PROJECT INFORMATION DOCUMENT (PID)
CONCEPT STAGE

Report No.: PIDC26652

Project Name	Hunan Integrated Management of Contaminated Agricultural Land (P153115)
Region	EAST ASIA AND PACIFIC
Country	China
Sector(s)	General agriculture, fishing and forestry sector (50%), Irrigation and drainage (20%), Agricultural extension and research (15%), Pu blic administration- Agriculture, fishing and forestry (15%)
Theme(s)	Pollution management and environmental health (50%), Environmental policies and institutions (50%)
Lending Instrument	Investment Project Financing
Project ID	P153115
Borrower(s)	People's Republic of China
Implementing Agency	Hunan Provincial Agricultural Commission
Environmental Category	A-Full Assessment
Date PID Prepared/ Updated	14-May-2015
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Estimated Date of Appraisal Completion	31-May-2016
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Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

1. Food security and safety have been at the forefront of the Chinese government agenda and lie at the heart of its agricultural policy. Over past decades, China has successfully fed its population of 1.3 billion people with less than 7% of the world??s arable land. Grain production has increased for 11 years successively, reaching 607 million tons in 2014. However, China faces severe resource and environmental constraints, and has now reached a critical juncture in its capacity to maintain national food security and safety targets. Wide spread soil and water pollution with heavy metals due to rapid industrialization, combined with lax environmental enforcement have left vast area of the countryside polluted.

2. The Chinese government, aware of the serious socioeconomic risks resulting from soil pollution, carried out China's first national soil pollution survey. The survey results indicate that the overall percentage of sample points exceeding the screening threshold in the country is estimated at 16.1%, involving 19.4% of arable land. More than 80% of the surveyed pollution points result from inorganic toxins, with the top three heavy metal contaminants identified as cadmium (Cd), nickel (Ni) and arsenic (As). The Ministry of Environmental Protection (MEP) issued, in early 2011, an Integrated Prevention and Control of Heavy Metal Pollution 12th Five Year Plan , the first national plan for addressing heavy metal pollution. The key guiding principle of the Plan is to prevent new pollution and remediate contaminated water and land by focusing on top control of pollution sources - cleaner production, and end treatment of soil contamination, a concept of whole-process pollution prevention and control. MEP is also making great efforts to include a Soil Pollution Prevention and Control Law in the legislation plan of the National Congress, which is expected to be issued in 2017 or 2018. An Action Plan for Soil Pollution Prevention and Control, led by the MEP, should be approved by the State Council in 2015.

3. The newly amended Environmental Protection Law, which was adopted in April 2014 and came into effect on January 1, 2015, requires that economic and social development be coordinated with environmental protection and encourages studies on the impact that environmental quality causes on public health. It says that the country should establish and improve a national soil pollution investigation, monitoring, risk assessment and remediation system and set up and strengthen a national public health monitoring and risk assessment system. It also says that the public has the right to access information related to environmental quality, monitoring data, pollution incidents, etc. and the environmental protection agencies should disclose this information and improve public participation procedures.

Sectoral and Institutional Context

4. Hunan produces 6% of the nations?? rice from only 3% of its arable land, making a significant contribution to food security in China . However, the safety of agricultural producing area in Hunan has been particularly affected by heavy metal contamination of agricultural soil and water, mainly caused by discharge of flu gas, wastewater, and waste residue from mining, smelting and other industries. The quality of agricultural soil is further affected by overuse of agrochemicals and poor farming practices. In addition, severe air pollution (sulfur dioxide emission from fossil fuel combustion at power plants and other industrial facilities) increases the frequency of acid rain in Hunan, causing soil acidification (reducing soil PH value) , which in turn increases the chemical availability of heavy metals to be absorbed by plants.

5. Rice is especially susceptible of accumulating Cd. There was a major food safety scandal in 2013 when its rice sent to Guangdong was discovered to contain significant levels of Cd. This led to a drop in Hunan??s grain sales, grain price drops, severely damaged farmers' willingness to engage in rice production.

6. It has been estimated that about 37% of Hunan??s total arable land (2.73 million ha) is contaminated with heavy metals. In 2011, with the support from the Ministry of Agriculture, Hunan Provincial Department of Agriculture (now Hunan Provincial Agriculture Commission (AC)) carried out soil heavy metal monitoring in mining and industrial areas, polluted irrigation areas, and suburbs of large and medium-sized cities of 45 counties and districts along the Xiang River basin. About 12,000 soil samples were collected in a total rice producing area of 120,000 ha, of which was found that 44% was highly-contaminated, 34% medium-contaminated and only 22%

uncontaminated .

