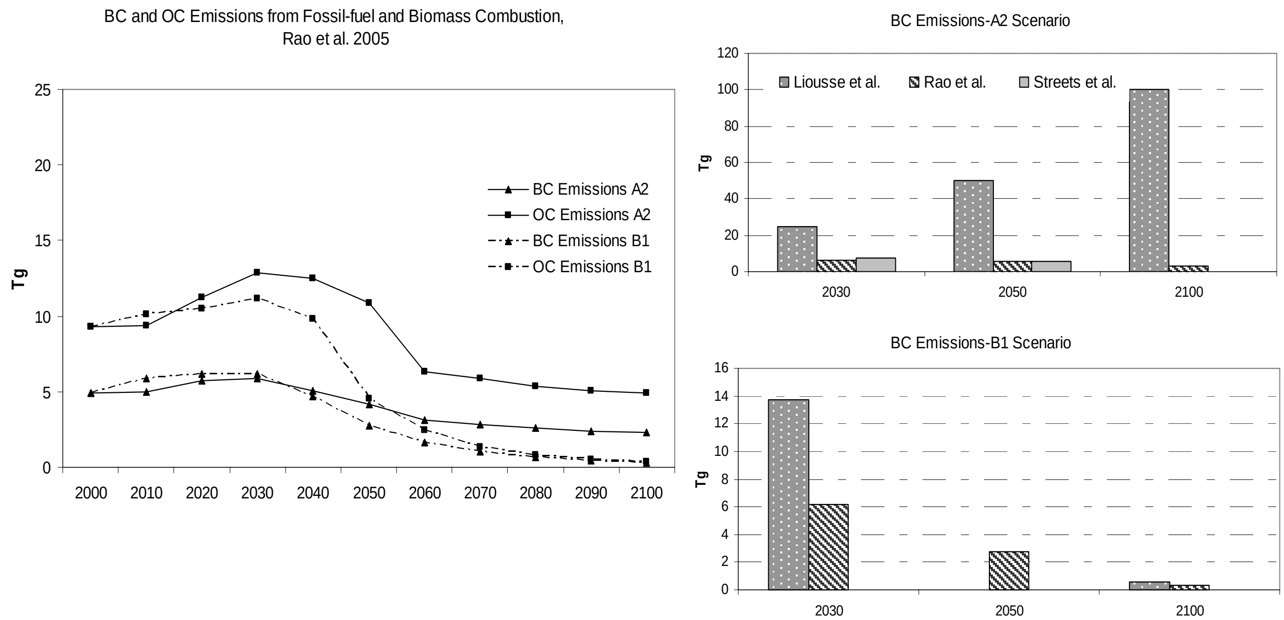


Figure 3.14. *BC/OC Emission Estimates Scenarios from Different Studies*

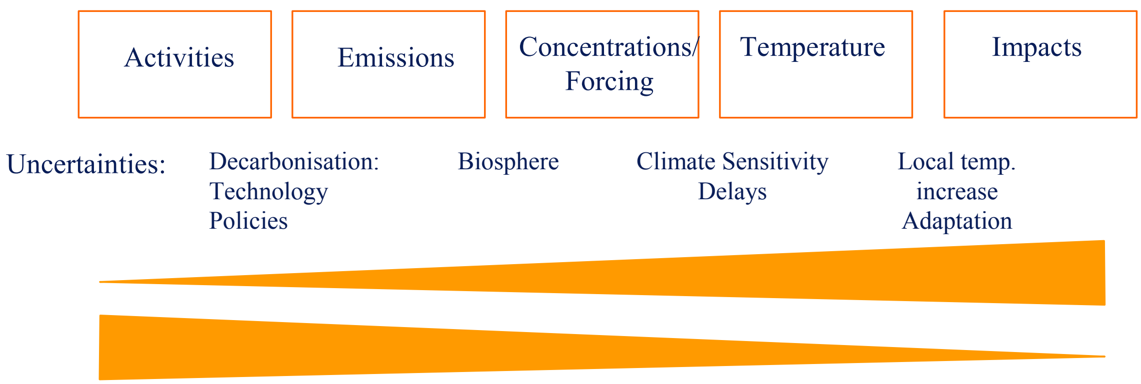


Figure 3.15. *Simple representation of the cause-effect chain of climate change. Choice of policy target within the chain has consequences for uncertainty.*

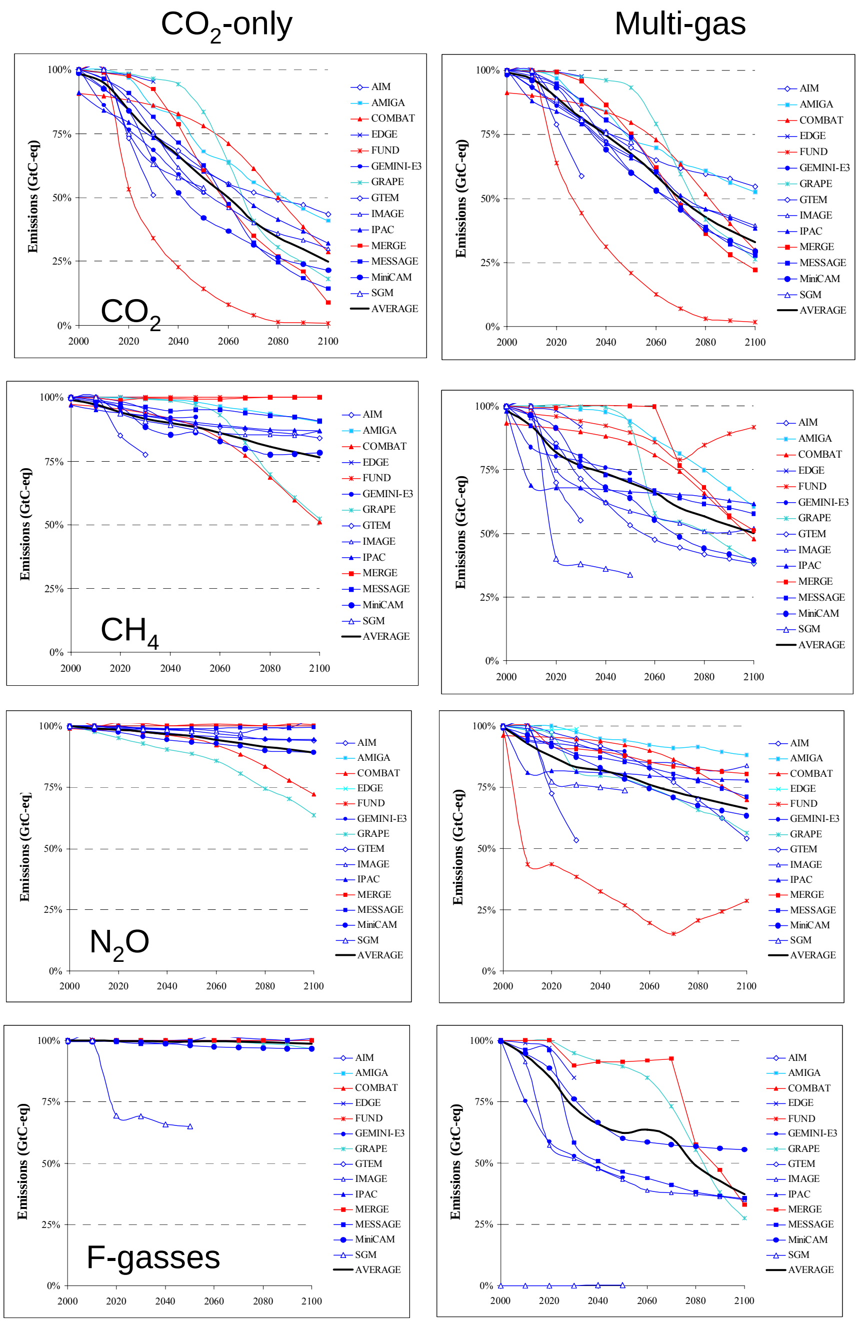


Figure 3.16. *Reduction of emissions in the stabilization strategies aiming for stabilization at 4.5 W/m², CO_2-only versus multigas; and models using GWPs (blue) versus those not using them (red).*

