

China Henan Flood Emergency Rehabilitation and Recovery Project (HFERRP)

Sub-project of Weihui
Environmental and Social Impact
Assessment and Management Plan

Construction unit: Weihui Water Resources Bureau

Compilation unit: Henan Juli Lianchuang Environmental
Protection Technology Co., Ltd.

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Executive Summary

1 Project Profile

The main construction of this project is as follows:

- A project including channelization, widening of the main channel, and beach bulldozing will be implemented in 0+100 to 17+250, with a total length is 17.15km.
- Embankment refurbishment will be carried out from 12+900 to 15+450. The total length of embankment repaired on the right bank is 2.844km.
- A floodwall construction project with 2,384 m of gravity retaining wall reconstruction and 325 m repair, 2,627 m of double inclined gravity retaining wall reconstruction and 457 m new construction.
- A project in the right bank beach downstream of Tagang Reservoir with 410m reconstruction, 80m foundation shoring, and 544m repair.
- A slope protection project with 1,570 reconstruction, 1,825m new construction, and 179m foundation reinforcement.
- A gabion bottom protection project with 130m was added to the South-to-North Water Diversion inverted siphon upstream side.
- Rehabilitation of Koutoulun River dams and downstream energy dissipation structures and erosion prevention facilities.
- Reconstruction of 2 production bridges, Xuewan and Xiaoshuang.
- Construction of 2 new ecological restoration projects.
- Construction of flood emergency travel road hardening project in Jiangshan, Xuewan village.

Upon completion, this project is expected to significantly enhance the flood prevention and removal capacity of the river in Weihui City's project area. This will ensure the safety of people's lives and properties along the river and enable the normal conduct of production and life. The project will offer considerable flood prevention and mitigation benefits.

This report is prepared in accordance with the “Environmental and Social Management Planning Framework for China Henan Flood Emergency Rehabilitation and Recovery Project (Draft)” issued by the Asian Infrastructure Investment Bank (AIIB), the “Environmental Protection Law of PRC”, the “Environmental Impact Assessment Law of PRC”, and “Regulations on the Administration of Construction

Project Environmental Protection (State Council Decree No.253)”. And this report analyzes the location of the project in relation to the ecological protection red line, determines whether the project is feasible or not, and finally identifies the main environmental and social issues involved in the project by summarizing the results of research, expert opinion and public opinion related to the project. The report analyzes the project's location with respect to the ecological protection red line, evaluates the feasibility of the project, and identifies the main environmental and social issues related to the project. These conclusions were arrived by summarizing the results of research, expert opinion, and public opinions.

2 Implementing Arrangement

The Weihui Water Resources Bureau is in charge of implementing the project, managing the program, and supervising the construction units and suppliers.

According to the plan of the Weihui Water Resources Bureau, the project is expected to start construction in April 2024, with a construction period of one year and completion in April 2025.

3 Project Category

This subproject is to post-disaster rehabilitation of Weihui Cang River Downstream, the construction of the project does not involve permanent land occupation, has minimal impact on the environment, and only affects it during the construction period.

During the construction phase of a project, various activities such as immigration and construction can have adverse effects on the local environment. The main sources of pollution are wastewater, air and solid waste and construction noise which can affect the environment. Additionally, engineering excavation and slagging can cause soil erosion. However, these environmental impacts are short-term and localized. By adopting appropriate environmental protection measures, the adverse effects can be mitigated.

Based on the Environmental and Social Policy (ESP) requirements of the AIIB, and the environmental and social risk assessment, this project has been classified as an Environmental Category B project. This Environmental Impact Assessment report has been prepared in accordance with the requirements of the AIIB's ESP and Environmental and Social Standards (ESS), Chinese laws and regulations.

4 Main Environmental Impacts and Mitigation Measures

A. Impact on Atmospheric Environmental

(i) Construction Period

During the construction period, various air pollutants are generated. The primary sources of these pollutants include dust produced during the construction process of river dredging, earth and stone backfilling, building demolition, and reconstruction. Road dust is also generated by material transportation, while dust from stockpiles and fuel gas from construction machinery also contribute to the problem. Finally, bad odor is generated during the process of river desilting and dredging.

Vehicle washing platform is set up at the entrance of the construction site; vehicles transporting bulk materials are covered and sealed, and driven in accordance with the specified routes and time periods; water sprinklers are equipped in the construction area; construction fences are set up on the construction site, and the stacking of temporary dumping yards that are prone to dust pollution are covered with mesh nets and sprinkled with water to suppress the dust; the pollution prevention and control measures of the construction vehicles and off-road mobile machinery are strengthened, and qualified fuels are used to monitor the exhaust gas emissions from the transportation vehicles on a regular basis. Regularly monitor the exhaust emissions from transportation vehicles.

