Environmental Monitoring Report

7 Semiannual Report
September 2022

People's Republic of China: Fujian Farmland Sustainable Utilization and Demonstration Project

Prepared by the Fujian Provincial Government for the Asian Development Bank.

NOTES

(i) The fiscal year (FY) of the Government of the People's Republic of China and its agencies ends on 31 December. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2019 ends on 31 December 2019.

(ii) In this report, "$" refers to United States dollars.

ADB

Environmental Monitoring Report

Project Number: L3450-PRC
September 2022

PRC: Fujian Farmland Sustainable Utilization and Demonstration Project

Semi-annual Environmental Monitoring Report for 1 January to 30 June 2022

Prepared by Fujian Provincial Department of Agriculture (Fujian Provincial Agricultural Affair Office) for the Fujian Provincial Government and the Asian Development Bank.

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 15 August 2022)

Currency unit	–	Yuan (CNY)
CNY1.00	=	$ 0.1477
$1.00	=	CNY 6.7692

ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
BOD_5	5-day biochemical oxygen demand
CNY	Chinese Yuan
COD	Chemical oxygen demand
CPMO	County Project Management Office
CSC	Construction Supervision Company
DO	Dissolved oxygen
DOEP	Department of Environmental Protection
EEB	Environment and Ecology Bureau
EHS	Environmental, Health and Safety
EIA	Environmental impact assessment
EIR	Environmental Impact Report
EIT	Environmental Impact Table
EMP	Environmental Management Plan
EMS	Environment Monitoring Station
FPG	Fujian Provincial Government
FSR	Feasibility Study Report
FYP	Five Year Plan
GDP	Gross domestic product
GHG	Greenhouse gas
GRM	Grievance redress mechanism
IEE	Initial environmental examination
LIEC	Loan implementation environment consultant
MEP	Ministry of Environment Protection
MPMO	Municipal Project Management Office
PDRC	Provincial Development and Reform Commission
PIU	Project Implementing Unit
PPE	Participating Private Enterprise
PPMO	Provincial Project Management Office
PPTA	Project Preparatory Technical Assistance
PRC	People's Republic of China
REA	Rapid Environmental Assessment
SOE	State Owned Enterprise
SPS	Safeguard Policy Statement
WHO	World Health Organization
WRB	Water Resources Bureau

SUMMARY PROJECT INFORMATION

GENERAL INFORMATION	
Project title:	Fujian Farmland Sustainable Utilization and Demonstration Project
Date of project effectiveness:	22 May 2017
Executing agency:	Fujian Provincial Government
Implementing agency: 19 PIUs at appraisal stage. After midterm review (MTR), number of PIUs changed to 11.	11 Project implementing units (PIUs): 1) Nanping: Wuyishan: Wuyishan Zhuzi Ecological Agriculture Co., Ltd 2) Nanping: Guangze: Fujian Zhengyuan Ecological Food Town Co., Ltd 3) Nanping: Pucheng: Pucheng Farmland Development and Utilization Co., Ltd 4) Sanming: Datian: Fujian Datian County Golden Phoenix Agricultural Development Co., Ltd 5) Sanming: Ninghua: Ninghua State-owned Ecological Forestry Co., Ltd 6) Longyan: Yongding: Longyan Municipality Longyu Ecological Industry Development Co. Ltd 7) Longyan: Xinluo: Longyan Municipality Greenland Ecological Agriculture Development Co. Ltd 8) Zhangzhou: Pinghe: Fujian Xinghe Investment Development Co. Ltd 9) Ningde: Jiaocheng: Fujian Lvyin Agriculture Co., Ltd 10) Ningde: Fu'an: Fujian Farms Agribusiness Tea Co. Ltd. 11) Ningde: Shouning: Shouning County State-owned Asset Investment and Operation Co., Ltd
PMO (name of agency):	The PPMO is established in the Fujian Provincial Department of Agriculture. County Project Management Offices, representing County governments, in County Agriculture Bureaus of 13 project counties, including: Longyan (Yongding, Xinluo); Nanping (Wuyishan, Guangze); Ningde (Jiaocheng, Tuorong, Dongqiao,Fu'an,); Sanming (Datian, Ninghua, Youxi); Zhangzhou (Pinghe, Hua'an) After the MTR, County Project Management Offices changed from 13 to 11, with 4 dropped and 2 new added, including Longyan (Yongding, Xinluo); Nanping (Wuyishan, Guangze, Pucheng); Ningde (Jiaocheng, Fu'an,Shouning); Sanming (Datian, Ninghua); Zhangzhou (Pinghe)
PMO Environment Officer (name, email):	1 from each PMO
Loan implementation consultant / firm:	NAREE
LIEC:	Yuan Jingwei from NAREE
Construction supervision company(ies):	See Table 2
Contractor(s):	See Table 2
ADB web link to EMP:	https://www.adb.org/projects/documents/prc-fujian-farmland-sustainable-utilization-and-demonstration-project-iee
Domestic web link to EMP:	Not available

