

Adaptation of Fishing Communities in the Philippines to Natural Risks

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Impact of Typhoon "Milenyo"

(308 mm RF in Los Baños)





Aftermath of Typhoon Reming in Legazpi, Albay



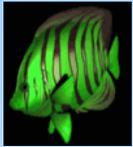
Climate Variability Predictions

(IPCC TAR, 2001; IPCC FAR, 2007)

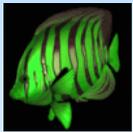
- More intense extreme hydrologic events
- More frequent events
- More extreme events
- Typhoons
- Floods
- Droughts
- More intense rainfall



Project Rationale



Climate change greatly affect fishery and aquaculture, which are most vulnerable to natural risks (i.e. vagaries of climate and weather, incidence of pests and diseases).



To address these problems, some risk management schemes have been introduced:

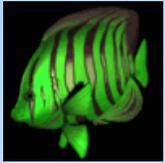
- price stabilization measures**
- typhoons and drought relief**
- crop insurance**

Remarks:

- Schemes becoming more expensive operationally.**
- Do not lessen the vulnerability of smallholders.**



Project Rationale ...



As the government's agricultural credit arm, QUEDANCOR's operations are greatly affected by the impacts of natural risks.

Thus, an assessment of risks due to natural risks may provide insights on how their loans of smallholders can be restructured so as not to lose the essence of credit assistance.



Objective

- **To assess the adaptation of fishing communities to natural risks and come up with appropriate recommendations and measures to mitigate the adverse impacts of natural risks on their welfare.**



Specific Objectives:

- **To estimate the fishers' production losses due to natural risks;**
- **To document the adaptation practices of fishers, communities and institutions to natural risks;**



Specific Objectives ...

- **To review and recommend effective and appropriate coping strategies and mitigating measures to minimize risk and losses in fisheries production;**
- **To formulate appropriate policies and strategies to cope with or manage risks due to climate change .**



Methodology

Data Gathering and Analysis

- Primary data collection via socio-economic survey
- Secondary data collection
- Review of literature
- Key informant interviews



SOCIOECON/DEMOGRAPHIC PROFILE OF FISHERS

- 42 yrs old
 - 41% HS
 - 28% college
 - 65% farming,
16% fishing
primary
occupation
 - 1%former OFW
 - 4% seeking
employment
- 41 yrs old
 - 36% HS
 - 34% college
 - 10% farming,
5% fishing
primary
occupation
 - 21%former
OFW
 - 6% seeking
employment



Children of fishers

16 yrs old

28% not of school age

23 % elementary

22% high school

16% college

Labor force: 22% farming, 11% fishing, 29%
non-farm employment



HOUSING CHARACTERISTICS

- **58% of Filipinos live in houses with predominantly strong construction materials of outer walls (NSO).**
- 91% own the lots where their houses are constructed
- houses predominantly are concrete or mixed wood-concrete structures
- 93 % Quedancor vs. 85 % non-Quedancor borrowers



NSO- the minimum basic needs for the survival of a family can be measured by their access to safe drinking water, the presence of electricity at home and their use of sanitary toilets.

- 70% of the Filipinos use water sealed toilets.
- 80% have access to electricity.
- 43% have access to piped water systems while 34% use artesian wells (NSO 2000).
34% Quedancor vs. 27% non-Quedancor



COPING MECHANISMS AND ADAPTIVE STRATEGIES

- Diversifying income sources
- Building up on stocks and inventory
- Seeking institutional support
- Institutional preparedness



STRATEGIES TO REDUCE VULNERABILITY

- **Reducing consumption and social obligations -81% cut food intake**
 - 48% add dried fish to their daily menu
 - consumption expenditures reduce by 6-39%
- **Livestock/poultry raising**
 - raise > 1 type of animal
- **Destocking of animals (26%)**
- **Migration-21% resort to seasonal out-migration**
- **Withdrawing from inventories**
- **Extracting from common property resources-31%**
- **Community cooperation and collective action**
- **Other strategies: non-payment of dues, drawing upon social relationships, borrowing, postponement of marriage, leasing out farms, harvesting pre-mature crops before floods come**