A vehicle washing platform is to be set up at the entrance of the construction site. Vehicles that transport bulk materials are sealed and driven on specified routes and at specified times. Water sprinklers are installed in the construction area to minimize dust pollution. Construction fences are set up on the construction site and temporary dumping yards that are prone to dust pollution are covered with mesh nets and sprinkled with water to suppress the dust. Measures to prevent and control pollution from construction vehicles and off-road mobile machinery are to be strengthened, and qualified fuels are used. Regular monitoring of exhaust gas emissions from vehicles is conducted to ensure compliance with emission standards.

The terrain of the project area is open, the air diffusion conditions are better. With the implementation of appropriate control measures, the impact of exhaust gas emissions during the construction period on the ambient air quality of the surrounding environment is relatively small.

(ii) Operation Period

The project is a river training project and no exhaust pollution is generated during operation.

B. Impact on Water Environment

(i) Construction Period

During construction, wastewater is generated from vehicle washing, bridge piling slurry wastewater, subsoil drying field leachate, pit drainage, living sewage, etc.

The main pollutant of pit water is SS, and the pit drainage is treated in a sedimentation tank and pumped to the river or used for dust suppression during construction. The construction camp on Changjiang Road relies on the existing public toilets in the surrounding area and discharges into the municipal sewage system. The domestic sewage will be treated in the existing septic tanks of private houses and used to fertilize the surrounding fields, which will not affect the environment of the surrounding water bodies.

Mechanical vehicle washing wastewater undergoes oil separation and sedimentation before being reused for mechanical vehicle washing and watering to reduce dust. This water is not discharged externally. Mud water is treated in a tandem mud sedimentation box, and the supernatant is reused for dust suppression by sprinkling in the construction area outside the water source protection area after sedimentation treatment, without external discharge. Around the bottom mud drying yard, diversion facilities are set up, and a sedimentation tank is located downstream to collect leachate water. This water is discharged into the river after sedimentation, or used for sprinkling dust suppression during the construction period. The water quantity of this part is small and the water quality is basically the same as that of the river, so it will not cause adverse effects on the surrounding environment. The main pollutant of pit water is suspended substance. Pit drainage is treated in a sedimentation tank and pumped to the river or used for dust suppression during construction. The construction camp on Changjiang Road relies on the existing public toilets in the surrounding area and discharges into the municipal sewage system. The domestic sewage will be treated in the existing septic tanks of private houses and used to fertilize the surrounding fields, which will not affect the environment of the surrounding water bodies.

In summary, the wastewater discharged from the project during the construction period will have less impact on the surrounding surface water environment.

(ii) Operation Period

The Cang River is a seasonal river, which is basically dry during non-flood

seasons or when the Tagang Reservoir is not draining. Therefore, the Cang River has no stable aquatic ecosystems, no ecological flow requirements needed to maintain the stability of aquatic biological ecosystems, no environmental water demand requirements for shipping, landscape and water recreation, no industrial pollution sources in the region, and no minimum dilution and purification water requirements to maintain the quality of the river's water environment. River water is mainly used for irrigation, which is discharged from the Tagang Reservoir during the irrigation period. This project involves river desilting and dredging, embankment reinforcement, masonry construction, and bridge reconstruction. Its implementation will not affect the ecological flow of the Cang River.

C. Impact on Acoustic Environment

During the construction period, noise mainly comes from mechanical equipment operation such as site leveling and earth excavation and traffic noise generated during transportation. Once construction activities end, the impact of construction noise on sensitive areas will be temporary. Appropriate prevention and control measures can help reduce the noise impact on sensitive areas generated by the project.

D. Impact on Solid Waste

The main sources of solid waste during the construction period include earth disposal from excavation, construction waste from building structures and protective works, silt from river dredging, and domestic waste from construction personnel.

All the earth disposal is temporarily stored in the abandoned dredge site. After construction, the land will be restored, vegetation will be replanted, and there will be no further pollution. The impact on the surrounding environment will be within acceptable limits. Construction waste is taken to a specialized landfill, while silt is dried in a temporary drying area until the water content is $\leq 60\%$. It is then used as bottom fertilizer for greening projects or for micro-terrain shaping. Any leftover silt is disposed of properly in designated dumping grounds as per municipal regulations. Domestic waste is collected centrally and handed over to the sanitation department for unified treatment.

In summary, the solid waste generated by the project during the construction period will be treated appropriately.

E. Impact on Ecosystem Environment

During the construction period of the project, the ecological environment may be

negatively affected in various ways, such as changes in land use pattern, impact on terrestrial flora and fauna, and aquatic ecology. However, the adverse impact can be significantly reduced by performing ecological restoration measures, such as reclamation and vegetation restoration, as required after the construction. This can help mitigate and control the negative impact on terrestrial fauna and flora of the river and its banks.

An on-site survey has revealed that the river channel has fewer types and quantities of aquatic vegetation, which are also sparsely distributed. As a result, the impact of the project on the aquatic ecology in the river during the construction period will be small.

