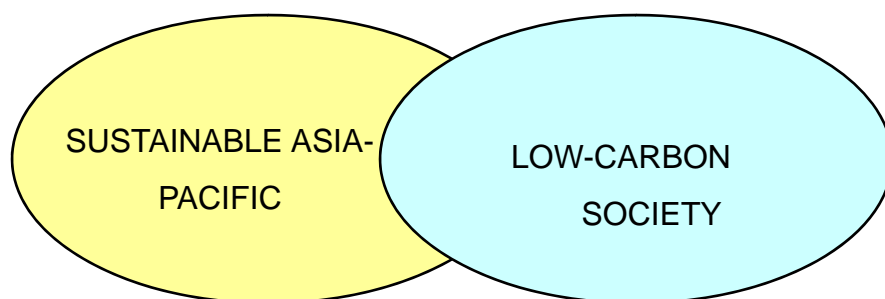


# **INTEGRATION OF CLIMATE CHANGE INTO NATIONAL PLANNING IN ASIA- PACIFIC**



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# A DANGER OF TWO WORLDS



GOAL	MDGs	STABLE CLIMATE
<b>Targets</b>	<ul style="list-style-type: none"> <li>Poverty reduction</li> <li>Safe water</li> <li>Hunger elimination</li> <li>Universal education</li> <li>Reduced infant deaths</li> </ul>	<ul style="list-style-type: none"> <li>Debated CO2 +/- or temperature increases</li> <li>Climate proofed infrastructure</li> <li>Reduced vulnerability</li> <li>Energy security</li> </ul>
<b>Policies</b>	<ul style="list-style-type: none"> <li>ODA as % of GDP</li> <li>Education for all</li> <li>Health policies</li> <li>Poverty alleviation</li> </ul>	<ul style="list-style-type: none"> <li>Subsidies to energy companies</li> <li>Incentives to reduce GHGs</li> <li>Compliance with Kyoto Protocol</li> <li>Voluntary agreements</li> </ul>
<b>Actions</b>	<ul style="list-style-type: none"> <li>Development plans</li> <li>Rural development</li> <li>Water supply</li> <li>Sanitation</li> <li>Schools</li> <li>Hospitals</li> <li>Food security</li> <li>Community-based management</li> </ul>	<ul style="list-style-type: none"> <li>Technology development</li> <li>Technology transfer</li> <li>CDM/JI/AIJ</li> <li>Emission trading</li> <li>Adaptation design and implement.</li> <li>Renewable energy</li> <li>Biofuels</li> <li>Nuclear energy</li> <li>Carbon sequestration</li> </ul>

# Sustainable Development Remains the Ultimate Goal

- Humans take up 83% of the Earth's land surface to live on, farm, mine or fish. Of the land suitable for farming rice, wheat and corn, 98% is already used, and much of that is being degraded.
- Humans have appropriated 40% of the planet's net primary productivity, 35% of the productivity of the oceanic shelf, and 60% of freshwater runoff.
- Virtually all fish stocks are overexploited and the oceans have vast anoxic dead zones and swirling gyres of plastic waste.
- Forests and biological diversity in the tropics continue to disappear at alarming rates.
- More than 1 billion people live in poverty.

# Climate Change Adds to the Urgency

- GHG emissions covered by Kyoto Protocol increased from 28.7 to 49.0 GtCO<sub>2</sub>-eq from 1970 to 2004.
- Atmospheric concentrations of CO<sub>2</sub> have increased from 280 ppm to about 387 ppm today.
- 60-80% of the needed GHG emissions reductions have to come from energy supply and use, and industrial processes.
- As population grows to 9 billion, mostly in Asia, planet Earth cannot sustain current development path and consumption patterns.

# What Kind of Changes Are Needed?

- Ministry of Environment, Japan identifies three principles for a low carbon society:
  - ✓ carbon minimization in all sectors;
  - ✓ a simpler lifestyle that realizes a richer quality of life; and
  - ✓ coexistence with nature.