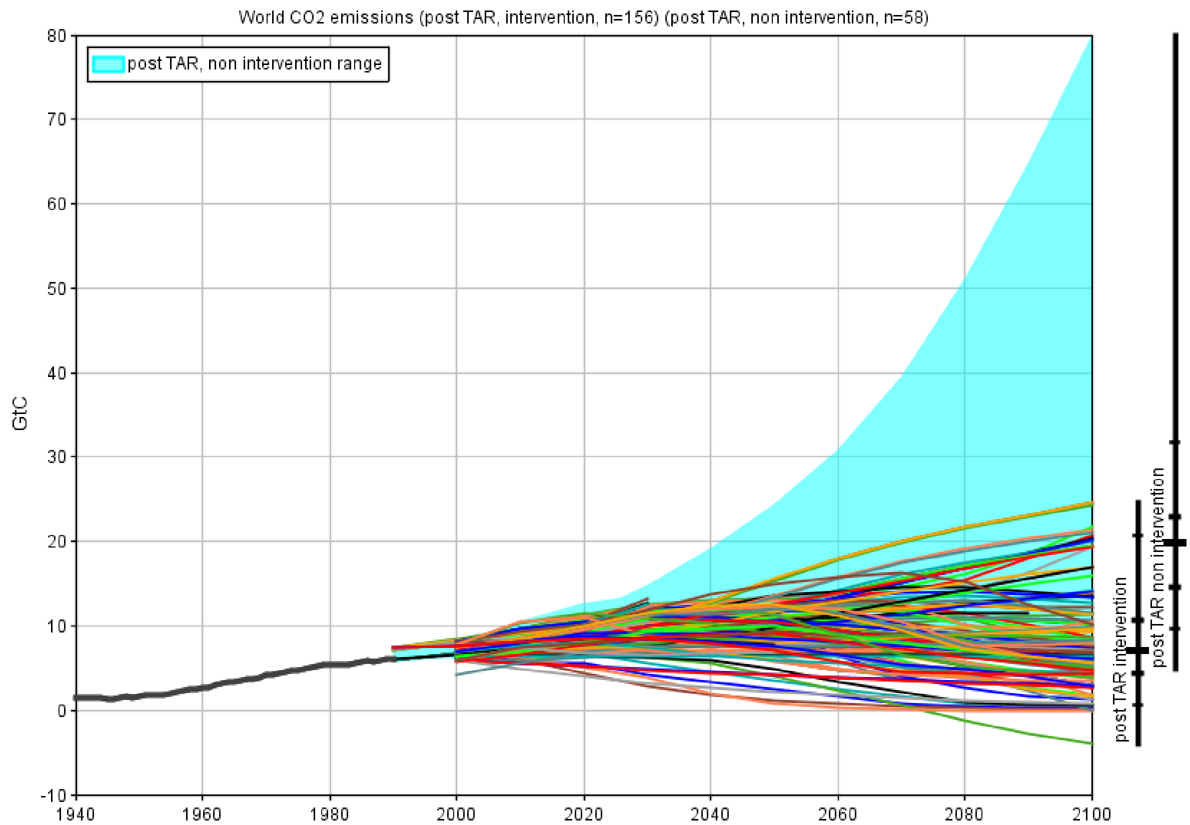


Figure 3.17. *Global carbon emissions: Historical development and scenarios. 58 non-intervention scenarios published after TAR are included in the figure as the (blue shaded) range. The colored lines show the additional 156 mitigation scenarios published since TAR. The two vertical bars on the right-hand side indicate the 2100 distributions for the two sets of scenarios. Adapted from: Nakicenovic et al. (2005), and Kainuma et al., 2005, http://iiasa.ac.at/Research/TNT/WEB/scenario_database.html.*

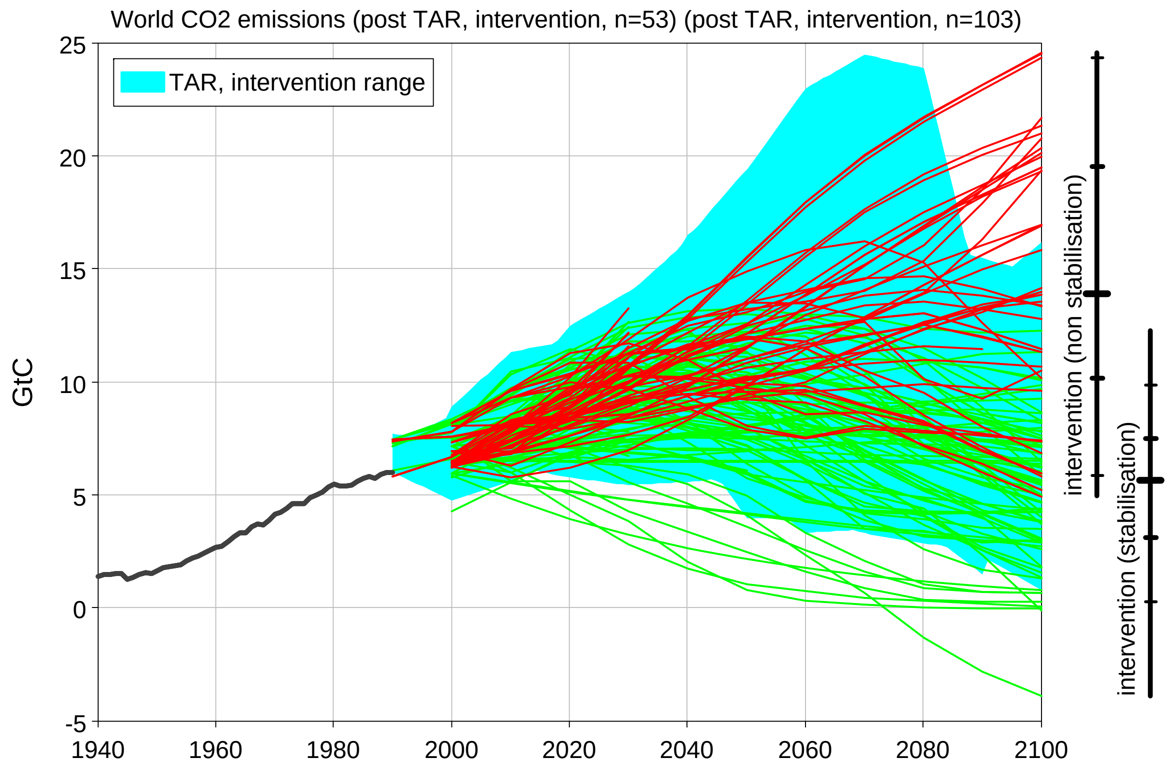


Figure 3.18. *Global carbon emissions: Historical development and scenarios. 156 intervention scenarios published after 2001, compared to the range of TAR mitigation scenarios for* CO_2 *stabilization levels between 450 and 750 ppmv (blue shaded range). Green lines show different types of stabilization scenarios (103) and red lines other mitigation scenarios not aiming at stabilization (53). The two vertical bars on the right-hand side indicate the ranges for the new scenarios, including the 5th, 25th, median, 75th, and 95th percentile of the scenario distribution in 2100 . Sources: Morita et al., 2001, Nakicenovic et al. (2005), Morita and Lee (1998) and http://iiasa.ac.at/Research/TNT/WEB/scenario_database.html.*

