



Technical and Policy Perspective: Climate Change Mitigation and Adaptation





Mitigation: Technical Perspective

- Global Level
 - Future emission and climate change
 - Requirement of GHG reduction to keep temperature below 2 degree – peaking and decline
 - Mechanism – baseline, additionality, leakage etc
- National Levels
 - Greenhouse gas accounting – reporting methodology and emission co-efficient, design and development of CDM projects
 - Institutional capacity – technical skill and human resource

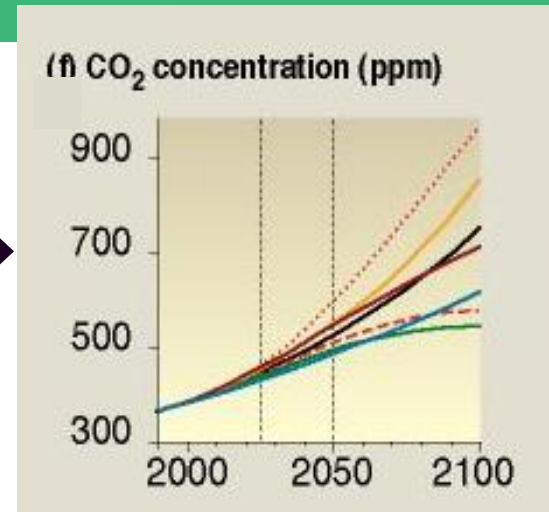
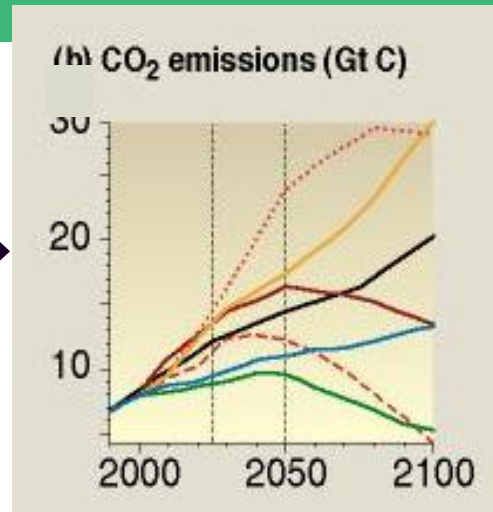
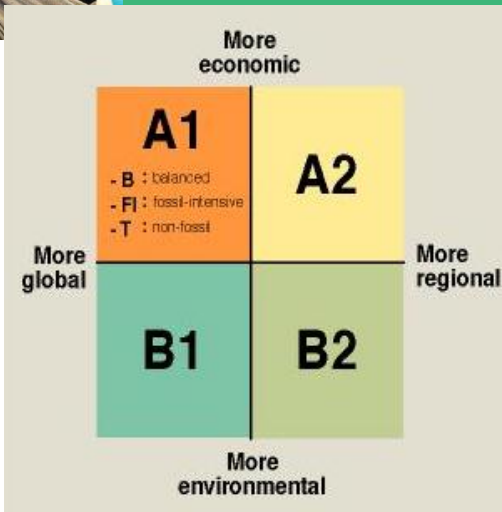