- **Advanced reliable information allows farmers to decide what management practices may be used to adapt to impending calamity.**



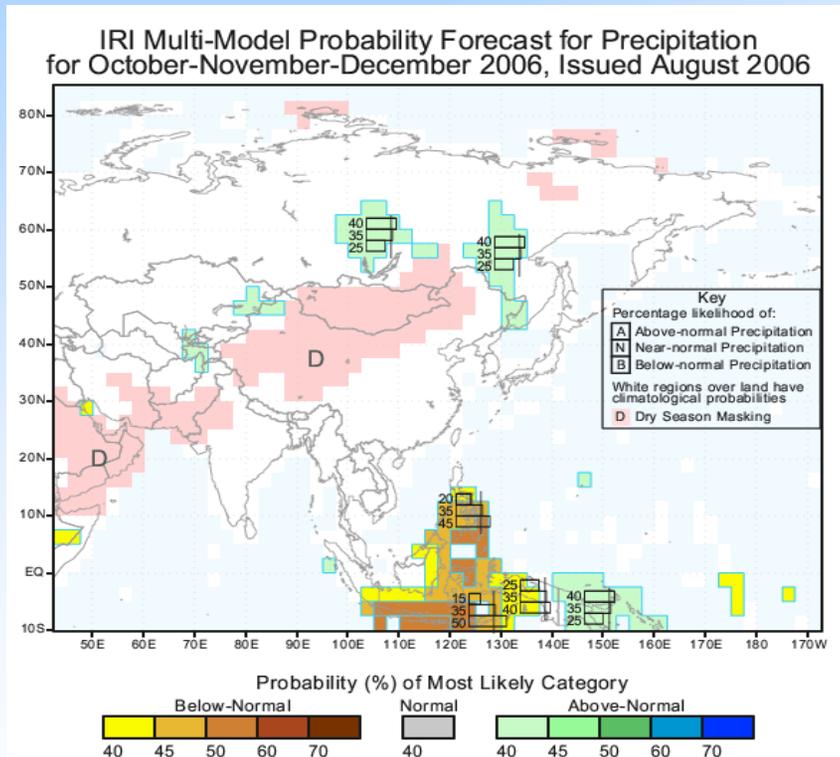


- **Farmer-borrowers get much of advance information on possible occurrence of natural calamities (El Niño, La Niña, typhoons, etc.) primarily from the media, local radio, agricultural extension workers, fellow-farmers who have access to advanced information from various sources.**

