

Mainstreaming Adaptation Concerns into Agriculture and Water Sectors: Progress and Challenges

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Outline

- I. Mainstreaming adaptation concerns
– What, why and how?
- II. Progress in mainstreaming based on
IGES consultation (14-15 Feb. 2007)
- III. Gaps, Needs and Concerns
- IV. The Way Forward

Mainstreaming – What & Why?

What is mainstreaming?

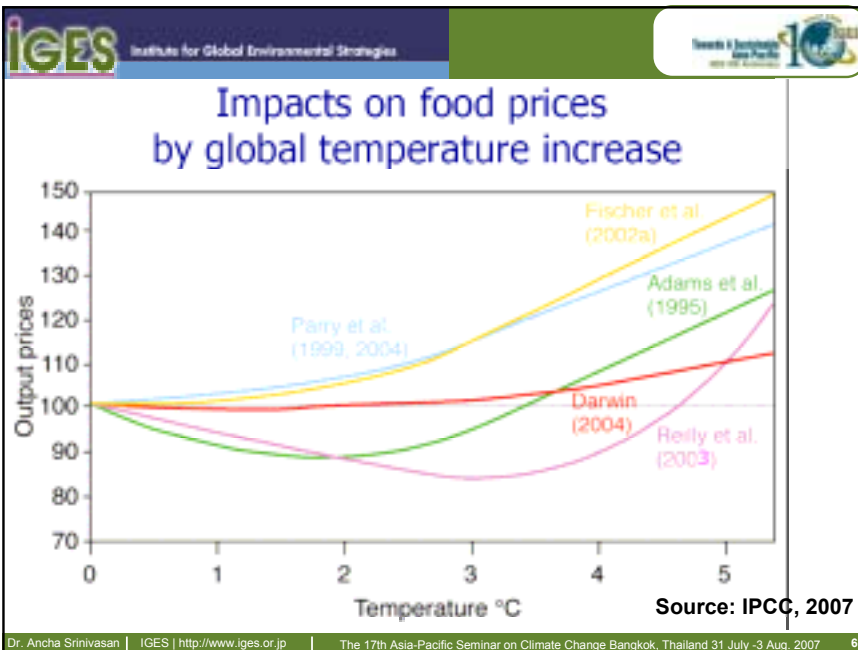
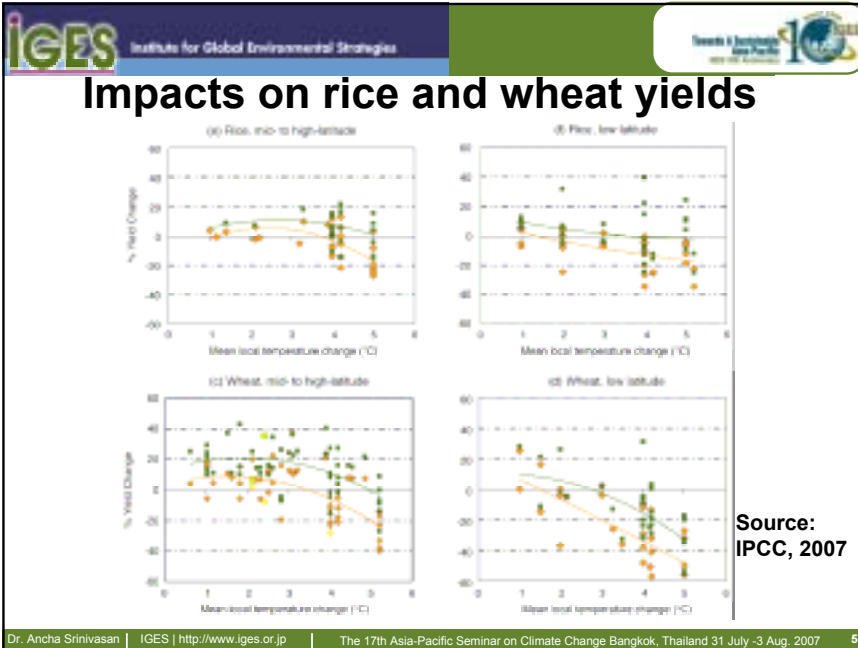
- Integration of concerns on adaptation to current & future impacts of CC at both **policy and implementation** levels