Reading the Signs – Future Storyline

Socio-economic scenarios

Emissions

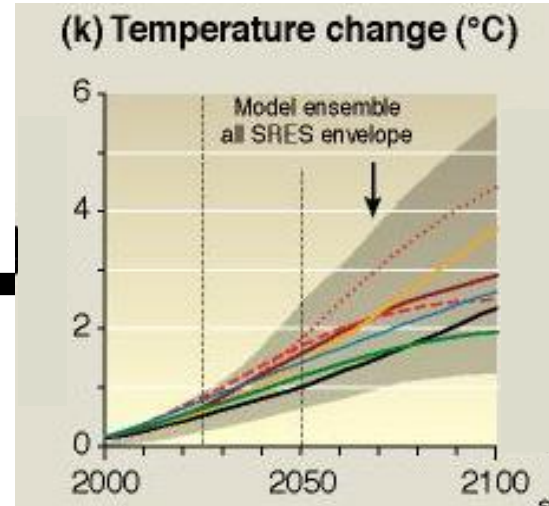
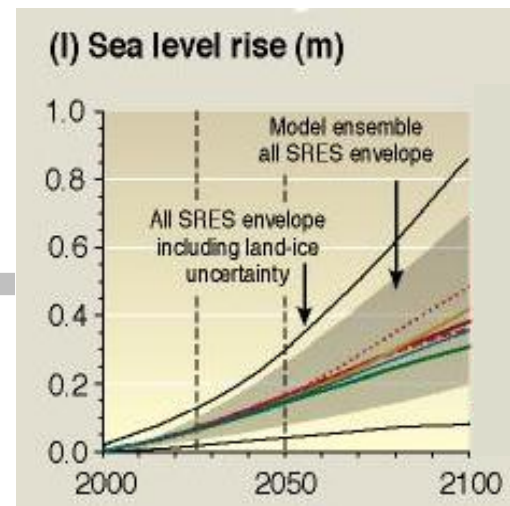
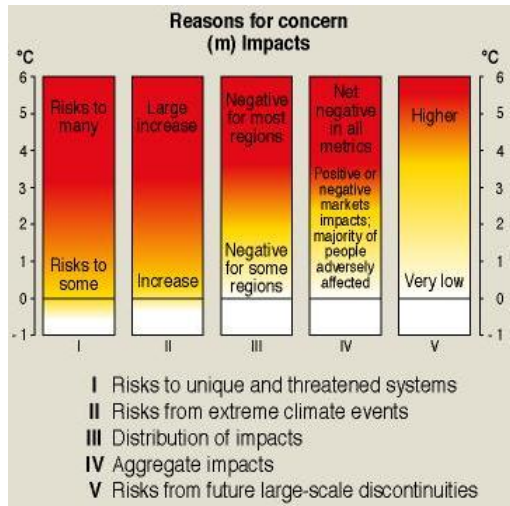
Concentrations



