

Climate Change Adaptation in the Agriculture and Water Sectors in the Philippines



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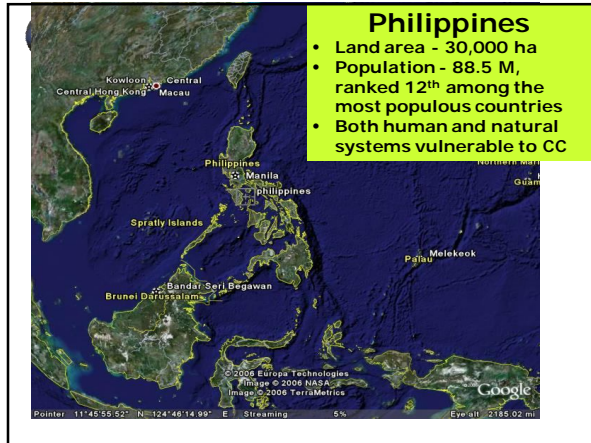


Inception Workshop on "Mainstreaming Adaptation to Climate Change in Agriculture and Water Sectors August 10 –11, 2009 Corus Hotel, Kuala Lumpur, Malaysia

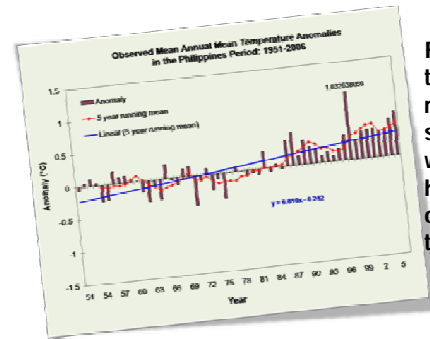


Outline of Presentation

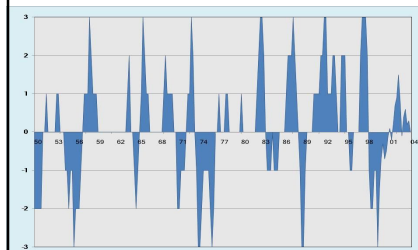
- The Philippines and Climate Change
- Potential Impacts of CC in Agriculture and Water Sectors
- Adaptation Strategies
- Issues and Challenges



The Philippines and Climate Change



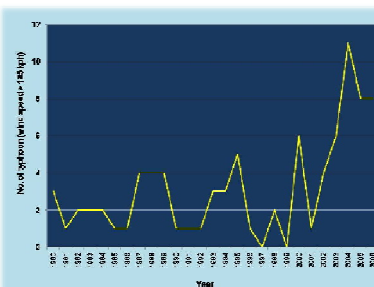
The Philippines and Climate Change



Legend:
 3 = strong El Niño event 2 = moderate El Niño event 1 = weak El Niño event
 -3 = strong La Niña event -2 = moderate La Niña event -1 = weak La Niña event
 0 = no El Niño or La Niña event

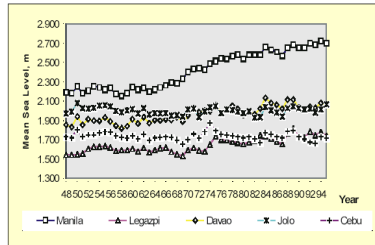


The Philippines and Climate Change



The Philippines and Climate Change

- Rising sea levels, one of the indicators that climate change is occurring

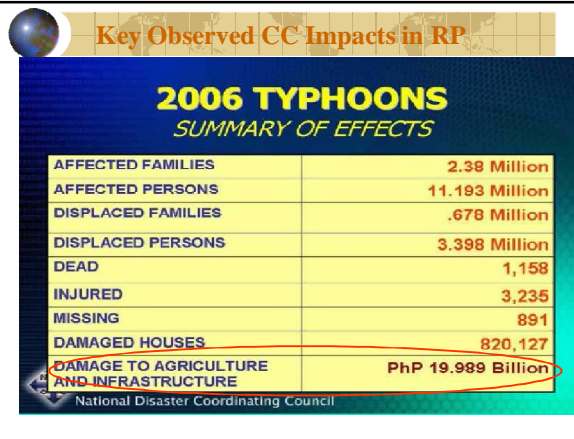


- Annual mean sea level is observed to increase since 1960s while for the rest of the stations, sea level rise occurred in 1970s