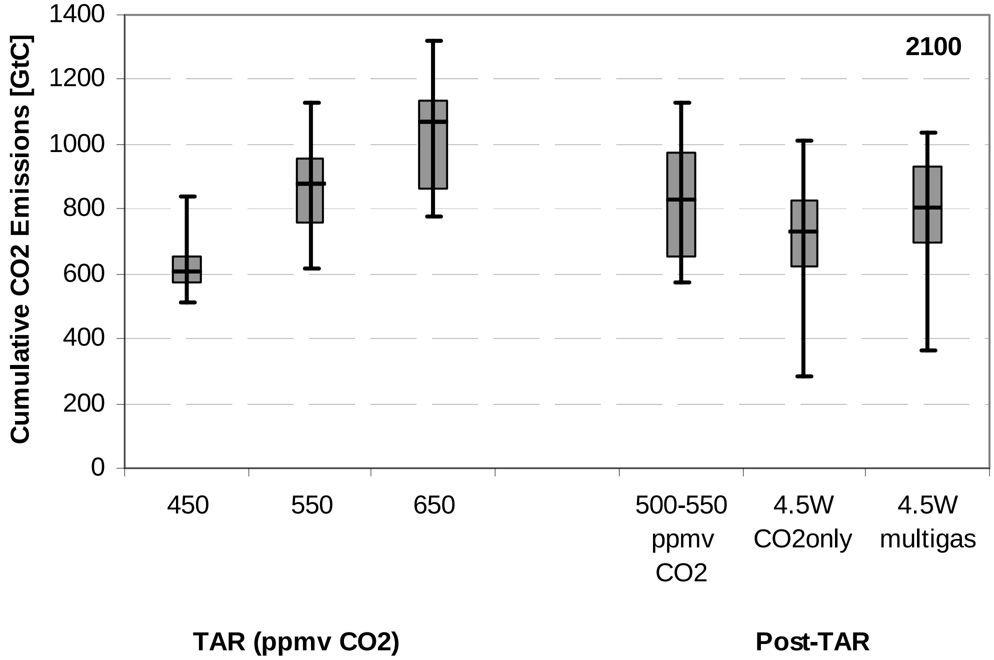


Figure 3.19. *Relationship between the scenario's cumulative carbon dioxide emissions (2000-2100) and the stabilization target of different studies. Thick vertical bars (gray) give the range between the 15th and 85th percentile of the respective scenario distribution. Black error bars give the full range including outlier scenarios. TAR scenarios depict stabilization targets of 450, 550, and 650 ppmv* CO_2*; EMF21 scenarios depict a stabilization target of 4.5* W/m^2*. In addition the ranges of scenarios between 500 and 550 ppmv of the new scenario literature is shown. Data Sources: Morita et al., 2001; Weyant and de la Chesnaye, 2005; Nakicenovic et al., 2005.*

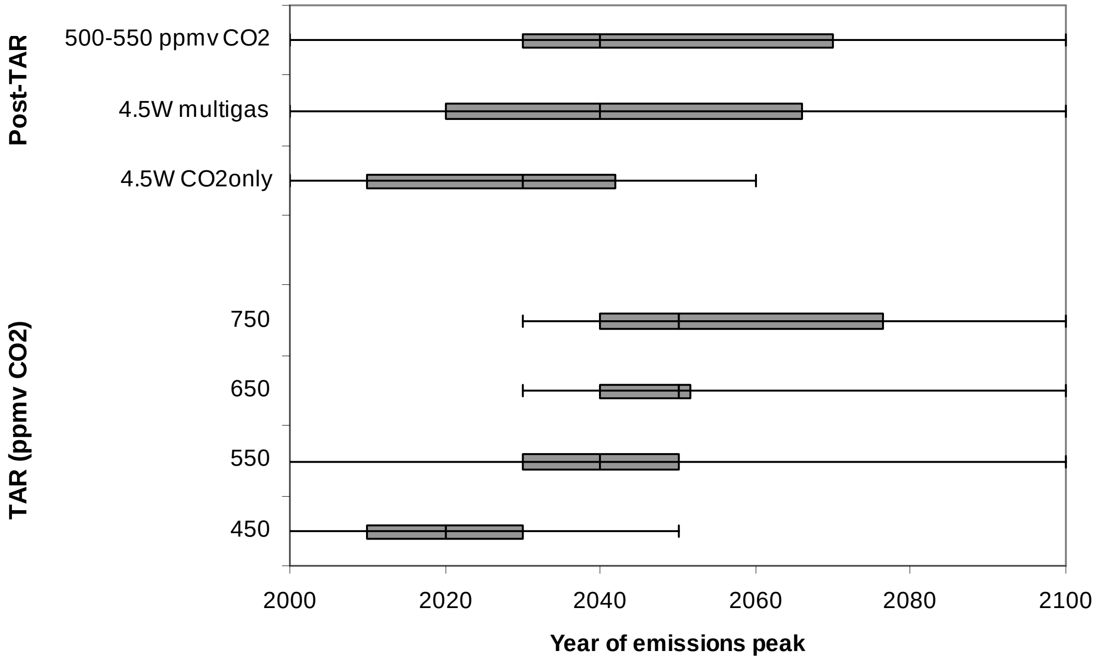


Figure 3.20. *Relationship between the time at which carbon dioxide emissions peak in the scenarios and the stabilization target of different studies. Thick horizontal bars (gray) give the range between the 15th and 85th percentile of the respective scenario distribution. Black error bars give the full range including outlier scenarios. TAR scenarios depict stabilization targets of 450, 550, and 650 ppmv* CO_2*; EMF21 scenarios depict a stabilization target of 4.5* W/m^2*. In addition the ranges of scenarios between 500 and 550 ppmv of the new scenario literature is shown. Data Sources: Morita et al., 2001; Weyant and de la Chesnaye, 2005; Nakicenovic et al., 2005.*