Reasons for concern

Sea level rise

Temperature change



Source: IPCC,

2007 **UNite to combat CLIMATE CHANGE**

ASIA PACIFIC
**ADAPTATION
NETWORK**



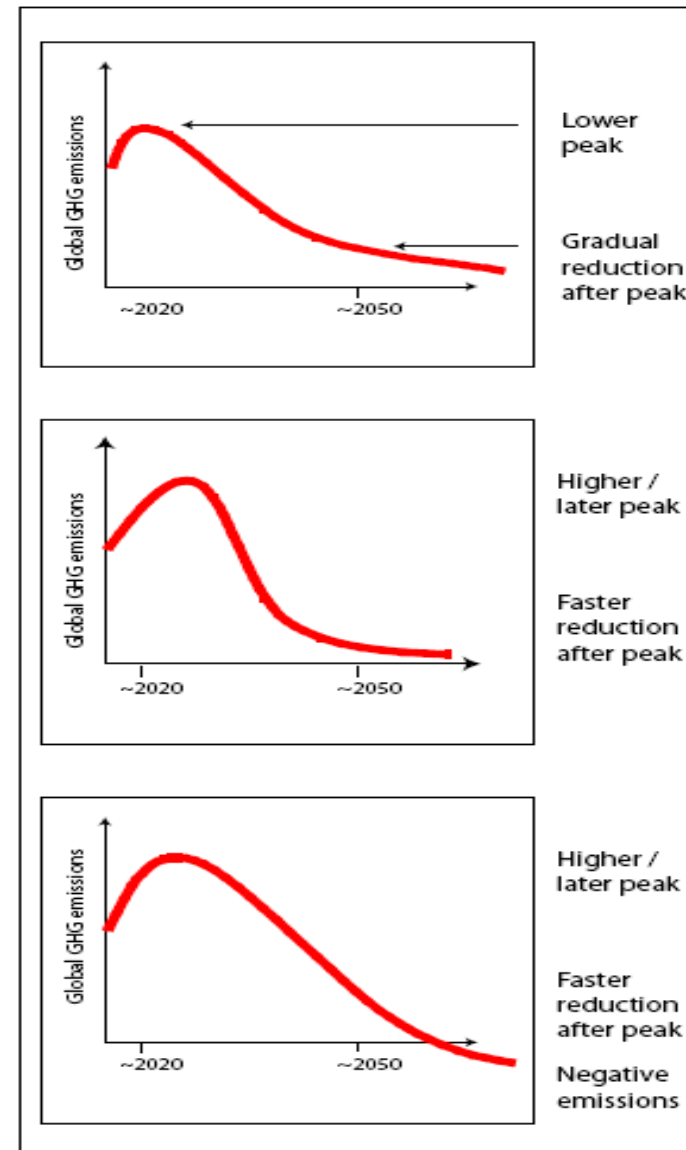
Future Storylines

Set	SRES						
Family	A1				A2	B1	B2
Scenario Group	A1C	A1G	A1B	A1T	A2	B1	B2
Population growth	low	low	low	low	high	low	medium
GDP growth	very high	very high	very high	very high	medium	high	medium
Energy use	very high	very high	very high	high	high	low	medium
Land- use changes	low-medium	low-medium	low	low	medium/high	high	medium
Resource availability	high	high	medium	medium	low	low	medium
Pace and direction of technological change favouring	rapid	rapid	rapid	rapid	slow	medium	medium
	coal	oil & gas	balanced	non-fossils	regional	efficiency & dematerialization	“dynamics as usual”



What are we aiming for?

1. Meeting a temperature target depends largely on *cumulative* emissions
2. Different pathways correspond to same cumulative emissions





Mitigation: Policy Perspective

- Global Level
 - Kyoto Protocol and Continuation
 - UNFCCC and legally binding agreement under AWG-LCA for developed and developing countries
 - Developed countries commitment – own reduction and supporting countries on Finance, Technologies and Capacity Building
 - Developing countries commitment - NAMA
- National
 - National Policy and Strategy – CDM, MANA,



UNFCCC: Copenhagen Accords, 2009

- **Emission reduction targets for industrialized countries:**
 - Annex 1 Parties commit to implement, individually or jointly, quantified economy-wide emissions targets for 2020;
 - Pledges are not close to the 25-40% reduction by 2020 from 1990 baselines – a reduction that is likely to be needed to remain temperature increase below 2 degree
- **Nationally appropriate mitigation actions by developing countries:**
 - Non-Annex I Parties to the Convention will implement mitigation actions and will list their voluntary pledges;
 - A number of key countries such as China and India proposed their own “carbon intensity” targets as a first step towards deviation from business as usual growth.



UNFCCC: Copenhagen Accords, 2009

- **Financial and technological resources to assist developing countries in mitigation and adaptation:**
 - The Accord includes commitment by developed countries to provide US\$30 billion over the next three years to support developing country adaptation and mitigation efforts;
 - The Accord also includes a commitment to the goal of mobilizing US\$100 billion a year by 2020, and a Panel to study potential sources of revenue for these funds.
- **Institutional setup and on the governance structure to channel financial and other support to developing countries:**
 - The Accord calls for the establishment of the Copenhagen Green Climate Fund as an operating entity of the financial mechanism of the Convention to support projects.



