I. Country and Sector Background

1. Against the background of unprecedented economic growth, the social and environmental challenges faced by China are closely interconnected. Environmental pollution is degrading the resource base and reducing its productivity for those people whose livelihoods depend on it. The Government of China has recognized this in the 11th Five-Year Plan (2006-2010) which aims to sustain the steady development of China’s “socialist market economy” while achieving five important balances\(^1\) including the balance between people and the environment. It is also anticipated that sustainable development will be a main theme in the 12th Five-Year-Plan.

2. Over 600 million people in China still depend on agriculture for their livelihoods. The Government is strongly supporting agricultural intensification and “industrialization” in order to support farmers’ incomes. In this context, expansion of livestock production is an important generator of rural income and employment. On the other hand, livestock sectors’ rapid expansion also poses a threat to the environment and public health if preventive and mitigating measures are not taken.

3. Henan Province, the most densely populated province in China with close to 100 million people also has one of the highest densities of livestock, ranking no. 3 in the country. Output of livestock products (pork, beef, and dairy) has increased. In parallel, the environmental pressure

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\(^1\) Between rural and urban development, interior and coastal development, economic and social development, people and environment, and internal development and relations with the rest of the world.
from livestock has increased significantly, making the level of pollution in form of nutrient loads in soil and water unsustainable, particularly in the Yellow River Basin.

4. Along with rapidly increasing general attention to environmental issues, the Government is aware of the environmental and public health challenges of livestock production. Currently, national standards for nutrient discharge and manure handling and treatment are being revised. This provides a timely guiding framework for the proposed project ensuring sustainability and replicability. At the same time, at the local level, significant challenges exist in implementation of standards and regulations already in place. Enforcement is lacking and the local authorities’ capacity to guide environmentally sustainable spatial planning of livestock activities and monitoring of impacts is weak.

5. Henan Province is now attempting to address the above issues in the context of their broader objective to develop a sustainable livestock industry. One of Henan’s strategies to achieve economic and environmental sustainability of the sector is to restructure smallholder cattle raising which is largely concentrated in the Yellow River Basin, and is still largely carried out in backyard farm type of operations with low productivity, making environmental monitoring and enforcement difficult. The intention is to actively encourage cattle production in “ecologically standardized” livestock farms and parks which will allow economies of scale in production, environmental management, and animal health.

II. Objectives

6. **Project Development Objective.** The project’s development objective is to ensure adoption of improved environmental health management practices on the targeted livestock farms in the Yellow River Belt in Henan Province. This objective would be achieved in the context of Henan’s overall goal of increasing farmers’ incomes through sustainable development of animal husbandry.

7. **Key Indicators of Project Performance.** The achievement of the project objective will be monitored through indicators measuring improved waste management practices in the target farms; productivity improvements; and indicators measuring improved institutional capacity of the local governments to promote environmentally sound livestock development.

8. The project is expected to generate both public and private benefits. The public benefits would consist of: (a) reduction of environmental pollution from livestock production systems in the Yellow River basin resulting in environmental and public health benefits; and (b) cleaner village environment with improved livestock waste management resulting in improved human and animal health in the villages. The private benefits would mainly consist of: (i) improved productivity in the project farms resulting from improved feed management and better animal health; and (ii) cost savings due to more efficient use of organic fertilizer in areas surrounding the project farms. Both public and private benefits would accrue from an increased capacity to manage livestock in an environmentally sound manner in the project areas.

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2 Livestock parks are farms which receive individual small livestock households to the same concentrated area under a variety of ownership and management structures e.g. (a) government provides land use, farmers build the sheds; (b) one owner rents the sheds to farmers; (c) farmers form a cooperative; etc.
9. The project is consistent with the Bank’s Country Partnership Strategy (2006-2010) for China. It aims to manage resource scarcity and environmental challenges by contributing to improved land management and protection of global environmental goods. Overall, the project would contribute to the development of social infrastructure, and enhancement of rural livelihoods, - in line with the development objectives in the Government’s 11th Five-Year Plan. More specifically, the project would contribute to the reduction of environmental pollution from livestock production in the Yellow River Belt in Henan Province.

III. Rationale for Bank Involvement

10. The World Bank has been a significant financier of livestock related projects globally starting in the 1970s covering the entire supply chain including investments in on-farm nutrient management of intensive production units, gathering in-depth experience in this area. The Bank also has extensive experience in upgrading eco-systems through improved pollution control and waste management. There are recent projects under implementation and preparation in the region with similar objectives. E.g. Global Environment Facility (GEF) funded Regional Livestock Waste Management Project carried out in China, Vietnam and Thailand, as well as Carbon Development Mechanism (CDM) carbon finance projects for treatment of manure and reduction of green house gases. The proposed project would build on the experience gained from these projects. The main objective of the Bank’s involvement in the proposed project would be to: (a) provide expertise and share experiences on how to address the institutional challenges for local governments to manage livestock waste; and (b) facilitate transfer of national and international best practices and technological alternatives and innovations in livestock waste management, cattle waste in particular.

