

Emissions Scenarios Concentrations Stabilization and Technology Options

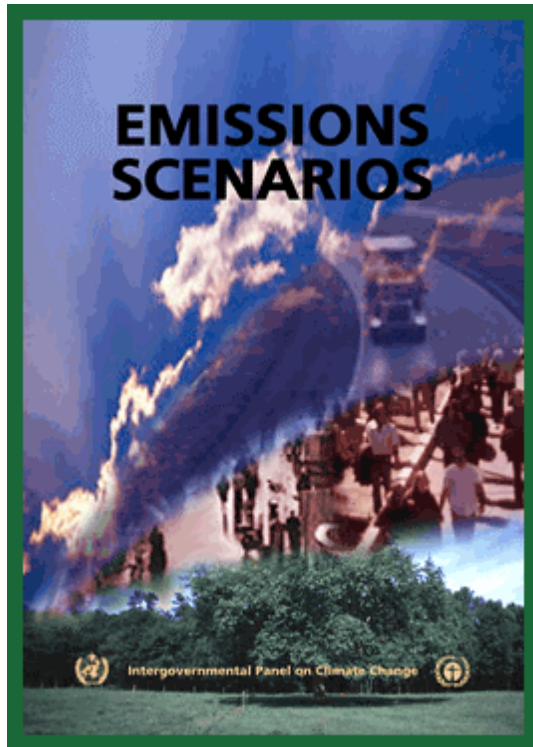
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Emissions Scenarios and Their Driving Forces

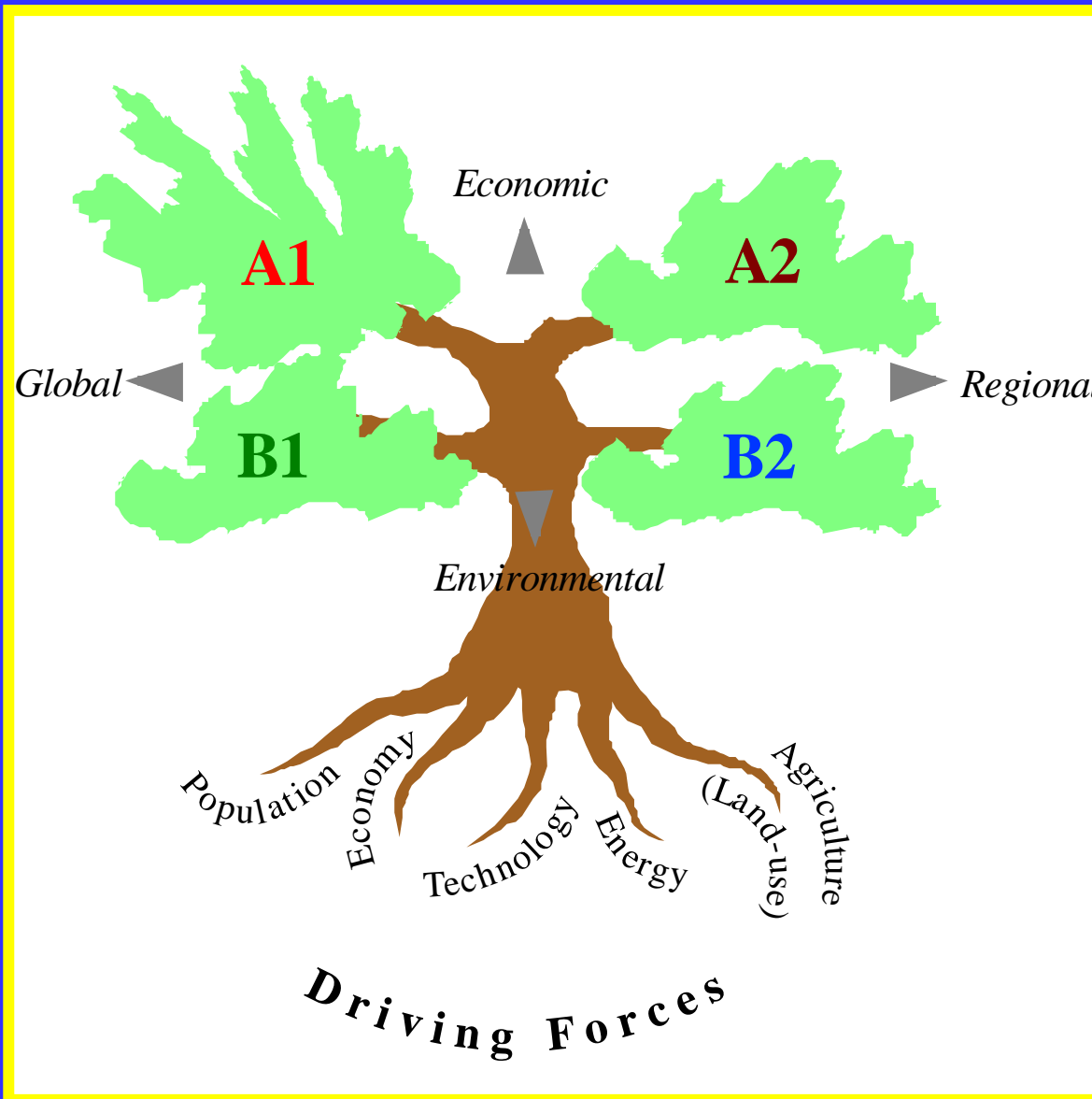
IPCC Special Report



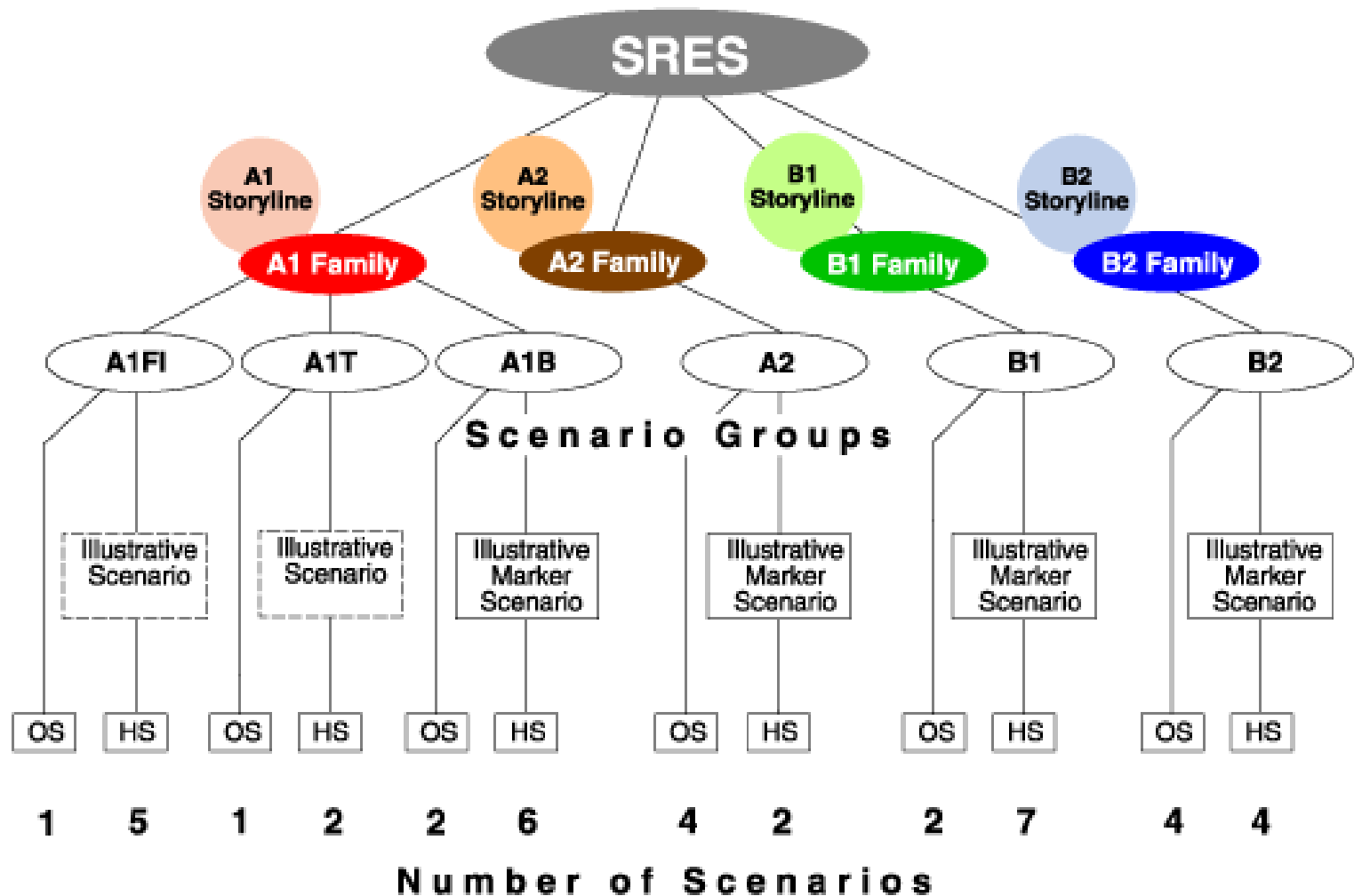
IPCC Emissions Scenarios

- Extensive literature review
- Six modeling frameworks
- Four scenario “families”
- Full range of driving forces
- Full range of emissions