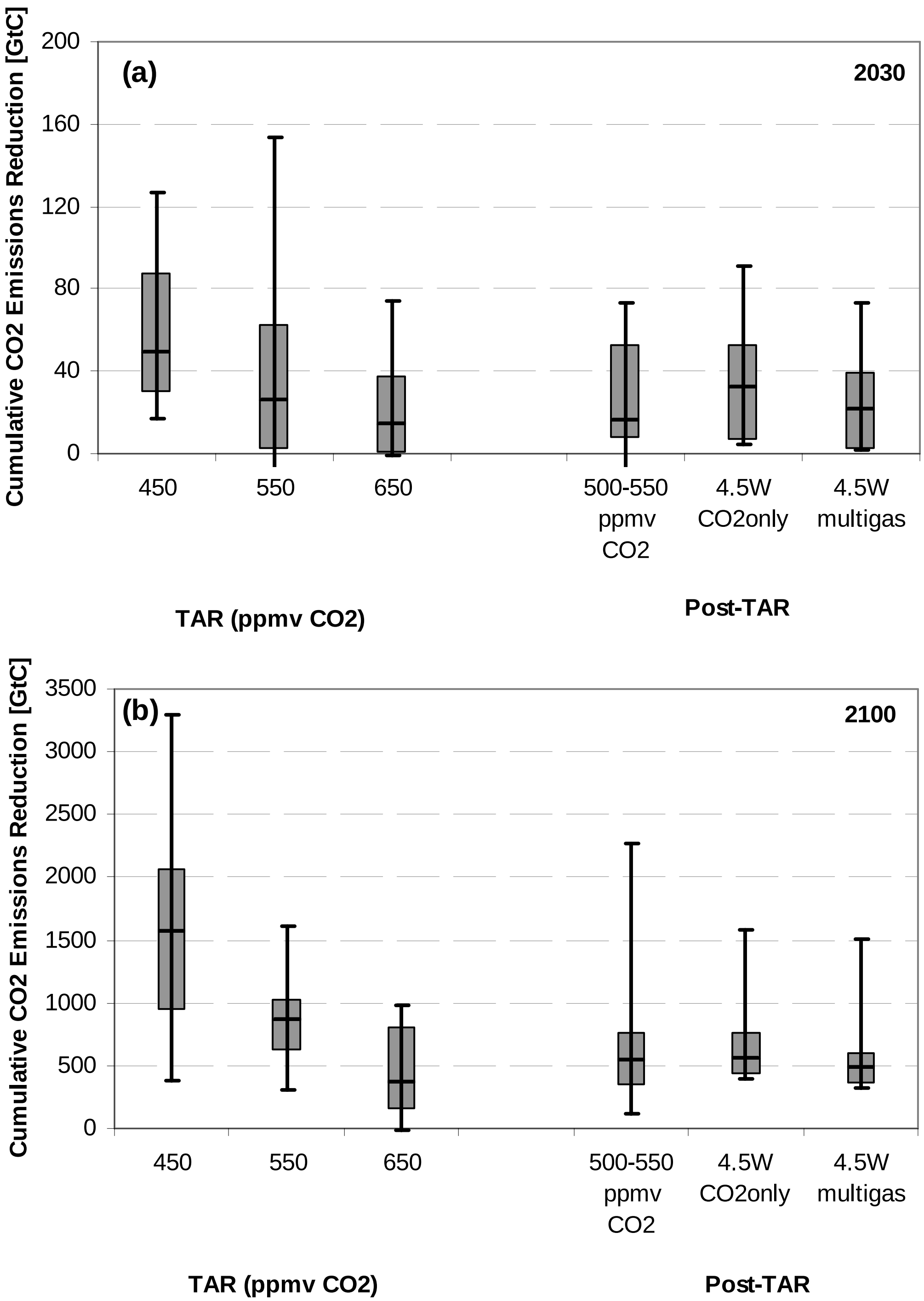


Figure 3.21. *Cumulative emissions reductions for alternative strabilization levels for the periods 2000 to 2030 (panel a), and 2000 to 2100 (panel b). Thick vertical bars (gray) give the range between the 15th and 85th percentile of the respective scenario distribution. Black error bars give the full range including outlier scenarios. TAR scenarios depict stabilization targets of 450, 550, and 650 ppmv* CO_2*; EMF21 scenarios depict a stabilization target of 4.5* W/m^2*. In addition the ranges of scenarios between 500 and 550 ppmv of the new scenario literature is shown. Data Sources: Morita et al., 2001; Weyant and de la Chesnaye, 2005; Nakicenovic et al., 2005.*

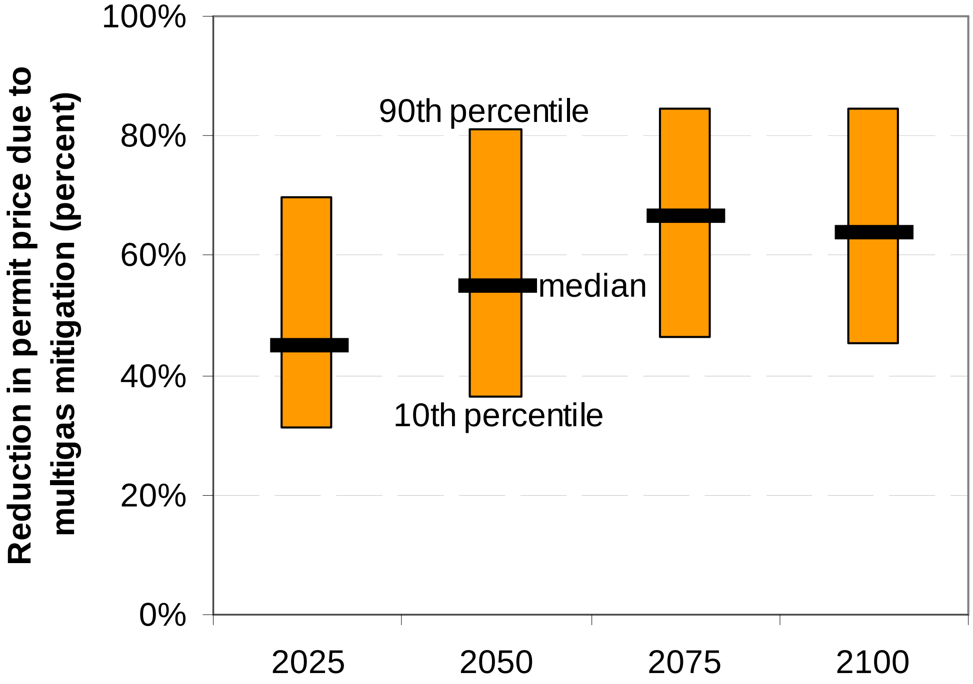


Figure 3.22. *Reduction in marginal carbon abatement cost (percent) in multigas stabilization scenarios compared to CO_2 only cases. Ranges correspond to alternative scenarios for a stabilization target of 4.5 W/m^2. Data source: Weyant and de la Chesnaye, 2005.*

