



中国社会科学院城市发展与环境研究所

Institute for Urban & Environmental Studies Chinese Academy of Social Sciences

Perspectives for Setting Climate Sustainability Goals

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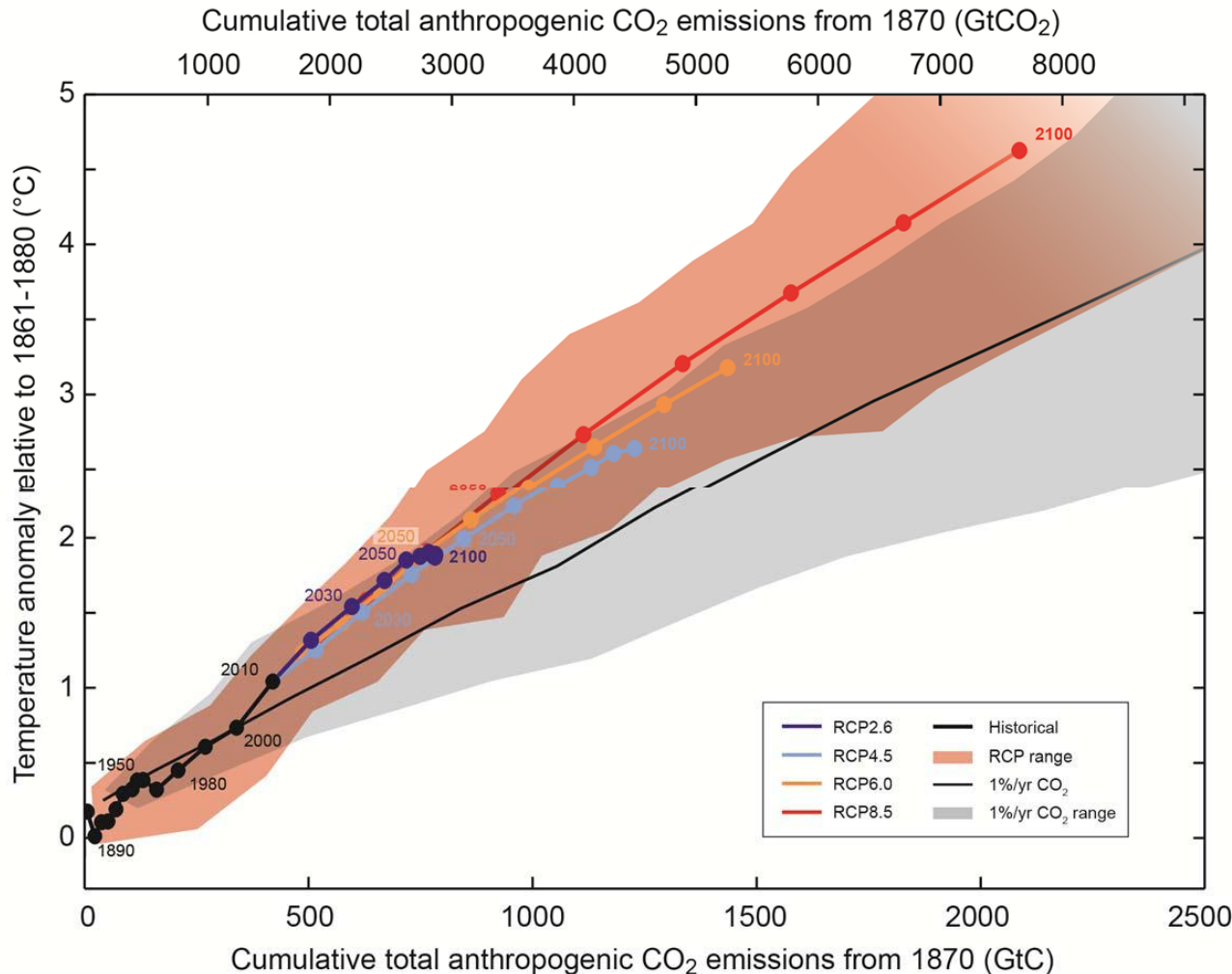
FCGCC Goals & Implementation

