PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE

Report No.: PIDC1107

Project Name	Climate Smart Staple Crop Production (P144531)
Region	EAST ASIA AND PACIFIC
Country	China
Sector(s)	Crops (80%), Agricultural extension and research (20%)
Theme(s)	Climate change (100%)
Lending Instrument	Investment Project Financing
Project ID	P144531
GEF Focal Area	Climate change
Borrower(s)	Ministry of Finance
Implementing Agency	Ministry of Agriculture
Environmental Category	B-Partial Assessment
Date PID Prepared/ Updated	15-Aug-2013
Date PID Approved/ Disclosed	28-Aug-2013
Estimated Date of Appraisal Completion	28-Feb-2014
Estimated Date of Board Approval	15-Sep-2014
Concept Review Decision	Track I - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

1. As a major country contributing to, and being seriously affected by, climate change, the Government of China has strived to integrate climate smart development actions into its emerging green growth strategy. In doing so, the Government developed the National Climate Change Program (2007), the White Paper on China's Policies and Actions for Addressing Climate Change (2011, the White Paper) and most recently the Work Plan for Greenhouse Gas Emission Control during the Period of the 12th Five-Year Plan for National Economic and Social Development (2011, the 12th FYP). Consistent with these frameworks, the Government specified in the Action Program on Climate Change for Agriculture (2008, the Action Program) that it would develop a sustainable agricultural production systems to increase agricultural outputs and farmers' incomes as well as to reduce its agricultural emissions and to promote soil carbon sequestration through adoption of advanced production technologies. In this regard, the Government has emphasized the importance

of accessing low-emission technologies and establishing scientific evaluation methods to lower emissions from its agricultural sector.

Sectoral and Institutional Context

2. Agriculture sector in China has to support the food security of 22% of world population with only 9% of world's arable land, contributes to increased intensity of agriculture production and a significant GHG emissions in China. The China's Second National Communication on Climate Change estimated that emissions from agricultural sources accounted for 11.6% of the country's GHG emissions in 2005. Specifically, the agricultural sector contributed 56.6% of China's total methane releases and 74.0% of China's total nitrous oxide (N2O) emissions. Among others, rice production accounted for 31.5% of agricultural methane releases, and crop production contributed 71.3% N2O emissions and 28.7% N2O releases were from livestock manure production.

3. The high GHG emissions from crop production are associated with high consumption and low utilization rates of fertilizers, pesticides and irrigation water. China consumed roughly 30% of the global fertilizer consumption and was ranked first in the world on fertilizer and pesticide consumption from 1994 to 2011. In 2010, China consumed 56.3 million tonnes of fertilizers with a utilization rate of only 30-35%, while the same rate exceeds 60% in developed countries. In the same year, China used 350 billion cubic meters of irrigation water for agricultural production with an effective utilization rate only about 50%, compared to 80% in developed countries. Similarly, the utilization rate of pesticides in China was only about 30%, which is much lower than that of developed countries.

4. Heavy reliance of synthetic fertilizers has stressed China's limited arable land. China's per capita arable land area close to the warning line set by the United Nations Food and Agriculture Organization (FAO). The area under low productive cropland accounts for over 70% of the total arable land area, and soil organic carbon in typical cropland of China is 30% lower than the world average, and over 50% lower than that of Europe. This situation is further aggravated by crop production practices which often include flood irrigation, no or limited crop rotation systems, straw burning, and low rates of organic residue return to soil. All such practices also contribute to high GHG emission from China's crop production.

5. High inputs, low efficiency, high GHG emissions and low soil organic carbon content indicate that there is significant potentials for China to improve climate change mitigation actions and the long-term sustainability of its crop production. Recognizing the potential, China is implementing on its own and in collaboration with international donors including the World Bank to identify and pilot low GHG emission technologies to avoid and minimize non-point agriculture pollution and to promote sustainable agriculture development. A key focus of these initiatives is to introduce to farmers technologies (e.g., precision fertilization, controlled release of fertilizers, crop straw returning to field, minimum and no-tillage crop production systems, and irrigation and fertilization integration) and practices that can optimize the use of GHG intensive synthetic inputs such fertilizers and pesticides and improve soil productivity while achieving sustainable crop yields.

6. A recent analysis by the Ministry of Agriculture (MOA) has identified a number of challenges that are limiting the uptake of low GHG emission technologies and practices in China: (a) low-emission technologies are systematically identified, assessed at the national level as there is limited public funding support for screening and assessment of such technologies and practices; (b) actual impacts of low-emission technologies and practices are yet to be fully demonstrated and evaluated on the ground; (c) farmers and local governments have limited awareness and information

on these technologies and their actual applications; (d) policy incentives and mechanisms are yet to be instituted to promote demonstration and adoption of low-emission technologies and practices; and (e) capacity and technical support of extension services are largely non-existent to promote the adoption of low-emission technologies and practices. To address these challenges and promote continuous identification and adoption of climate smart agricultural production technologies / practices, MOA requested the World Bank's support the preparation of this project financed under a grant from the Global Environment Facility (GEF). The project's concept was approved by the GEF Council in March 2013.