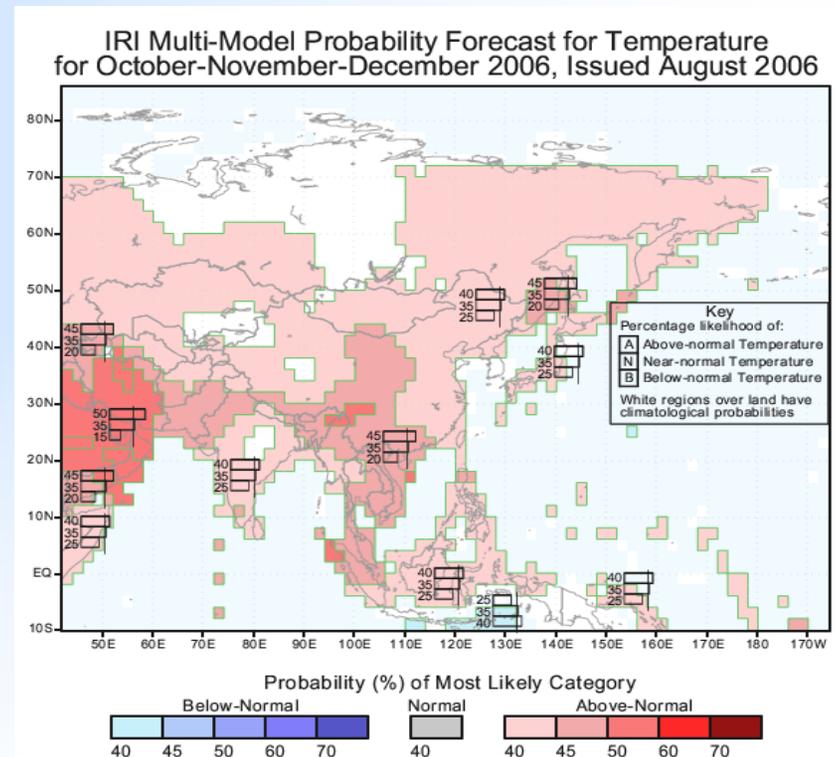


Early Warning System

IRI Regional Climate Forecast, Oct 2006



Precipitation

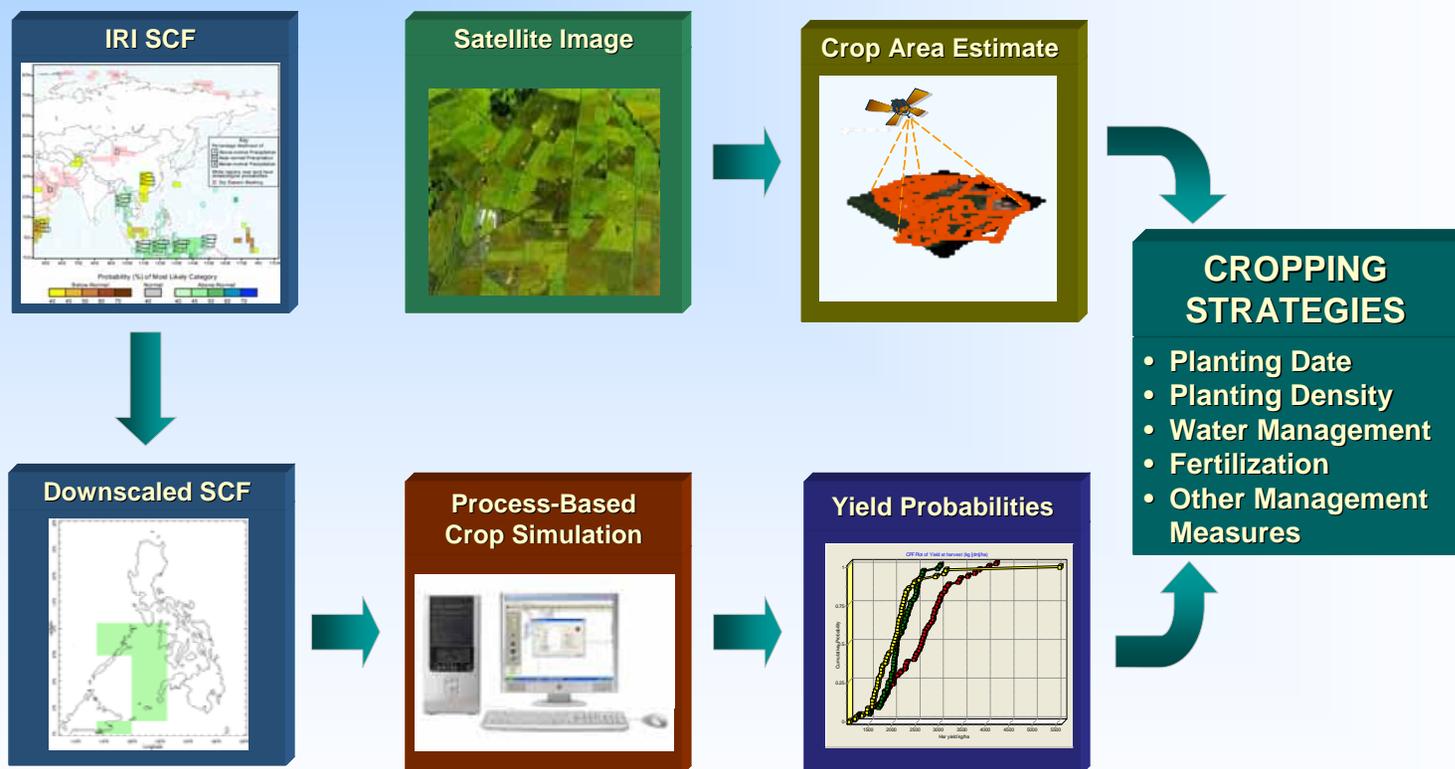


Temperature



Crop Forecasting System

Knowledge-based crop forecasting system framework



Managing Risks ...