Key Observed C-related Impacts

Average Yearly Damages from Typhoons (1975-2000)

- Annual deaths of 593
- 4.5 B pesos damage to property (\$83 M)
- 3 B pesos damage to agriculture (\$55 M)
- Strong typhoons + excessive rains = landslides



Projected Climate Change

- More prominent ENSO events and a shift in seasonal cycle
- Increase chances of summer droughts and floods
- Increase in tropical cyclone intensities is suggested
- Potential sea level rise

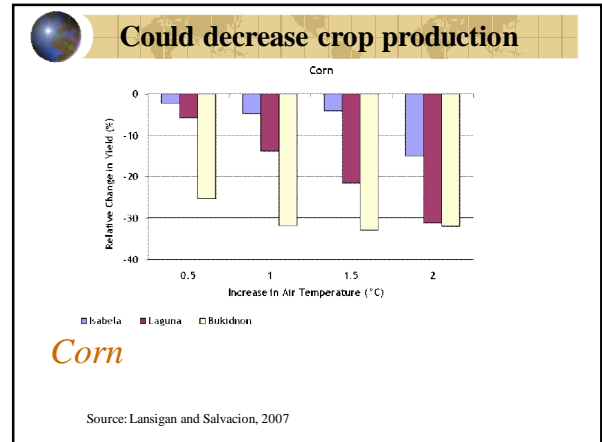
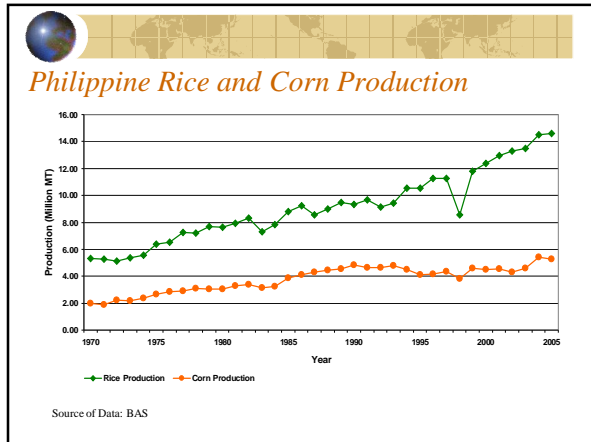
Philippines' basic information on agricultural sector

	1980	1991	2002
Number of farms (M)	3.42	4.61	4.82
Farm Area (M Ha)	9.73	9.98	9.67
Average farm area (Ha)	2.82	2.16	2.00
	2005	2006	2007
Volume of production (Th MT)	73,725.9	77,401.1	78,775.7
Value of production (MP) at current prices	410,303.1	459,585.3	510,266.2 (14% of DGP)
Area harvested (Th Ha)			
Palay	4,070.4	4,159.9	4,272.9
Corn	2,441.8	2,570.7	2,648.3
Yield per hectare (MT)			
Palay	3.60	3.68	3.80
Corn	2.20	2.37	2.54
Total employment (36% of TE in 2007)	112,502	114,451	123,855
Status of irrigation (in hectares)			
Total irrigable area	3,126,340	3,126,340	3,126,340
Total service area	1,413,236	1,427,924	1,434,597
Irrigation development (%)	45.2	45.7	46.0

CC could decrease crop production

In seasonally dry areas 1-2 °C - rise in temperature could lead to

- Increase in irrigation requirement
- Decrease in freshwater availability
- Affects flowering of plants
- Decrease in productivity of rice, corn as in 1983 and 1998