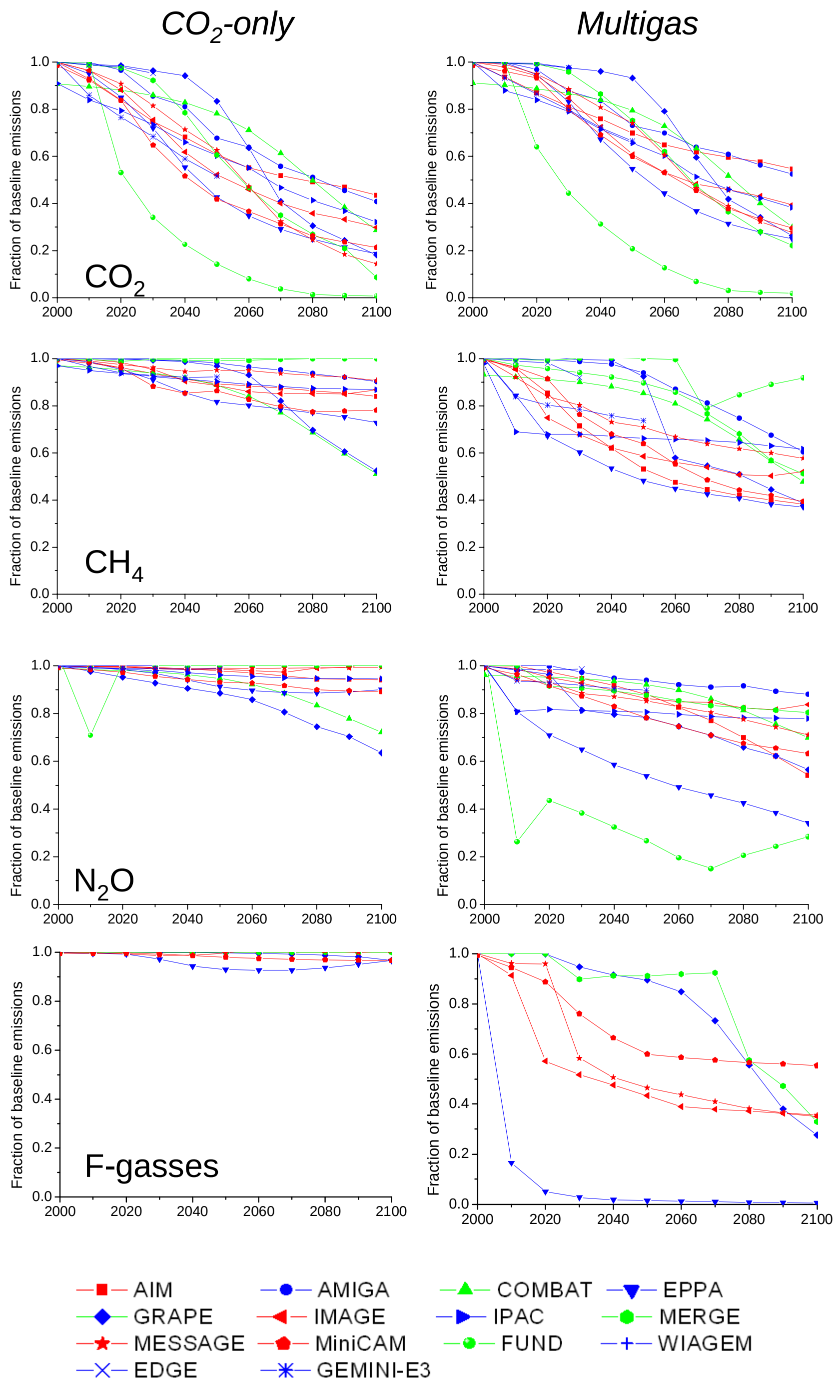


Figure 3.23. *Reduction of emissions in the CO_2-only versus multi-gas strategies*

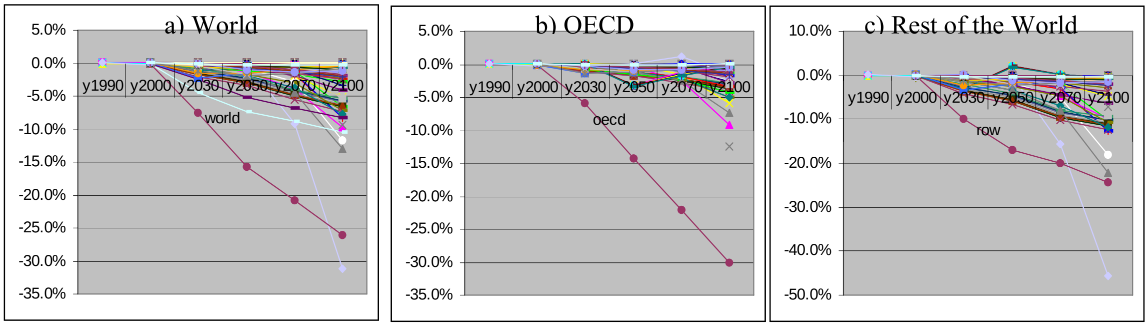


Figure 3.24. *Change in GDP in Mitigation scenarios over corresponding Reference scenarios in (a) World (b) OECD and (c) Rest of the World*

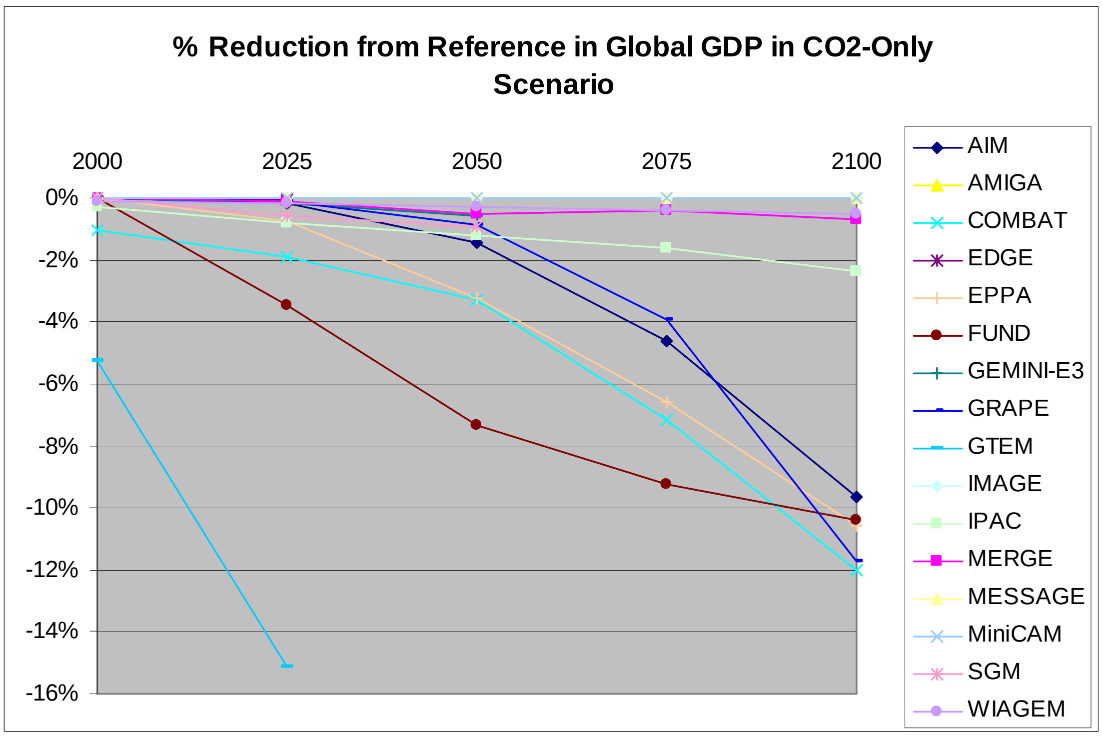


Figure 3.25. *Reduction global GDP from each model's reference scenarios for stabilization scenarios target of 4.5 W/m*^{2} *with* CO_2*-only mitigation. Source: Weyant and De la Chesnaye, 2005.*