- **Survey showed that Quedancor's borrowers employed a range of varying strategies and measures:**
 - *seeking employment elsewhere to augment the family income;*
 - *using the stored food (rice) supply for household consumption or for sale;*





selling livestock before the calamity





coming up with collective community action.



Farm Management Practices

- Improving the production technologies or cultural management practices such as adjusting or modifying the planting density and synchronized planting.
- Adjusting the cropping calendar by planting early (e.g., in the case of anticipated occurrence of extreme climatic variability such as El Niño and La Niña events).



Farm Management Practices

- Farm sanitation to reduce the sources of disease infection or incidence of pests;





Practices adopted to safeguard against or minimize impacts before a natural calamity occurs - e.g. drainage construction, and cleaning of farm.



Farm Management Practices

- Seaweed growers in Zamboanga del Norte harvest the crop as soon as the signs of pest and diseases occur.

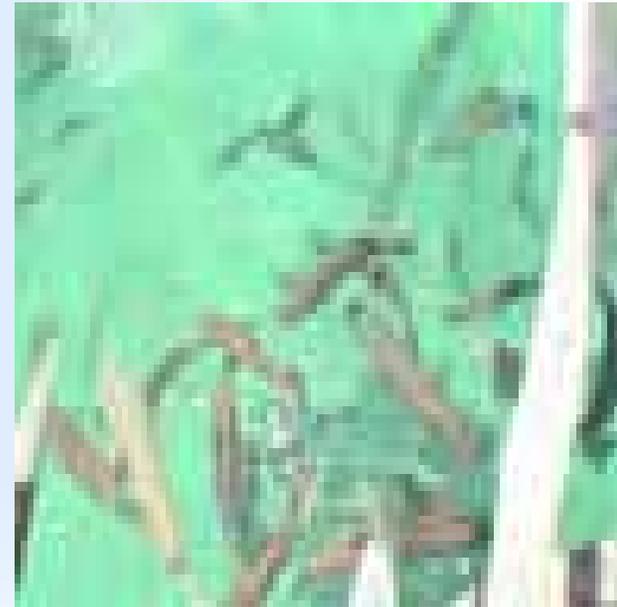




- Tilapia growers in Batangas and bangus farmers in Pangasinan harvest the stock before an announced typhoon occurs.



Structural Measures



- Raisers of grouper in Surigao del Norte's usually transfer the cages to deeper water during periods of continuous rain in order to prevent abrupt changes in water temperature and salinity.



Structural Measures



- **Tilapia growers in Batangas select sites where the terrain of the surrounding shore areas weaken or deflect strong winds and waves.**





After typhoons and floods, the usual practices of the farmers are to restore what is left of the crops, remove the damaged crops ...





