

Pilot Program for Climate Resilience (PPCR) –



Private Sector Approach in Promoting Climate Resilient Agribusiness

> Anupa A Pant PPCR Pilot Country Meetings, Washington DC May 03, 2013

Presentation Highlights

- 1. Nepal PPCR
- 2. Program Preparation Promoting Climate Resilient Agribusiness
- 3. The Program



Nepal PPCR





Nepal PPCR Components

Component 1: Building Climate Resilience of Watersheds in Mountain Eco- Regions	Component 2 Building Resilience to Climate-Related Hazards	Component 3 Mainstreaming Climate Risk Management in Development	Component 4 Building Climate Resilient Communities through Private Sector Participation	Component 5 Enhancing Climate Resilience of Endangered Species					
Component 4	Ļ								
Indicative US\$ 23.5n (Grant 23.Sub component 1: Public and private sector collaboration to enhance food security through promoting climate resilient agriculture.et: US\$5m									
Sub component 2: Climate proofing of selected vulnerable infrastructure such as private hydropower stations									
• Sub co	mponent 3: Feasibility S	Study for Low Cost Clim	ate Resilient Housing						



Institutional Setup for Implementation





Program Preparation –

Promoting Climate Resilient Agribusiness



Approach & Methodology





Primary Survey- Survey locations & Stakeholder profile

Number of producers and market chain players surveyed

SN	Locations	Terrain	Settlement or village	Farmers	Seed Supplier	Irrigation Equipment supplier / manufa-cturer	Fertilizer Dealer	Feed Supplier	Trader
1	Saptari	Terai	23	75	6	3	4	3	2
2	Ramechhap	Mid-Hills	26	75	2	4	1	2	NA
3	Dolakha	Mountain	18	75	1	1	3	1	1
4	Chitwan	Terai	24	78	5	4	5	2	2
5	Lamjung	Mid-Hills	19	75	5	5	4	2	2
6	Dailekh	Mid-Hills	24	75	4	1	0	1	2
Total			134	453	23	18	17	11	9

- Sample districts determined to match with proportion of physical area covered by each of mountains, mid-hills and terai regions
- 48 VDC's in 6 districts were covered during primary survey

Sub-sectors assessed / Value chains

- Cereals Rice, maize and wheat
- Vegetables tomato, potato and cole crops (cabbage and cauliflower)
- Pulses & Oil seeds mustard & lentil
- Livestock dairy and poultry



Vulnerability Analysis –

Significant warming is inferred in all the three regions

Climate projections at different terrains in Nepal												
Time	Anomaly in 2030			Anomaly	Anomaly in 2050			Anomaly in 2080				
Parameter	Tmax	Tmin	Rainfall	Tmax	Tmin	R	Rainfall	Ттах	Tmin		Rainfall	
Unit	⁰ C	⁰ C	%	⁰ C	0 C	%	6	0 ⁰ C	⁰ C		%	
Hill	1.1	1.3	1.2	2.3	2.5	5	5.0	4.9	5.2		13.5	
Mountain	1.3	1.1	2.1	1.8	2.2	1	.2.6	3.2	3.2		19.2	
Terai	1.2	1.3	5.0	1.7	2.0	7	'.8	3.0	3.3		12.1	
Source: PwC analy	Source: PwC analysis											

- Climate change indicates *significant warming in all three regions*
- *More warming expected in higher elevation* (Hill region) followed by mountain region. Increase in temperature in the hill region would *increase the frequency of climate disasters* such as floods and soil erosion
- **Rainfall** expected to **increase gradually** over time up to 19.2 % towards end century. Increased precipitation would have **greater implications on** the rate of top **soil erosion**
- *Minimum temp.* expected to *increase more than maximum temp. impacting crops production* negatively due to increased respiration during night hours leading to wastage of stored food in plants

Vulnerability based crop clustering -

Rice, sugarcane, potato, tomato & maize are found to be highly vulnerable to climate change

List of models used for impact analysis							
S. N.	Models used	Crops					
1	DSSAT	Sugarcane, Tomato, Cabbage, Beans					
2	INFOCROP	Rice, Maize, Wheat, Potato, Millet					
3	EPIC	Banana, Lentil					
4	Statistical	Fruits, Mango, Guava, Garlic					

Vulnerability based crop clustering							
Highly Vulnerable	Vulnerable	Less vulnerable					
Maize	Mustard	Lentil					
Vegetables	Orange	Mangoes					
(Tomato)							
Potatoes	Millet						
Sugarcane	Wheat						
Rice							

Districts selected for pilot study



 Districts for climate change analysis included Taplejung, Dolakha, Ramechhap, Lumjung, Dailekh, Jajarkot, Udaypur, Chitwan, Saptari



Vulnerability based crop clustering -

In Terai, all crops under study exhibited declining productivity



■Hill ■Mountain ■Terai

- In the near future (2030), due to change in climate, Maximum negative impact is seen in Maize crop in Terai region (-15%) followed by tomato, potato, sugarcane and rice
- In Terai region, all the crops tried, exhibited reduction in yield in mid-century (2050) & end century (2080) with varying magnitude for the change in climate



Impacts of projected climate change on water demand-Sugarcane tops the list in increased water requirement followed by rice



- Change in water requirement of highly vulnerable crops (Maize, Vegetables, Potato, Sugarcane and rice) in Nepal was assessed using DSSAT model
- Crop water requirement for different crops in Terai region expected to increase at a higher rate than the other two regions
- Among the vulnerable crops, sugarcane tops the list in terms of increased usage of water followed by rice, potato, tomato & maize