UNFCCC: Copenhagen Accord - mitigation pledges

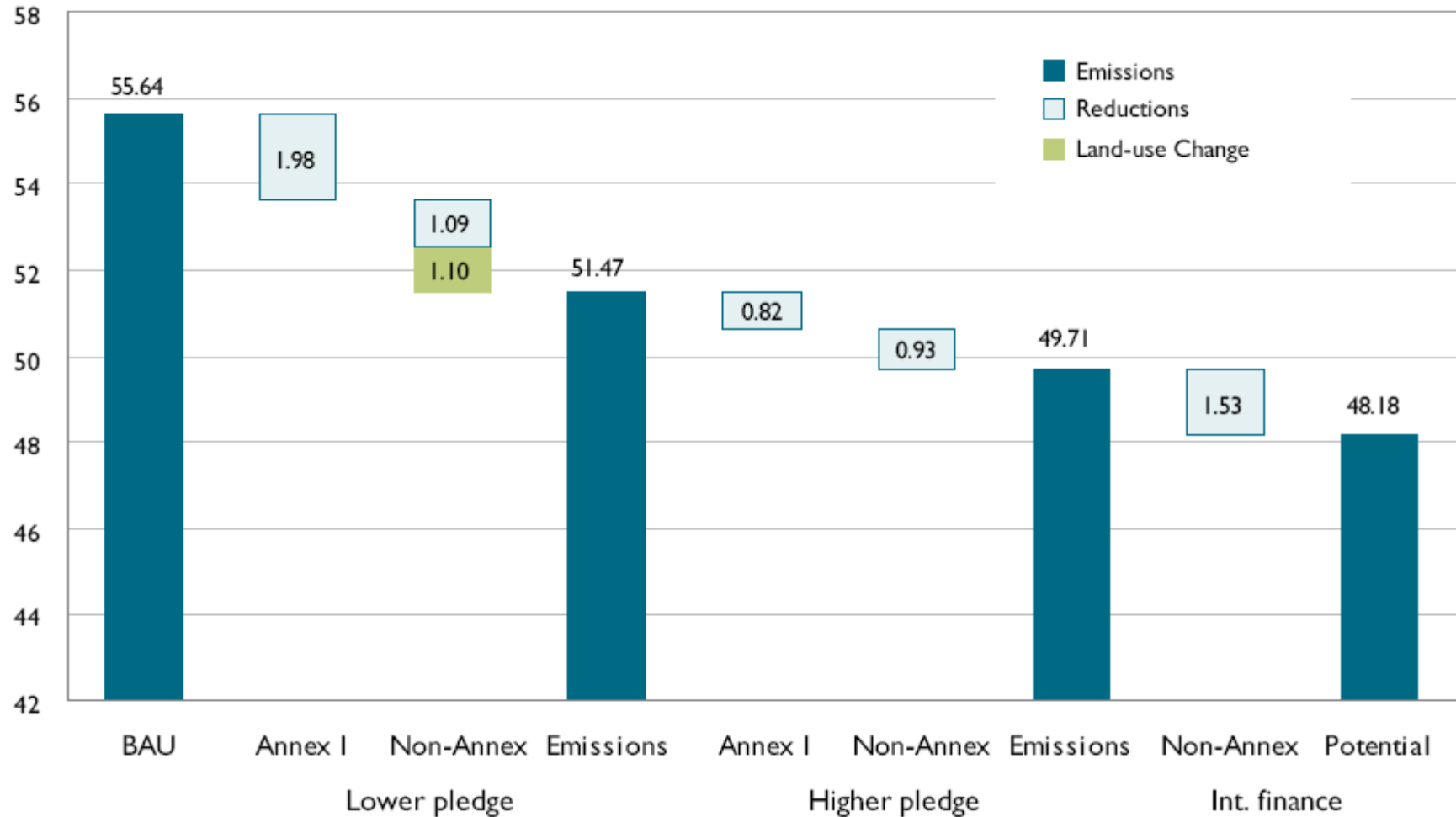
- 106 Countries supported Copenhagen Accord (40 developed and 66 developing) initially which has grown to 117;
- 72 have listed specific national emission reduction plans;
- The national pledges currently listed in the Copenhagen Accord would reduce emissions to between 49.7 and 51.5 billion tons in 2020;
- \$50 billion international financial assistance for mitigation could reduce emissions to as low as 48 billion tons.