...or totally replant

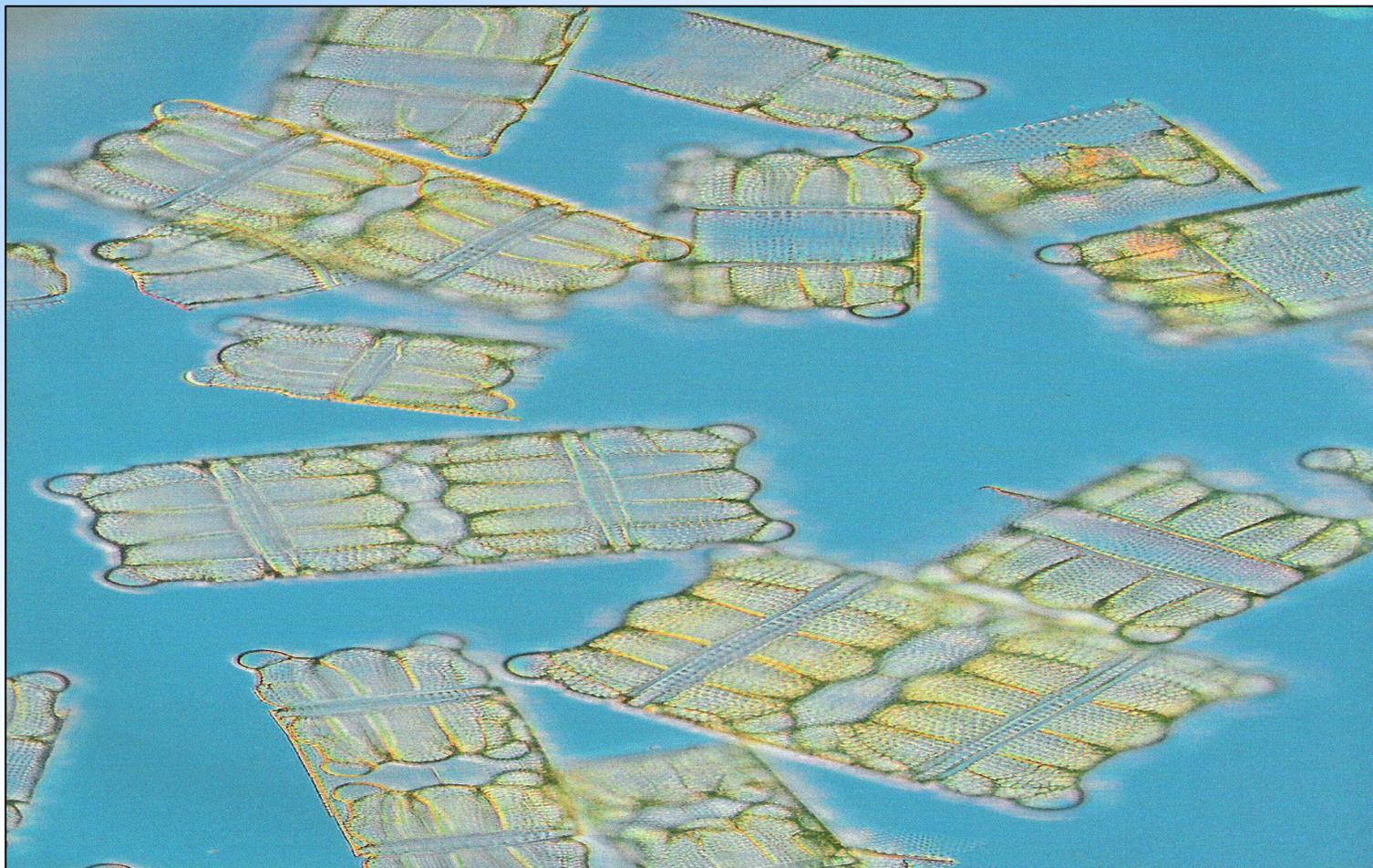


Institutional Measures

- Improved seasonal climate forecasting of the occurrence of natural calamities as well as effective dissemination of forecasts for preparedness.
- Improving the early warning system by concerned government agencies – e.g. PAGASA, DA-RFUs, BSWM, etc.