- Legally agreed upon goals
 - FCCC Article 2 (GHG Stabilization)
 - Copenhagen Accord/ADP: 2°C, 1.5 °C
- Principles for implementation
 - Responsibility based
 - Ability based
 - Grandfathering based
 - Development needs/entitlements based, or
 - A combination of any two or three
- Legal terms for implementation
 - commitments, pledges, contributions, actions

FCCC Targets & Indicators

- Targets or Elements: mitigation, adaptation, finance, technology
- Indicators:
 - Mitigation: temperature increase, GHG concentrations, emission budgets, % reductions, intensity reductions
 - Adaptation
 - Finance & technology
- Governance structure: cooperation, policy & measures

IPCC Stabilization Scenarios



To meet 2°C increase goal, cumulative emissions are indicated.

If probability at 33% , 50% and 66% below 2°C in 2100 (compared to 1861~1880), budgetable total emissions would be 1560, 1210 and 1000 GtC. Up to 2011, 531GtC in the atmosphere already, total budgetable emissions between 2012~2100 would be 1029, 679 and 469 GtC.

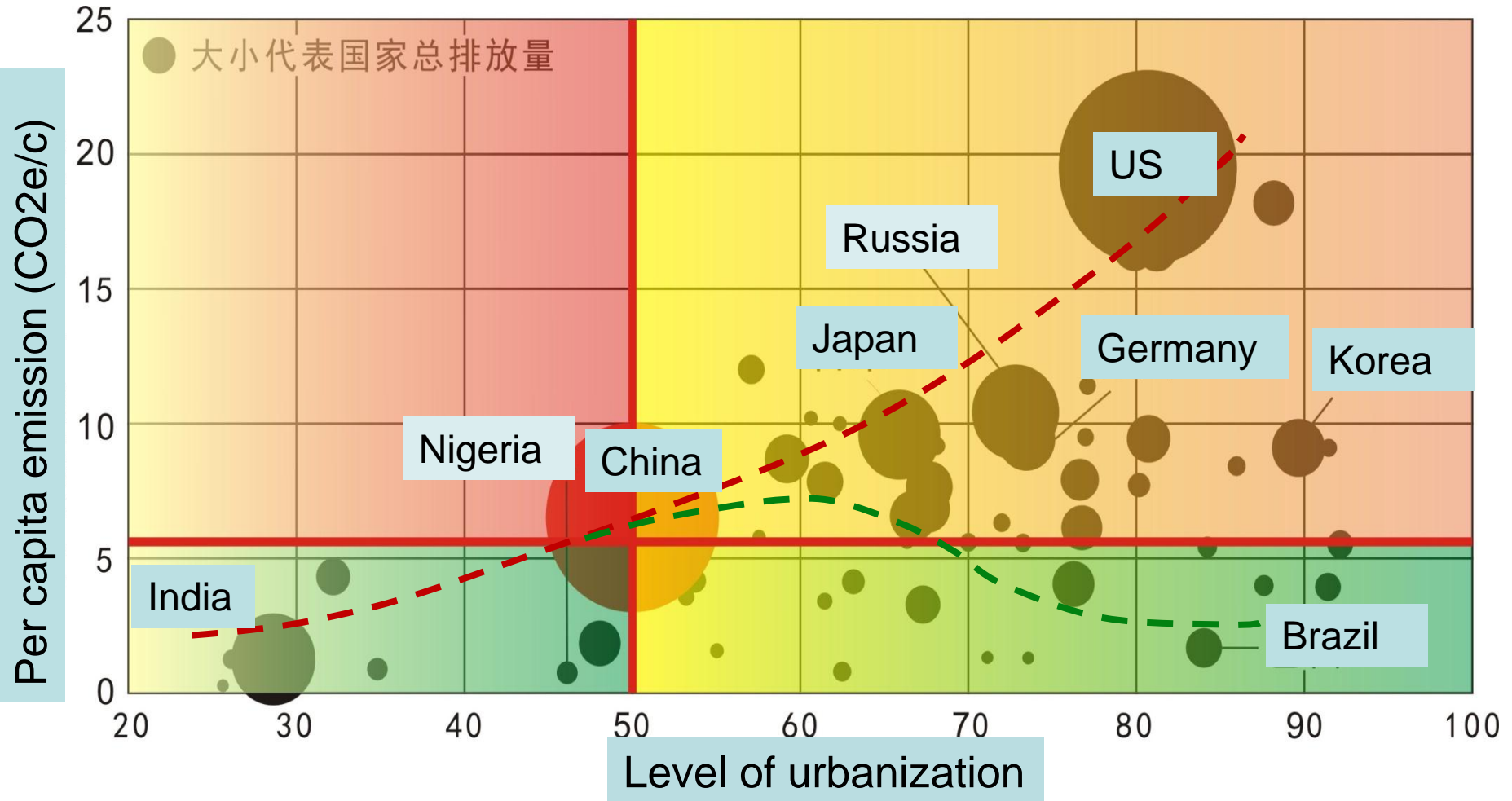
Perspectives of climate sustainability: Human Development & level of urbanization (2011)