IV. Description

11. **Target Beneficiaries.** It is anticipated that the proposed project would be implemented over a five-year period in about 600 medium-size farms (parks) in 31 counties of 8 prefectures in Henan involving about 5,000-10,000 households. The majority of them are cattle (dairy or beef) farms, of which about 1/5 are new - to be constructed under this project. Backyard animal raisers would move their animals to these new parks. Because the development of animal parks is seen as the only way to ensure effective livestock waste management, it is necessary to build animal parks with a complete set of infrastructure (including some production infrastructure such as milking stations) to attract the smallholders to these parks. While the project will focus on supporting waste management infrastructure and related technical assistance in existing farms, it will also support a broader range of activities in the new cattle parks, which would receive relocated surrounding small livestock farmers mainly under cooperative ownership (farmers’ associations).

12. It is envisaged that each participating farm/park would function as a demonstration farm through structured outreach programs for surrounding farms so that the introduced management methods and technologies can be spread. Post-project, the regulatory enforcement practices are expected to gradually change with an increasing number of livestock production facilities having to use their own funds to address government standards.
13. **Financing and Loan Repayment.** The total project base cost is about US$ 160 million, with US$ 80 million World Bank financing. The counterpart funding would come from the final beneficiaries, public and private. There is a clear regional public good aspect of this project, which will demonstrate transformation of the current norm in animal husbandry to replicable environmentally sound practices. Therefore, it has been agreed that the World Bank loan would be passed on to the final beneficiaries as a matching grant, thus constituting a public subsidy to encourage investments in environmental protection. The size of the public subsidy for each sub-project will be commensurate with the public goods element of the sub-project. The Bank loan would be paid back by various levels of government (provincial, prefecture, and county).

14. Post-project, following implementation and monitoring of these demonstrations, the regulatory enforcement practices are expected to gradually change with an increasing number of livestock production facilities having to use their own funds to address government standards.

**Project Components**

15. The proposed project is envisaged to have three main components promoting better waste management along with economies of scale in production, quality and safety:

16. **Component 1. Institutional Strengthening, Training and Technical Support** (US$3.4 million) to improve the technical understanding and institutional management capacity at province, prefecture/city and county levels of on-farm management of livestock waste processes. The aim of this component is to enhance the ability of government at various levels to manage sustainable development of the livestock industry, and provide training, technical and farm management support to livestock farms in waste management. Activities to be financed through two subcomponents (Strengthening of Public Institutions; and Farmer Training, Technical and Farm Management Support) include technical assistance, technical training, awareness raising, establishment of a Geographic Information System (GIS), and investment in technical support systems for animal health management.

17. **Component 2: Environmental Management in Existing and New Farms and Livestock Parks** (US$145.1 million) to assist scale and medium size livestock farms and parks to acquire appropriate infrastructure to minimize, manage, and treat their livestock waste under sub-components: (a) Waste Minimization and Animal Health Infrastructure; (b) Waste Management Infrastructure; (c) Waste Treatment Infrastructure; and (d) Production Infrastructure Support to New Livestock Parks; and (e) Construction Design and Supervision. Activities to be financed include civil works and equipment for infrastructure related investments into the farms/parks to improve waste management and farm productivity.

18. **Component 3: Project Management, and Monitoring and Evaluation** (US$3.8 million) to ensure effective project management offices at each level, and an effective monitoring and evaluation system. Activities to be financed would include incremental project management costs, office equipment and vehicles, training, technical assistance, progress and impact monitoring and evaluation. A computerized Management Information System (MIS) would be established to ensure smooth project implementation and monitoring and evaluation.

V. **Financing**
VI. Implementation

19. **Project Management Structure.** The project management structure is consistent with other Bank-financed rural projects in China. It includes a Project Leading Group (PLG), Project Management Offices (PMOs) located in the animal husbandry bureaus at provincial, prefecture and county levels, and a Project Technical Expert Group (PTEG) to provide guidance during implementation. *The requirement to maintain an adequate management organization is reflected in the legal agreements.*

20. **Project Implementation Manual.** A Project Implementation Manual (PIM) has been prepared by the Provincial PMO (PPMO). The PIM includes selection criteria for project participation; description of project implementation arrangements, procedures (including checking and acceptance), rules, and guidance. The PIM also includes the Environmental Management and Monitoring Plan (EMMP); Policy Framework for Resettlement and Land Acquisition (RPF); farm/park model concept designs; sample farm implementation agreement, etc. *The project will be implemented in accordance with procedures set out in the PIM.*