Source:
Trevor Houser, March 2010
UNFCCC, November 2010



Copenhagen Accord: Mitigation Potential

billion tons CO₂e

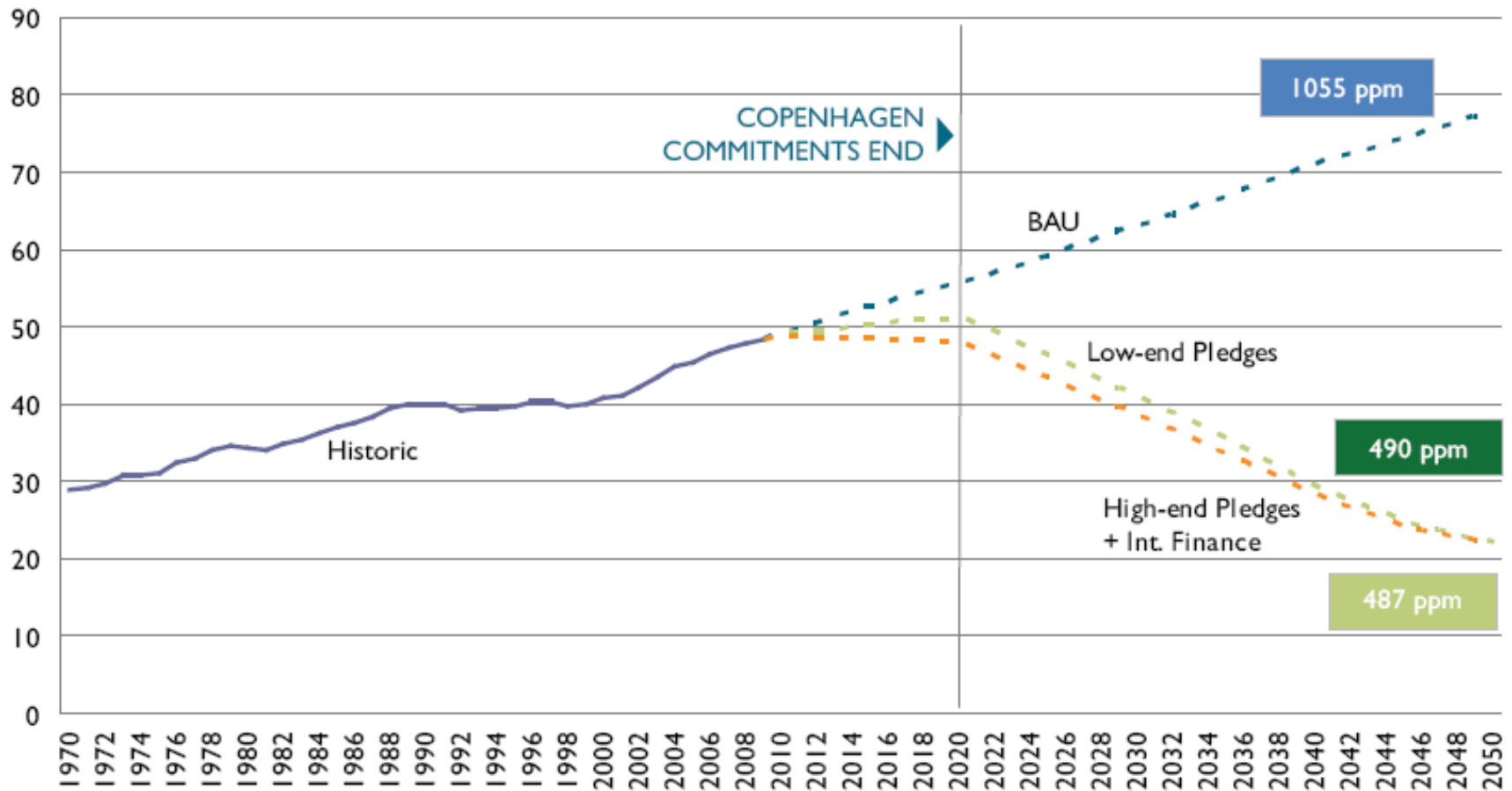


Source: Trevor Houser, March 2010



Copenhagen Accord: Mitigation up to 2050

billion tons CO₂e - potential emission reductions following the pledges in the Copenhagen Accord and resulting atmospheric concentrations in 2100.