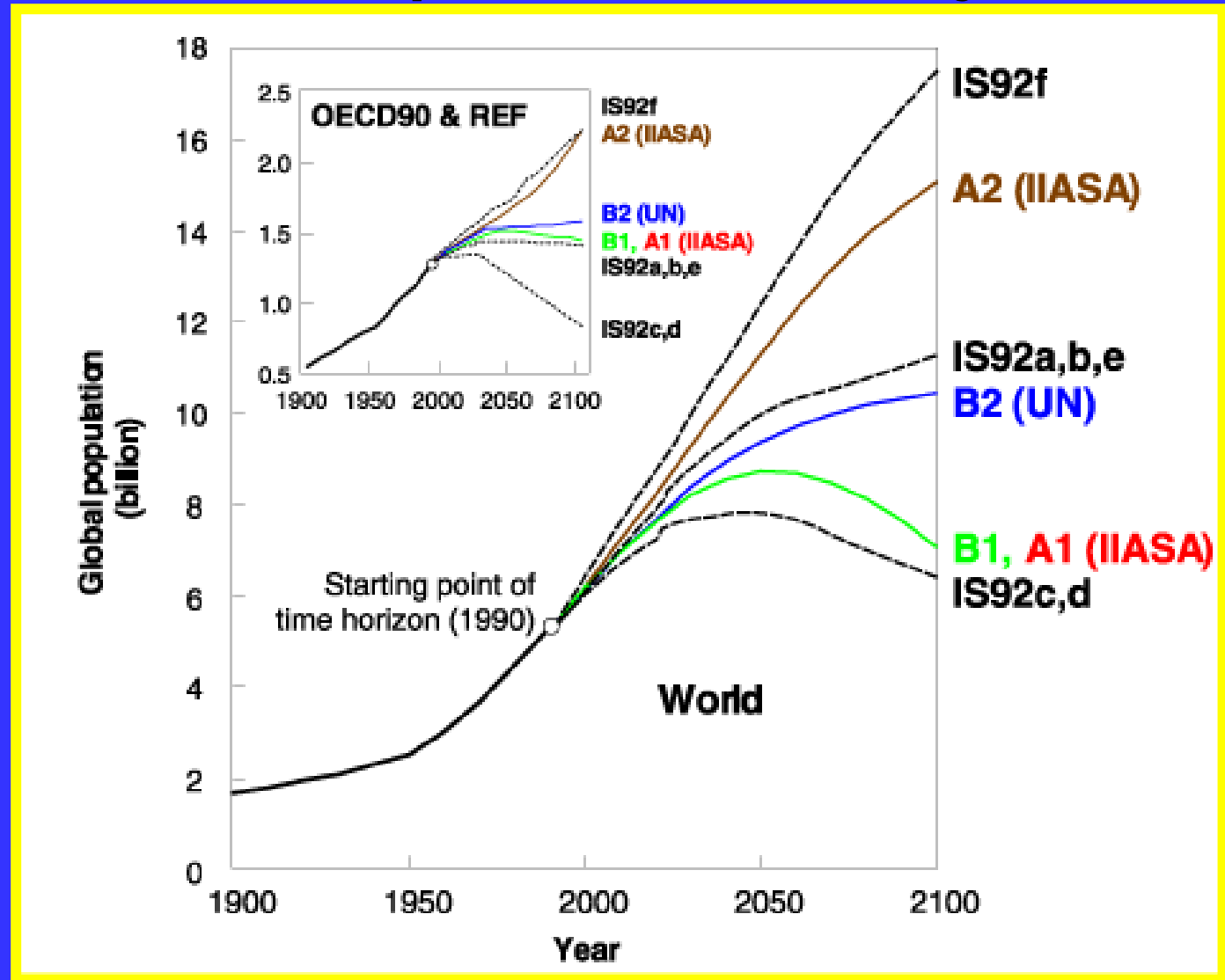
SRES Scenarios



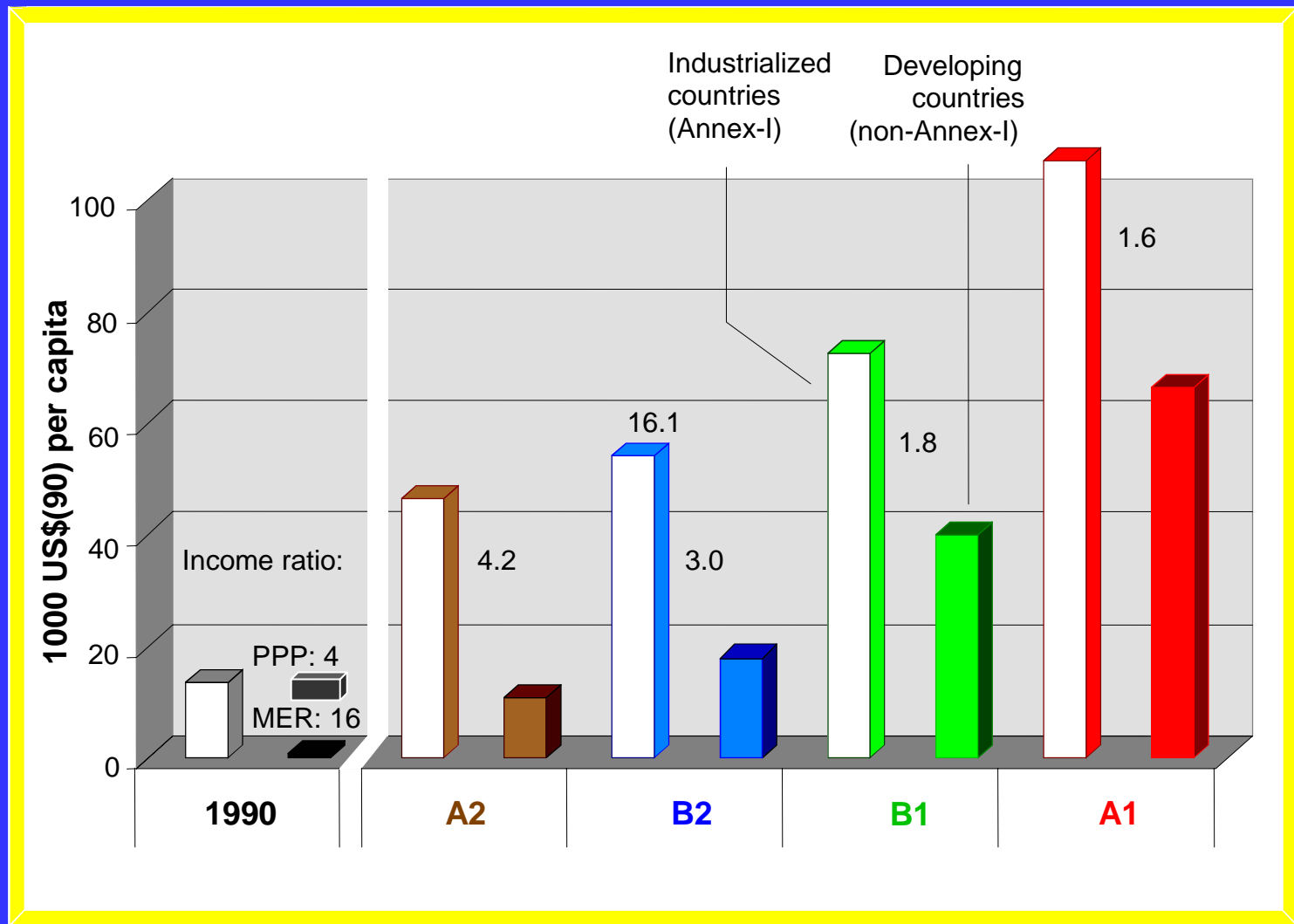
SRES SCENARIOS



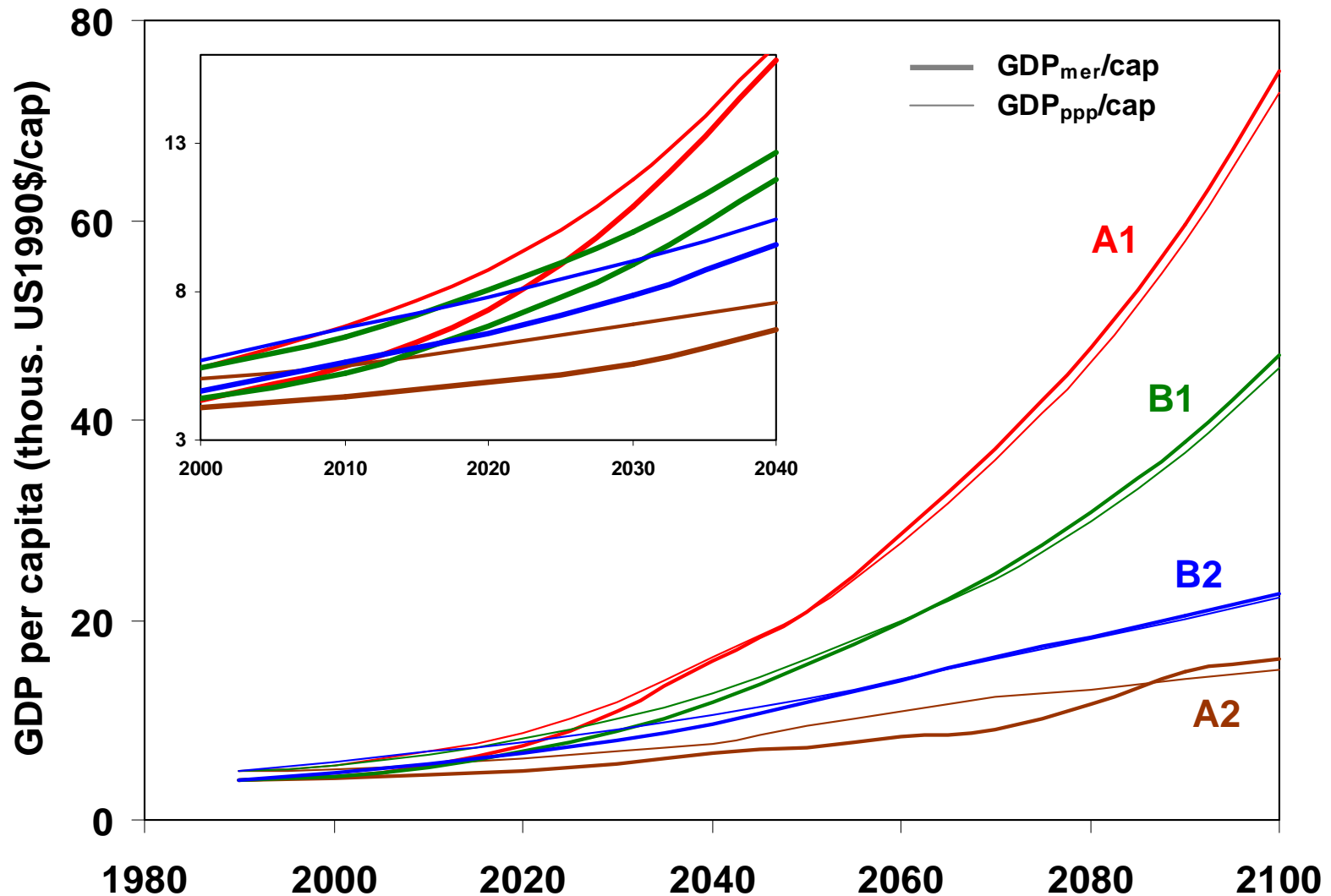