5 Major Social Impacts and Mitigation Measures

A. the main benefits of the project include:

- The direct beneficiary population of this project involves three townships, namely Shibaotou, Dunfangdian, and Andu, located in the downstream section of the Cang River. The direct beneficiary population of the project is estimated to be more than 80,000 people, with 126,000 mu of protected arable land, and an average of 30,000 mu of disaster reduction area per year. In addition, the project will also have an indirect benefit on Weihui City and Xinxiang City, with an estimated population of 543,000 people.
- The project will involve repairing river channels and bridges damaged by floods, reinforcing and thickening embankments, and dredging river channels to improve flooding conditions. These measures are aimed at safeguarding the lives and properties of residents in villages along the route.
- The residents along the route have been severely impacted by flooding and are eagerly awaiting the implementation of the project. The project is expected to solve the flooding problem and safeguard the safety of life and property. The preliminary survey shows that the support rate of stakeholders is as high as 96.77%.
- The reduction of flooding and improvement of the natural environment can have a significant impact on the health and living standards of the population. The incidence of infectious diseases is expected to decrease, and

the bad influence of the environment on human health will be eliminated.

- Furthermore, managing the bank slope protection can significantly decrease erosion caused by floods on the beach and embankment. This can enhance the ecological environment, increase the environmental capacity for the population in the region, and provide convenience for leisure and tourism activities.

B. the main risks of the project include:

The following social impacts have been considered: discrimination and vulnerability of certain groups, gender equality, gender-based violence, land acquisition, access to natural resources, production security risks, social health risks, etc. In order to address these impacts, we have developed corresponding mitigation measures and social management plans:

- Full information disclosure will be provided. During the environmental social impact assessment process, vulnerable groups will be identified, and we will ensure the participation of at least 50% women and low-income families.
- Protection of women's labor rights and interests, as well as prioritization of employment opportunities for women in the project area, will be ensured.
- Construction contractors will be required to formulate and implement environmental social management measures such as relevant regulations to prevent sexual harassment.
- Compensation will be provided for farmland temporarily occupied by the project, and the project construction contractor will restore the temporarily occupied land after the completion of the project construction to ensure that the interests of the landowners are not jeopardized.
- Proper safety management will be ensured during the construction of the project.
- Appropriate procedures for managing workers' camps will be developed.

The effectiveness of these measures will be evaluated based on results from supervisory and external monitoring units to determine if adjustments and improvements are necessary.

6 Stakeholder Engagement

Based on the design of the comprehensive improvement project of the

downstream section of the Cang River, the results of the field survey, and the interviews with relevant organizations, the primary stakeholders of the project are identified as the direct beneficiaries within the project's area of influence and the groups negatively affected by the project's construction. Secondary stakeholders include Weihui City Water Resources Bureau, design units, construction units, supervision units, etc.

In the pre-preparation stage of the project, the feasibility study preparation unit, the social assessment preparation unit, and the environmental assessment preparation unit, etc., carried out project information publicity and notification, as well as fully informed consultation and public participation activities such as institutional interviews, field surveys, focus group interviews, key informant interviews, and questionnaire surveys, etc., in response to the project's relevant information. The survey found that the residents in the project area suffered from the impact of daily life on the project demand is urgent, and the residents along the route hope to promote the implementation of the project as soon as possible to ensure the safety of flood control. Meanwhile, based on the questionnaire survey, symposium, in-depth interviews, and interviews with key informants, the information disclosure and public participation plan for this optimization design was formulated through participatory environmental and social impact assessment. Residents, disadvantaged groups, and relevant organizations in the affected area attended the public participation meeting.

7 Grievance Redress Mechanism (GRM)

The project has implemented a new GRM as per the requirement of the AIIB. The GRM aims to effectively gather and address any concerns or demands of the public in order to maximize the environmental and social benefits of the project. The GRM has been included in the Environmental and Social Impact Assessment Report and will be put into effect during the implementation phase of the project.

GRM will be accessible to all resident members, including vulnerable groups like women and the elderly. The project office has assigned a full-time staff member to collect residents' opinions, suggestions, and demands. If a complaint is received, the responsible person will first verify if it is related to the project. If the complaint is related to the project, the responsible person will take the necessary steps to resolve it, irrespective of whether it is related to the environment, society, or any other issue. However, if the complaint is not related to the project, the responsible person will

forward it to the relevant authorities on behalf of the complainant. All grievances will be documented, and the person who made the complaint will be notified of the entire grievance process. Moreover, there is an exclusive grievance mechanism for project staff to deal with complaints lodged by workers working on construction sites.

If they believe that they have been or may be adversely affected by AIIB's failure to implement the Environmental and Social Framework, they may submit their submission to AIIB by the Project-affected People's Mechanism of AIIB.

8 Environmental and Social Management Plan (ESMP)

The project has developed an ESMP based on the requirements of the AIIB Environmental and Social Assessment Framework.

The Weihui Municipal Water Resources Bureau, as the project implementing agency, will be responsible for managing the ESMP to ensure the successful implementation of environmental and social impact monitoring and mitigation measures.

Regular management of the environmental and social impacts of the project by the Project Implementation Office of the Weihui Water Resources Bureau ensures that the project implementation process is audited for compliance with the domestic environmental and social laws as well as the requirements of the AIIB's Environmental and Social Framework Policies.