7. Hunan Provincial Government issued an Implementation Program for Heavy Metal Pollution Control in Xiang River Basin (2012-2015), a first ever program ratified by the State Council, aiming to address arable land pollution in Hunan. The annual investment provided by the central government for remediation of contaminated farmlands and adjusting cropping systems is 1.156 billion RMB per year. Meanwhile, the Hunan Environmental Protection Department (EPD) has inspected and monitored the waste emission and discharge of all highly-polluting industries. Some enterprises have been ordered to close or improve their waste treatment to meet the emission and discharge standards. Progress has been made on industrial heavy metal pollution source control and reduction of heavy metal concentration in rice in pilot areas . However, it is recognized that there is an urgent need for improving environmental performance in both industrial and agricultural production operations and promoting an integrated approach - combining environmental management (pollution source control and environmental remediation) and sustainable soil management, in order to fully address agricultural land pollution with heavy metals and other pollutants , contributing to food safety.

Issues related to Integrated Management of Contaminate Agriculture Land

8. Legal and policy constraints. China does not have a national law encompassing soil pollution prevention and control in China, thus, there is no direct legal basis for soil environment protection. However, the Chinese government is making great efforts to pass such a law. The proposed project, therefore, will support Hunan government in developing and enforcing local policies and technical standards urgently needed for integrated management of agricultural land contamination.

9. Lack of collaboration among government agencies. Controlling toxic substances at their source is the most effective way of keeping pollutants out of the environment. Soils should not be remediated while continued to be polluted. However, while industrial pollution control is under the responsibil ity of Hunan EPD, agricultural land and crop pollution control is managed by Hunan AC. There is no effective collaboration between the two agencies. This issue is also observed in other provinces in China. The proposed project will promote the collaboration among multiple stakeholders needed for addressing agricultural land contamination in Hunan.

10. Technical constraints. Remediation of agricultural soil contaminated with heavy metals is a complex and difficult task. China lacks comprehensive remediation and treatment technical models including pollution source control, remediation approach and technology, engineering measures, remediation management and decision making systems. Addressing agricultural land contamination also requires sustainable soil management practices for restoration and maintenance of soil quality.

11. Lack of engagement of farmers. Remediation of contaminated agricultural land is more difficult without the active participation of farmers. To address this issue the proposed project will: (i) raise awareness of farmers on the importance of environmental protection in agricultural production, (ii) provide a suitable level of compensation to farmers caused by changes in cropping systems and restricted access to highly-contaminated croplands, and (iii) provide training and incentives for applying sustainable soil management practices.

12. Information constraints. Although the national soil survey has provided an overview of soil

pollution in arable land and the Hunan AC has investigated the soil and crop pollution situation, the degree of pollution and potential risks in specific locations remain unclear for decision making due to lack of effective data processing. In addition, China does not have track for events and activities related to industrial facilities that generate, transport, treat, store, discharge, or dispose of hazardous waste which may cause land pollution, and for distribution and use of fertilizers and agrochemicals. China has not established effective mechanisms for information disclosure of soil pollution, resulting in a very poor awareness of potential harm. The proposed project will improve agricultural environmental monitoring, data processing, and information disclosure on agricultural land contamination.

13. Financing constraints. Treatment or remediation of land pollution is expensive; therefore, financing is often a major obstacle as well. During project preparation, establishment of financing mechanisms for management of contaminated agricultural land will be explored if needed.

Relationship to CAS

14. The proposed project is consistent with the national and Hunan??s master plan on heavy metal pollution prevention and control and with the Bank??s County Partnership Strategy (CPS) for 2013-2016 (Report No. 67566-CN) dated October 11, 2012, and in line with the Strategic Theme One of the CPS, Supporting Greener Growth. The proposed project should contribute to several outcomes under this theme: demonstrating pollution management measures and sustainable natural resources management approaches, promoting sustainable agriculture practices, and enhancing urban environmental services. The project will also contribute to the World Bank??s Group??s goals of ending extreme poverty by 2030 and boosting shared prosperity through improving food safety and health conditions by reducing exposure to pollution and increased access to information. The bottom 40% of the population has currently limited access to information and are relatively more exposed to degraded or highly-contaminated areas than other population groups.

15. The project is innovative as it will be the first operation in China to demonstrate an integrated approach to control of agricultural land pollution by: (i) improving and regulating environmental performance in both industrial and agricultural production, (ii) integrating environmental remediation and soil quality management, (iii) promoting effective agricultural environmental monitoring. Experience gained and results will be disseminated for scale-up not only in China, but also in other developing countries.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

16. The project development objective is to improve environmental management of agricultural land contaminated with heavy metals and other pollutants for safe agricultural production in selected counties in Hunan.

