PILOT PROGRAM FOR CLIMATE RESILIENCE

Summary - Project/Program Approval Request

1. **Country/Region**:	Nepal/South Asia	2.	(Trustee will assign ID)
3. **Project/Program Title:**	*Building Climate Resilient Communities through Private Sector Participation ("Program")*		
4. **Type of PPCR Investment**	*Private: X*	*Public:*	*Mixed:*
5. **Funding Request (in USD million total) for Program:**:	*Grant: US$2,100,000 (for advisory services only)*	*Loan: US$6,600,000 (for investments)*	
6. **Approved Preparation Grant**	*US$300,000*		
7. **Implementing MDB:**	*IFC*		
8. **Other MDB Involvement**	*MDB:*	*Type of Involvement:*	
9. **National Project Focal Point**:	*Ms. Meena Khanal, Joint Secretary, Ministry of Environment*		
10. **National Implementing Agency[1] for program:**	*Ministry of Environment*		
11. **MDB PPCR Focal Point and Program Task Team Leader (TTL)**:	*Headquarters-PPCR Focal Point: Ms. Joyita Mukherjee (JMukherjee1@ifc.org)*	*TTL: Ms. Anupa Aryal Pant (APant@ifc.org)*	

12. **Program Description:**

This proposal conforms to Component IV "Building Climate Resilient Communities through Private Sector Participation" in Nepal's SPCR that was endorsed by the PPCR Subcommittee in June 2011. The two main areas of intervention proposed in this component were:

- Enhanced agricultural productivity contributing to food security through capacity building of farmers and agricultural supply chain members and facilitating better access to finance.
- Strengthened climate change risk management capacity in Nepal's private sector by climate proofing vulnerable infrastructure, mainly hydropower stations.

Following the endorsement, IFC undertook a scoping study and carried out further appraisal and discussions with key market players to develop each of the proposed interventions described in this proposal. Broadly speaking there are three categories of interventions:

1. Enhancing food security through promoting climate resilient agriculture;
2. Strengthening climate change risk management capacity in Nepal's private sector by way of climate proofing vulnerable infrastructure, mainly hydropower stations; and
3. Conducting a market assessment for low-cost climate resilient housing.

A context for each of these sectors, the market barriers, and the proposed projects in each of these three areas is described below.

1: Promoting Climate Resilient Agriculture

Context. Agriculture in Nepal is highly vulnerable to climate change. It is ranked fourth amongst sixteen countries categorized to be at "extreme risk" from climate change impacts over the next thirty years.[2] In

[1] Can be Government agency or private sector firm
[2] Maplecroft. http://maplecroft.com/about/news/ccvi.html

fact, agricultural productivity in Nepal is already challenged from limited access to quality inputs, high dependence on rain, poor farming practices, very limited access to finance, significant male outmigration and poor forward linkages; in turn, these factors contribute to serious food security risks.

In Nepal, the agricultural sector employs over two-thirds of the labor force and contributes to roughly one-third of the gross domestic product. In addition, about a quarter of Nepalese households are headed by women, and the majority of agricultural labour is provided by women.

As part of project preparation, IFC commissioned a diagnostic study of the agribusiness sector, which conducted a vulnerability assessment using crop simulation models to categorize Nepal's main crops into three categories: highly vulnerable (maize, vegetables, sugarcane and rice), vulnerable (mustard and wheat) and less vulnerable (lentil).

IFC's objective is to promote climate-adaptive agricultural practices and technologies to Nepal's smallholder farmers to increase their productivity. Based on the findings of the diagnostic study, IFC will focus on three highly vulnerable crops--rice, maize, and sugarcane.

Description of market barriers. Key barriers that need to be addressed to promote adaptive farming practices are as follows:

Low levels of awareness and adoption amongst farmers and supply chain members regarding improved seed varieties. The institutional mechanisms to update and inform farmers about new and modern seed varieties releases are weak or non-existent. Low awareness results in low adoption of even the few varieties currently available. Better access to quality seed would increase yield by 20-30%, significantly contributing to food security.