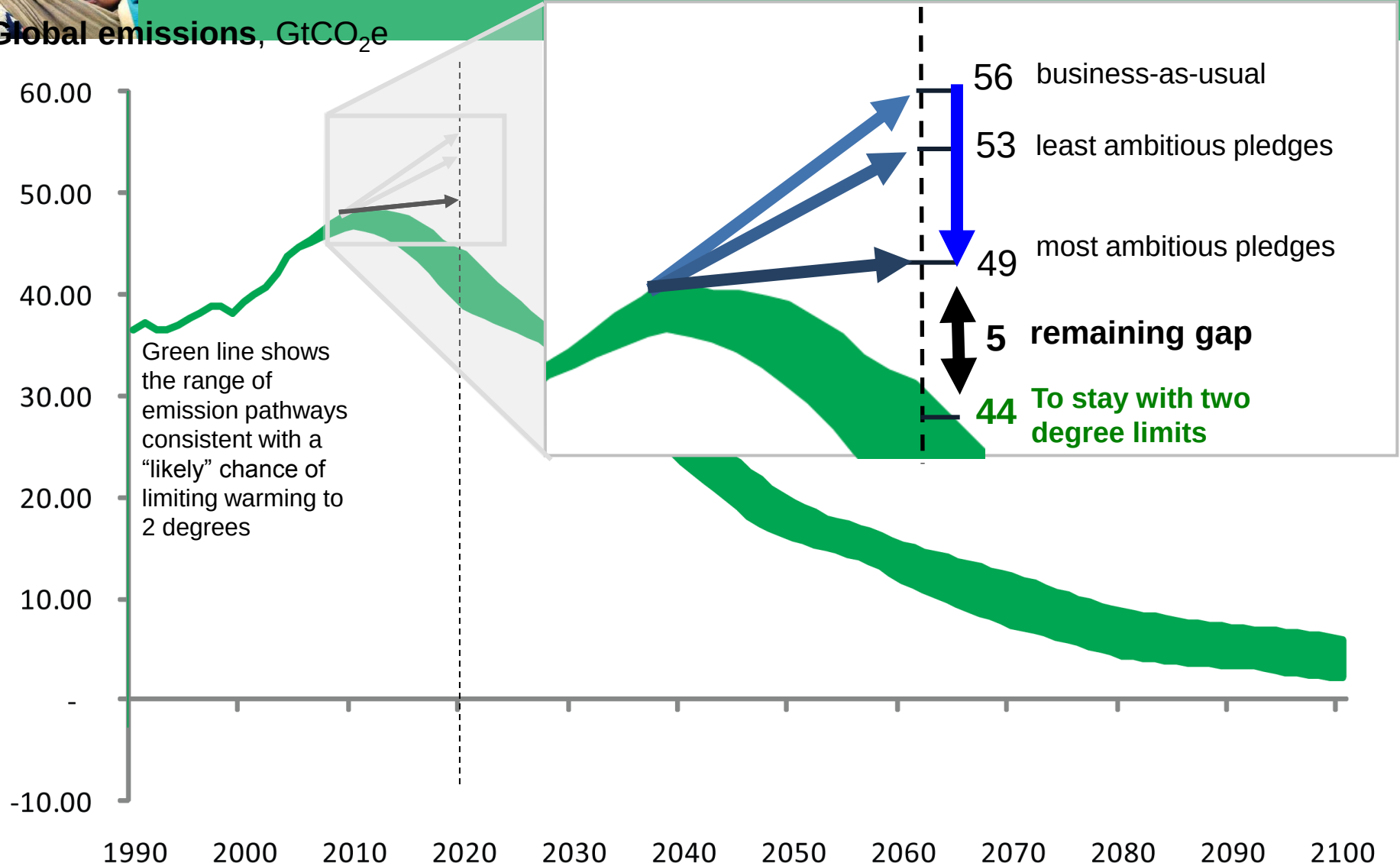


Source: Trevor Houser, March 2010



Where are we heading?

Global emissions, GtCO₂e



UNEP thanks Joeri Rogelj (ETHZ) and the European Climate Foundation for graphics

1 This is the median estimate of modelling groups, estimates range from 47-51 GtCO₂e (20th to 80th percentile)

Source: Adapted from The Emissions Gap report, UNEP, 2010



Main Options for Reducing the Gap

- **Increase in ambition** of country targets from those with targets
- **National emissions outperforming targets** due to policies not reflected in national targets, international finance beyond that required to deliver the existing pledge
- **Mitigation in sectors not covered by national targets** –e.g. international aviation and maritime

And essential complimentary actions

- **Addressing short lived climate forcers**, e.g. black carbon, tropospheric ozone and other gases such as HCFCs, HFCs



Adaptation: Technical Perspective

- National, sub-national and local levels
 - Changes in temperature, rainfall, sea level and extreme events – global, regional, national, sub-national, local
 - Capacity to assess impacts, vulnerability and adaptation
 - Baseline condition and adaptive capacity





Impact-Vulnerability-Adaptation: Relationship

Impacts
Event = $\sum \int$ Intensity of
Event



$\times \int$ Baseline
Conditions

$\times \int$ Adaptive
Capacity





Projected Global Average Surface Warming and Sea Level Rise

Thermal Expansion	Temperature Change (°C at 2090-2099 relative to 1980-1999)		Sea Level Rise (m at 2090-2099 relative to 1980-1999)
Case	Best estimate	Likely range	Model-based range excluding future rapid dynamical changes in ice flow
B1 Scenario	1.8	1.1 – 2.9	0.18 – 0.38
A1T Scenario	2.4	1.4 – 3.8	0.20 – 0.45
B2 Scenario	2.4	1.4 – 3.8	0.20 – 0.43
A1B Scenario	2.8	1.7 – 4.4	0.21 – 0.48
A2 Scenario	3.4	2.0 – 5.4	0.23 – 0.51
A1FI Scenario	4.0	2.4 – 6.4	0.26 – 0.59



Changes – Temperature and Rainfall

- Temperature, Rainfall etc. – Projected

Model	Year	Temperature change (°C) Mean (standard deviation)			Precipitation change (%) Mean (standard deviation)			Sea Level Rise (cm)
		Annual	DJF	JJA	Annual	DJF	JJA	
GCM	2030	1.0	1.1	0.8	5	- 2	6	14
PRECIS	2030 (Max)	0.3	-0.02	1.3*	4	-8.7	3.8	
	2030 (Min)	1.18	0.65	1.78*				
GCM	2050	1.4	1.6	1.1	6	- 5	8	32
PRECIS	2050 (Max)	0.2	0.07	0.89*	2.3	-4.7	3.0	
	2050 (Min)	1.24	0.59	1.65*				