ENVIRONMENTAL SAFEGUARD MONITORING	
ADB environment safeguard category:	B
Environmental report prepared as per ADB requirements for this category:	Initial Environmental Examination
Domestic safeguard report:	13 EIA Table (one for each PIU) at appraisal; 3 EIA Table for Shouning, Pinghe and Guangze, 1 EIA registration form for Pucheng for new proposed subprojects after MTR
Period covered by this report:	1 January 2022 to 30 June 2022
# EMRs to date including this report:	7
Agency/person responsible for internal environmental monitoring:	11 person (One from each PIU)
Agency/person responsible for external environment monitoring (EMC):	5 EMCs 1) Fujian Sanming Houde Testing Technology Co., Ltd. (for Datian and Ninghua) 2) Fujian Zhongke Environmental Monitoring Co. Ltd (for Wuyishan, Jiaocheng, and Fu'an) 3) Fujian Zhongkai Test Technology Co. Ltd. (for Yongding) 4) Fujian Huafei Test Technology Co., Ltd (for Xinluo) 5) Fujian Keyi Test Technology Co., Ltd (for Pinghe) Pucheng and Shouning will contract and engage external environment monitoring agency in July 2022.
Agency/person responsible for EMP implementation and progress monitoring:	Yuan Jingwei, LIEC from NAREE
Agency/person responsible for independent compliance monitoring:	This is environment safeguard category B project. No independent compliance monitoring for this project is required
Overall status of environmental safeguards:	On track

ADB = Asian Development Bank, EMP = environmental management plan, EMR = environment monitoring report, LIEC = loan implementation environment consultant, PMO = project management office.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

A. Overview

1. This is the 7th environmental monitoring report presenting the status of compliance with the environment management plan (EMP) during the project implementation from 1 January 2022 to 30 June 2022. The key environment issues caused by project construction have been discussed, and corresponding improvement measures and follow up actions have been suggested according to the issues found.

B. Progress in Implementing the EMP

2. **Contractual arrangement.** PPMO has distributed the EMP to MPMOs, CPMOs, PIUs and design institutes. Relevant environmental requirements including COVID-19 prevention and control measures have been included in the bidding documents, civil works contracts with contractors and supervision contracts with construction supervision companies. The contractual arrangement is fully in compliance with the EMP. There are five project counties have on-going construction activities during this reporting period.

3. **Institutional setup.** PPMO, CPMOs, CPMOs and 8 PIUs have designated environment persons to conduct environment management. An environment person has been appointed by each contractor and each supervision company to be responsible for the implementation of environmental mitigation measures and on-site internal monitoring. The institutional arrangement is complied with the EMP.

4. **Implementation of mitigation measures.** No environmental pollution, health and safety accident recorded during this reporting period. The implementation of mitigation measures complied with the EMP.

5. **Internal monitoring.** The CSCs, environmental officers of PMOs at all levels and PIUs have been working effectively on the project inspection and supervision with the support of local Ecology and Environment Bureaus (EEBs) and Loan Implementation Environmental Consultant (LIEC). Regular site inspections have been performed by CSCs on a weekly basis. The internal monitoring results have been submitted to PIUs for review on a monthly basis. Random site inspections performed by PPMO and MPMOs and CPMOs. The internal monitoring is in compliance with the EMP.

6. **External monitoring.** There are five subprojects has on-going construction activities during this reporting period, i.e., Datian (two civil work contract), Pinghe (two civil works contracts), Fu'an (one civil work contract), Shouning (two civil work contracts) and Pucheng (three civil work contracts). The monitoring results of Datian and Pinghe showed compliance with the ambient air, noise and surface water quality standards. The subproject site of Fu'an was in a tea garden. There are no sensitive receptors within 500 m hence no monitoring was conducted for Fu'an subproject. Baseline environment has been established for the subprojects of Shouning and Pucheng during the process of environmental impact assessment. The contractors of Pucheng (FJ-PC-CW01,02 and 03) were mobilized in late June 2022. Shouning had two civil work contracts (FJ-SN-CW-01 and FJ-SN-CW-02) that started construction in March and May 2022 respectively. The PIUs of Shouning and Pucheng will engage EMCs and conduct the first monitoring in July 2022.