Global Population Projections



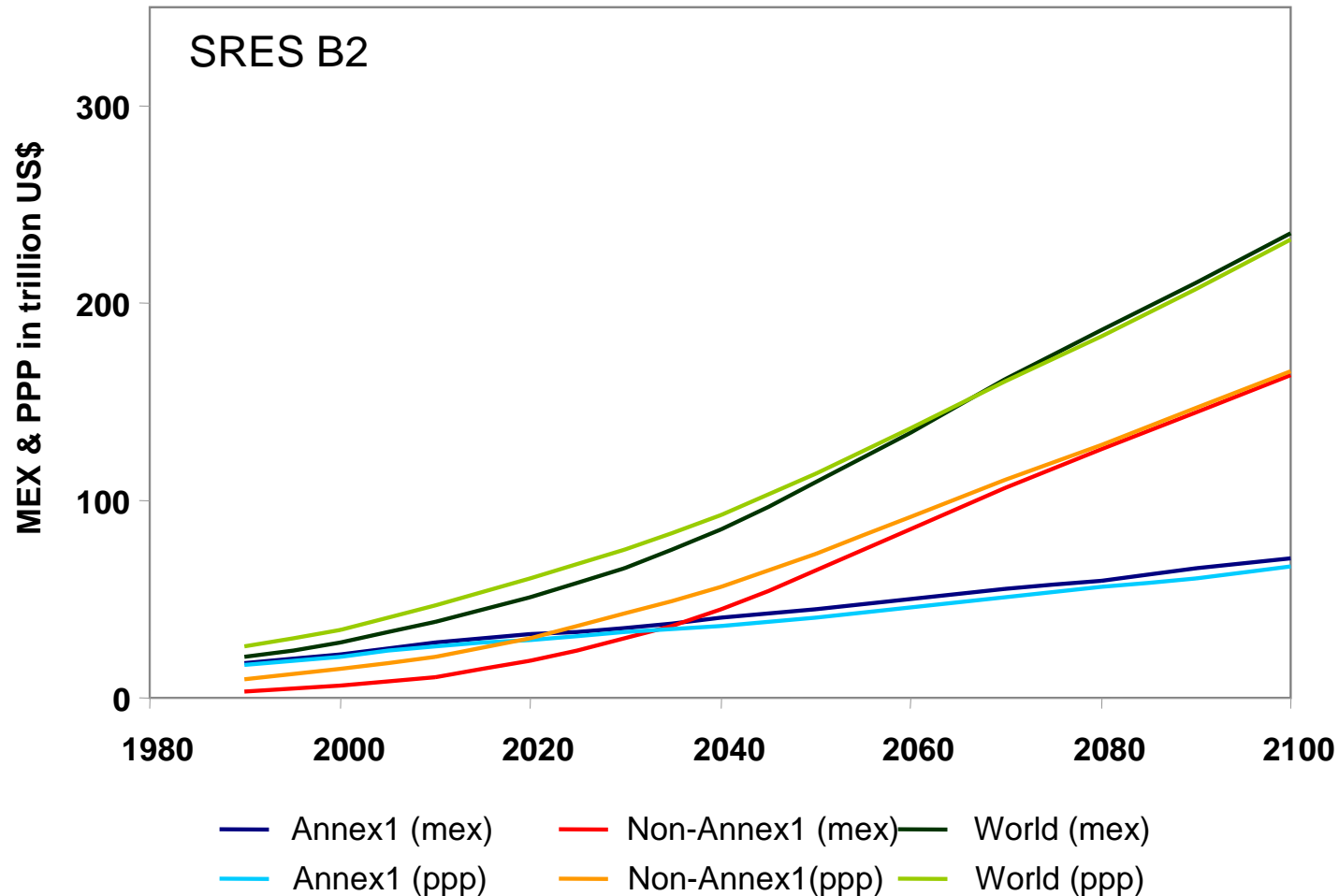
Per Capita Income Across SRES Scenarios



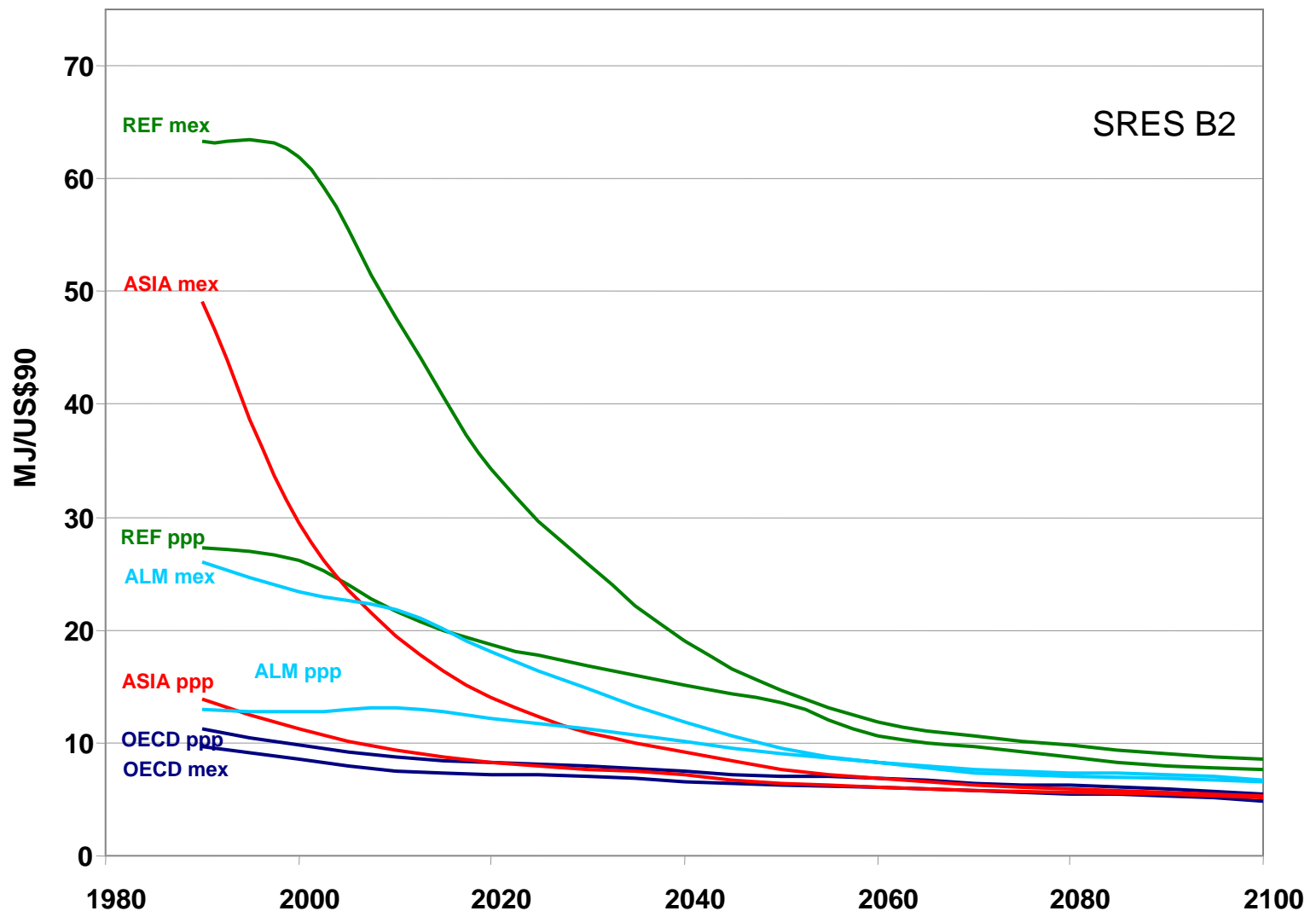
GDP Per Capita in PPP and MER