## THAT MEANS:

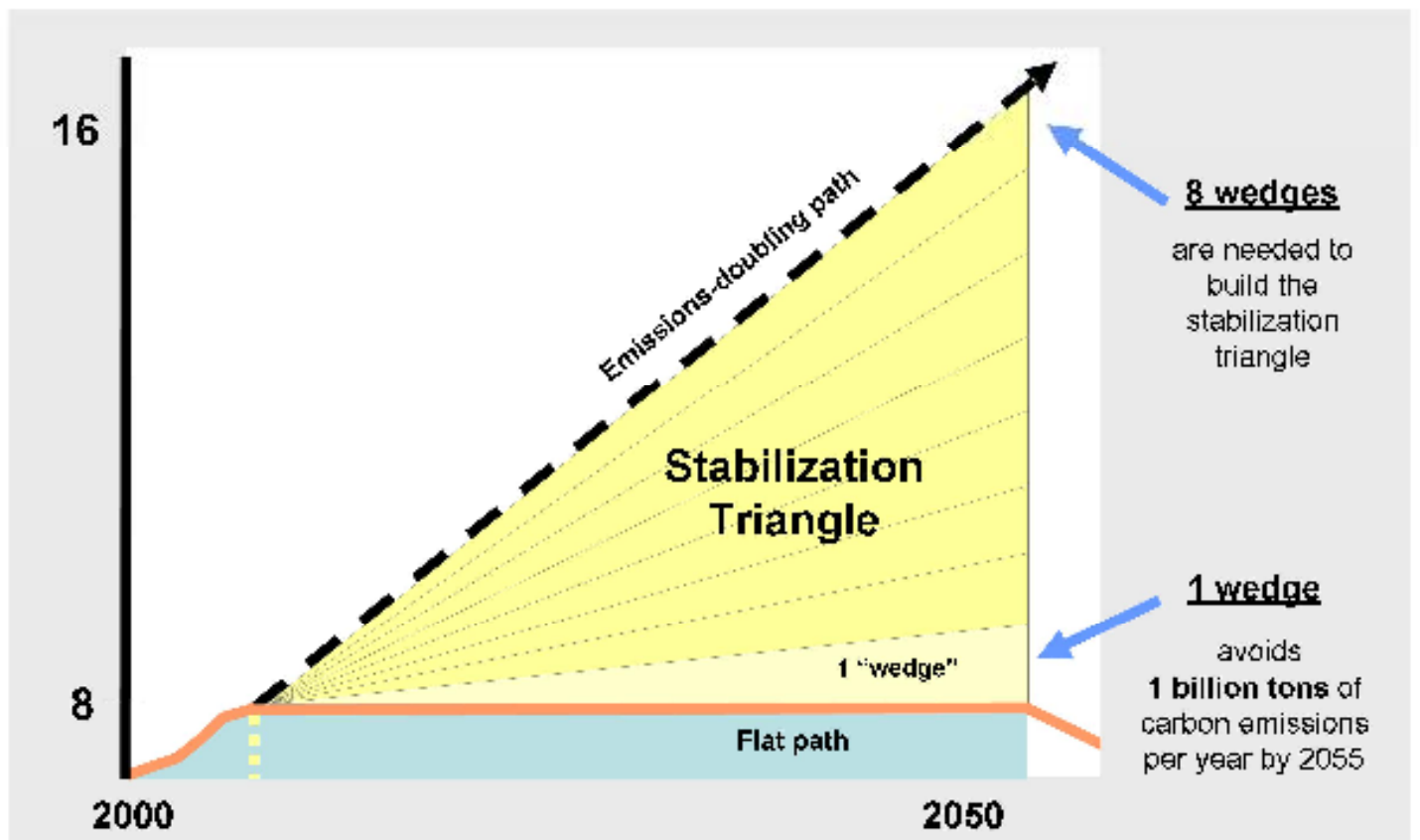
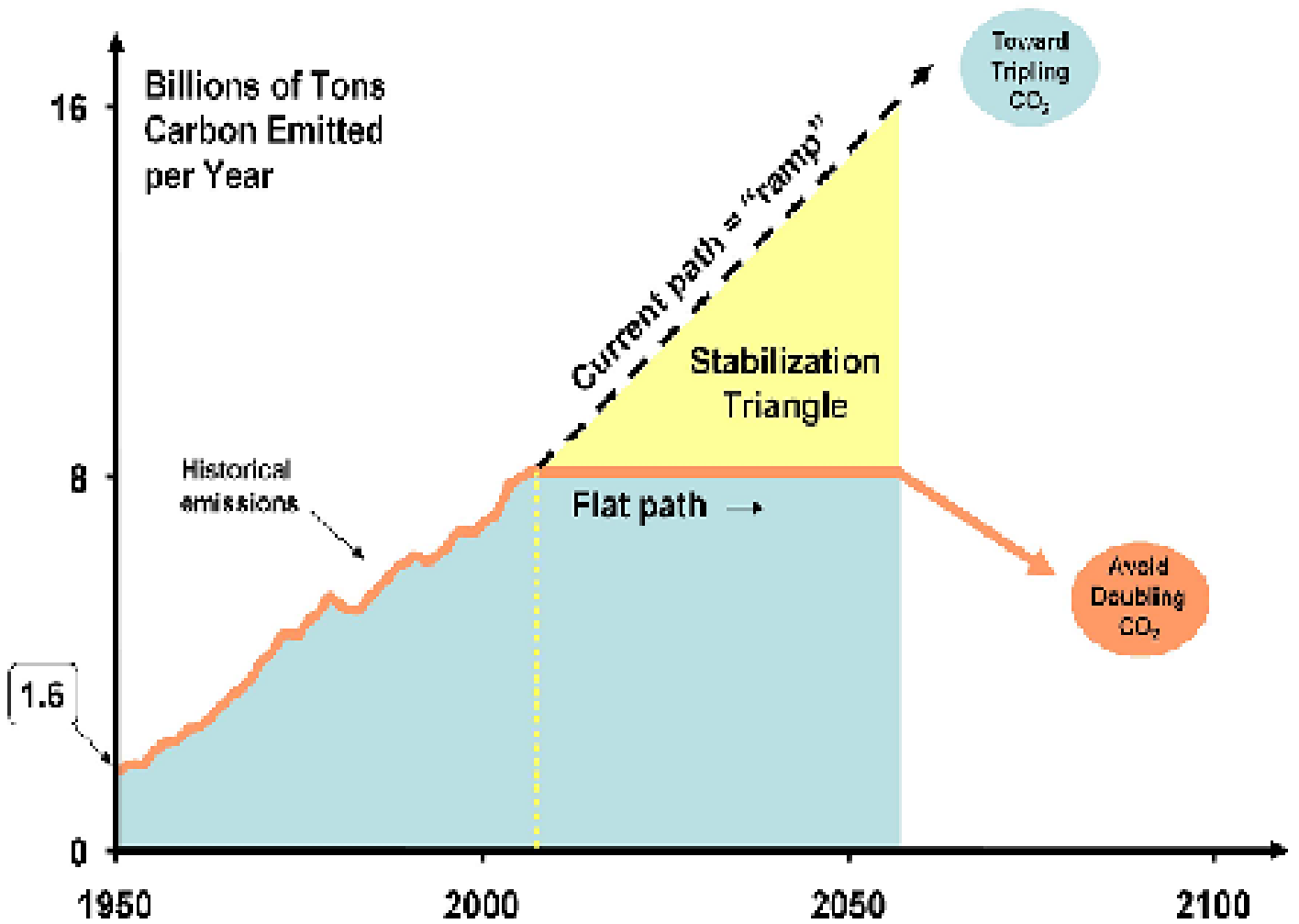
- (i) rates of use of renewable resources below rates of regeneration;
- (ii) rates of use of non-renewable resources below the rate at which sustainable renewable substitutes are developed; and
- (iii) rates of polluting emissions, including GHGs, below the assimilative capacity of nature.