21. **Flow of Funds and Disbursement.** The Bank loan proceeds will flow from the WB to a project designated account (DA) to be set up at and maintained by the Henan Provincial Finance Bureau (HPFB). The Bank loan will be on-lent to the Henan Provincial Government through HPFB. Disbursement will take place against signed farm implementation agreements and agreed checking and inspection procedures. *Participating project counties will sign implementation agreements with each project farm/par, and each project farm shall implement the project consistent with the farm implementation agreements.*

VII. Sustainability

22. At the central government level, the commitment to environmental improvement is reflected in its 11th Five-Year Plan (2006-2010), providing substantial resources to be invested in such activities. This commitment is expected to continue – if not increase - during the 12th 5-Year Plan period. At the local level, the challenge remains to effectively implement, monitor and enforce environmental legislation and regulations.

23. The sustainability of the project greatly depends on the institutional capacity and strength that the government at various levels has to move the environmental protection agenda forward more generally, and livestock waste management in particular. In this context, the project’s training and technical assistance activities are key for sustainability.

24. At the project level, it is anticipated that the project farms will continue to implement improved environmental management practices after the project because these will ensure better productivity and provide financial income to the farms/parks.

25. The project will contribute to improved environmental sustainability of the livestock industry in Henan through improving feed quality on project farms/parks, thus reducing the
amount of waste produced for disposal into the surrounding environment. Improved waste
collection and on-farm management will reduce direct disposal into ground- and surface water as
pollution of such water. Improved treatment of manures and its use as organic fertilizer to
substitute for inorganic fertilizer on crop land will improve soil organic matter contents, improve
moisture and nutrient retention, and reduce leaching losses, thus contributing to more sustainable
crop production in nearby agriculture land.

26. Improved feed, animal health and livestock housing conditions will contribute to
improved animal productivity and financial return, which in turn will lead to economic
sustainability of the project interventions.

VIII. Lessons Learned from Past Operations in the Country/Sector

27. **Technical Design.** The principle guidance for technical design for this project is
technical and economic feasibility. Experience in other projects show that focusing on
sophisticated technologies without considering their cost-effectiveness and the local capacity to
operate such technologies would lead to unsustainable sub-projects. Therefore, based on a
comprehensive review of existing animal waste management technologies both inside China and
abroad, only designs with both technical and economic feasibility will be adopted in this project.

IX. Safeguard Policies (including public consultation)

<table>
<thead>
<tr>
<th>Safeguard Policies Triggered by the Project</th>
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<tbody>
<tr>
<td>Environmental Assessment (OP/BP 4.01)</td>
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<td>Projects on International Waterways (OP/BP 7.50)</td>
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28. The project has been classified as a Category B and triggers safeguards policies on: (1)
Environmental Assessment; and (b) Involuntary Resettlement.

29. **OP4.01 Environmental Assessment.** No major or irreversible negative environmental
impacts of the project were identified during the EIA process. The EIA has fully considered
potential project impacts on the natural and social environments and has recommended a plan to
ensure that positive environmental impacts are further enhanced and any negative impacts are
kept to a minimum. Potential impacts on human health have been assessed and specific
measures have been included in the project design to minimize the potential transmission of
pathogens, water-borne, and zoonotic diseases by allowing adequate retention time for
composting and treatment of liquid manure within pond systems.
30. **OP4.12 Involuntary Resettlement.** No involuntary relocation is envisaged under the project. New farms and parks would be constructed on land with leasing arrangement. Use of land leased to individual households might have some adverse impact on the household. Measures will be taken to minimize any such potential impacts. A Policy Framework for Resettlement and Land Acquisition (RAP) has been prepared describing all these potential situations and including mitigation principles to be complied with in accordance with the Bank’s OP4.12 and relevant Chinese laws. In such cases, consultation with farmers will be documented and impacts will be monitored and reported to the Bank. *The project has to follow the RAP which forms an integrate part of the PIM.*

X. **List of Factual Technical Documents**

**By the Borrower:**
1. Project Feasibility Study Report
2. Social Assessment
3. Environmental Impact Assessment
4. Policy Framework for Resettlement and Land Acquisition
5. Project Implementation Manual
6. Procurement Plan
7. Project Application Guide and Project Farm Selection Criteria Table

**By the Bank:**
1. Project Concept Note (PCN)
2. PCN meeting review and PCN stage safeguard review meeting minutes
3. Report on livestock waste management technologies in China
4. Report comparing livestock waste management technologies in China with best international practices
5. Institutional Assessment report
6. Mission Aide Memoires
8. Financial Management Capacity Assessment (not yet available)
9. Procurement Management Capacity Assessment (not yet available)
10. Detailed Cost Tables
11. Cost&Benefit Analysis Excel Files

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