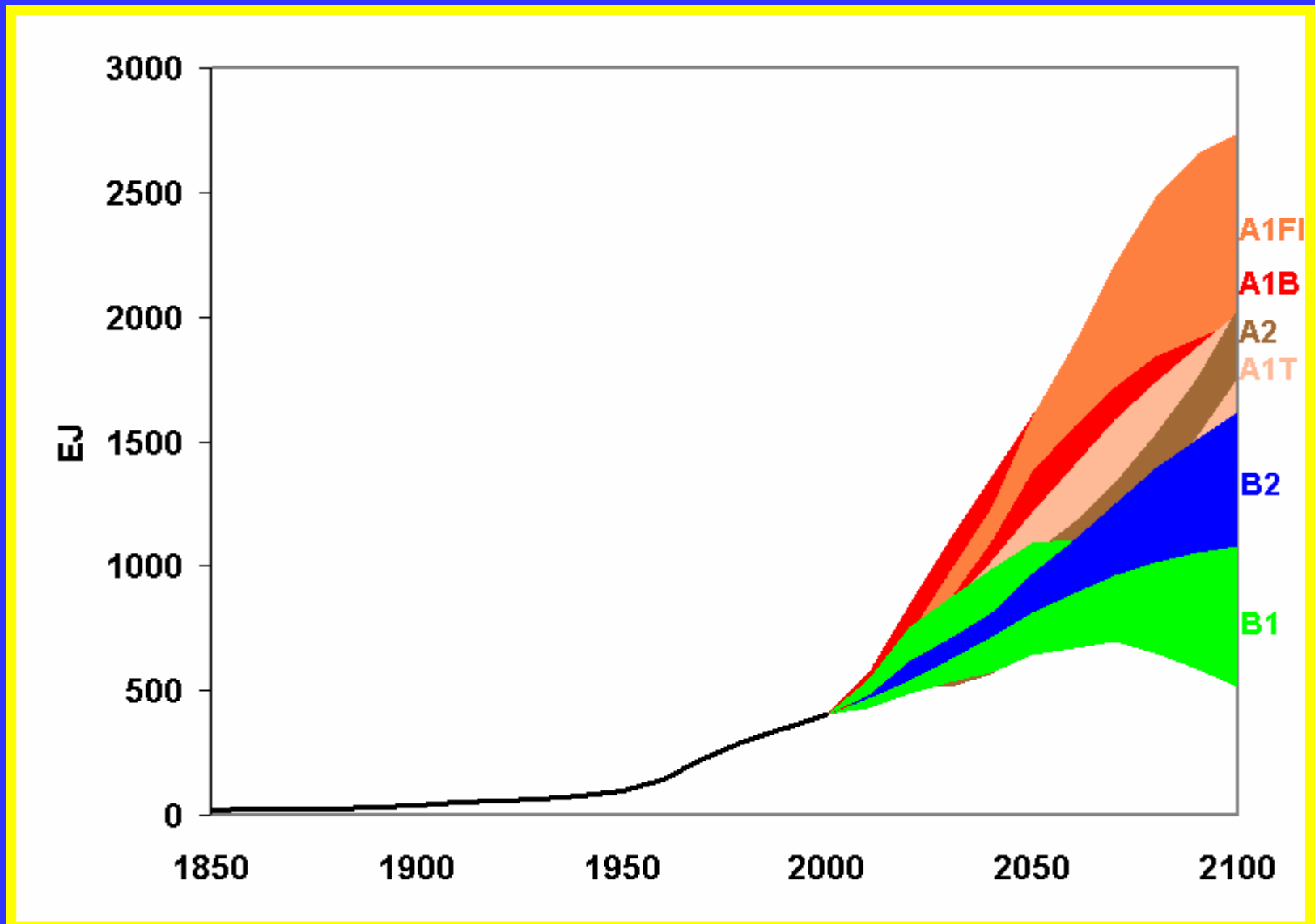
Gross World Product in MEX and PPP



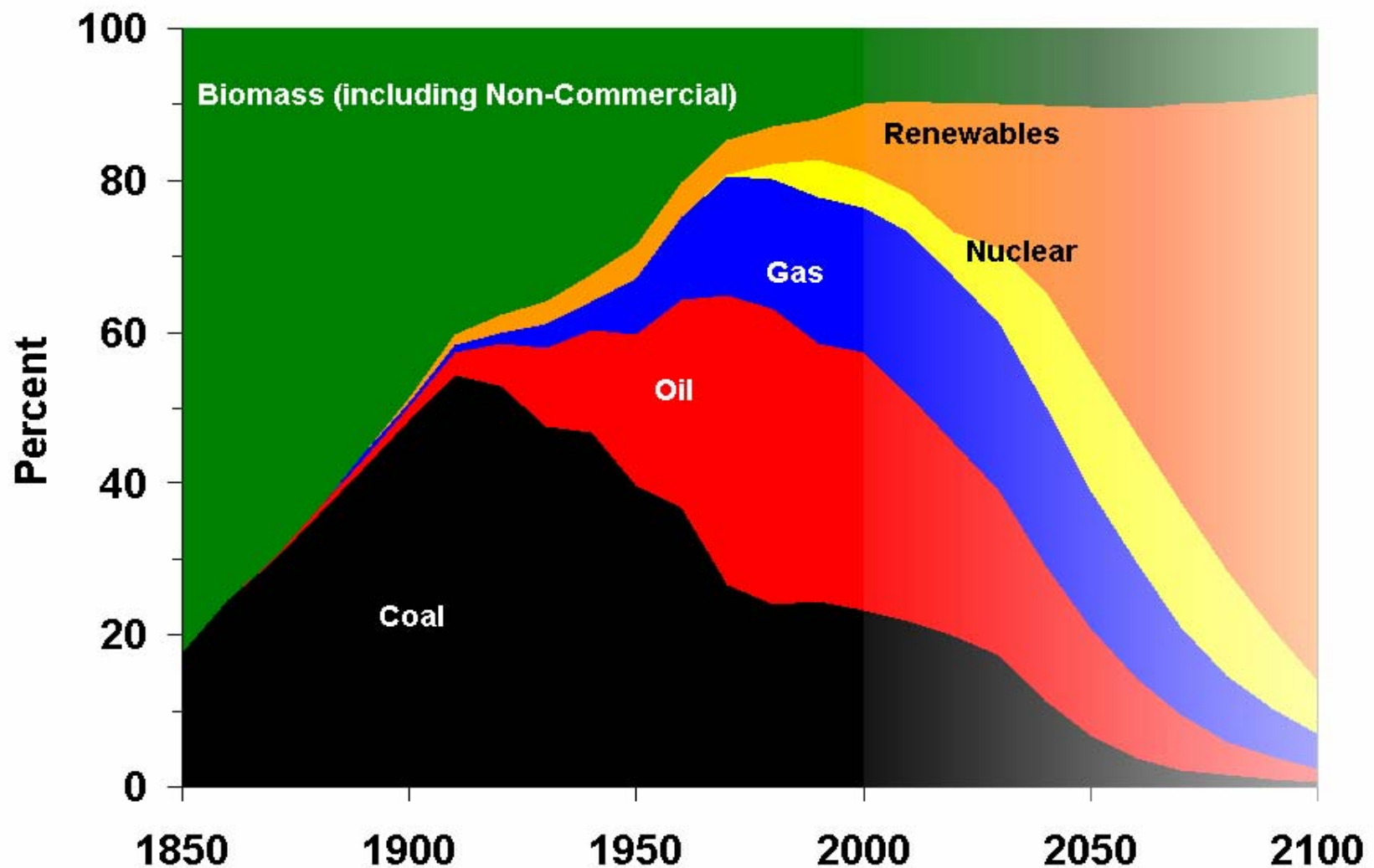
Primary Energy Intensity of GDP MEX and PPP