Community zonation

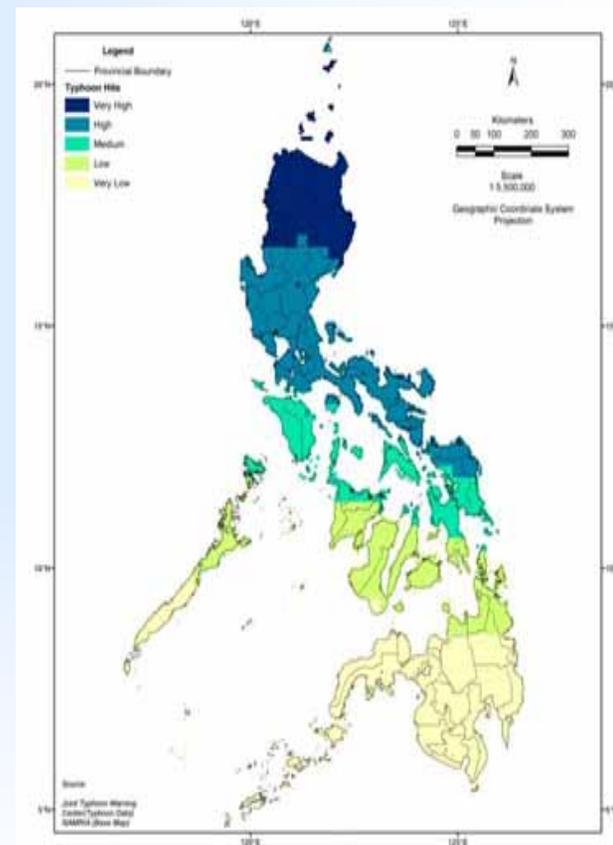


REGION	PROVINCE	COMMODITY	NATURAL RISK	LOSS (%)	AVERAGE LOSS (PhP/ha)	
					QB	NQB
Region I	Pangasinan	Bangus	Typhoon	87.80	13,960.20	13,073.42
Region IV	Batangas	Tilapia	Typhoon	84.39	77,039.63	n.a.
Region IX	Zamboanga del Norte	Seaweeds	Pests & diseases	75.00	68,700.00	66,375.00
CARAGA	Surigao del Norte	Grouper	Pests & diseases	64.95	179,911.50	n.a.
			Typhoon	72.68	201,323.60	n.a.
			ENSO	6.96	19,279.20	n.a.



Typhoons in the Philippines

- **Average of 20 typhoons annually occur in PAR**
 - Accompanied by strong winds, intense rainfall,
 - Flooding occurs



Typhoon incidence map of the Philippines
(Source: Manila Observatory)



Institutional Measures

- Provision of a standby **Calamity Support Bridge Fund** to assist farmers and fisher folks in cases of natural calamities.



QUEDANCOR CALAMITY BRIDGE FUND (QCBF)

Rationale:

- ⌘ **Farmer-borrowers highly vulnerable to natural calamities be given additional support to facilitate recovery from damages.**
- ⌘ **Co-variability of risks reduces efficacy of existing measures in handling uncertainties in crop production, particularly in ensuring secured finances to continue crop production activities.**



Rationale cont'd.....

- ✪ **Agricultural/crop insurance – most common tool in strengthening financial security but several studies assessed that administration cost is generally too high relative to benefits receive farmers and lending institutions like the banks.**
- ✪ **Insurance alone cannot be a source of financing to enable farmers to continue production activities and recoup losses.**



QUEDANCOR CALAMITY BRIDGE FUND (QCBF)

OBJECTIVES:

- ∞ aimed to help eligible farmers, fishermen, and aquaculture producers to recover from production losses due to natural calamities
- ∞ amortized within a considerable grace period to allow farmers to have sufficient time to recover
- ∞ seen to be an integrated part of any insurance program or credit facilities
- ∞ will not replace existing tools of risk management including crop insurance



Estimating QCBF

QCBF = Amount of previous loan + Cost of Production for next cropping period + (Fraction Loanable x Expected yield loss x Price/kg)

where **'Fraction-Loanable'** represents the proportion (e.g., 30% -50%) of the estimated value of yield loss that may be loaned from Quedancor



Assessment of yield losses

Actual Crop Yield = Potential Yield x Yield Reduction Coefficient

where Potential Yield = Attainable yield in the location

Yield Reduction Coefficient = $(1 - RT_{\tau}) \times (1 - RF_{\tau}) \times (1 - RD_{\tau}) \times (1 - RPD_{\tau})$