Weak extension services for farmers. Government-provided extensions have a limited role in the agriculture sector, and while some large agri processors and aggregators have technical teams to provide extension services, they are inadequately trained and very few in number. Weak extension mechanisms for farmer education limit their yields, which in turn lowers their incomes and their ability to cope with disasters and market fluctuations. For example, the current average yield of rice, maize and sugarcane in Nepal are 2.7 MT/ha, 2.1 MT/ha and 39.5 MT/ha, respectively, while the Southeast Asia average is 3.8 MT/ha, 3.2 MT/ha and 64.9 MT/ha, respectively (PPCR Diagnostic Report, PwC). Climate change impacts will further exacerbate the existing situation.

Lack of modern irrigation facilities and practices. Agriculture in Nepal is primarily rainfed, with irrigation available to only 26.5% of cultivable land. Moreover, conventional surface irrigation, which constitutes a majority of irrigation, has lower water use efficiency and limited water availability during winter and spring seasons. Uncertainties in rainfall and increased water demand due to higher temperatures caused by climate induced weather changes are accentuating poor farm productivity.

Lack of access to finance. The availability of agricultural credit is low—the diagnostic study revealed that only 20% of farm households surveyed receive loans from formal financial institutions (FIs). High transaction costs to reach farming households and limited awareness among farmers about financial products constrain the growth of delivery of financial services to farmers.

Absence of robust climate information delivery and early warning systems. In Nepal today, as in many poor countries, critical infrastructure and services that help anticipate and communicate early warning of severe weather events and better manage scarce and dwindling water resources are weak or limited. The ability of farmers to respond effectively to climate-related weather variability is therefore, limited, which in turn reduces food security and agricultural production.

Summary of the Program

Advisory Component

Advisory services under the Program will provide technical advice to private sector companies and smallholder farmers that are involved in the cultivation and processing of three commodities (rice, maize and sugarcane), promote climate resilient and high yielding seed varieties, improve land and water management and increase access to information and access to finance. The objectives of the advisory services component are as follows:

- Build capacity of farmers regarding adoption of improved seed and climate adaptive practices and technologies.
- Facilitate awareness and adoption of efficient and improved irrigation technologies for efficient water usage.
- Disseminate climate information specific to farming operations through a Short Message Services (SMS)-based pilot project.
- Develop innovative financial products for usage by farmers and other agri supply chain members in association with commercial banks.

Raising knowledge and awareness among farmers on better farming practices and building capacity among private sector lead firms with provision to reach out to farmers will be the primary driver of the Program. Related activities will include:

- Facilitate introduction and adoption of high yielding and stress resilient seed varieties by farmers who are contract growers for private companies by training their technical team.
- Develop farming extension services and training on adaptation to extreme climate events during critical crop growth stages. Enhance training programs with a particular focus on gender-sensitive delivery methods, given the increasingly important role of women in agricultural activities (due to out-migration of men).
- Improve water use efficiency by developing demonstration sites for improved irrigation systems in rice and maize in partnership with the Department of Irrigation and irrigation equipment manufacturers and private processors.
- Enhance early warning systems for farmers by creating partnerships with private sector players (such as third party telecom service providers) to develop a platform for delivery of the customized farm-level climate and weather information generated by the Ministry of Agriculture and Cooperatives. The Ministry is establishing an Agriculture Management Information System under Component 2 of the Nepal SPCR in coordination with the Department of Hydrology and Meteorology.

In addition, advisory activities will promote access to agri-finance. Advisory services will work in tandem with the investment component (described below) to support both financial institutions and farmers to introduce and promote an offering of financial services tailored to farmers and other agri supply chain members. At the same time, the advisory component will strengthen the long-term impact of market transformation by solidifying capacity, awareness and know-how.