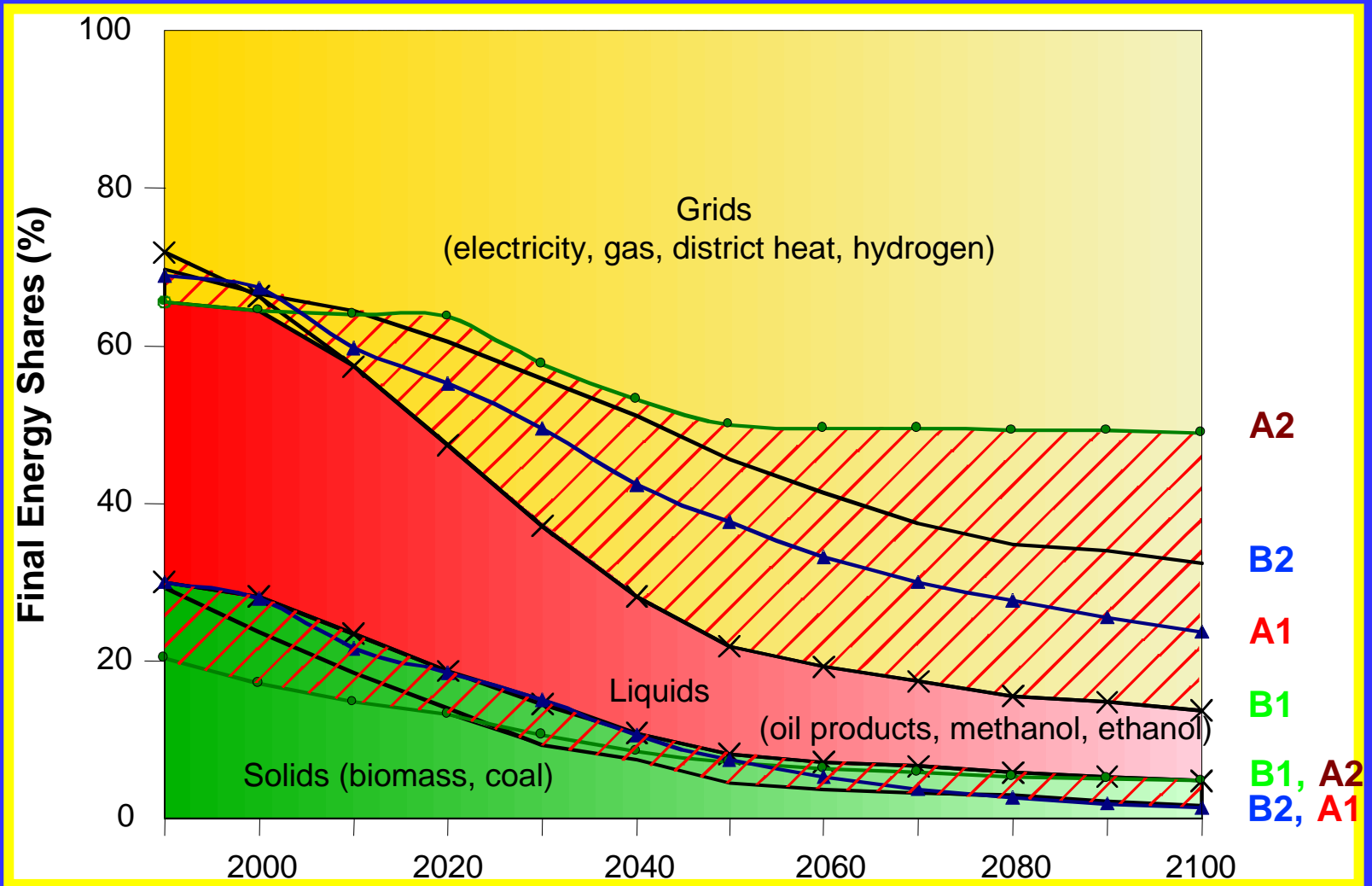
Global Primary Energy Scenarios



Evolution of Global Primary Energy



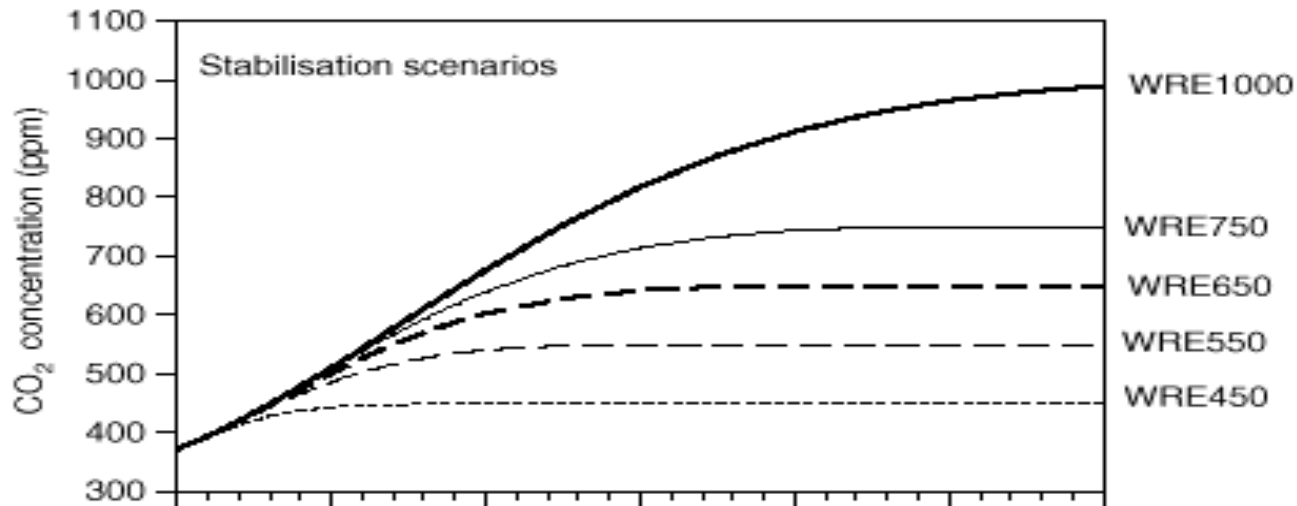
Global Final Energy by Form



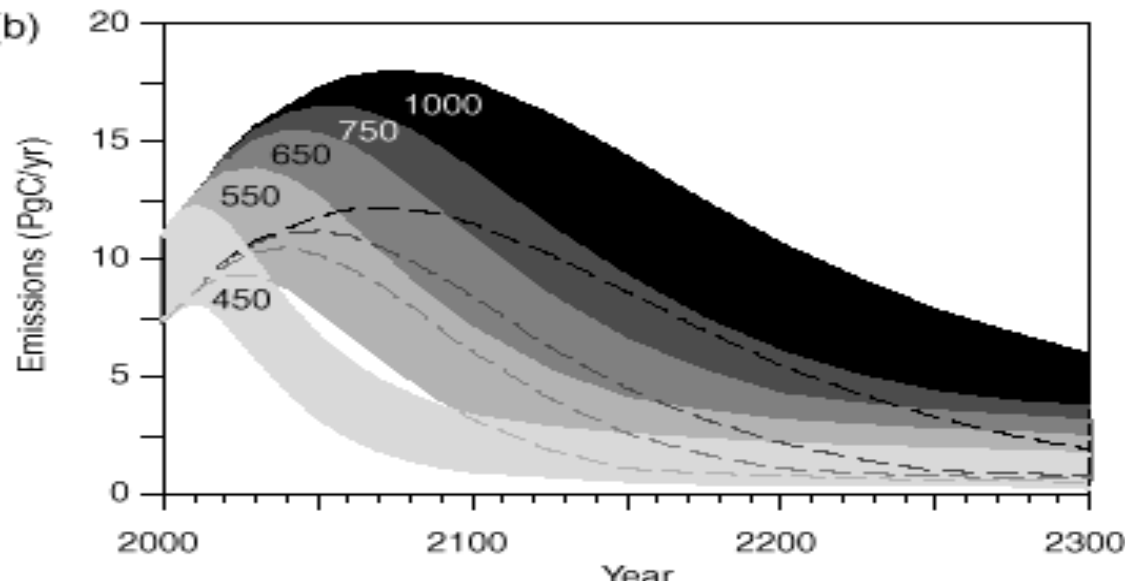
Atmospheric Concentrations and Climate Change

Stabilization of the Atmospheric Concentration of CO_2 Requires Significant Emissions Reductions

(a)