17. The project is part of Hunan’s efforts to improve the quality and safety of its agricultural product area, and also the part of the national efforts to reduce heavy metal pollution under the 12th Five Year Plan on Integrated Prevention and Control of Heavy Metal Pollution. Hunan is one of the 14 key provinces selected for heavy metal pollution management under the Plan. The project will contribute to sustainable agriculture and food safety in Hunan and China.

18. The total cost of the project is estimated as RMB 1.237 billion Yuan (US$200 million),

including US$100 million from the World Bank, and RMB 620 million of counterpart funding from provincial government and participating county governments.

Key Results (From PCN)

19. The PDO level results indicators are:

i). Contaminated land managed under the project (ha) (core sector indicator);
ii). Heavy metal concentration in grain/rice in project counties reduced;
iii). Regulations and technical guidelines/standards for prevention and control of agricultural land contamination at local levels issued.

III. Preliminary Description

Concept Description

19. Component 1: Management of Contaminated Agricultural Land. . This component aims to reduce concentrations or manage risks of heavy metals (Cd in particular) and other toxins in the crops (mainly rice) and soils in participating counties by applying different approaches and technologies (such as phytoremediation , inactivation , comprehensive agronomic control technologies , less costly than conventional treatments for heavy metal contamination in soils) in three categories of contaminated farmlands: highly-contaminated area, medium-contaminated area and low-contaminated areas. The approaches and technologies will be assessed and selected during project preparation based on soil and crop contamination risk assessment , taking into account those that are being demonstrated under the national program and other remediation technologies that have been used internationally, and have potential for scale-up in China.

20. In highly-contaminated area, cropping systems will have to be shifted towards new or alternative crops more resilient to accumulating heavy metals, or even stop cropping altogether. There is therefore a need to explore alternative uses of land, and the benefits/costs to farmers. The project will identify and demonstrate a suitable level of compensation to farmers for the changes in cropping systems which would affect their livelihood or restricted access to land. This will be addressed through an environmental and social management framework.

21. Component 2: Sustainable Soil Management. This component aims to improve environmental performance of agriculture production operations for restoring and maintaining soil quality. To increase the efficiency of soil remediation investments under Component 1 there is a need for simultaneous improvement in agricultural soil management to protect soil organic matter, nutrients, organisms, and structure. Sustainable soil management practices will help limit the activity of heavy metals in the soil and dissolve excess nitrogen and phosphorus.

22. This component will support soil management practices including (i) soil health assessment ; (ii) organic matter management: leaving crop residues in the field, choosing crop rotations that include high residue plants, using optimal nutrient and water management practices to grow healthy plants with large amounts of roots and residue, growing cover crops, applying manure or compost, using low or no tillage systems, using sod-based rotations, growing perennial forage crops, and mulching; (iii) tillage management - avoiding excessive tillage; (iv) chemical management - testing and monitoring soil and pests, applying only the necessary chemicals at the right time and place, taking advantage of non-chemical approaches to pest and nutrient management such as crop rotations, cover crops, and manure management; (v) prevention of soil compaction;

(vi) residue management - keeping the ground covered; and (vii) diversification of cropping systems using buffering strips, small fields, or contour strip cropping. These sustainable soil management practices will be detailed during project preparation, taking into account international good practices. All or part of these practices will be applied depending on the soil situation in different locations, especially the level of heavy metal pollution land areas.

23. This component may also support techniques and practices to control agricultural non-point source (NPS) pollution from the three key water pollutants including total chemical oxygen demand (COD), total nitrogen (TN) and total phosphorus (TP) . NPS pollution is possibly caused by (i) fertilizers and agrichemicals, and other agricultural inputs (e.g. plastic film), (ii) crop residues (e.g. straws), (iii) livestock wastes, (iv) contaminated irrigation water , (v) aquaculture discharges, and (vi) rural household wastes. Some of these sources (e.g. i, ii, iii) will be addressed through sustainable soil management. During project preparation, more detailed baseline data on the other sources will be collected to prioritize and justify project support for specific activities on (iv), (v) and (vi).

24. This component will also raise awareness of farmers on environmental impacts of poor farming practices; transfer knowledge and international good practices on soil management; and establish ecological compensation mechanisms, such as establishment of an incentive mechanism to help farmers adopt sustainable soil management practices to preserve soil quality.