# Setting Goals – Not Only Targets

- Japan's PM Fukuda: (i) transition from a fossil fuel dependent industrialized society; (ii) stepping forward with confidence, as a LCS will bring new business opportunities and is based on traditional ability to live in harmony with nature; (iii) setting up a long-term goal to reduce CO<sub>2</sub> emissions by 60-80% by 2050; (iv) peaking out emission levels in the next 10-20 years; (v) developing innovative technology and diffusing existing technologies; (vi) setting up enabling institutions such as emissions trading and tax reform; (vii) implementing local government measures like producing and consuming locally; and (viii) behavioral change at all levels.

# Plan Building Blocks Towards Long Term Goals

- Princeton University's Carbon Mitigation Initiative sets a goal of avoiding 200 billion tonnes of carbon emissions, or eight 25 billion tonne "stabilization wedges", over the next 50 years, such as:
- (i) doubling fuel efficiency of 2 billion cars; (ii) using best efficiency practices in all buildings; (iii) replacing 1,400 coal-fired electricity plants with natural gas powered facilities; (iv) installing 2 million large windmills; (v) using 40,000 sq. km. of solar panels to produce hydrogen for fuel cell powered cars; (vi) driving 2 billion cars on ethanol; (vii) stopping all deforestation; (viii) doubling today's nuclear output to replace coal; (ix) cutting electricity use by 25%; and (x) expanding conservation tillage to 100% of cropland.



# Reducing Energy Demand

- US, for example, could achieve a 50% reduction in GHG emissions by 2050 by combining electricity end-use efficiency, other end-use efficiency, passenger vehicle efficiency, other transport efficiency, plus increased renewable energy and CCS, all with existing technologies.
- Efficiency measures must be careful to avoid rebound effect – e.g. driving more km in fuel efficient vehicles, or using money saved for other unsustainable activities.

# Reducing Energy Demand (cont.)

- **Residential buildings** – install full floor and attic insulation, install weather sealing, retrofit energy recovery ventilators, insulate and seal frames of non-opening windows, provide insulating curtains for windows, install sink aerators, retrofit high efficiency showerheads, install heat recovery systems from hot water going down drains, replace energy inefficient appliances, replace incandescent and halogen lights, turn off and unplug appliances when not in use, install ground source heat pumps and other passive energy systems, and use solar hot water heaters.

**Commercial buildings** – install solar heaters and chillers and/or ground source heat pumps, double glazed windows, piped lighting rather than windows, retrofitting insulation, energy efficient equipment and air conditioning, greenery on the roof or balconies, and use of stairs rather than elevators (e.g., for 1-3 floors).

**Transportation** – smaller and lighter passenger vehicles, improved fuel efficiency, electric-hybrid cars, modal shift to public transport, bicycles, or walking, reduced distance travelled, telecommuting, teleconferences, electric recharging at parking bays, car-pooling, no-car days, sail-assisted shipping, and urban planning.

**Industry** – energy audits, detecting and stopping fugitive emissions, leak detection, staff incentives for process improvements, factory insulation and ground source heating and cooling, heat recovery systems, and waste minimization.

# Fossil Fuel Alternatives

- **Wind, wave, solar, geothermal, hydropower, biomass** are competitive with coal-fired power plants, provided full life cycle cost is considered.
- **Nuclear energy** remains problematic until the issues of wastes and potential military uses are resolved. Fusion energy may offer a long-term solution.
- **Hydrogen** for use in fuel cells is attractive because the waste product is benign, but hydrogen must be sourced from renewable energy.
- **Biofuels** are controversial because of competition with food production, but second generation biofuels from cellulosic waste appear to be very attractive.

# Co-Benefits of Climate Change Measures

- Co-benefits include (i) rural electrification and distributed, renewable energy (like micro-hydropower or solar lighting); (ii) community-based management of forests and carbon sequestration; (iii) flood prevention and mitigation and climate change adaptation; (iv) sustainable fisheries management and reduced bleaching of coral reefs and ocean acidification; (v) control of disease vectors; and (vi) livable cities and towns.

# Green Jobs and Poverty Reduction

- Current global market for environmental products and services is about \$1,370 billion and is projected to grow to \$2,740 billion by 2020.
- About 2.3 million people are employed in the renewable energy sector.
- Greening the building industry worldwide could create more than 10 million jobs.
- Tens of millions of people are involved in recycling, but these jobs need to be cleaner and safer, “decent” employment.
- About 1.6 billion people depend on forests, so increasing forest cover and rewarding carbon sink services could create new jobs and new revenue for forest-dependent people.