7. **Public consultation and GRM.** At the project preparation stage, PIUs, design institutes, EIA Institutes have conducted related public consultation activities in accordance with ADB requirements. The GRM has been established and carried out by PPMO, MPMOs, CPMOs and PIUs. All subprojects IAs publicized GRM entry points by erecting bulletin boards at construction sites and posting notice at information board of nearby village committees and this is quite welcomed by the local people. During reporting period, the contractors of Datian, Shouning, Pucheng, Pinghe, and Fu'an have kept close communication with people from local villages in the daily works, include consulting with the villagers on the construction time arrangement and traffic disruption during construction of tractor roads. No complaints have been received by all GRM entry points during this reporting period. No pending / outstanding complaints. Public consultation and GRM are complied with the Table A1.2 of the EMP.

8. **Training.** As the sub-projects are spread across different counties and cities in Fujian Province, they are far apart from each other, which makes it difficult to organize and arrange a centralized venue for a face-to-face training seminar. An online environmental safeguards training was organized by the PPMO on June 24, 2022. Total of 33 participants from PPMO, PIUs and contractors attended this training.

9. **COVID-19 prevention and control.** Each contract has prepared H&S plan and endorsed by the PPMO. During the reporting period, there is no positive case in the project counties. Construction activities were not affected by the COVID-19 pandemic.

C. Key issues, actions and work plan for next reporting period

10. The actions largely relate to external monitoring company (EMC) for the new subprojects and project facilities that enter into operation. Actions are planned for July to December 2022 and will be reported on in the next EMR.

Issue/subject	Action	By When	By Whom
External monitoring frequency	Recruitment of monitoring agency and conduct monitoring coinciding construction activities per EMP schedule and conducted within the respective reporting periods.	First monitoring by July 2022 and then follow the monitoring frequency defined in the EMP.	PIUs of Pucheng and Shouning
Site inspection	Carry out field inspection to check the performance of EMP implementation	November 2022	LIEC
Operation monitoring	Organize environmental monitoring for the project facilities that have been in operation more than 1 year.	December 2022	EMCs
EMP implementation training	Provision of EMP implementation training to the new contractors and CSCs; Provision of training on EMP implementation requirements during operation phase for PIUs, EMC, and CPMOs.	November 2022 September 2022	LIEC LIEC

II. INTRODUCTION

A. Purpose of report

11. The purpose of this environmental monitoring report (EMR) is to describe and assess progress for implementation of the environmental management plan (EMP) for the Fujian Farmland Sustainable Utilization and Demonstration Project, for the reporting period January 1 to July 31 2022. This EMR is submitted in compliance with the Safeguard Policy Statement (SPS)[1] of the Asian Development Bank (ADB) and the loan agreement between ADB and the project executing agency.

12. This is the 7th EMR for the project. It covers part of the design, bidding, construction and operation phases of the project. The report describes: (i) institutional setup with respect to fulfilling environmental requirements (ii) implementation of mitigation measures; (iii) monitoring activities; (iv) public consultations (including grievance redress); (v) training and capacity building; (vi) expenditures for EMP implementation (including mitigation, monitoring, and training); (vii) reporting; and (viii) an overall assessment of key achievements, challenges, issues, corrective actions, and lessons learned, during the reporting period.

B. Project outcome, outputs and subcomponents

13. The project outcome will be climate-resilient and sustainable crop farming systems demonstrated in 13 project counties. The project outputs will be (i) productive farmland established, (ii) sustainable farming technology and practices adopted, and (iii) institutional capacity strengthened.

14. **Output 1: Productive farmland established.** This output will rehabilitate degraded (i) valley floor crop land (land preparation, flood protection, soil health); and (ii) sloping land (terracing and drainage). Valley floor crop land improvement demonstration will include 63,700 *mu* of crop land improved for growing grains, vegetables, and lotus seeds. The activities will comprise land levelling and development of farm infrastructure such as farm tractor roads and water conservancy facilities (25 kilometres of dikes/embankments for flood prevention, drainage ditches, irrigation canals, and irrigation facilities). Sloping land rehabilitation demonstration will include 250,000 *mu* to be improved for tea, tea oil, and orchards. The rehabilitation activities include repairing existing terracing, farm infrastructure such as farm tractor roads, and water conservancy facilities such as water storage ponds and spray/drip irrigation equipment.