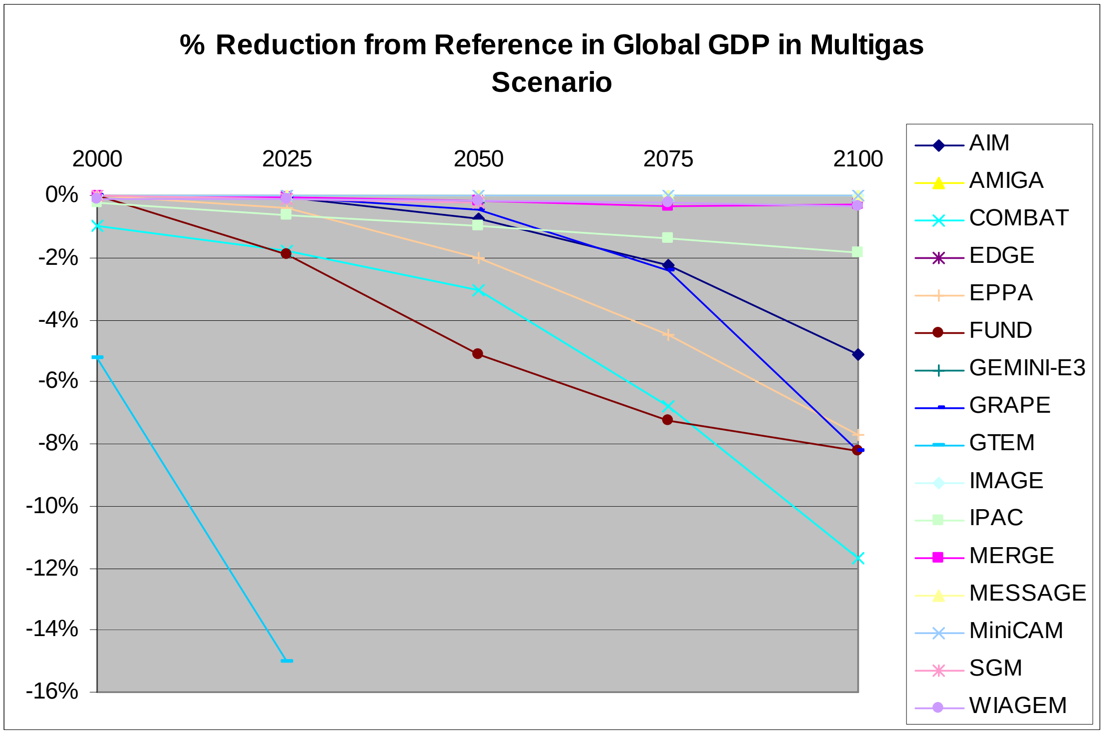


Figure 3.26. *Reduction global GDP from each model's reference scenarios for stabilization scenarios target of 4.5 W/m^2 with multigas mitigation.*
Source: Weyant and De la Chesnaye, 2005.

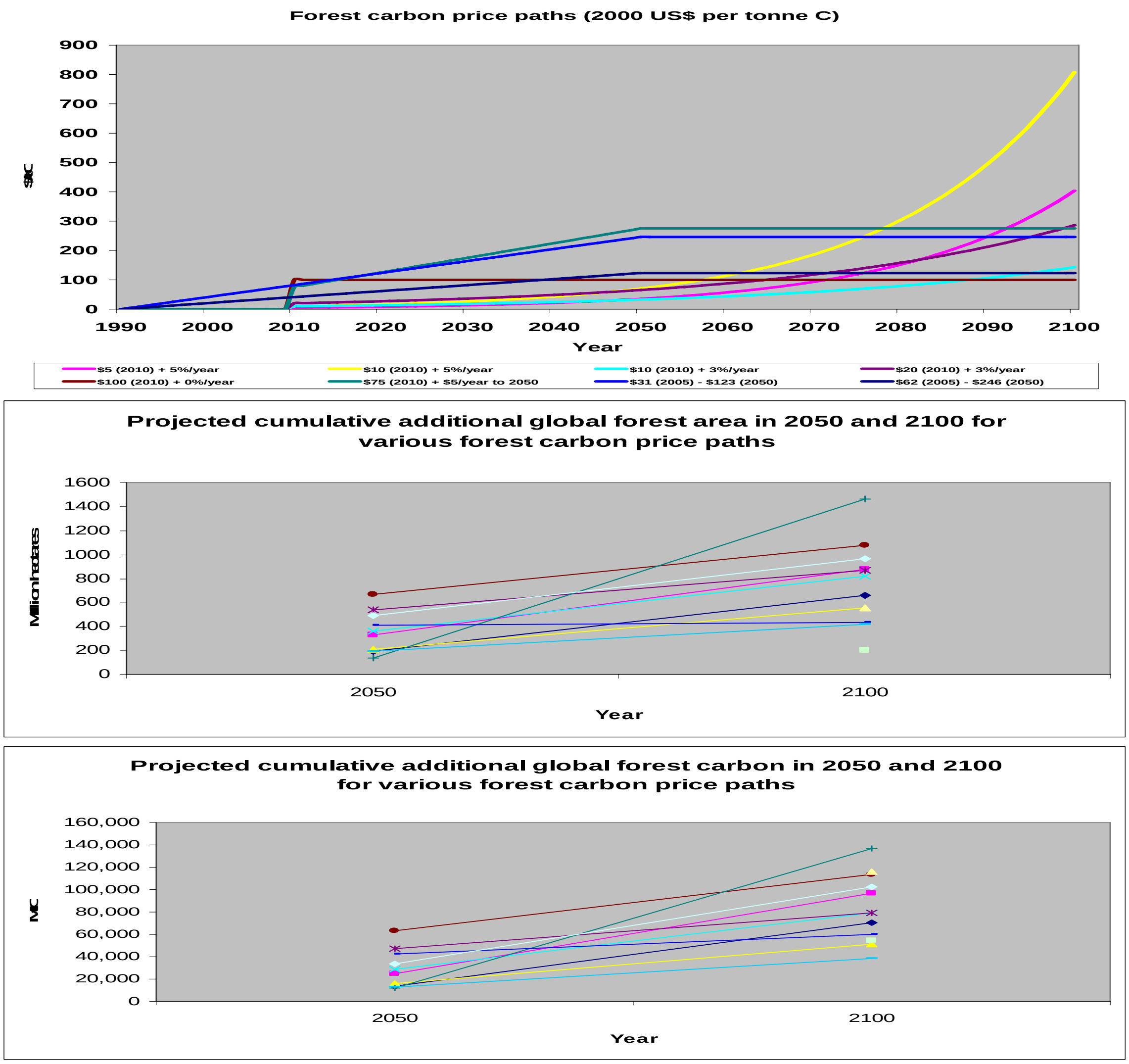


Figure 3.27.

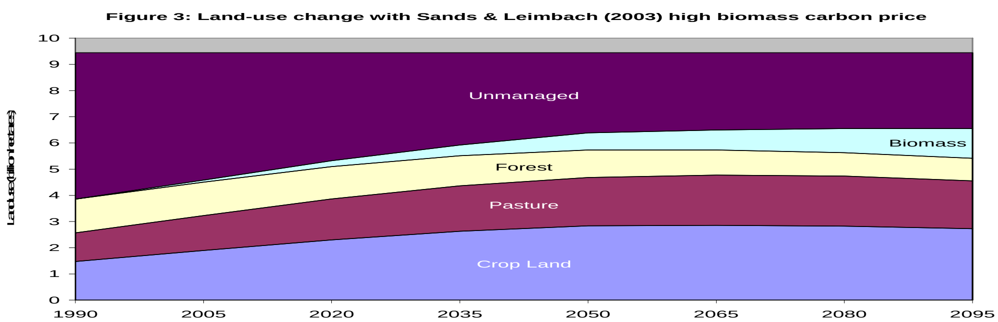


Figure 3.28.

