Environmental Monitoring Report

Project Number: 38660
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People’s Republic of China: Ningxia Integrated Ecosystem and Agricultural Development Project


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Environmental Monitoring Report  
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Abstract

This report is the forth one of a series of annual environmental monitoring reports submitting to the ADB for the Ningxia Integrated Ecosystem and Agricultural Development Project (No. 38660). The report aims at reflecting the monitored present environmental situation of the project implementation region after four years of project implementation.

This report contains the monitored information of filled-in monitoring table sheets from eight project implementing agencies that were submitted to the PMO. Those monitoring table sheets are categorized into 4 types (15 items), representing either from a subcomponent implementation agency or unit, or from its implementation stage: WLFP: wetlands, landscape lakes and fishing ponds; FWGO: farmlands, woodlands, grasslands & orchards; CC: subcomponent implementation relating to construction activity and; CO: subcomponent implementation at test running stage or under full operation.

The project has been implemented quite well in general, from the viewpoints of environmental protection and ecological conservation. The environmental situation is fairly good in the whole project implementation region. This is reflected by: no serious environmental pollution event occurred in the whole project implementation region, no large amount of gaseous or liquid pollutants emitted to the surrounding areas, no large amount of solid wastes generated from the construction sites or due to operation activities improperly disposed, no apparent environmental deterioration detected in visage, and no environmental complaint made by general public of project implementation region.

Certain environmental benefits generated gradually since four years of project implementation, mainly displayed in: the rehabilitation and conservation of lake wetland ecosystem improved the urban environmental quality; although wetland tourists increasing produced pressure on wetland ecosystem, due to adopted integrated control measures of lake water quality pollution, water quality continued in the National Surface Water IV Standard; expanded Helan mountain nature reserve area and increased Helan Mountain forest coverage rate and vegetation coverage further improved the regional environmental quality; the implementation of conservation agriculture effectively prevented water loss and soil erosion; Xixia King Winery has been established wastewater treatment plant and started to run at the end of 2012, beef farm has established a biogas digester to handle animal waste from joint breeding units and fattening lot, reduced the pollutant emissions and protected the environment.

Suggested environmental monitoring activities and further mitigation measures for reducing environmental impacts include:

Urge those subcomponent implementation units that have submitted incomplete monitoring table sheets to check and refill in the blank cells and/or incorrect cells in the monitoring table sheets, also urge subcomponent implementation units have specially-assigned person responsible for this task.

Invite professional environmental experts and technicians from the corresponding EPA or research institutions to supervise the monitoring activities of the project. Conduct technical training programs to raise the monitoring capability of the monitoring team of the whole project.
Entrust local environmental monitoring department to monitor water quality. It is needed to purchase (or rent) some necessary equipments and instruments for field monitoring and/or laboratory analysis and given full play. Build up wastewater treatment facilities in some subcomponent implementation units according to the original environmental monitoring plan suggested. Some dairy farms did not dispose waste water from breeding lot and milking parlor properly, urge an integrated dairy farm environmental management proposal jointly prepared by consultants and dairy farms. Establish a proper irrigation system and implement the irrigation management regulations to reduce the soil salinization risks at some subcomponent implementation areas. Increase integrated environmental management measures of NARB vineyards and dairy farms.

**Introduction**

This report is the forth one of a series of annual environmental monitoring reports submitting to the ADB for the Ningxia Integrated Ecosystem and Agricultural Development Project (No. 38660), which has launched since 2010 and will last to 2014. The project has four components:

(i) IEM capacity and project management,
(ii) Land and water resource management,
(iii) Rural livelihoods improvement, and
(iv) Conservation and tourism.

The outcome of the project is to introduce an integrated ecosystem management (IEM) approach that provides sustainable livelihoods for the population of the project area.

The Project Implementation Agencies (PIAs) include Ningxia Finance Department (NFD) under Ningxia Hui Autonomous Region Government, Ningxia Agriculture Reclamation Bureau (NARB), and Yinchuan Municipality Government (YMG). The PPMO (Project Management Office) attached to the NFD is the executing agency and responsible for environment management during the implementation.

According to the Environmental Monitoring Plan, the project should perform periodical monitoring activities and submit the monitoring report based on the routine monitoring data to ADB regularly. The Report presented here is updated monitoring data based on report prepared by Dr. Muyi Kang, an environment expert performed as technical assistant (TA) from ADB’s assignment1; the monitoring data within this report, however, are provided by the PMO through a set of investigation table sheets with categorized monitoring indices. The index contents within the table sheets for environmental monitoring were designed by the TA, through several times consultations with a few relevant experts and representatives of implementation agencies from all over the different implementation activities at different implementation locations. Thus, this report supposed to be able to reflect the present environment situation as a whole at project implementation area following three years of project implementation.