15. **Output 2: Sustainable farming technology and practices adopted.** This output will support project implementation units (PIUs), comprising state-owned enterprises (SOEs) and participating private enterprises (PPEs) in cooperation with farmers and cooperatives to establish crop model demonstration sites. Activities include provision of (i) agricultural equipment and materials to implement sustainable farming technology and practices such as soil conservation measures (e.g., applying organic fertilizer, implementing zero or low tillage, introducing new crop varieties, and establishing tree plantations for windbreaks and shade), integrated pest management, and improved cropping practices (e.g., intercropping and crop rotation); and (ii) soil, water, and organic fertilizer quality-testing equipment required for formulation of balanced fertilizer application. In addition, the output will facilitate the certification process for green and organic tea, tea oil and other products.

[1] ADB. 2009. Safeguard Policy Statement. Manila.

16. **Output 3: Institutional capacity strengthened.** This output will support: (i) training specialized farmer cooperatives on cooperative operation, production technology, and marketing; (ii) training PIUs staff and farmers on good agricultural practices and technology, including green and organic product certification, and will be inclusive of women and the poor; (iii) establishing of and developing the capacity of farmland infrastructure management and maintenance associations; (iv) training on gender and development for the PPMO, MPMOs, county project management offices (CPMOs), and participating enterprises; and (v) training for PIUs and PMOs on procurement and improved project management.

17. The project will be implemented by 19 agricultural enterprises distributed among the 13 counties engaged in tea and tea-oil production on slope land areas as well as other cropping including rice, in the valley floors. These enterprises will comprise both State Owned Enterprises (SOE) and Participating Private Enterprises (PPE) and will be collectively called Project Implementing units (PIUs).

C. Project implementation progress

18. The project became effective on 22 May 2017.ADB approved the changes to the project, reallocation, extension of loan closing date in 20 May 2022 including i) minor changes to the project scope as agreed during the project midterm review mission, particularly removal from the project of ten PIUs and respective subprojects that have withdrawn from the project, and addition of two new PIUs and respective subprojects ii) extension of the loan closing date from 30 November 2022 to 30 November 2024. The domestic EIA procedures for the proposed change proposed during midterm review have been completed between 2019 to 2020. The addendum IEE, including EMP updates covering the midterm changes has been endorsed by ADB in January 2022. For this reporting period, there are no significant project design change/s hence no IEE / EMP updating is required.

19. Implementation progress for the civil works contracts is summarized in Table 1. During this reporting period, subprojects in Datian, Pinghe, Pucheng, Fu'an and Shouning have on-going construction activities. It should be noted that construction progress was affected due to the continuous rainfall in various counties of Fujian Province in the first half of 2022.

Table 1. Project civil work implementation progress as of 30 June 2022

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
Datian Subproject, PIU = Fujian Datian County Golden Phoenix Agricultural Development Co., Ltd							
1	FJ-DT-CW-01-01 Qianping Township Grain Production Base Establishment	· Paddy land leveling: 2000mu · In-stream weirs (No.): 2 · Water collecting tanks (No.): 3 · Sprinkling irrigation pipes: 4km · Drainage ditches: 5.7km · Tractor roads: 6.7km	Released	Contract signed on 7 January 2019. As the served farmland was changed to industrial land, the contract is released. ADB approved the release of this contract on 11 October 2021.	/	Fujian Dongyu Construction Engineering Co., Ltd.	Fujian Zhongxu Construction Co., Ltd.
2	FJ-DT-CW-01-02 Qianping Township Paddy Land Leveling	· Tractor roads: 0.4km · Riverbank revetment: 1.04km	Operation	Contract signed on 7 January 2019. 100% completed in early 2020.	July 2019	Richang (Fujian) Group Co., Ltd.	Fujian Zhongxu Construction Co., Ltd.
3	FJ-DT-CW-01-03	· To be designed	Design	/	/	/	/
4	FJ-DT-CW-01-04	· To be designed	Design	/	/	/	/
5	FJ-DT-CW-02-01 (Huaxing Township)	· Tractor road widening: 9.7km · Drainage ditches: 9.9km · Embankment: 33m · New tractor road: 48km	On-going construction	80% completed	December 2020	Fujian Fangxin Construction Group. Co., Ltd	/
6	FJ-DT-CW-02-02	· Water construction tank: 3 · Water ponds: 177 · Irrigation ditches: 7.6km · Drainage canals: 0.42km · Tractor roads: 44.3km	Design	Not initiated	/	/	/
7	FJ-DT-CW-03-01 Taoyuan Township Grain Production Base Establishment (Taoyuan Village)	· Tractor roads: 17km · Drainage ditches:1.2km' · Irrigation channels:2.9km · In-stream weirs: 14 · Pump stations: 3 · Water ponds: 3 · Sprinkling irrigation: 400mu	BD preparation	Not initiated	/	/	/
8	FJ-DT-CW-03-02 Xi'an Village of Taoyuan Township Grain Production Base Establishment	· Newly-built tractor road: 6.4km · Irrigation ditches: 4.5km	Operation	100% completed in end of 2020	March 2020	Fujian Hongchang Project Management Co., Ltd.	Sanming Lianmeng Engineering Consulting Co. Ltd.