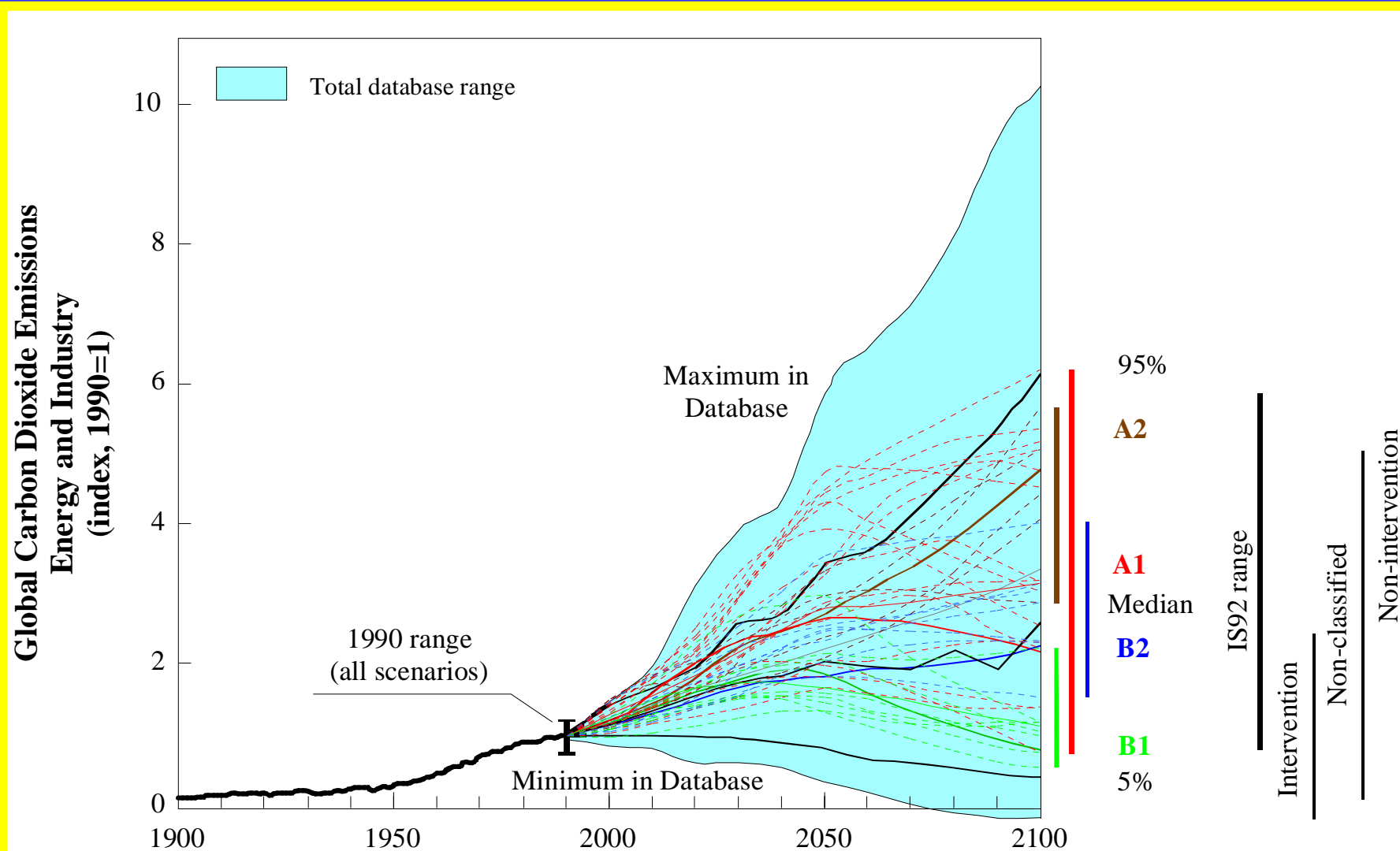


(b)