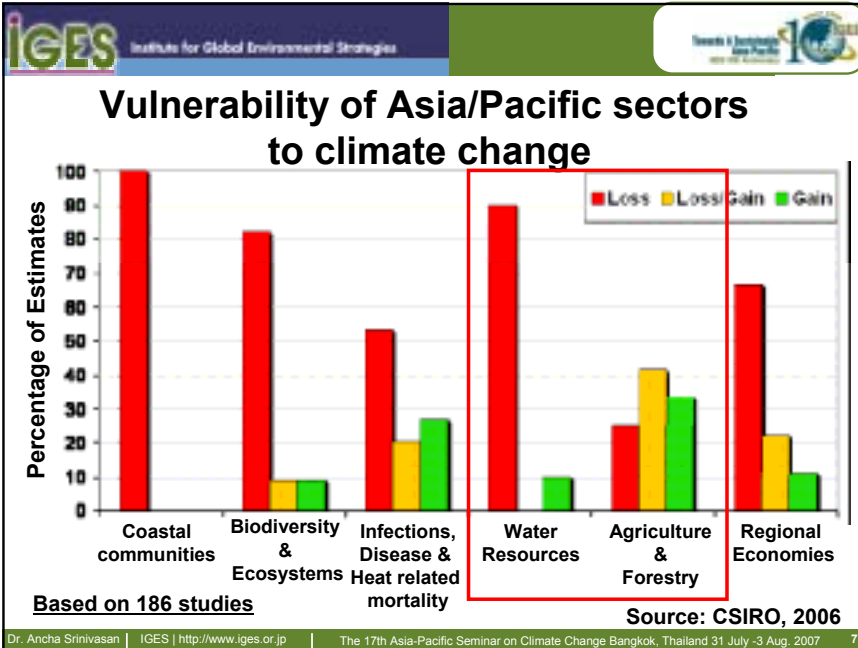
Why is mainstreaming necessary?

- To ensure that current projects are no longer at risk from CC or no longer contribute to the vulnerability of its recipients
- To ensure that future projects are consciously aimed at reducing vulnerability (e.g., ensuring water rights to groups exposed to water scarcity during drought)
- To use resources efficiently and effectively
- To avoid mal-adaptations
- To ensure consistency between the needs of poverty eradication and adaptation

Why agriculture and water?

- Most vulnerable sectors (NCs, IPCC WGII)
- Heavy reliance of the poorest nations and poor groups in all nations
- Tight relationship with attainment of MDGs
- Links to security of livelihoods, UNFCCC Article 2
- Equity, fairness and justice dimensions
- Water stress is a primary medium through which climate change is experienced and responded to
- Often requires costly investment in infrastructure and adaptive responses are generally slower than in other sectors

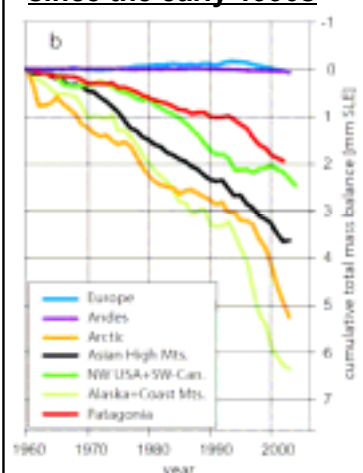




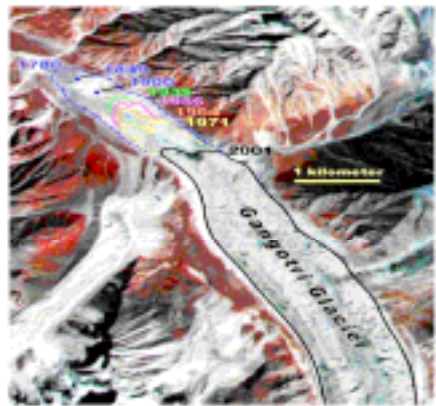
Projected impacts in Asia | Source: IPCC, 2007

Sector	IPCC Projected Impacts
Agriculture	<ul style="list-style-type: none"> • Increased risk of hunger in South Asia by 2050 due to 30% decline in cereal yields; • Increase in agricultural water demand by 6-10% or more for every 1°C rise in temperature; • Decline in net productivity of grasslands and milk yield
Water resources	<ul style="list-style-type: none"> • Decline in water availability from ~1820 m³/yr to as low as ~1140 m³/yr in India by 2050; May adversely affect >1 billion people. • Disappearance of Tibetan Plateau glaciers of <4km length with 3°C rise • Shrinkage of area of glaciers over Tibetan plateau from 500,000 km² in 1995 to 100,000 km² by the 2030s.