		HDI	Life expectancy (yrs)	GNI per capita (US\$)	Urbanization level (%)
101	China	0.699	73.7	7945	51.9
HDI level					
	Very high	0.905	80.1	33391	81.2
	High	0.758	73.4	11501	74.1
	Medium	0.640	69.9	5428	43.7
	low	0.466	59.1	1633	33.6
	world	0.694	70.1	10184	52.6

Per capita emission (tCO₂) in 2011

Annex I Parties: 10.33; Non Annex I parties: 2.98

Perspectives of climate sustainability: choice of development pathways



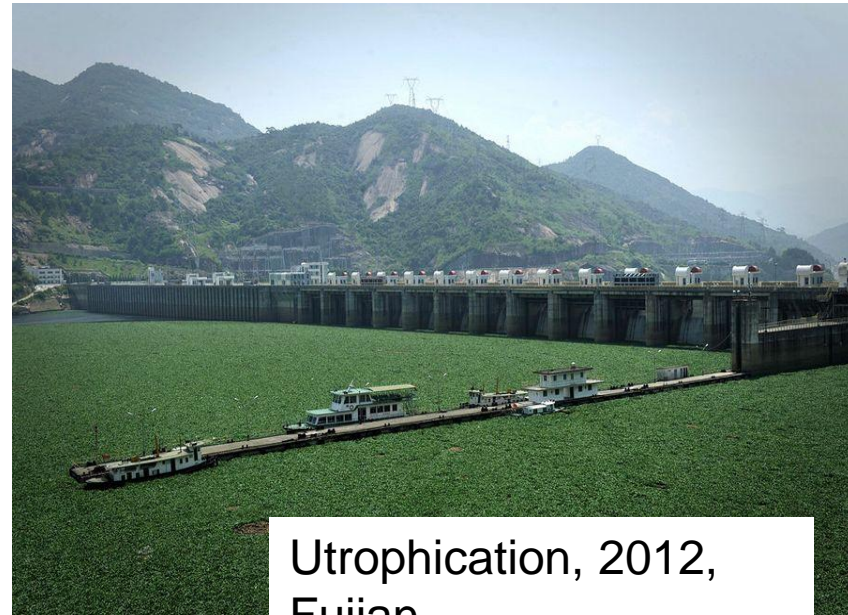
Perspectives of climate sustainability: environmental pollution, ecological degradation, climate extremes, energy security, etc.



Urban flooding: July 21, 2012, Beijing



Air pollution in Beijing, 2013



Eutrophication, 2012, Fujian

Paradigm shift challenges to sustainable development

- **Social – inequality, poverty**
- **Economic – economic/financial crisis**
- **Environmental – pollution, depletion of natural resources, ecological degradation, climate change**
- **Institutional: cares more for capital, less or even no for people and nature**

Paradigm shift: away from industrial civilization?