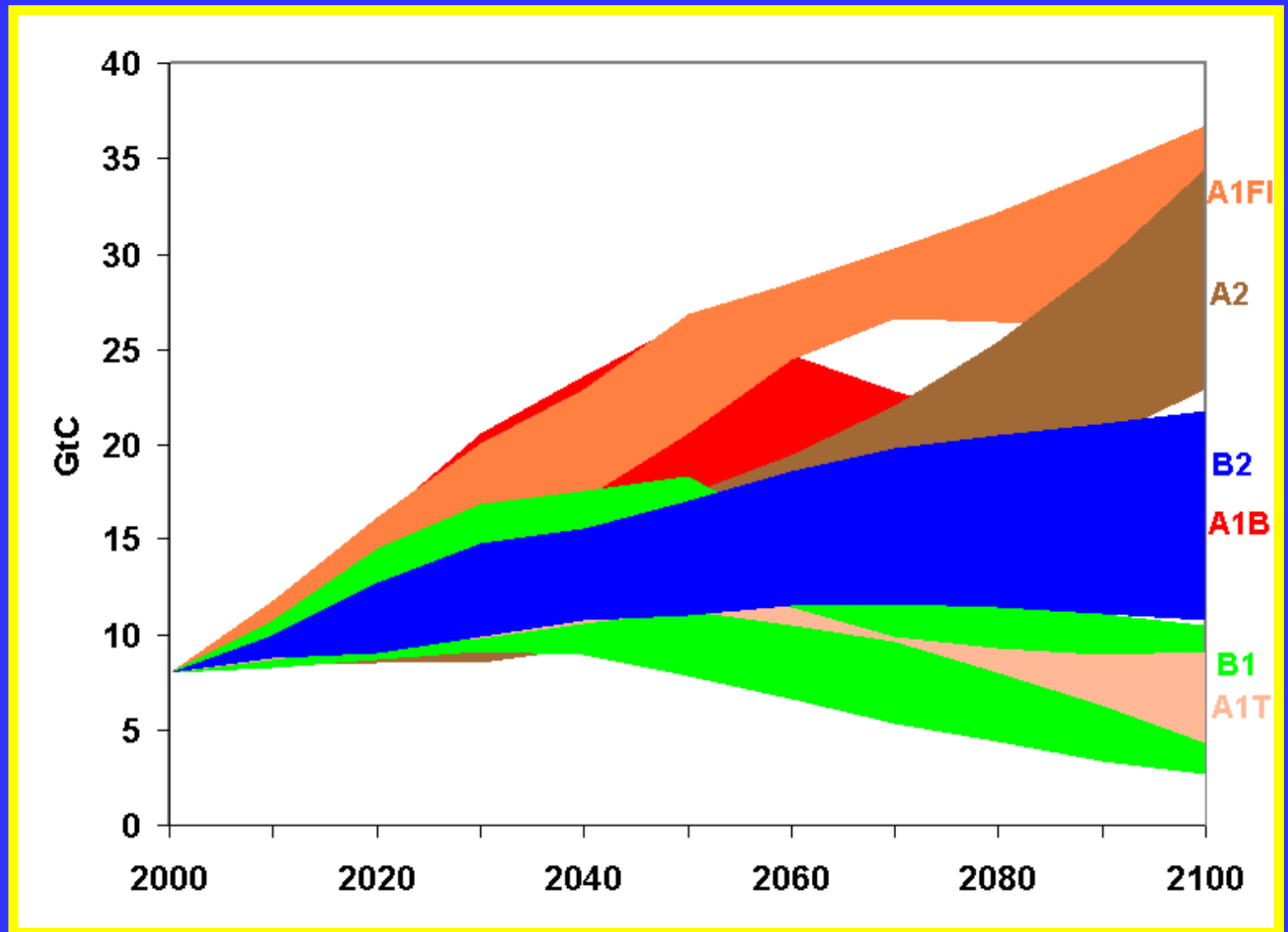


Global Carbon Dioxide Emissions

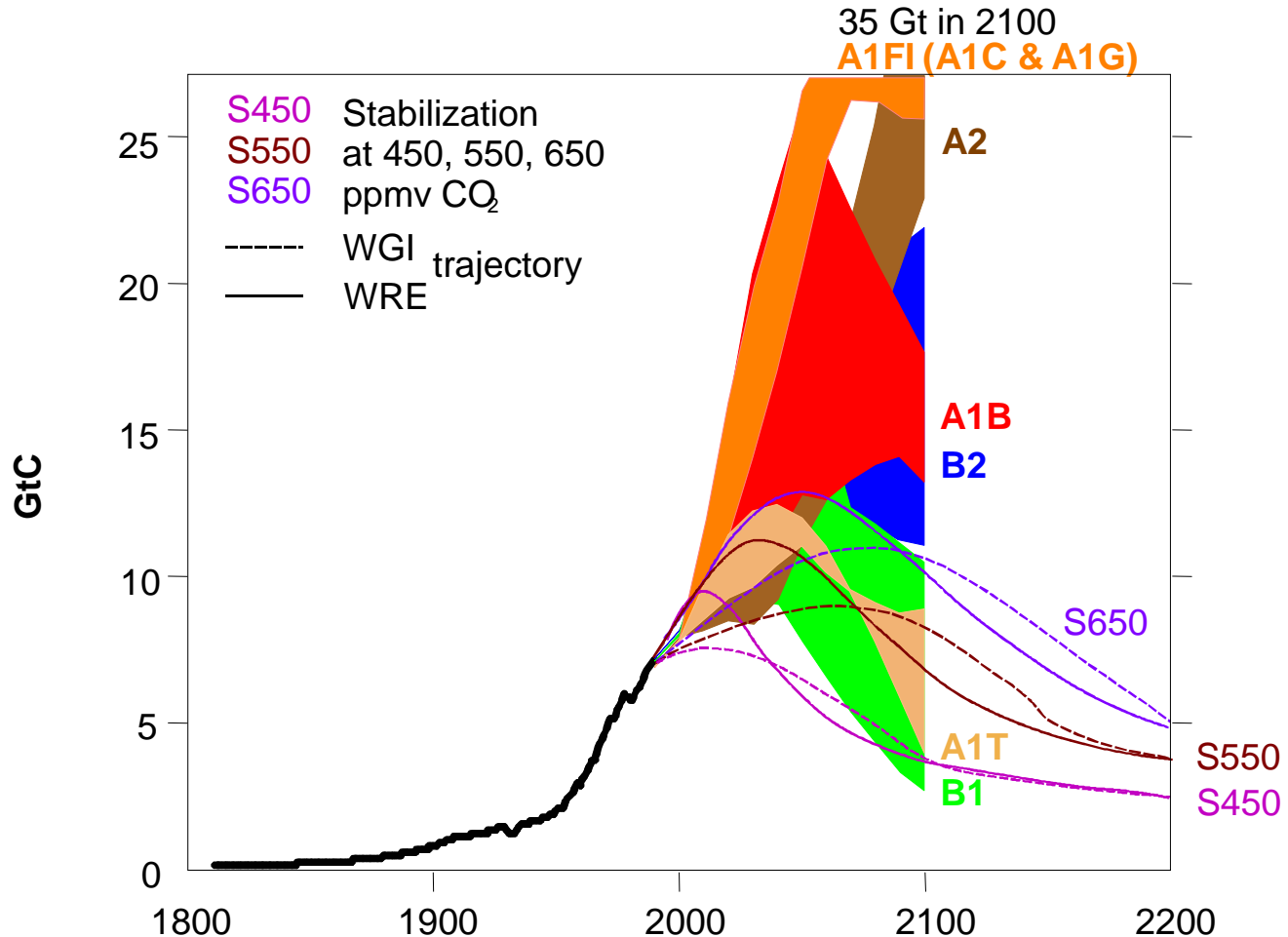
40 SRES Scenarios and Literature Range



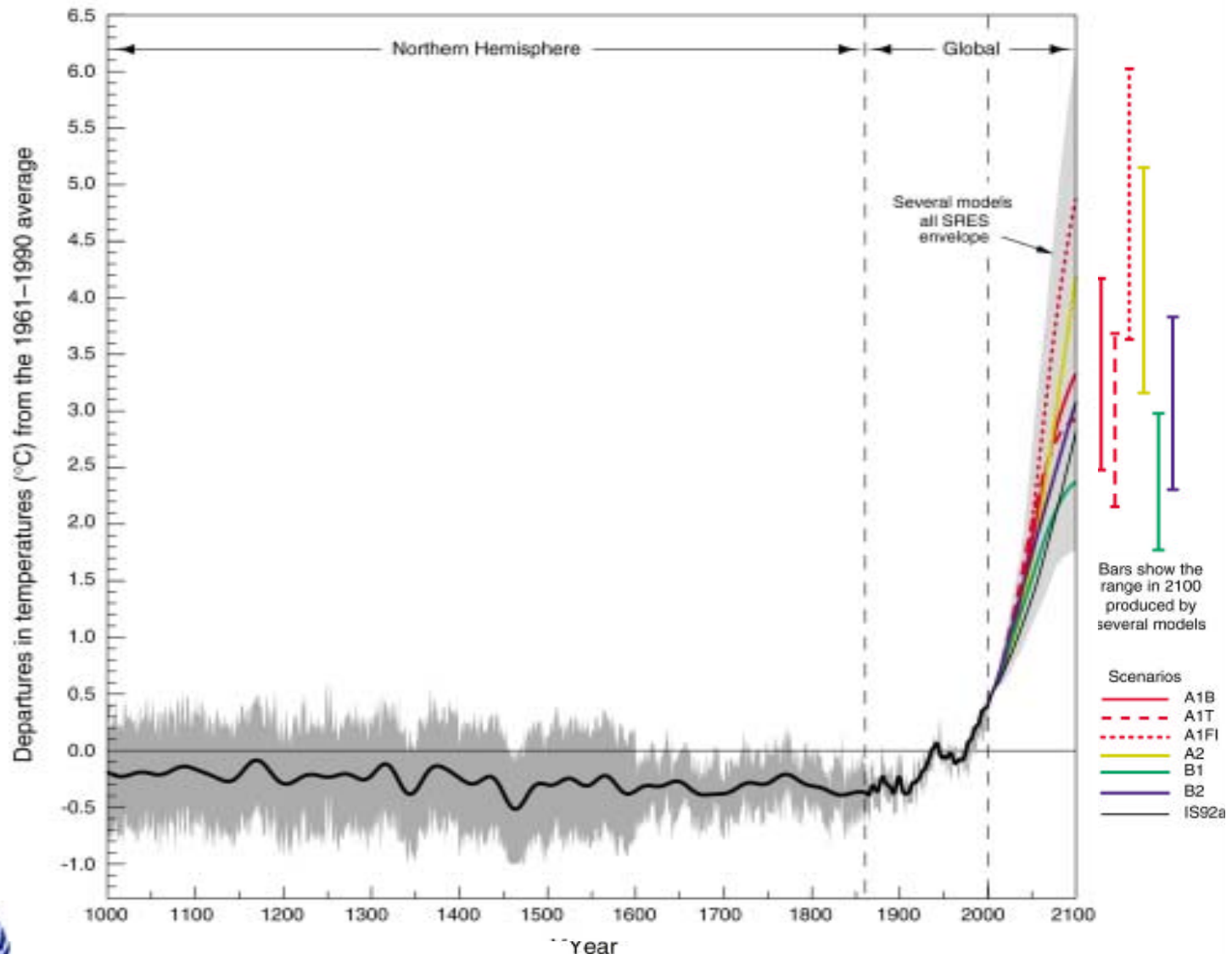
Global Carbon Dioxide Emissions



Carbon Emissions: Scenarios and Stabilization Profiles

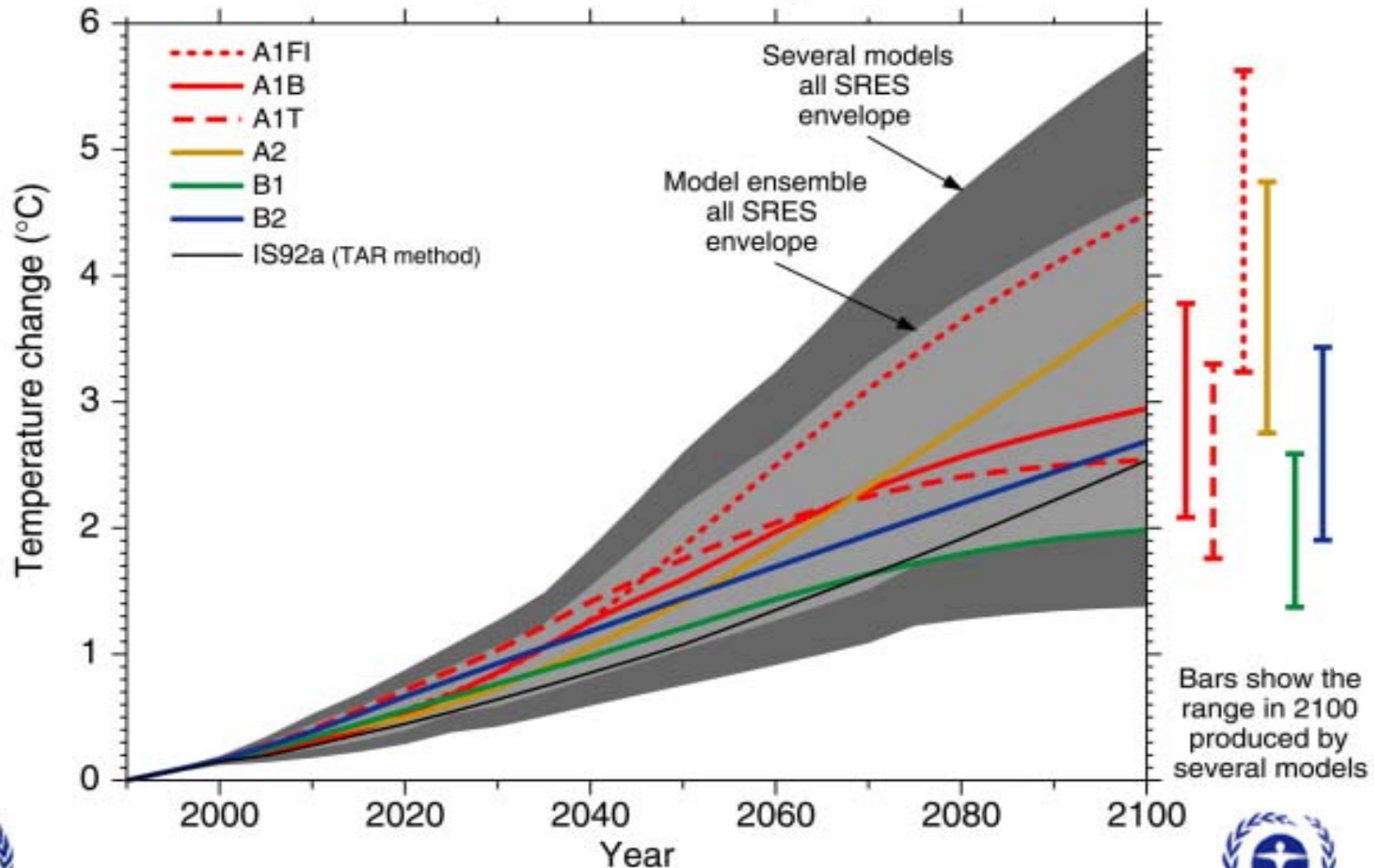


Global Mean Temperature Change



Global Mean Temperature Change

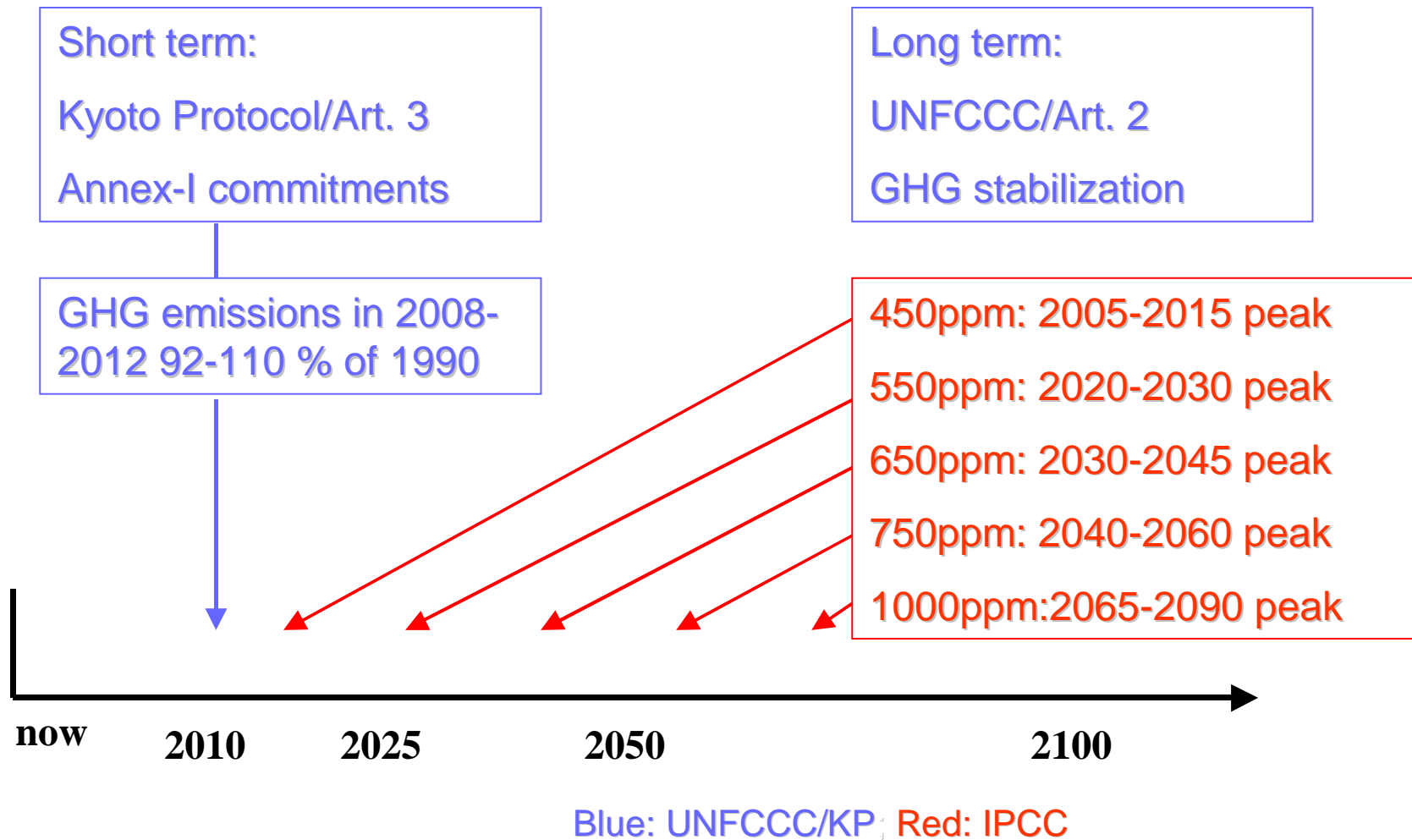
Six illustrative SRES scenarios, full range



INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC)



What is Needed to CO₂ Concentrations?



CO₂ Emissions 1990-2000 and Kyoto Targets

in million tons C, Source: IEA, 2002

Annex I	1990	2000	'90/'00	Target
RF+U	1005.5	698.2	-30.6%	0%
EU	904.0	939.1	3.9%	-8%
Japan	277.8	314.9	13.4%	-6%
Austria	15.4	17.1	10.3%	-13%

Carbon Dioxide Emissions in Mt CO₂

	1990	2000	00/90	target (1)		1990	2000	00/90	target (1)
ANNEX I	13 558.8 e	13 711.3	1.1%		Economies in Transition	3 687.4 e	2 560.1	-30.6%	
Annex II	9 871.3	11 151.2	13.0%		Belarus	..	55.5	..	none
<i>North America</i>	<i>5 255.9</i>	<i>6 192.2</i>	<i>17.8%</i>		Bulgaria	75.2	42.7	-43.2%	-8%
Canada	430.2	526.8	22.4%	-8%	Croatia	..	17.8	..	-5%
					Czech Republic	153.8	118.8	-22.8%	-8%
Europe	3 314.7	3 443.3	3.9%		Estonia	..	14.0	..	-8%
					Hungary	70.5	55.2	-21.7%	-8%
					Latvia	..	6.5	..	-8%
					Lithuania	..	11.2	..	-8%
Denmark	50.6	50.1	-0.9%	-21%	Poland	344.2	292.8	-14.9%	-8%
Finland	55.0	54.8	-0.4%	0%	Romania	166.9	86.4	-48.2%	-8%
France (2)	352.7	373.3	5.8%	0%	Russia	..	1 505.7	..	0%
Germany	964.1	833.0	-13.6%	-21%	Slovak Republic	55.6	37.9	-31.9%	-8%
Greece	70.6	87.7	24.3%	+25%					
Iceland	1.9	2.2	13.6%	+10%	Ukraine	..	301.0	..	0%
Italy	400.1	425.7	6.4%	-6.5%	NON-ANNEX I	6 512.6 e	8 906.9	36.8%	none
Luxembourg	10.5	8.0	-23.1%	-28%	Africa	540.8	685.7	26.8%	none