Glaciers are receding fast since the early 1990s



Retraction of the Gangotri Glacier terminus (Himalayas) since 1780 (Source: NASA, 2001)



Source: IPCC, 2007

Record of retreat of some Himalayan glaciers

Glacier	Period	Retreat of snout (meter)	Average retreat (meter/year)
Pindari	1845-1966	2840	135.2
Milam	1909-1984	990	13.2
Ponting	1906-1957	262	5.1
Gangotri	1977-1990	364	28.0
Gangotri	1985-2001	368	23.0
Triloknath	1969-1995	400	15.4
Chota Shigri	1986-1995	60	6.7
Bara Shigri	1977-1995	650	36.1
Zemu	1977-1984	194	27.7

Mainstreaming - How

Entry points

NCs, NAPAs, NAPF, NAgP, NWP, PRSP, NEAP, MDG plans, EIA

Approaches

Top-down (e.g., expanded irrigation systems, Developing drought-resilient crop varieties) vs. **bottom-up** (e.g., community-based water harvesting or allocation systems)

Policy level (e.g., integrated water management policies accounting for climate change impacts, national land use planning systems) vs. **operational** (e.g., location and design of bridges, reservoirs & hydropower facilities) level

Traditional (e.g., Water managers would fit a drainage system in an area projected to experience more intense rainfall events with bigger pipes when replacing old ones) vs. **modern** (A mainstreamed adaptation strategy in water sector includes measures that address the underlying factors of vulnerability to CC, particularly at local scale)

Scales/Levels:

- Local, national, regional, and international; Sector level mainstreaming

Typical Adaptation Measures

Agriculture

- Crop diversification, adjustments in crops and sowing dates, use of drought and flood-tolerant varieties, pest, disease and salinity resistant varieties, mixed and intercropping, and low-cost post-harvest technologies, agroforestry including live hedge technology, eco-farm technology (to reduce the effects of high temperature on crops), transhumance (strategic movement of livestock to manage pasture and water resources), enterprise diversification, migration, etc.

Water

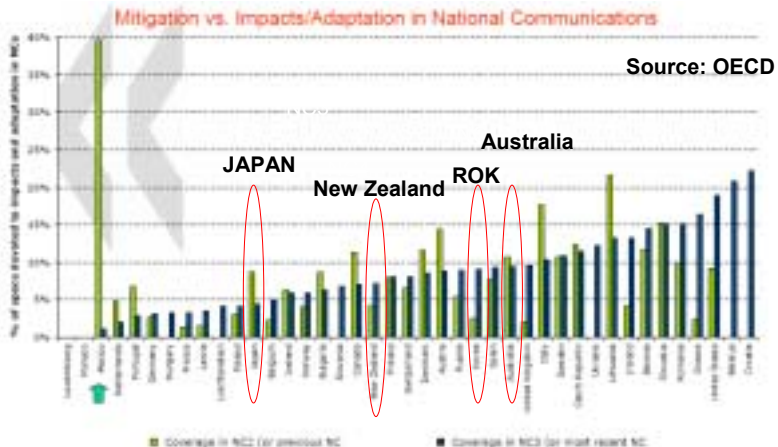
- Innovative soil and water conservation techniques such as rainwater harvesting, micro-catchments, construction of dams and dykes, sprinkler and drip irrigation, small scale irrigation schemes, micro-irrigation, water leak reduction and education/dissemination of seasonal climate forecasts; promotion of groundwater recharge;

Progress on mainstreaming

General observations:

- Most National Communications are strongly skewed towards GHG inventories/mitigation.
- NAPA process in some LDCs (e.g., Bangladesh) seems to have served as a catalyst in mainstreaming adaptation concerns at least in planning stages.
- Development agencies have just begun to support mainstreaming efforts (WB, GTZ, OECD, etc.)
Declaration by OECD Development and Environment ministers to integrate adaptation in development planning and assistance, both with OECD and its partner countries (OECD, 2006)

Impacts/Adaptation in OECD National Communications



Very few OECD countries have looked at adaptation options and identified policy responses (Gagnon-Lebrun and Agrawala, 2006)



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Coverage on adaptation policies and measures as reflected by number of pages in National Communications of selected Asian countries