The monitoring aspects include air emission, wastewater and solid waste discharge, as well as

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1 The annual environmental monitoring reports in next few years will be prepared by the PMO itself.
other physical or chemical pollutants such as noise, odor, dust, etc., relating to project’s construction and operation activities to surrounding atmosphere, water-body (river channels and wetlands), land surface, and sensitive areas such as residential area, nature reserve or biodiversity and water resources conservation sites.

**Monitoring contents**

The monitoring contents are categorized in 4 situations:

I Monitoring index system for wetlands, including landscape lakes and fishing ponds,

II Monitoring index system for farmlands, woodlands, grasslands & orchards,

III Monitoring index system for construction sites, and

IV Monitoring index system for aquatic, breeding farms or feedlots, dairy, winery, food processing mills in test run or full operation period.

Each of the above 4 situations has, more or less, some different monitoring items designed for that particular situation, which are assembled within 4 different monitoring investigation table sheets, respectively (See appendixes in detail).

**Analysis and illustrations**

The subcomponent implementation agencies have done a fairly good job in implementing the environmental monitoring plan. The filled-in monitoring table sheets submitted to the PMO are technically workable and fairly complete, showing the environmental situation in the project implementation region is generally good.

1 **On wetland, landscape lake and fishing pond type**

There are in total 4 wetland parks under monitoring (See Appendixes in detail): Shahu Wetland Park, attached to NARB; Mingcuihu Wetland Park, Baohu Lake Urban Wetland Park and Haibao Lake Park under the supervision of YMG. Those 4 wetlands parks play an important role in biodiversity conservation (through as a transitory habitat for migratory birds), recreational resort for local residents and tourists from faraway, and a production base of aquaculture and agriculture.

Among the 4 wetland parks, Shahu Wetland Park is much larger, even having a nature reserve within. While Mincuihu Wetland Park is much smaller compared with the other two parks, but its vegetation is much denser, with a coverage reaching to 80%.

EPB of Shizuishan Municipal periodically monitor water quality of Shahu wetland whilst EPB environmental monitoring station of Yinchuan Municipal monitor water quality of Mingcui Lake.

Generally speaking, it can be concluded from the monitoring data, that those wetland parks have operated normally and there are no serious pollutant emissions or apparent pollution events occurred.

It is worthy to say, that total N of lake water body monitoring of Mingcui Lake and Shahu wetland reduced from 2.61mg/L and 1.76mg/L in 2011 to 1.11mg/L and 1.21mg/L respectively, hinting the lake eutrophication is mitigating.

2 **On farmland, woodland, grassland and orchard type**

Several implementing units fall into this category, named Yinxi Project Area attached to YMG and Maosheng Forage Base, Yuquanying Grape Base and Helan Mountain Beef and Sheep Group.
attached to NARB, have submitted their monitoring data in table sheet forms. NARB is developing its production scale, especially in expanding the grape plantation area and livestock breeding scale, through the project's loan funds. Generally speaking, the vegetation on the subcomponent implementation area grows well and its coverage is around 10%; the air quality is good; there is no apparent soil erosion; and the groundwater quality is up to the standard. In 2012 urged project implementing units contacted related EPB or research institution to invite professional environmental experts and technical personnel to supervise project monitoring activities.

3 On construction sites
All the construction activities involved in this project are temporal, normally activating at working season –from late spring through summer to early autumn in a year– and lasting no more than 18 months within 2-3 years. Thus the construction sites are the areas only transitorily existing in the project implementation region. There are 4 implementation agencies that have submitted their construction site monitoring data: Maosheng Forage & Dairy Farm, Yuquanying Grape Base, Helanshan Muslim Meat Processing Mill, and Xixia King Winery. They are in fact the FWGO type but involve in more or less construction activities in the subcomponent implementation process. Judging from the monitoring data, in general, there is no serious environmental impact on the surrounding areas or around by the 4 construction sites. For example, no large amount of water pollution and sewage discharged, and no atmospheric pollutants emitted. Only slight noise pollution and solid waste discharge were detected, yet the construction units where these happened have applied a few mitigation measures, such as transporting the construction solid wastes (rubbish and sludge, etc.) to a designated area, piling them up properly and spraying water on the pile-ups timely to reduce the dusts, etc.