25. Component 3: Environmental Management and Agricultural Environmental Monitoring (AEM). This component aims to assist the participating county-level governments in (i) regulating (compliance and enforcement) heavy metal and other toxic pollutants entry into the soil; (ii) improving AEM to guide agricultural land pollution management and agricultural pollution source control.

26. The focus of effective environmental management is the use of a systematic approach to planning, controlling, measuring, and improving an industrial enterprise's environmental impact i.e. the International Standards Organization (ISO) 14000 series of environmental management standards. Clean production and cost savings can be achieved by improving the environmental management processes. The component will support (i) development and issuance of local regulations, technical guidelines and standards for controlling industrial heavy metal emissions and limiting heavy metal entry into soil by application of industrial waste or sewage sludge and agrochemicals , (ii) training for government officials to improve their enforcement capacity and for technical service providers on compliance assistance, (iii) training and technical assistance for key highly-polluting enterprises on establishment of Environmental Management Systems (EMS).

27. This component also aims to improve existing AEM system in participating counties, in collaboration with the local Environmental Protection Department and Bureaus, to enable agricultural land pollution risk mapping and risk assessment, which will help identify areas that are more or less vulnerable to land pollution and crop pollution and display this information graphically. Combining risk assessment with maps would help local governments to identify the main sources of pollution and get the highest food safety impacts for money spent. The other objective of the AEM is to assess how agriculture and changes in agricultural practice affect the environment. Continuous soil, water and air monitoring and mapping of results would be required for meeting the monitoring objectives . The results of this monitoring, together with statistical data from the agricultural sector and results from special research and evaluations should be the basis for

taking decisions on assessing and developing agricultural policy and helping direct resources and land use activities to appropriate areas, and assisting in protection and remediation efforts. The monitoring system is not to replace site-specific investigations, but rather to be used as a planning and management tool. This will also mark the beginning of effective and comprehensive agricultural soil pollution and soil quality management planning. This component will finance development, revisions and issuance of technical guidelines and procedures for AEM and procurement of monitoring and data processing/presentation equipment in participating counties.

28. Component 4: Project Monitoring & Evaluation, Capacity Building and Management. This component aims to support monitoring and evaluation of the project outcome indicators and results by collecting evidence-based information and data, summarizing and disseminating lessons and experiences derived from project implementation, and organizing the project launch and completion workshops. This component will also support capacity development of all levels of AC in Hunan, agriculture technical service providers, and farmer field schools through study trips and training, and provision of international and national technical experts to support project implementation. This component will also support project management, including day-to-day project implementation, procurement and financial management, and environmental and social safeguards functions carried out by the PMU, and coordination and collaboration among local government agencies, non-government agencies and the farmer??s professional organizations.

29. Selection of Project Participating Counties and Farmlands. The number of participating counties is estimated at up to 10, taking into account the funding limitation and impacts that the project is expected to generate. A shortlist of 15 counties will be established by the first preparation mission based on three criteria: (i) percentage of arable land contaminated; (ii) production level of crops (especially rice); and (iii) willingness of the county authorities to participate in the project. During project preparation (before project appraisal), selection will be further detailed to conclude a list of up to 10 participating counties. Additional selection criteria may include: (i) more detailed supporting baseline data on soil and crop heavy metal pollution, soil quality, and non-point pollution sources and key pollutants (processed and presented by mapping, tables and diagrams); (ii) representativeness of farmland sites for management of heavy metal pollution and application of sustainable soil management practices, which should have potential for scaling up, (iii) fiscal capacity for counterpart funding, and (iv) local government management and collaboration capacity.

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		x	

V. Financing (in USD Million)

Total Project Cost:	200.00	Total Bank Financing:	100.00
Financing Gap:	0.00		

Financing Source	Amount
Borrower	100.00
International Bank for Reconstruction and Development	100.00
Total	200.00

VI. Contact point

World Bank

Contact: Wendao Cao
Title: Senior Rural Development Speci
Tel: 5788+7693
Email: wcao1@worldbank.org

Contact: Qing Wang
Title: Senior Environmental Specialis
Tel: 458-5023
Email: qwang1@worldbank.org

Borrower/Client/Recipient

Name: People's Republic of China
Contact: Mr. Licheng Yao
Title: Director, International Department, Ministry of Finance
Tel: 861068552064
Email: yaolicheng@sina.com

Implementing Agencies

Name: Hunan Provincial Agricultural Commission
Contact: Shuguang Liu
Title: Director
Tel: 8673188654819
Email: nyt_lsg@126.com

VII. For more information contact:

The InfoShop
The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 458-4500
Fax: (202) 522-1500
Web: http://www.worldbank.org/infoshop