Country	Total number of pages	No. of pages describing impacts and vulnerability	No. of pages discussing adaptation policies
Bhutan	63	30	2
Cameroon	79	8	2
China (NCT)	112	13	4
India	292	48	8
Indonesia	116	30	3
Japan (PCR)	314	31	0.5
Laos (PCR)	97	2 lines	1 line
Malaysia	131	30	7
Maldives	134	30	18
Mongolia (NCT)	136	38	7
Nepal	181	41	18
Pakistan	92	34	9
Papua New Guinea	81	20	6
Republic of Korea (NCT)	132	8	2
Singapore	75	5	1 line
Sri Lanka	122	32	5
Thailand	190	35	2.5
The Philippines	107	20	12
Viet Nam	125	17	4

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Progress – Mainstreaming at sector level

Agriculture:

- Several national agricultural policy documents refer to the need for considering climate variability but **do not consider CC explicitly**.

Water:

- Water **managers showed little enthusiasm** for factoring long-term climate predictions into their calculations (18-country Dialogue on Water and Climate, 2004)
- OECD analysis of water policy frameworks:
 - Four Annex I (Canada, Finland, UK and USA) and four non-Annex I (Argentina, India, Mexico and Zimbabwe) countries
 - Most of them do not yet incorporate CCA explicitly;
 - Policy frameworks of Annex 1 generally provide good basis for adaptation while those of non-Annex 1 are considered less mature, with weaker institutions, and less capable of providing for adaptation (OECD, 2006)

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Status in selected countries

Bangladesh (Huq et al., 2003; IGES 2004)

- Agriculture – Research level (yes) but not extension level
- Water – Commitments to incorporate adaptation into existing plans
However, commitments do not necessarily lead to implementation due to various barriers

China

Impacts reasonably well studied; several water conservation measures exist; However, agriculture/water sector development plans do not yet consider future CC impacts explicitly. Adaptation priorities are not yet clear

Philippines

Many efforts on water conservation and flood prevention at national and local levels, but CC is not the primary motive for such initiatives; Most of the measures have generally considered historical climate but they are not necessarily suitable/adequate

Status in selected countries

India

National Agriculture Policy - No direct reference to CCA;

However, contains references to rainwater harvesting and conservation; Improvement of drought/salinity tolerance of crops

National Water Policy: formulated in 1987; revised in 2002 – Many references on water use efficiency & integrated watershed development but no reference to adaptation

- **Domestic legal framework:** Legal provisions dispersed across various acts; No exclusive water laws; No explicit legal framework on water extraction rights or water trading; ineffective water pricing policies
- **Functional responsibilities are spread** over a number of institutions Ministry of Water resources – Central water commission, Central Ground Water Board; National Water Development agency; ICAR and Planning commission – No explicit role for the Ministry of Environment (except water quality monitoring)
- **5-year plan** mandates decentralization of water supply; water audits; efficient water use; Integrated Flood Management Association – All of them may help in adaptation but no explicit reference to climate change impacts in designing them

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**Mainstreaming at sector level:
Some operational guidelines**

- National consultation process on V&A including social assessment of perceived climate changes in each sector
- Prioritization of hazards and adaptation strategies
- **Ranking adaptation options in each sector**
 - **A - Urgent options which can be done by communities**
 - **B – Urgent options for which communities need assistance from the Government**
 - **C – Options that are less important/urgent**
 - **D – Adaptation options that are not yet needed**
- **Allocating responsibilities to various sectoral agencies and assessing the changes necessary**
 - o Changes to national policies/strategies
 - o Changes to local laws and regulations/ enforcement
 - o Formal engineering and construction works
 - o Informal engineering and construction works by communities
 - o Extension and information to communities
- **Matching adaptation priorities with operational plans of different agencies in each sector**

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Gaps, Needs and Concerns

- **Lack of awareness** among policy makers about CC impacts and their economic implications in each sector
- **Mismatch between the temporal and spatial scales** of CC projections and information needs of sector planners: Very few climate models can predict rainfall patterns in Asian countries with certainty or on timescales relevant to policy makers
- **Lack of capacity** of officials to integrate CCA information into sector planning processes
- **Limited leverage** of environment ministries on agriculture/water management agencies and policies
- **High reliance on structural and technological options** which are inflexible and insensitive to local contexts, and are technologically and financially demanding
- **Inappropriate means** to connect stakeholder interests and climate change impacts