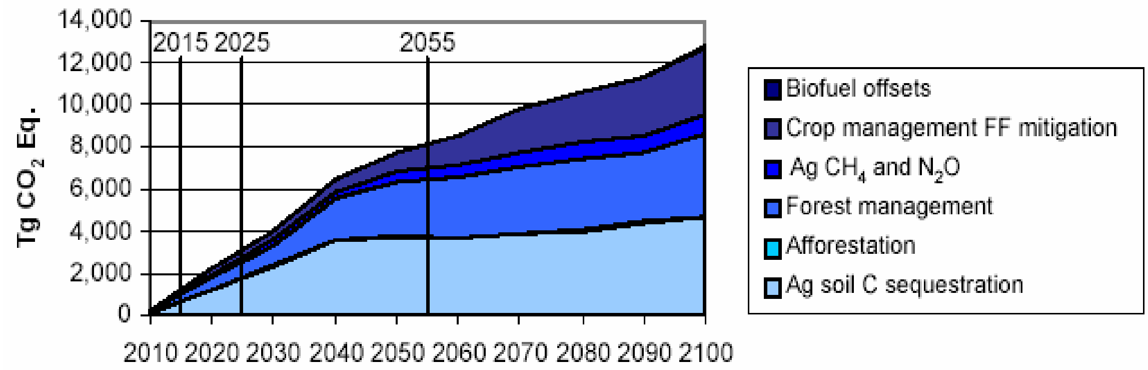


Figure 3.29. *Potential cumulative U.S. forest and agricultural GHG mitigation (below baseline) over time: \$3/t CO_2 price rising at 1.5% per year (USEPA, forthcoming)*

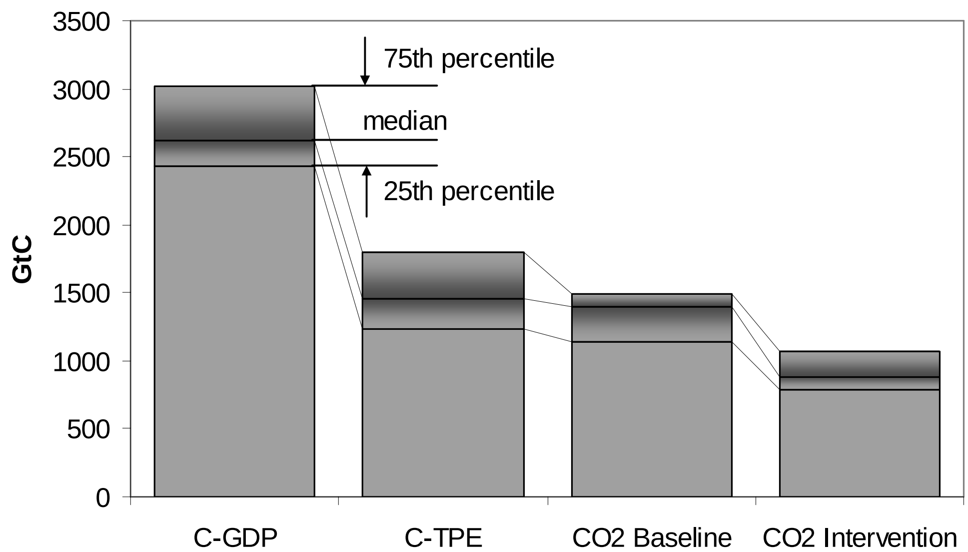


Figure 3.30. *Median, 25th and 75th percentile of global cumulative carbon emissions by 2100 in the scenarios developed since 2001: The range labeled C-GDP refers to hypothetical futures without improvement in energy and carbon intensities in the scenarios, the range labeled C_TPE keeps only carbon intensity of energy constant while energy intensity of GDP is the same as originally assumed in scenarios, the range labeled CO_2 baseline are the 39 baseline scenarios in the database, while the region labeled CO_2 intervention includes 140 mitigation and/or stabilization scenarios.*
Source: Nakicenovic *et al.* (2005).

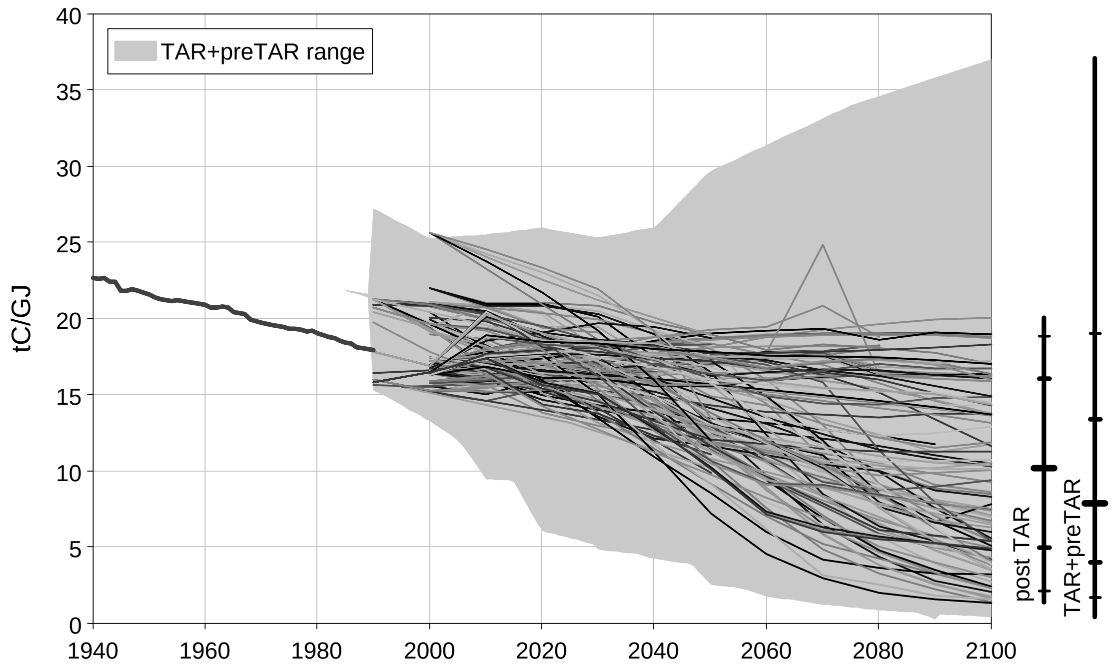


Figure 3.31. *Carbon Intensity of Primary Energy: Historical development and 157 projections for intervention and non-intervention scenarios developed after 2001. The gray range illustrates the range of 338 pre 2001 scenarios.*
Adapted from Nakicenovic et al.,(2005); Historical data: Nakicenovic (1996)