Investment Component

In the commercial banking market in Nepal, IFC has identified areas of intervention to promote agribusiness through financial sector involvement and funding mobilization. IFC proposes to work through intermediary banks to facilitate access to finance across the agricultural supply chain to meet investment requirements for adaptive capacity. The Program will seek to contribute to market transformation by building the capacity of FIs, allowing them to provide appropriate financial products and foster mobilization of private financial investment in climate smart technologies in agribusiness projects while simultaneously increasing demand through end-user knowledge management and support.

Alongside its own funds, IFC will provide PPCR financing to private commercial banks, and the terms of financing will be designed in a way to adequately address some of the market barriers described earlier in order to scale-up investments in climate smart agribusiness with a minimum level of concessionality.

2: Strengthening Vulnerable Infrastructure

Context. Over 90% of grid electricity in Nepal is generated by hydroelectric facilities. Currently, installed hydropower capacity is about 700 MW (which amounts to less than 2% of the total economically feasible hydro potential in Nepal), and electricity demand in Nepal is increasing by 7-9% per year. Power is already in short supply, with regular power outages occurring during the winter. Inadequate electricity supply has been a major constraint to economic development and poverty alleviation in Nepal. Given supply shortages and low electricity access rates (40% of the population has access to electricity), the country depends primarily on biofuels, mainly wood, to meet its energy needs. This has serious consequences for Nepal's environment, as the consumption of fuel wood accelerates deforestation and soil erosion.

Changes in hydrological cycles and the depletion of water resources are some of the top environmental challenges facing Nepal in the context of global warming. In-depth analysis of water resources in Nepal reveals two critical impacts of climate change on hydropower – glacial lake outburst floods (GLOFs) and variability of river runoff – both of which pose significant impacts not only to hydropower generation but also to rural livelihoods and agriculture. It is estimated that a global temperature rise of 4^{o}C can result in the loss of 70% of snow and glacier area due to melting of snow and ice. This melt water will accelerate development of glacial lakes and increase potential of GLOF events. Private hydropower companies in Nepal have reported generation loss between 3-8% per annum due to GLOFs, landslides and variation in rainfall pattern, which have consequently increased sediment concentration, accelerated erosion of turbines and caused frequent maintenance shutdowns. The Program objective is to ensure that the most vulnerable hydropower plants in Nepal are resilient to these effects of climate change.

Market Barriers

High costs of adaptation

Deforestation has triggered landslides in Nepal causing significant silt overflow and damage to underwater turbine parts. Some hydropower companies are experiencing large sediment load during the rainy season, resulting in early replacement of equipment. To avoid equipment damage, plants must reduce generation output or even shutdown completely. In turn, this leads to high maintenance costs and reduces operating revenues. To address these conditions, investment in silt trapping, erosion resistant parts and watershed management is needed, but the costs of these measures are often prohibitively high to finance and install.

Lack of long-term financing

Insufficient supply of long term financing, whether to local banks as credit intermediaries or directly to hydro projects from traditional sources of long term credit (pension, insurance, and local bond capital market) is a predominant barrier to financing adaptation projects in Nepal.

Investment Component

Through the Program, IFC will provide a combination of its own and PPCR financing. The terms of financing will be designed in a way to adequately address the barriers (described earlier) with the minimum level of concessionality required.

3: Feasibility Study for Low Cost Climate Resilient Housing

Context. More than 80% of property loss in Nepal is due to climate related disasters. About 41% of the population in Nepal lives in improper housing, which is at high risk to damage from landslides, floods and other natural disasters. It is crucial to develop a range of suitable housing and housing finance options that facilitate the effective use of shelter for disaster preparedness, thereby reducing vulnerability of lower income population groups. Currently, the market is underdeveloped with significant constraints on sustainable supply of raw materials and no substantial private sector investment. Data on at-risk communities (e.g. income levels, disaster-related risks they face, access to housing and housing finance) is scarce, which has hindered development of successful interventions. It is important to establish a viable business model that induces private sector involvement in the lower income housing market so that, eventually, the vast majority of the population has access to resilient and affordable shelter.