- Ethical principle: utilitarian
- Objective: profit maximization
- Driver: technological innovation
- Energy base: fossil fuel
- Geo-physical limit: neglect
- Production mode: linear
- Consumption style: materialism

Paradigm shift: to ecological civilization characterized by man and nature in harmony?

- ◆ **Ethical foundations : justice, not simply equality**
 - Respect for nature, so as to realize ecological justice
 - Protect human rights, so as realize social justice

Ecological civilization: relevance to setting climate sustainability goals

◆ **Efficiency**

- Ecological efficiency: natural ecological system is resilient with high level of natural productivity
- Economic efficiency: economic system is characterized by low input, zero emission and high output
- Social efficiency: social institutions are well designed and functioning

◆ **Harmony and inclusiveness:** man and nature, between individuals, between individuals and society, production and consumption, economy and society, rural and urban, and among regions

◆ **Human development:** quality, healthy and dignified way of living

China's green goals in development planning

- Targets for construction of ecological civilization
 - keeping natural resources assets increasing, balance sheet of natural resource assets
 - Development within ecological carrying capacity by setting ecological redlines
 - internalization of externality by putting a value on natural resource to adjust demand and supply, progressive pricing of resource consumption

Implementation of green goals: five year plans

12th five year plan for res. & env.

indicator	Unit	2010	2015	change %	
Arable land area	100 m mu	18.18	18.18	[0]	M
Water use efficiency in industry	%			[30]	M
Effective use rate of irrigation water		0.5	0.53	[0.03]	A
Share of non-fossil fuels in primary energy consumption	%	8.3	11.4	[3.1]	M
Energy intensity reduction	%			[16]	M
Carbon intensity reduction				[17]	M
COD reduction	%			[8]	M
SO2	%			[8]	M
NOx	%			[10]	M
NH4	%			[10]	M
Forest cover	%	20.36	21.66	[1.3]	M
Timber volume	100 m m3			[6]	M

Note: A: anticipatory target; M: mandatory target.
Source: State Council, Directive 2013(2). January 1, 2013

12th five year for energy development

	Unit	2010	2015	Rate of change	Note
Total primary energy	Billion tce	3.25	4.00	4.3%/a	A
Non-fossil fuel share	%	8.6	11.4	2.8 % points	M
Energy intensity	Tce/10,000rmb	0.81	0.68	16%	M
Thermal power efficiency	Grams coal /kW	333	323	- 0.6%/a	A
Electricity installed capacity	GW	970	1,490	9.0%/a	A
thermal	GW	660	960	7.8%/a	A
hydro	GW	220	290	5.7%/a	A
nuclear	GW	10.8	40.0	29.9%/a	A
Natural gas	GW	26.4	56.0	16.2%	A
wind	GW	31.0	1,000	26.4%/a	A
Solar PV	GW	0.9	21.0	89.5%/a	A

Setting Climate Goals/Targets within SDG Framework

- Climate change goal: fundamental in SDG framework, as it is long term by nature, transformative with no delay, harmonious and inclusive with respect to both development and sustainability
 - Climate sustainability Goal (ethically grounded): no dangerous human interference with the climate system
 - Targets (scientifically based): 2°C → 450 ppm
→ 679 (50% probability) GtC between 2012 and 2100

Climate Goal: its drivers are linked to all the other SDGs

- Secondary drivers (public choice): population, GDP per capita, energy intensity, GHG intensity
- Primary drivers (regulation related): behavior, technology, governance, resource availability, infrastructure, development, industrialization, urbanization
- Ultimate drivers (action oriented): information provision, R & D, planning, economic incentive, non-climate policies, direct regulation

Climate Goal: indicators have to be in perspective and transformative

- Indicators: measurable, reportable and verifiable
- Aggregate
 - reflecting the principle of common but differentiated responsibilities
 - Choice of indicators: emission budget, % in absolute reduction, % in intensity reduction
- Per capita emissions
 - Accelerate the process of paradigm transformation
 - Choice of indicators: cumulative emissions per capita, progressive pricing of carbon

THANKS