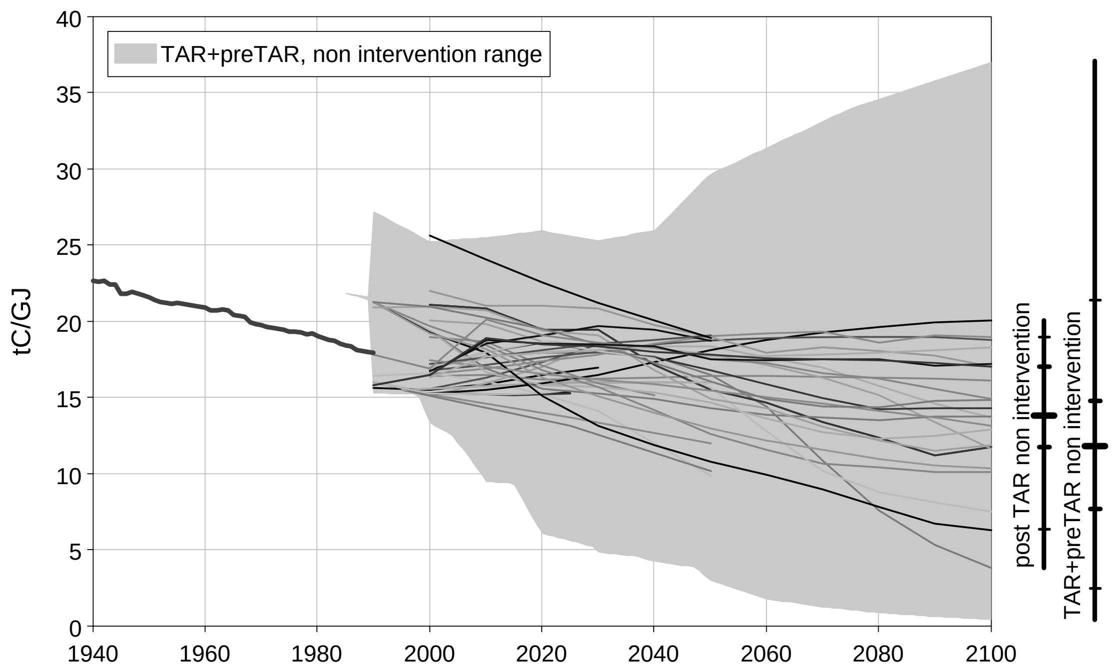


Figure 3.32. *Carbon Intensity of Primary Energy: Historical development and 38 projections for non-intervention scenarios developed after 2001. The gray range illustrates the range of 160 pre 2001 non-intervention scenarios.*
Adapted from Nakicenovic *et al.*, (2005); Historical data: Nakićenović (1996)

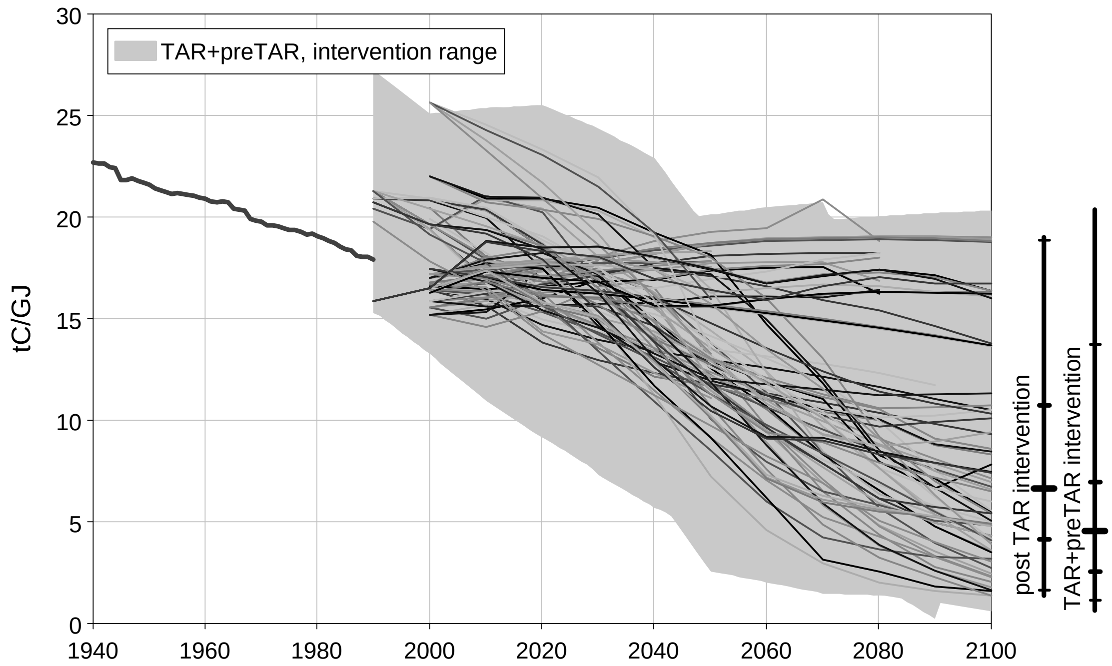


Figure 3.33. *Carbon Intensity of Primary Energy: Historical development and 105 projections for intervention scenarios developed after 2001. The gray range illustrates the range of 157 pre 2001 intervention scenarios.*
Adapted from Nakicenovic *et al.*,(2005); Historical data: Nakicenovic (1996).

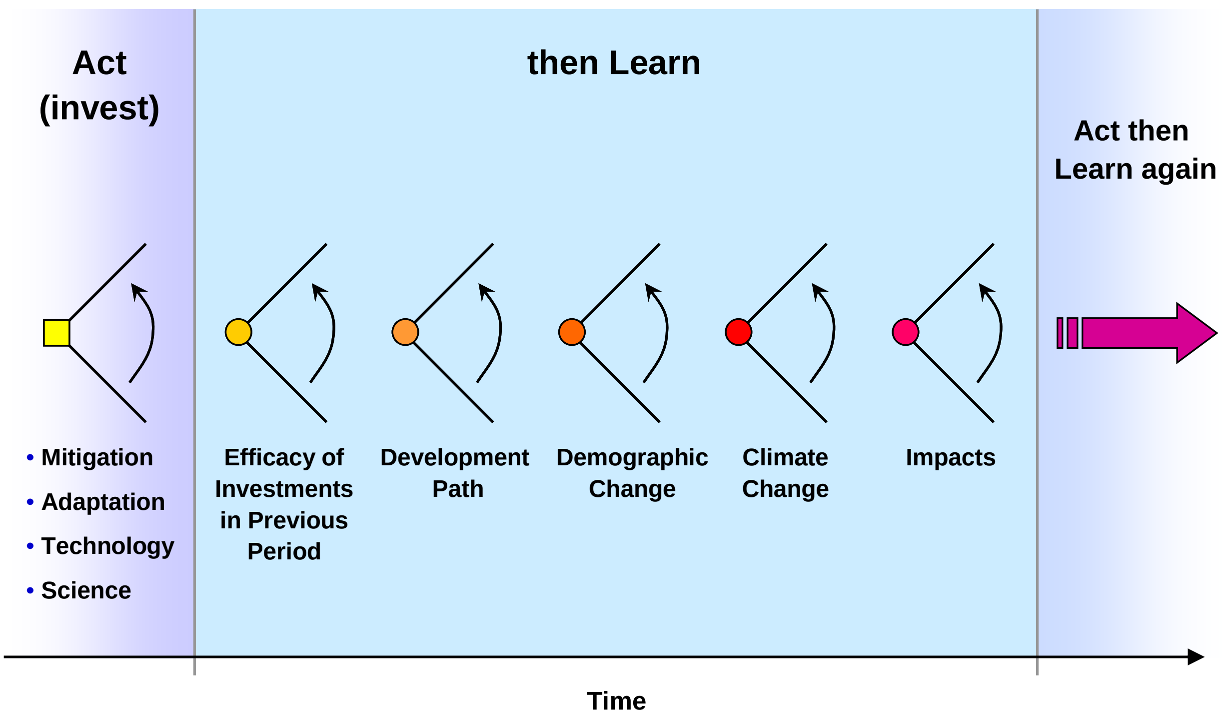


Figure 3.34. *The Sequential Nature of the Climate Policy Process*