Summary of the Program:
The feasibility study aims to improve access to climate resilient technologies and reduce market barriers that prevent the private sector from playing a role in building climate resilient communities. Specific objectives of the study are to:

- Assess demand-supply gaps in low income housing in Nepal through market surveying;
- Review existing housing finance options for these segments, including financing sources, barriers to access and value of financing available, in both organized and unorganized financial sectors;
- Assess the supply and demand for climate resilient housing in this price range;
- Review developer plans to build low cost climate resilient housing units over the next 1-5 years;
- Evaluate climate resilient technologies appropriate for low cost housing for vulnerable communities.

13. Objective of the Program

1: Promoting Climate Resilient Agriculture: Enhance agricultural productivity contributing to food security through capacity building of farmers and agricultural supply chain members and facilitating better access to finance.

2: Strengthening Vulnerable Infrastructure: Foster financing of climate-adaptive investment in vulnerable hydropower plants to enhance their resiliency to effects of climate change.

3: Feasibility Study for Low Cost Climate Resilient Housing: Conduct a market assessment for low-cost climate resilient housing.

14. Expected Outcomes

- Enhanced food security through adoption of climate resilient agriculture by farmers and agri supply chain members.
- Reduced vulnerability of farmers to impacts of climate change.
- Increased availability of finance to farmers and agri supply chain members.
- Improved reliability of hydropower generation.
- Better understanding of low cost climate resilient housing options.

15. Key Results and Indicators for Success (consistent with PPCR Core indicators):

Result	Indicator

(a) Enhanced agricultural productivity contributing to food security through capacity building of farmers and agri supply chain members.	- Number of farmers and agri supply chain members introduced to improved agricultural practices, such as adoption of stress tolerant and high yielding seed varieties, improved water management and other adaptive technologies. - Number of Information and Communication Technology (ICT) based early warning system to disseminate climate related information to farmers.
(b) Increased availability of finance for climate smart technologies in agribusiness to farmers and agri supply chain members (facilitating better access to finance).	- Value of financing accessed (US$ million) by farmers and agri supply chain members for climate smart technologies in agribusiness. - Number of new loans for climate smart technologies to farmers and agri supply chain members.
(c) Strengthened climate change risk management capacity in Nepal's private sector by climate proofing vulnerable infrastructure, mainly hydropower stations.	- Number of hydropower facilities integrating climate resilient technologies. - Value of financing accessed (US$ million) for installation of climate resilient technologies in hydropower facilities.
(d) Better understanding of low cost climate resilient housing options.	- Number of market assessments for low-cost climate resilient housing.

16. **Budget:**

Expenditures[3]	**Amount (USD)** - estimates
1: Investment (concessional credit)	6,600,000
2: Advisory Services (grant component)	2,100,000
Total Cost	**8,700,000**

17. **Project/Program Timeframe**

Expected Board/MDB Management[4] approval date: September 2013
Expected Mid-Term review date: Not applicable
Expected Project/Program closure[5] date: March 2029

18. **Role of other Partners involved in project/program**[6]: IFC will seek to involve other national and international partners (NGOs, community organizations, and other private sector entities) in the implementation of the advisory component of this Program accordingly to their specific expertise and Program needs.

[3] Expenditure categories should be provided by the MDBs based on own procedures.
[4] In some cases activities will not require MDB Board approval
[5] Financial closure date
[6] Other local, national and international partners to be involved in implementation of the project/program.

19. **Implementation Arrangements** (incl. procurement of goods and services)**:**
Project activities will be implemented by IFC. IFC will work closely with relevant departments within government ministries, such as the Ministry of Environment, Ministry of Agriculture, and Department of Irrigation. IFC will also work closely with private sector partners, local government agencies and community organizations to implement the project.

In terms of procurement of goods and services, World Bank Group procurement guidelines will be followed. For more information, please see
http://siteresources.worldbank.org/INTPROCUREMENT/Resources/278019-1308067833011/Procurement_GLs_English_Final_Jan2011.pdf

20. **Other Information:**
N/a