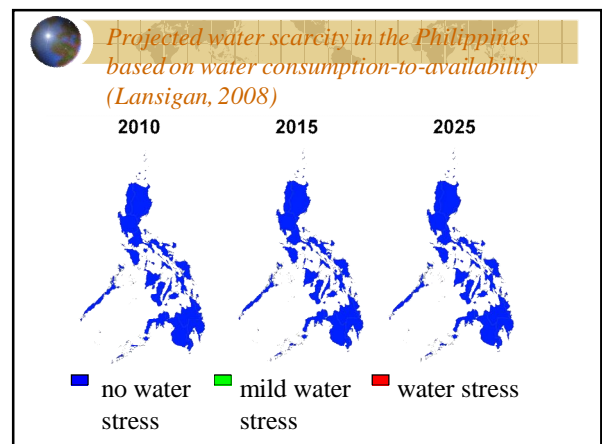
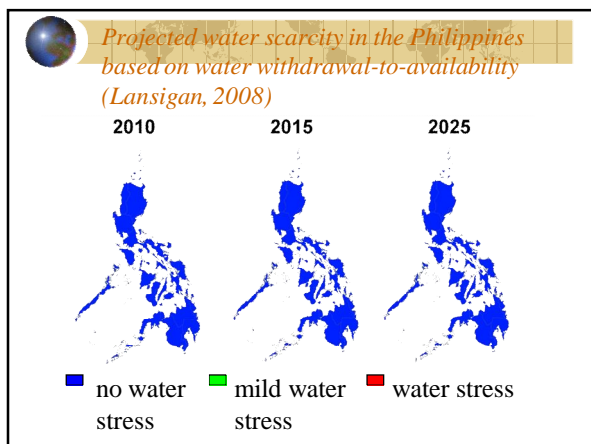
Projected Impacts of climate change on agricultural productivity (%) in 2080

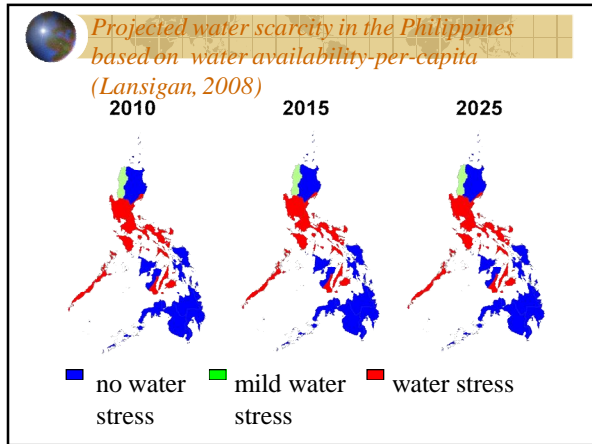
	Without carbon fertilization effect	With carbon fertilization effect
World (output weighted)	-15.9	-3.2
Industrial countries	-6.3	7.7
Developing countries	-21	-9.1
Asia	-19.3	-7.2
Philippines	-23.4	-11.9

Source: ADB (2009)

Water availability, in Mcm

Water Resources Region	Groundwater Potential	Surface Water Potential	Total Water Resources Potential
X Northern Mindanao	2,116	29,000	31,116
XII Southern Mindanao	1,758	18,700	20,458
VI Western Visayas	1,144	14,200	15,344
XI Southeastern Mindanao	2,375	11,300	13,675
IX Western Mindanao	1,082	12,100	13,182
VIII Eastern Visayas	2,557	9,350	11,907
II Cagayan Valley	2,825	8,510	11,335
III Central Luzon	1,721	7,890	9,611
IV Southern Tagalog	1,410	6,370	7,780
I Ilocos	1,248	3,250	4,498
V Bicol	1,085	3,060	4,145
VII Central Visayas	879	2,060	2,939
TOTAL	20,200	125,790	145,990