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
9	FJ-DT-CW-03-03	· Tractor roads : 17km · Drainage ditches: 1.2km · Irrigation canals: 2.9km · In-stream weirs: 6 · Sprinkling irrigation: 400mu	BD preparation	/	/	/	/
10	FJ-DT-CW-03-04	· To be designed	Design	/	/	/	/
11	FJ-DT-CW-04 (Dongfeng farm)	· Tractor roads:4.7km · Drainage ditches: 5.6km · Irrigation canals: 5.7km · In-stream weirs: 2 · pump station: 1 · Riverbank revetments: 0.84km	Operation	100% completed in April 2021	December 2020	Fujian Hongchang Project Management Co., Ltd	Sanming Liansheng Construction Consulting Co., Ltd.
12	FJ-DT-CW-05-01 Tea garden and paddy field rehabilitation in, Xiangji Village, Jiyang township	· Tractor road:10.81km · Drainage canals: 1.06km · Irrigation ditch of 5.5km	Operation	100% completed in early 2020.	June 2019	Fujian Hongchang Project Management Co., Ltd.	Fujian Zhongxu Construction Co., Ltd.
13	FJ-DT-CW-05-02 (Shangfeng village, Jiyang Township)	· Weir: 1; · Flood drainage channel: 338 m; · Retaining wall 30 m; · Field road: 3335 m; · Branch road: 1250 m; · X726 road renovation (Shangfeng to Jiyang): 5.953 km.	On-going construction	99% completed.	July 2020	Datian Dongyu Construction Engineering Co., Ltd	Fujian Huahong Engineering Management Co., Ltd
14	FJ-DT-CW-05-03 (Jiyang township)	· Road pavement 2.669 km; · Concrete canal 28448.38 m.	Contract awarding	/	/	/	/
15	FJ-DT-CW-06-01 (Shipai town)	· To be designed	Design	/	/	/	/
16	FJ-DT-CW-06-02 (Shipai town)	· To be designed	Design	/	/	/	/
17	FJ-DT-CW-07-01 (Pingshan township)	· Road pavement 6.267 km; · Concrete canal 6.991 km	Contract awarding	/	/	/	/
18	FJ-DT-CW-0702(Neiyang	· Earth borrowing 85625.55 m^3; · Ditch excavation 594 m^3; · Concrete pipe 120 m;	Completed, waiting for completion	100% completed	July 2021	Jiangxia (Fujian) Construction	Fujian Hongtao Construction Consulting Co., Ltd.