Source: MoEF, 2005, BUET, 2008

Note: * IIAS



Changes – Temperature and Rainfall

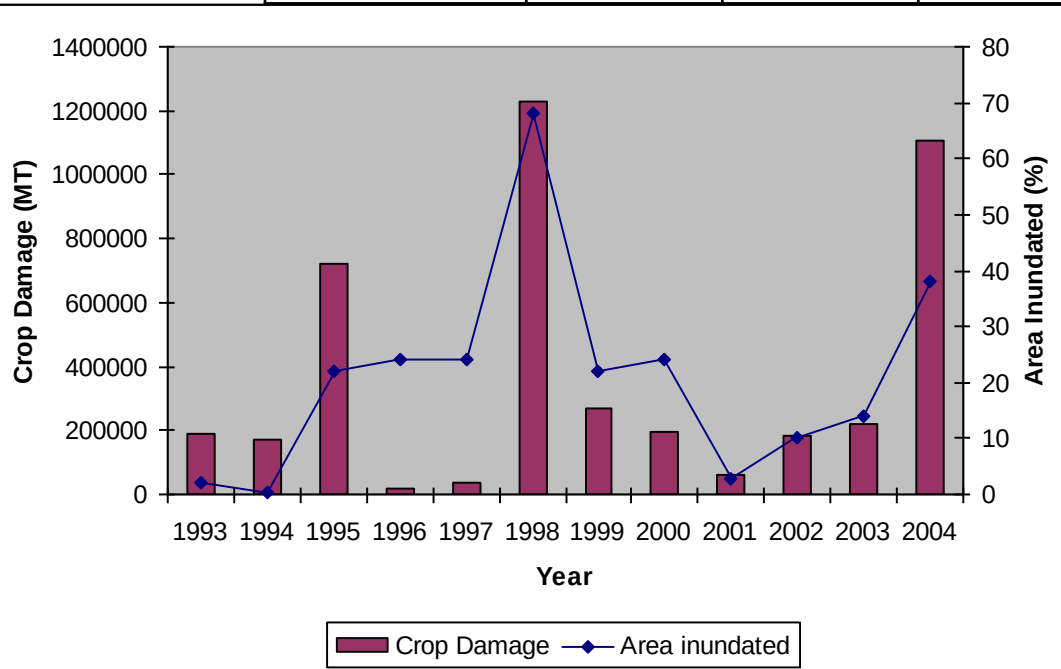
		2030				
Rainfall Change (%)		DJF	MAM	JJAS	ON	Ann
	NE	-9.6	9.0	4.2	24.6	7.0
	SE	-5.3	3.3	-3.3	14.3	2.3
	NW	-17.9	2.0	27.0	4.6	3.9
	SW	-3.6	-2.9	-5.5	19.8	2.0
	BD	-8.7	4.1	3.8	16.6	4.0
Maximum Temperature Change (C)	NE	0.22	-0.05	-0.26	-0.33	-0.10
	SE	0.10	0.56	0.70	-0.59	0.30
	NW	-0.31	0.03	0.16	-0.26	-0.06
	SW	-0.12	0.09	0.30	-0.90	-0.06
	BD	-0.03	0.16	0.23	-0.52	0.02
Minimum Temperature Change (C)	NE	0.20	0.69	0.48	0.13	0.40
	SE	0.27	0.41	0.78	-0.46	0.35
	NW	0.06	0.42	0.69	0.20	0.38
	SW	0.01	0.40	0.62	0.33	0.36
	BD	0.13	0.48	0.64	0.05	0.37

Source: BUET, 2008



Changes Flood Characteristics

Flooded Area	Return period (Years)						
	2	5	10	20	25	50	100
Area affected %	20	30	37	43	52	60	70
Last years 30			5	3	2	2	
Last years 10			3	2	1	1	