RT_{τ} = reduction coefficient due to typhoon during period τ

RF_{τ} = reduction coefficient due to flood during period τ

RD_{τ} = reduction coefficient due to drought during period τ

RPD_{τ} = reduction coefficient due to pests and diseases during period τ



QCBF Amortization Scheme

$$x = i \left[P \frac{(1+i)^n}{(1+i)^n - 1} \right] + \left[B / (1+i) - (1+i)^{n+1} \right]$$

where x = periodic payment

P = QCBF availed

i = fractional (periodic) interest rate

n = number of payments

B = a final balloon payment

If no balloon payment is required, $B = 0$, the above formula is simplified as follows:

$$x = i \left[P \frac{(1+i)^n}{(1+i)^n - 1} \right]$$



QCBF Qualification Criteria

(Administrative/Policy Decision)

- ∞ **QUEDANCOR borrowers (and their immediate families)**
- ∞ **farmers who experience a crop loss of more than 30 percent from natural calamities**
- ∞ **farmer-borrowers with no immediate sources of other funds for their recovery process**
 - primary source of income is cultivation of crops and no other stable livelihood source
 - farmers unable to derive financial assistance from relatives
 - farmers with no properties as collateral to avail credit
 - etc.
- ∞ **farmer beneficiaries willing to adopt preventive technologies**



QCBF Implementation Guidelines

(Administrative/Policy Decision)

- **The QCBF only applies to losses due to natural calamities: typhoon, flooding, drought, pest and diseases, etc. This will minimize covering production losses due to moral hazards (e.g. when farmers fail to take reasonable precautions against crop losses because they can rely on yield compensation when crop is insured).**
- **The QCBF will only cover production losses to crops/fish/aquaculture/animals. It does not cover losses of physical structures since there are other banking/credit institutions that already cover these particular items.**



QCBF Implementation Guidelines

(Administrative/Policy Decisions)

- Application must be received within 2 months after the occurrence of the calamity. Estimates of the damage must be done by QUEDANCOR personnel after close ocular inspection and assessment of the extent of damage.
- Prioritization of areas (regions) where Calamity Fund may be provided may be based on risks to natural calamities e.g. **Central Luzon to Northern Luzon** with 25-32% frequency of occurrence of typhoons, and high risk due to dry episodes.