4 On operation period or test running time at subcomponent implementation units
Totally 3 subcomponent implementation units in this category have submitted their monitoring data: Helanshan Muslim Meat Processing Mill, Maosheng Forage & Dairy Farm, and Xixia King Winery. This means that besides implementation activities mentioned above, these 3 units also involve in some operation or test run activities in the subcomponent implementation process. Based on the monitoring data, these units operate quite normal and there is no apparent pollution event happened, nor heavy pollutants emitted to surrounding areas. For example, all the 3 units haven't detected serious odor pollution; and all 3 units equipped with wastewater & sewage disposal facilities, the treatment installations have in operation and functionally run well. The water quality from their wastewater outlet ranked at Grade III, showing a fairly good condition. The treatment of processing waste from 3 units is all up to 100%. Animal waste from Maosheng Forage & Dairy Farm and Helanshan Muslim Meat Processing Mill are disposed as fermented manure to sell. Xixia King Wine Group constructed sewage treatment station in the second half of 2012 and in test run at the moment. Maosheng Forage & Dairy Farm planned to build sewage treatment facilities to conduct treated water recycling and in test run in 2013.
Conclusion

1 The project has been implemented quite well in general, from the viewpoints of environmental protection and ecological conservation. The environmental situation is fairly good in the whole project implementation region, especially good environmental air quality, stable and improved water environmental quality. No serious environmental pollution event occurred in the whole project implementation region, no large amount of gaseous or liquid pollutants emitted to the surrounding areas, no large amount of solid wastes generated from the construction sites or due to operation activities improperly disposed, and no apparent environmental deterioration detected in visage.

2 The environmental benefits generated by the project’s implementation have apparently emerged. In the following years the environmental benefits by the project’s implementation will emerge little by little and be fully visible, since this project itself is a good IEM (integrated ecosystem management approach) practice.

3 A few monitoring table sheets submitted to the PMO by subcomponent implementation units are not fully complete, especially in filling in some of the blanks with monitoring data that are not easily measurable and monitoring whilst some same data due to no big change between the first and second half of the year. However, it does not seriously distort and/or affect the whole monitoring results.

Suggestions of adjustment and mitigation measures

Problems

1 A few indices have not been monitored, or more precisely, the indices in monitoring record table sheets have not completely filled in with monitoring data by some of the project implementation agencies. In wetland type, for example, the cells for flora data in the monitoring table sheets from some of the subcomponent implementation units left blanked, whereas the cells for water quality monitoring data from some other units missed, etc. The other implementation types also have one or another or more blank cells left in the monitoring table sheets. In general, missing data due to blank cells left in monitoring table sheets are common. The possible reasons for causing these include, no enough monitoring experts and/or professional technicians involved in, no special instruments and/or necessary equipments purchased, no regular monitoring on duty, or simply no especially reserved funds for monitoring activities.

2 Some of the figures or data in a few monitoring table sheets are apparently abnormal, which might be caused by either negligent monitors or amateurish persons who can not undertake the responsibility of monitoring tasks.

Suggestions

1 Re-checking all the monitoring table sheets by the consultant or project management personnel of the PPMO; and urging those subcomponent implementation units that have submitted incomplete monitoring table sheets and those monitors who haven’t completely or responsibly finished their monitoring tasks to refill in the blank cells and/or incorrect cells in the monitoring table sheets. If the monitors in implementation units are not competent for taking up the monitoring responsibility or irresponsible when they are on duty, replace them with the competent and
responsible ones; and conduct some technical training programs for capacity building to raise the monitoring capabilities and standards of the whole monitoring team of the project.

2 The necessary equipments and instruments for field monitoring and/or laboratory analysis should be provided, either by purchasing or by renting.

3 Setting aside enough funds for environmental monitoring; delivering the monitoring tasks with instrument of awards and punishments that are directly related to the quality of monitoring job done.

4 Enhance the environmental monitoring by increasing the frequency of submitting the monitoring table sheets, for instance, from once to twice a year.

5 Invite a few professional technicians and experts from the corresponding EPB or research institutions to supervise the monitoring activities of the project, and ask them to deliver certain occasional professional instructions or technical consultations to the monitoring team members. Some project monitoring entrust qualified professional monitoring unit to deliver, such as monitoring of water quality.

**Mitigation measures**

1 Build up the wastewater treatment facilities in some subcomponent implementation units according to the original environmental monitoring plan.

2 Operate the fermentation digesters regularly and functionally at some large dairies, food processing mills and wineries.

3 Establish a proper irrigation system and conduct rational water allocation programs in those areas with soil salinization threats and risks.

4 Deliver lake wetland and agriculture nutrient balance research, adopt specific measures to prevent and mitigate lake Eutrophication.