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
	village, Pingshan township)	· 2 wells	acceptance inspection			Engineering Co., Ltd.	
19	FJ-DT-CW-07-03 (Pingshan township)	· Road pavement 2258 m; · Concrete canal 224.66 m	Completed, waiting for completion acceptance inspection	100% completed	July 2021	Jiangxia (Fujian) Construction Engineering Co., Ltd.	Hefei Yiteng Construction Consulting Co., Ltd
20	FJ-DT-CW-07-04	· To be designed	Design	/	/	/	/
21	FJ-DT-CW-08-01 (Keshan village, Wushan Township)	· New tractor roads: 2.12km · Tractor roads rehabilitate: 2.64km · Irrigation canal: 6.4km	Operation	100% completed	May 2020	Sanming Hongchang Construction Engineering Co., Ltd.	Nanping Jiancheng water conservancy and Hydropower Engineering Supervision Co., Ltd
22	FJ-DT-CW-08-02 (Wushan township)	· Paddy Land Leveling: 700 mu · Terrace Rehabilitation: 2500 mu · Tractor roads: 10.24km · Drainage ditches: 4km · Irrigation canals: 18.24km · Water collecting tanks: 35 · In-stream weirs: 6 · Pump station: 7 · Pipe irrigation: 1000mu · Sprinkle irrigation:1200mu	Design	· Not initiated	/	/	/
23	FJ-DT-CW-09 (Junxi town)	· Water storage tanks: 5 set; · Field road: 6855 m; · Culvert: 168 m; · Retaining wall 30 m; · Sedimentation tank: 2	Design	· Not initiated	/	/	/
24	FJ-DT-CW-10 (Wuling township)	· Drainage channel: 9959 m; · Field road: 14332 m; · Culvert: 240 m. ·	Design	· Not initiated	/	/	/
25	FJ-DT-CW-11 (Xieyang township)	· Drainage channel: 2710 m; · Field road: 6506 m.	Design	· Not initiated	/	/	/
26	FJ-DT-CW-12 (Shangjing town)	· Nanxi village road pavement: 2.329 km;	Design	· Not initiated	/	/	/

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
		· Nanxi village concrete canal: 2328.58 m; · Shangping village road pavement: 3.058 km; · Shangping village concrete canal: 3043.95 m					
27	FJ-DT-CW-13 (Qianping township)	· Road 7500 m; · Drainage channel 7500 m.	Design	· Not initiated	/		
Wuyishan Subproject, PIU = Wuyishan Zhuzhi Ecological Agriculture Co., Ltd.							
1	FJ-WYS-CW-01 Water Infrastructure and Ecological Revetment Infrastructure Transformation	· 5000 mu of paddy field-water conservancy infrastructure renovation, ecological bank protection improvement. · 3 irrigation ditches: 4.32km · 2 drainage canals: 1.66km · River embankment: 3.2km · Improve 15 field roads: 11.85km	Operation	100% completed	28 Jun 2019	Fujian Dongyu Construction Engineering Co., Ltd.	Fujian Hongjian Engineering Consulting Co. Ltd.
2	FJ-WYS-CW-02-01 5000 mu paddy field water infrastructure improvement, transportation and ecological embankment upgrading and transformation	· Construct irrigation ditch: 110m; · Construct protective retaining wall: 50m; · Upgrading ecological embankment: 1.44km · Improve 4 field roads: 7.4km	Operation	100% completed	21 May 2020	Fujian Dongyu Construction Engineering Co., Ltd.	Xiamen Jianshi Engineering Management Co, Ltd.
3	FJ-WYS-CW-02-02 5000 mu Paddy field-Transportation	· Field road improvement: 1.47km	Operation	100% completed	Jun 2019	Wuyishan Xingyi Highway Maintenance Engineering Co., Ltd.	Wuyishan Anda Construction Supervision Co. Ltd.
4	FJ-WYS-CW-03 5000 mu Paddy field	· Field roads · Land levelling	Operation	100% completed	2021	Fujian Hongri Water Conservancy and Hydropower engineering Co., Ltd	/