# Enabling Legislation

- US Energy Independence and Security Act, 2007
- California Global Warming Solutions Act, 2006
- UK Energy Act and a Climate Change Act in 2008
- EU Fuel Quality Directive and Renewable Energy Directive, 2008
- Australia National Greenhouse and Energy Reporting Act, 2007
- China Renewable Energy Law in 2005 and Circular Economy Law 2009
- Japan Climate Change Policy Law 1998, Law Regarding Rationalization of Energy Use, revised in 1998, 2002 and 2005; Law Concerning Special Measures for the Use of New Energy etc. by Electric Utilities) 2002

# Sustainable Development Plans

- Review of 46 national sustainable development strategies found only 8 did not directly refer to climate change;
- Bangladesh - National Sustainable Development Strategy (2008) identifies climate change as a strategic priority and refers to the Climate Change Strategy and Action Plan (2008), National Adaptation Program of Action and National Capacity Self Assessment.
- Bangladesh's National Strategy for Accelerated Poverty Reduction (2009-2011) recognizes climate change as an issue.
- A multi-donor trust fund to deal with climate change adaptation and mitigation has been set up, with the Government contributing \$43 million.

# Sustainable Development Plans (cont.)

- Republic of Korea's National Strategy for Sustainable Development (2006-2010) deals extensively with climate change;
- Intends to formulate a systematic and comprehensive plan to change the economic structure;
- co-benefits include water conservation, sewage water re-use, sustainable groundwater management, flood management, a national land management system, sustainable forest management, expansion of urban forests, "green" transport, green building certification, insurance for storm damage, and conversion to a low energy consumption economy.

# Sustainable Development Plans (cont.)

- Singapore's sustainable development strategy (A Lively and Livable Singapore: Strategies for Sustainable Growth 2009) mentions climate change in several places.
- Co-benefits include empowering consumers to make resource smart choices, setting minimum performance standards, expansion of the National Recycling Program, incentives for "green" buildings (Green Mark Certified), eco-friendly public housing (solar test-beds and improved resource efficiency), a cleaner and greener transport system, improved resource efficiency, and a city "nestled in greenery."

# Other Plans

- Most countries have prepared a climate change action plan.
- Least developed countries, have prepared a National Adaptation Program of Action.
- Integration into social and economic development plans is less common.
- Strategy for the Development of Samoa (2008-2012), relates climate change and disaster management, to implement the Disaster Management Act 2007

# Results of Country Survey

Country	Elements of the plan related to climate change responses										
	Agriculture	Coastal Protection	Water Resource	Health	Education	Disaster management	Biodiversity	Resettlement	Energy Efficiency	Renewable Energy	Forestry
Bangladesh	Green	Green	Green	Green	Green	Green	Green	Orange	Light Blue	Light Blue	Green
Cambodia	Green	Light Blue	Green	Green	Green	Light Blue	Light Blue	Orange	Light Blue	Light Blue	Green
China, P.R.	Green	Light Blue	Green	Green	Green	Green	Light Blue	Orange	Green	Green	Green
Lao PDR	Green	Orange	Green	Green	Green	Green	Green	Orange	Light Blue	Light Blue	Green
Maldives	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Philippines	Green	Green	Green	Green	Green	Green	Green	Orange	Green	Green	Green
Samoa	Green	Green	Green	Green	Green	Green	Green	Orange	Green	Green	Green
Singapore	Green	Orange	Green	Green	Green	Orange	Green	Orange	Green	Green	*
Korea, Rep.	Green	Green	Green	Green	Green	Green	Green	Orange	Green	Green	Green

Note:  = more focus  = less focus  = not mentioned  
 \*The word "greenery area" is used instead of forest management.

- Countries like Bangladesh have not yet addressed possible resettlement and migration issues;
- Additional effort is needed on renewable energy and energy efficiency, not just for climate change benefits.
- Most countries have recognized the need to address climate change in all sectors.

# Conclusions

- Basic elements of an integrated CC/SD plan are (i) reducing energy demand; (ii) moving away from carbon-intensive fossil fuels and GHG emissions; (iii) meeting the development needs of all groups in society; and (iv) ensuring energy security. But as emphasis is on energy, a LCSDP is a sub-set of a national sustainable development plan, not synonymous.
- In developing countries, finding the right policy balance between development co-benefits and climate change mitigation is crucial to the overarching goal of poverty reduction.