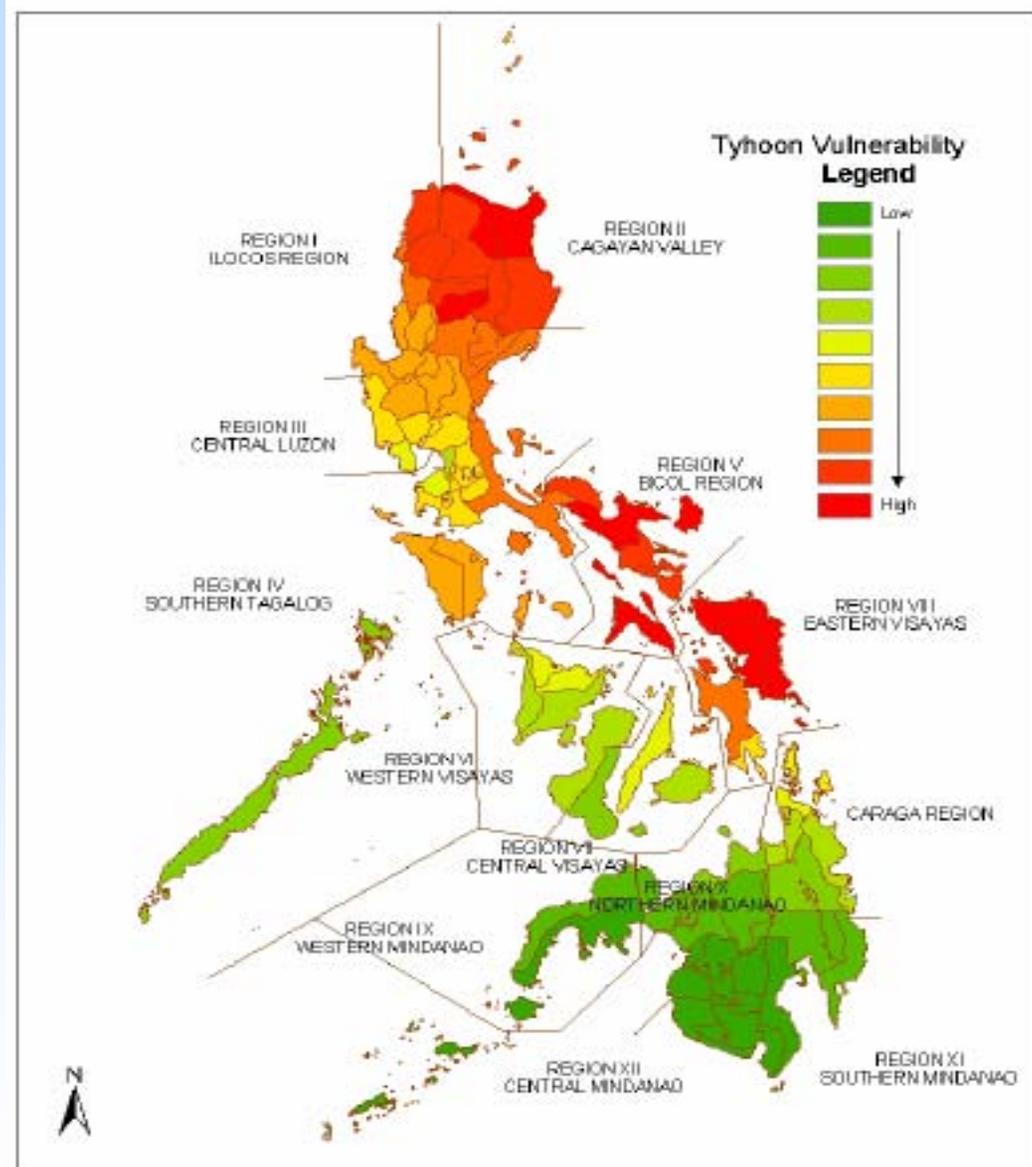


Vulnerability to typhoons of different provinces of the Philippines

E. Visayas, Bicol, Southern, Central & Northern Luzon: 25-32 %

Central Phils: 18%

Southern Phils.: 1 -7%



QCBF Implementation Guidelines

(Administrative/Policy Decisions)

- **Loan processing should be facilitated to enable farmers to immediately restart/continue production activity.**
- **Amortization schedule should be carefully computed based on the ability of the farmer to make his payments. Determinants include the economic status of the farmer, vulnerability of the area to natural calamities/frequency and extent of the area to occurrence of natural calamity, relative fertility of the area, etc. (recommended i.r. at 12% or lower depending on source of fund for QCBF)**
- **Administrative cost must be controlled.**



Issues and Challenges

1. Updating of risks and associated losses

- *as new data and information are available*
- *new approaches and procedures are developed*
- *risk is location-specific, commodity-specific, and time-dependent*



Issues and Challenges

- 2. Developing strategy for information, education and communication of assessment and management of risk.**
 - *SRT training module on understanding and assessing risks.*
 - *module on adaptations, coping and mitigating measures.*



- *Quedancor to work with partners in agricultural development (e.g. DA, LGUs) to enhance capacity of smallholders to respond to and manage risks.*
- *Use of radio, television, and local communication networks, SMS, etc.*
- *Quedancor to provide regular advisories and recommendations **to cope with natural calamities.***



Issues and Challenges

3. Effective & efficient implementation of Calamity Bridge Fund

- *criteria on who may qualify to avail of the loan fund.*
- *amortization period.*
- *reasonable interest rate.*
- *prioritization of areas.*



Issues and Challenges

4. Capacity building for QUEDANCOR staff on risk assessment and management

5. QUEDANCOR to maintain good database on:

- *farmer-borrower clientele (benchmark socio-economic characteristics especially their sources of income, production performance, loan repayment performance, etc)*
- *traders/input suppliers*
- *risk parameters particularly on yield losses*
- *Weather-related information that concerns the area/locality, etc.*