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
Pinghe Subproject, PIU = Fujian Xinghe Investment Development Group Co., Ltd.							
1	FJ-PH-CW-01-01 Oil-tea Garden Improvement in Qiling Township of Pinghe County	· Construction of 6.732 km Tractor Roads. · Construct field road: 4.793 km · Construct 3 small water drops	Operation	100% completed in January 2021.	22 Dec. 2019	Fujian Minying Construction Development Co., Ltd	Fuzhou Xintiandi Engineering Management Co., Ltd.
2	FJ-PH-CW-01-02 (Qiling Township)	· Field roads: 21.10km · Drainage ditches: 28.84km · Water ponds: 5 · Pesticide pools: 208 · Sprinkling irrigation: 4375mu · Terrace rehabilitation: 5966mu	Plan to be released	10% completed. The original oil-tea forest was classified into ecological forest and the contract will be released.	/	/	/
3	FJ-PH-CW-02 (Qiling Township)	· Water ponds: 19 · Pesticide pools: 292 · In-steam weirs: 2: · Tractor roads: 3.67km · Field roads: 65.12km · Drainage ditches: 14.06km · Drip irrigation: 5182mu · Sprinkling irrigation: 89.23mu · Terrace rehabilitation: 5271mu	Operation	100% completed in December 2021.	December 2020	Fujian Province Zhongda Construction and Development Co., Ltd	Fujian Province Forestry Investigation and Design Institute
4	FJ-PH-CW-03 (Sankeng village, Jiufeng Township)	· Tractor roads: 3.29km · Field roads: 1.57km · Drainage ditches: 4.86km · Sprinkling irrigation: 1880mu · Terrace rehabilitation: 1880mu	Operation	100% completed.	November 2020	Zhongliguan Construction Group (Fujian) Co., Ltd	Fujian Xiangjiang Project Management Co., Ltd
5	FJ-PH-CW-04 (Meishan village, Jiufeng Township)	· Water ponds: 2 · Tractor roads: 12.96km · Field roads: 1.78km · Drainage ditches: 7.61km · Sprinkling irrigation: 1506mu · Terrace rehabilitation: 1506mu	Operation	100% completed	December 2020	Fujian Province Shengyu Construction and Development Co., Ltd	Fujian Hengmaoyuan Project Management Co., Ltd
6	FJ-PH-CW-05-01 5050mu Pomelo Orchard Improvement in	· Tractor roads (3.0m width): 6.7km · Tractor roads (3.5m width): 6.7km	Operation	100% completed	22 Dec. 2019	Fujian Jingfang Construction Engineering Co., Ltd	Fujian Hongye Construction Supervision Co. LTD

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
	Banzi Township of Pinghe County - Farmland Infrastructure Construction	· Field roads: 0.431 km · Astern turntable: 4 · Passing bay: 12 · Cover culvert: 3 · Water drops: 7					
7	FJ-PH-CW-05-02 (Banzai Township)	· Drip irrigation main pipe: 10675m · Drip irrigation branch pipe: 16159m · Anchor block: 72 · Valve well: 238 · 55kW booster pump: 3 · Supporting pump house: 1 · Suction tank: 1 · New agricultural Bridge: 1 · Slab culvert: 1 · Tractor road: 0.768km	On-going construction	35% completed	14 March 2022	Zhongda (Fujian) construction Service Co., Ltd	Fujian hengmaoyuan Engineering Management Co., Ltd
8	FJ-PH-CW-06	· Water ponds: 4 · Tractor roads: 11.12km · Field roads: 1.42km · Drainage ditches: 3.59km · Drip irrigation: 4277mu · Terrace rehabilitation: 4277mu	On-going construction	Contract was signed in July 9, 2021. 90% completed.	August 2021	Yuehong Construction and Development Co., Ltd associated with Fujian Huitong Construction Co., Ltd.	Zhangzhou Jinlou Construction Management Co., Ltd.
9	FJ-PH-CW-07 Xiaoxi Town	· Tractor road: 9240m; · Shoulder retaining wall: 1700m; · Passing lane: 6; · Reversing table: 2; · Downfield ramp: 12; · Crossing culvert pipe: 35; · Drainage and irrigation canal: 2350M; · Water diversion pipe: 4380m; · Reservoir: 400 m^3; · Pump house: 2; · 2060 Mu micro spraying construction.	Design	/	/	/	/

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
10	FJ-PH-CW-08 Banzai Town	· Tractor road: 10375m; · Passing lane: 9; · Reversing table: 3; · Downfield ramps: 25; · Crossing culvert pipe: 12; · Step road: 2835m; · Reservoir: 110m ³; · 550 mu of micro spraying construction.	Design	/	/	/	/
11	FJ-PH-CW-09 Shange Town	· Field trunk road: 2060m; · Passing lane: 2; · Downfield ramp: 4; · Culverts: 2.	Design	/	/	/	/
12	FJ-PH-CW-10 Nansheng Town	· Tractor road: 450m; · Crossing culvert pipe: 9; · Picking path: 5130m; · Anti-scour revetment: 1440m; · Reservoir: 200m ³; · Pump house: 1; · 875 mu of micro spraying construction.	Design	/	/	/	/
13	FJ-PH-CW-11 Daxi Town	· Tractor road: 6340m; · Passing lane: 5; · Reversing table: 2; · Xiatian ramp: 10; · Crossing culvert pipe: 3; · Drainage channel: 3030m; · Anti-scour revetment: 1110m; · Reservoir: 15m ³; · 70 mu of micro spraying construction.	Design	/	/	/	/
14	FJ-PH-CW-12 Wuzhai Town	· Tractor road: 7465m; · Passing lane: 7; · Reversing table: 3; · Downfield ramp: 12;	Design	/	/	/	/