Netherlands	159.8	177.1	10.8%	-8%	Middle East	568.8	986.2	73.4%	none
Norway	28.5	33.6	17.7%	+1%	Non-OECD Europe (4)	113.9	79.1	-30.5%	none
					Other Former USSR (4)	554.1	325.2	-41.3%	none
Spain	206.5	284.7	37.9%	+15%	Latin America (4)	888.3	1 208.1	36.0%	none
Sweden	51.2	52.0	1.6%	+4%	Asia (excl. China) (4)	1 557.2	2 587.1	66.1%	none
Switzerland (2)	40.6	41.7	2.7%	-8%	China	2 289.5	3 035.4	32.6%	none
Turkey (3)	128.8	204.1	58.5%	none					
United Kingdom	559.9	531.5	-5.1%	-12.5%	MARINE BUNKERS	364.0	460.7	26.6%	
Pacific	1 300.7	1 515.8	16.5%		AVIATION BUNKERS	285.3	343.4	20.4%	
					WORLD TOTAL	20 720.7	23 422.3	13.0%	
New Zealand	22.3	31.7	41.9%	0%	Annex B (5)	8 238.2 e	7 457.0	-9.5%	

- (1) The targets apply to a basket of six greenhouse gases and take sinks into account. The overall EU target under the Protocol is -8%, but the member countries have agreed on a burden-sharing arrangement as listed. Because of lack of data and information on base years and gases, an overall "Kyoto target" cannot be precisely calculated for total Annex I or total Annex B.
- (2) Emissions from Liechtenstein are included with Switzerland, and emissions from Monaco are included with France.
- (3) While Turkey was recently removed from Annex II, it is still included in Annex II statistics in this publication.
- (4) Composition of regions differ from those shown elsewhere in this publication to take into account countries that are not members of Annex I.
- (5) Annex B countries are those that have emission targets under the Kyoto Protocol (listed in Annex B). Membership in Annex B is almost identical to that of Annex I, except for Australia, the United States, Turkey and Belarus (The United States and Australia have expressed their intention not to ratify the Protocol and Turkey and Belarus did not agree to a target under the Kyoto Protocol).

The Greenhouse "Barometer"