Gender- Women outnumber men in farming activities

- In working age group, > 16 yrs & < 60 yrs., women outnumber men in farming activities involvement in all survey districts
- Highest involvement of women reported in sowing (95.8%), harvesting (97.4%), weeding and hoeing (84.8%)

Significant involvement also reported in irrigation application of Imperative for acknowledging the role of women as farmers and natural resource managers and enduring their involvement for effective implementation of any climate change adaptation strategies

men in livelihood search

• Limited capacity of women to cope with increase workload & changing environment due to exclusion from decision making



Selection of potential crops for intervention

Parameters		Subsector score							
	Weights	Rice	Maize	Wheat	Sugarcane	Lentil	Potato	Tomato	Mustard
Quantitative Parameters									
Vulnerability to climate change(% productivity decline aross different regions in 2030 & 2050)	30	15	30	0	25	0	10	25	15
Percentage Contribution to dietary energy requirement#	10	10	6	5	1	8	1	0.5	1
Percentage Contribution to GDP	10	10	2	2	1	1	4	0.4	0.58
Estimated reach to number of farmers (in million)	20	20	12	10	1	3	3	0.2	2.69
Growth potential (Unmet market demand) in thousand tonnes of import	5	5	2	0.1	1	2	2	0.1	0.27
Comparative Level of Commercialization (Private Sector Involvement)	15	15	2	3	6	1	0	0	13
Qualitative Parameters									
Level of interest amongst pvt. sector (Training, Information, Marketing)	5	1	3	1	5	1	1	1	1
Perceived ease of partnership with producers	5	3	3	1	5	1	2	1	2
Overall weighted average score	100	79.01	59.42	21.62	44.47	15.98	22.89	28.19	34.70



The Program





Nepal: Agricultural Context

- The agricultural sector employs over two-thirds of the labor force and contributes to roughly one-third of the gross domestic product
- Fragmented supply chain with average land holding of 0.5 ha and low farm level productivity
- Feminization of agriculture
- 20 million farmers, of whom 96% are smallholders, are likely to face increased climatic variability

Anticipated Changes to Climate in the Terai region :

Increase in temperature
Intensive rainfall events, increases in frequency and intensity of floods, and changes in monsoon patterns

Anticipated Impacts of Climate Change on production of the target crops (rice, maize, sugar):

Decrease in productivity

•Increased water requirements

•Decrease in soil fertility

•Increase in pests



Market Barriers

Access to Technology

- Low levels of awareness and adoption of climate-resilient seed varieties
- Lack of reliable, and affordable access to water resources, and poor water management practices
- Inadequate input availability and knowledge of agriculture practices, especially related to climate change
- Absence of robust weather information delivery and early warning systems

Access to Finance

- Low availability of agricultural credit
- High transaction costs to reach farming households
- Limited awareness among farmers about financial products



Increase Productivity by Offsetting Climate Change Risks of 15,000 farmers in Rice, **The Program** Maize and Sugarcane Access to Finance for Improved climate smart Access to irrigation ICT-based early warning agriculture and water system to disseminate usage by farmers and technologies and weather-related and other agri supply chain management practices practices agronomics information members Input Lead Processors Market **Farmers** IFC Entry Point Suppliers Farmers/Cooperative Advisory services Design and dissemine Capacity building/ on improvement of Demonstration sites training tools. Finance for farmers on input quality (seed, on climate smart adoption of improved irrigation/mechani agriculture models Demo Plots inputs, climate adaptive agriculture zation equipment, and water finance, early Training of LF management practices warning system extensionists and technologies to increase farm

Implementation Modality



Results Framework

Output		0	utcome		Impact	Goal
 Lead Firms training strategy developed for climate resilience Training materials developed addressing specific needs of women Lead Firm extensionists trained(2004 women) 	New Trainin implement Lead firms Lead Firms train farm	ng strategy ed by the extensionists ers (50%	Farm weat pract mark impro	ers knowledge on her, agronomic ices/conditions, et information oved	Assumptions • Availability, accessibility and affordability of proposed te • Farmers have incentives, til resources, capacity to impli- changes	d chnologies me , ement
•Demo plots developed •ICT product developed	women) ICT produc disseminat data/agron launched	t to e weather omics	Famers (50% women) adopt new technologies/improved farm practices to better cope with climate variability		Treatment famers have 20% higher yield as compared to comparison group Farm based household income increased	Sustainable
Assumptions •Availability of qualified extensionists, consultants and implementing partner •WB project to built the capacity of Department and Hydrology and Meteorology is on track •Availability and access to source data		 Target farrevents Recommenter remain relection release Access to remain relection relection remain relection release 	Assumptions et farmers are motivated to attend es nmended technologies and practices n relevant to coping with climate e es to mobile sets			and replicable climate sma agriculture model demonstrat d to improve farmer resilience
 Financial products developed Procedures developed to assess the risk management processes Key staff of FI trained 	F iii	inal Product Laun lisk management mplemented	nched by Fl procedures		Farmers and Supply Chain Members avail loan from partner FI	
Bank acc	Assumptic ept the procedures	ns developed		A •Product offering i •Bank markets the •Relevant knowled	Assumptions meets farmers' needs e products dge shared by farmers	

Capacity Building

Access to Finance

Stakeholders: Farmers (50% women), Lead Firms, MOE, Donor, Input Suppliers, MOA, DOI, Technical Partners, Banks, Civil Society, DHM, Mobile Service Providers, IFC, Input providers

Thank You

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