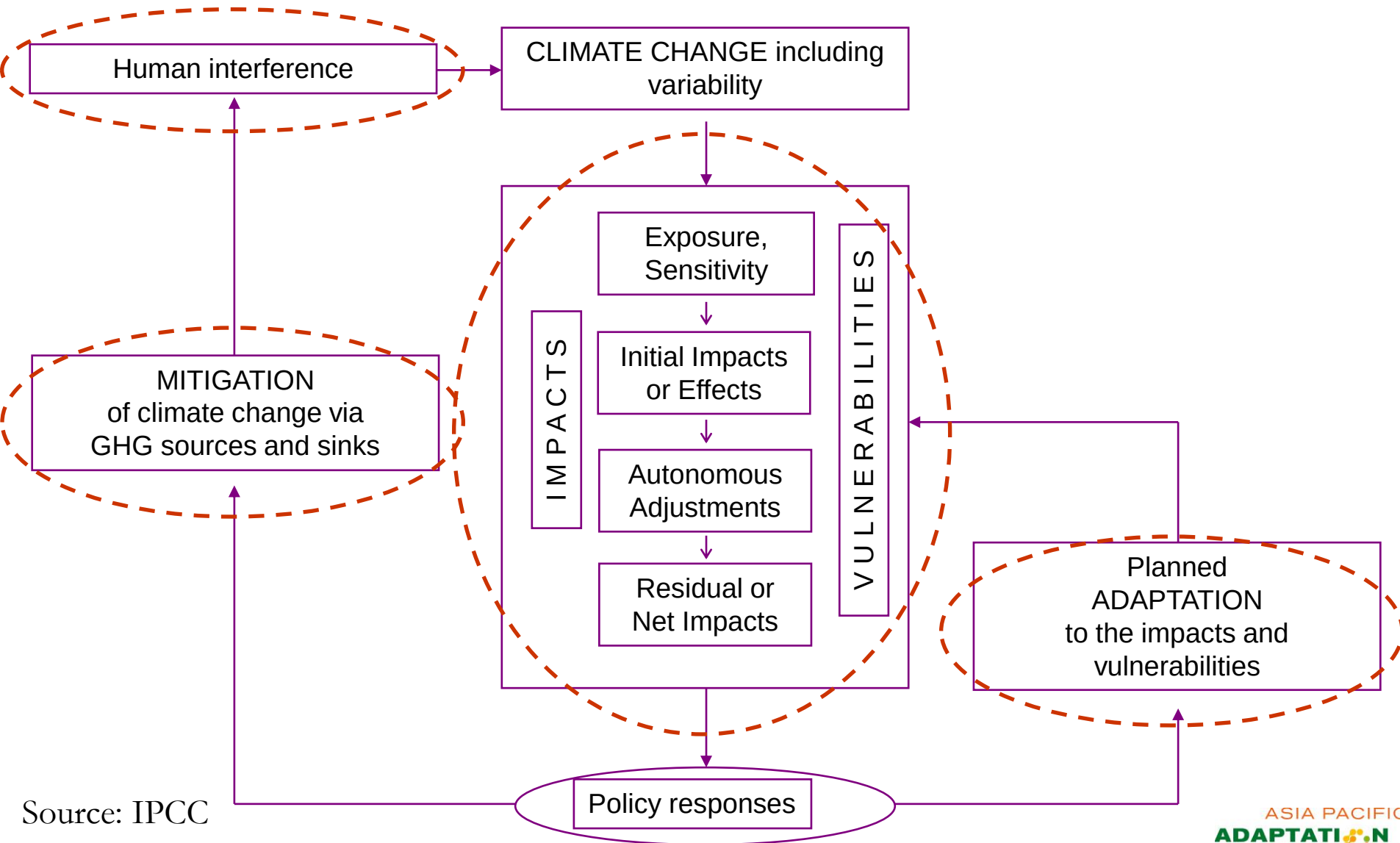


Adaptation: Policy Perspective

- Global Level
 - National Adaptation Programme of Action (NAPA)
 - National Adaptation Plan
 - Fund: Least Developed Countries Fund, Special Climate Change Fund, Adaptation Fund, Green Climate Fund
- National
 - NAPA, policy and strategies
 - Integration/mainstreaming – sectoral and national
 - National Level Climate Change Fund – mostly for adaptation



Responses to Climate Change: Mitigation and adaptation





How can be better Integrated

- Make climate information more relevant to development
- Development of climate risk screening tools for integration
- Find suitable entry points – existing development and adaptation
- Awareness and capacity building of planners – national and sectoral agencies
- Give emphasis on implementation – Learning by doing



Thank You