Relationship to CAS

7. The proposed project is fully consistent with the China-World Bank Country Partnership Strategy (CPS) for FY2013-2016 (Report No. 67566-CN) and directly supports towards achievement of the Strategic Outcomes (a) Outcome 1.4: Promoting Sustainable Agriculture Practices; and (b) Outcome 1.7: Strengthening Mechanisms for Managing Climate Change the Strategic Theme I: Supporting Greener Growth.

II. Proposed Development Objective(s)

Proposed Global Environmental Objective(s) (From PCN)

8. The proposed project's Global Environmental Objective (GEO), i.e. its Project Development Objective (PDO), is to promote climate smart and sustainable crop production through identification, piloting, and promotion of low emission and soil carbon sequestration production techniques and practices. The focus of the project will be on the production of three main staple crops of China's and two major crop production systems: the rice-wheat system in Anhui and the wheat-corn system in Henan.

9. This project will be an integral part of China's efforts to address climate change issues in agricultural sector. Successful implementation of this project will contribute to the country's efforts to reduce China's GHG emissions per unit of GDP by 40-45% by 2020 compared to its 2005 level.

Key Results (From PCN)

10. Three key results of the project will be: (a) reduced nitrous oxide and methane emissions from the project sites; (b) increased soil organic carbon content of the areas implemented under the project; and (c) verified climate smart techniques and practices for the production of the three staple crops.

III. Preliminary Description

Concept Description

11. The proposed project will have four components: (a) Technology Pilots for promoting GHG mitigation; (b) Policy Development; (c) Knowledge Management; and (d) Project Management.

12. Component 1: Technology Pilots for promoting GHG mitigation. This component will promote identification, piloting, evaluation and demonstration of low-emissions and soil carbon sequestration technologies and practices for production of rice, corn and wheat cropping systems in selected demonstration sites. The project will focus on a systematic design, demonstration and evaluation of these technologies and their impacts on GHG mitigation in a cropping system context. In general, the project will promote the adoption of climate smart and integrated soil crop management practices under the precondition of not reducing crop productivity. It is expected that

for wheat and corn, the project will support (a) variety selection; (b) nutrient management; (c) improvement in soil organic carbon; (d) change in tillage practices. For rice, the focus will be on (a) varietal selection; (b) crop rotation; (c) water management; and (d) nutrient management. Selection of specific technical interventions will be done during project preparation.

13. Results of technology pilots will be systematically monitored and evaluated based on approved monitoring methodologies available under different standards, and will be adopted to the project context by implementing suitable revisions to the methdologies . Based on empirical results and feedback from farmers and other implementing agencies, this component is expected to promote adoption of successful pilot technical interventions in the selected cropping systems in the two project provinces.

14. Component 2: Policy Development. This component will support (a) review and development of technical guidelines and standards related to production and use of agricultural inputs (e.g. fertilizers, pesticides and irrigation water); (b) review and development of technical procedures/ guidelines of demonstrated soil carbon sequestration and emission reduction technologies; and (c) policy studies on incentive mechanisms to encourage farmers to apply climate smart crop production technologies. The project will also support MOA to adopt selected policy instruments based on concrete pilot results of these studies.

15. Component 3: Knowledge Management. This component will support activities to share experience and lessons learnt from the pilots of climate smart crop production technologies at the project sites. It will create a knowledge database on climate smart technologies and practices for major crop production areas, and assist agricultural extension services to develop information dissemination platform. It will also develop as trategy for scaling up the adoption of demonstrated low-emission technologies widely beyond the pilot areas.

16. Component 4: Project Management. This component will support the operating costs associated with project management activities.

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IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	×		
Natural Habitats OP/BP 4.04		×	
Forests OP/BP 4.36		×	
Pest Management OP 4.09	×		
Physical Cultural Resources OP/BP 4.11		×	
Indigenous Peoples OP/BP 4.10			×
Involuntary Resettlement OP/BP 4.12	×		
Safety of Dams OP/BP 4.37			×
Projects on International Waterways OP/BP 7.50		×	
Projects in Disputed Areas OP/BP 7.60		×	

V. Financing (in USD Million)

Total Project Cost:	30.10	Total Bank Financing:	0.00
Total Cofinancing:		Financing Gap:	0.00

Financing Source	Amount
BORROWER/RECIPIENT	25.00
Global Environment Facility (GEF)	5.10
Total	30.10

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