CC: Could promote over supply of water

Streamflow

- Increase average annual runoff and water availability in some wet areas by 10-40%

2003 12 10

Could exacerbate water scarcity

Marikina Dam

- Exacerbates water stress due to increasing demand
- 10-30% decrease in dry areas which are already water stressed

Could exacerbate water-related extreme events

Droughts

Could exacerbate water-related extreme events

2004 Floods & Landslides in Aurora and Quezon

Photo Courtesy of DENR

Could exacerbate water-related extreme events

Flashfloods

Key Adaptation Options in Agriculture				
Practice	Scale	Reactive/Proactive	Planned/Autonomous	Example
Adjustment of cropping calendar and pattern	Local	Reactive	Autonomous	Widely used
Changes in management and farming techniques	Local	Reactive	Autonomous	Widely used
Use of heat-resistant varieties Local/Subregional	Local/Sub-regional	Proactive	Autonomous	Widely used
Diversified farming, intercropping, crop rotation	Local	Proactive	Autonomous	Widely used
Development of early warning systems	Local/Regional	Proactive	Planned	Philippines, Thailand, Viet Nam

Sources: Boer and Dewi (2008), Cuong (2008), Ho (2008), Jesdapipat (2008), Perez (2008).

Examples of location-specific adaptation strategies to climate change in agriculture		
Adaptation Strategies	Location	Literature
Reduction in area cultivated	Los Banos, Daet, Iloilo	Lansigan et al (2000)
Modification in choice of crops or cultivars	Los Banos, Daet, Iloilo	Lansigan et al (2000)
Changes in agronomic practices (fertilizer use, irrigation, and control of pests and diseases)	Los Banos, Daet, Iloilo	Lansigan et al (2000)
Using farm wastes wisely	Central Luzon	Tibig and Lansigan (2007)
Organic farming	Cordilleras	Tibig and Lansigan (2007)
Use of sulfate-containing fertilizers	Central Luzon	T.M. Corton et al (2000)
Direct seeding crop establishment	Central Luzon	T.M. Corton et al (2000)
Planned cropping sequence and schedule	Los Banos, Daet, Iloilo	Lansigan et al (2000)
Crop insurance	Isabela and South Cotabato	Lansigan (2003)

Key Adaptation Options in the Water Resources Sector					
Practice	Impact to be reduced	Scale	Reactive/Proactive	Planned/Autonomous	Beneficiary Sector
Multi-purpose reservoirs, dams, water-impounding system	Drought, flood, erratic rainfall pattern, water shortage	Regional	Proactive	Planned	Agriculture, Household, Industry, Power generation
Metering and pricing to encourage water conservation	Water shortage	Local	Reactive	Autonomous	Household

Sources: Boer and Dewi (2008), Cuong (2008), Ho (2008), Jesdapipat (2008), Perez (2008) cited from ADB 2009.

- ### Some Issues and Challenges
- ❖ Raising public awareness and appreciation of climate change issues and concerns
 - ❖ Instituting enabling law and national adaptation framework to mainstream adaptation in development policies and programs
 - ❖ Strengthening the capacity of local government units to champion effective adaptation strategies at the local level

- ### Some Issues and Challenges
- ❖ Improving the science of climate change projection relevant to national and local level
 - ❖ Enhancing capacity of researchers to conduct integrated assessment of climate change impacts, vulnerability and adaptation
 - ❖ Undertaking more research to better understand climate change, its impacts and solutions, especially at local levels
 - ❖ Strengthening the science-policy-local action interlink

- ### Some Issues and Challenges
- ❖ Adopting a more holistic approach to building the adaptive capacity of vulnerable groups and localities and their resilience to shocks
 - ❖ Building on the experience of indigenous adaptation strategies to enhance effectiveness of future adaptation
 - ❖ Developing and using adaptation metrics for planning and monitoring purposes to enhance adaptation effectiveness