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Institutional Concerns

- **Inefficient regulatory frameworks**
- **Institutional fragmentation** and resulting communication barriers; Very short political and funding horizons make full integration particularly difficult
- **Weak coordination** between agencies or ministries responsible for CC, agriculture & water resource management, and lack of policy coherence and consistency between adaptation and development goals

Other Concerns

- **Lack of effective participation** of a broad range of stakeholders in sector policy making (Inclusion)
- **Lack of suitable incentives** for individuals, organizations and institutions to realize effective mainstreaming (e.g., many national meteorological services do not have adequate incentives and are not mandated to provide agriculture/water sectors with the full range of services they need).
- **Mainstreaming fatigue** and lack of adequate recognition of challenges in mainstreaming
- **Parallel evolution** of adaptation and agriculture/water management approaches

The Way Forward - General

- Practical demonstrations on promising mainstreaming options, rather than pure theoretical approaches
- Building support for more detailed V&A assessments
- Strengthening institutional frameworks and human capacities
- Streamlining financial mechanisms
- Improved governance for mainstreaming

Ways to move forward - Information

- **Framing adaptation issues** (both content and manner of delivery) including current and future impacts in the context of the audience, and in the context of development rather than environmental context
- **Raising awareness on local impacts and coping strategies** among senior politicians and high level policy makers through creation of an effective knowledge management system
- **Improving the relevance of scientific outputs** to decision making through improving communications between scientists and policy makers and information delivery methods (e.g., religious gatherings, field days)
- **Generating intelligent information** – Easily accessible and timely climate risk information based on good interpretation (Seasonal weather forecasting, Disaster early warning mechanisms, local impacts)

Ways to move forward - Institutions

- **Region-wide Adaptation Facility** to improve technical capacity for adaptation mainstreaming at sector level & regional level
- **Addressing institutional aspects** through managing adaptation plans by a ministry with a high level of leverage
- **Building “boundary institutions”** which can help to bring information on CC implications to bear on sector planning and decision making
- **Fostering institutional linkages and coordination** between environment, sector and development ministries through **creating a framework for combining tools, funds and organizations** or **establishing a multi-stakeholder coordination committee**
- **Enhancing the role of research institutions** to improve agriculture/water sector decision making under climate uncertainty;
- **Involving the private sector** in adaptation (water trading laws do not exist in most countries but happens anyway)
- **Ensuring a coherent approach to mainstreaming** through regular and broader engagement of stakeholders

Ways to move forward - Incentives

- Tackling “mainstreaming fatigue” through
 - providing appropriate financial and career development incentives
 - **avoiding replication** with other parallel processes
 - attaching conditions for donor funding to implement locally-relevant adaptation actions such as use of drought tolerant crops in areas with water deficits
 - communicating the economic case for different adaptation options in water sector
 - increasing investments in agriculture/water infrastructure
 - **reorienting meteorological services** towards improved adaptation and sustainable development

Ways to move forward – International mechanisms

- Developed countries to **shoulder part of the efforts** for mainstreaming both in the context of ODA and in enhancing technical skills for mainstreaming
- Effective **enabling environment** for mainstreaming through
 - Development of operational guidelines
 - Provision of additional support for research, monitoring and evaluation of mainstreaming
 - Enlarging the base and quantity of adaptation-specific funds
- Some **regional/international capacity building initiatives** for mainstreaming adaptation in agriculture/water sectors
 - GEF, UNDP, UNEP, APN (research, CaPable)
 - START (AIACC, ACCCA), CLACC
 - IWMI, ADPC, IGES

The Way Forward: Role of Various Actors

- **Local:**
 - Strengthening local coping strategies
 - Providing feedback to national policies & mainstreaming opportunities
- **National:**
 - Inter-agency coordination
 - Legal provisions to mainstream adaptation (e.g., revising EIA) into operating rules, forecasts and management choices
- **Regional:**
 - Trans-boundary river commissions to consider adaptation more explicitly
 - Negotiate and implement regional water agreements in the context of CC
 - Regional development agencies to preferentially finance projects that proactively consider climate risks
- **International:**
 - Provision of operational guidance on mainstreaming adaptation concerns in agricultural and water resource management (e.g., IFAD initiative)
 - UNFCCC & other organizations to play catalytic role in exchange of experiences, and in facilitating the development of region-wide and sector-wide approaches

Thank You.