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
		· Crossing culvert pipe: 11; · Anti-scour revetment: 845m; · Reservoir: 180m ³; · Pump house: 1; · 870 mu of micro spraying construction.					
Ninghua Subproject, PIU = Ninghua State-owned Ecological Forestry Co., Ltd.							
1	FJ-NHLC-CW-06 Oil-tea Garden Rehabilitation and Infrastructure Construction Project (Zhongsha Town)	Land Rehabilitation of 844 mu of low-yield Camellia oleifera garden in Zhongsha Township: land remediation, land cultivation, irrigation and drainage renovation, field roads, farmland protection projects · Terrace rehabilitation: 844mu · Water ponds: 9 · Tractor roads: 2.5 km · Field roads: 7.7 km · Irrigation canals: 2.5 km · Micro irrigation facilities: 844mu	Operation	100% completed	Oct 2019	Ninghua County Forestry Corporation	Fujian Guangxia Engineering Consulting Co., Ltd
2	FJ-NHLC-CW-07 Oil-tea Garden Rehabilitation and Infrastructure Construction Project (Jicun Town)	Land Rehabilitation of 273 mu of low-yield Camellia oleifera garden in Jicun Township: land remediation, land cultivation, irrigation and drainage renovation, field roads, farmland protection projects · Terrace rehabilitation: 166 mu · Water ponds: 4 · Tractor roads: 1.6 km · Field roads: 1.4 km · Drainage canals: 1.3 km · Sprinkling irrigation: 166 mu	Operation	100% completed	Oct 2019	Ninghua County Economic and Forestry Service Center	Fujian Guangxia Engineering Consulting Co., Ltd
Fu'an Subproject, PIU = Fujian Farms Agribusiness Tea Co., Ltd.							
1	FJ-FANK-CW-01-01 Land Rehabilitation in 1000 mu and	· Irrigation ditches: 4 km · Tractor roads: 7.7 km · Terrace rehabilitation: 89.2 mu	On-going construction	80% completed	May 2020	Shanxi Jiexingyuan Construction	Xiamen Gangwan Consulting Manager Co., Ltd

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
	Construction of Farm Infrastructures in 3800mu Tea Gardens					Engineering Co., Ltd.	
2	FJ-FANK-CW-02	380 V high-voltage power supply line	Construction completed, waiting for check and accept	Construction 100% completed, waiting for completion acceptance inspection.	August 2021	Fujian Jinli Construction Engineering Co., Ltd	Gongcheng Management Consulting Co., Ltd
Yongding Subproject, PIU = Longyan Municipality Longyu Ecological Industry Development Co. Ltd							
1	FJ-YDLY-CW-04 Rehabilitation of Slopeland, Construction of Farm Infrastructures in the 5565 mu Oil-tea Plantations	· Slopeland rehabilitation: 5565mu · Irrigation ponds: 6 · Pipeline for irrigation: 5565mu · Tractor roads: 16.7km · Field road: 16.7km	Operation	100% completed	April 2019	Fujian Yong Wang Construction Group Co. Ltd.	Longyan Rundaxin Engineering Managements Co. Ltd
Jiaocheng Subproject, PIU = Fujian Lvyin Agriculture Co., Ltd.							
1	FJ-JCLY-CW-01 4460 Oil-tea Plantation– Rehabilitation of slopeland and construction of access roads	· Slopeland rehabilitation: 2500mu · Tractor roads: 13.38km · Field rods: 138km	Operation	· Slopeland rehabilitation:100% · Tractor roads: 100% · Field roads: 100%	2 Dec 2017	Fujian Yuanhong Construction Engineering Co., Ltd.	Yucheng Company
2	FJ-JCLY-CW-02 4460 Oil-tea Plantation– Construction of Water Conservancy Facilities	· Water ponds: 40 · Open canals: 5km · Sprinkling irrigation: 2500mu · Piped irrigation: 1960mu · Drainage ditches: 13.38km	Operation	· Water ponds: 100% · Open canals: 100% · Sprinkling irrigation: 100% · Piped irrigation: 100% · Drainage ditches: 100%	22 Jan 2018	Fujian Yuanhang Construction Engineering Co., Ltd.	Yucheng Company
Xinluo Subproject							
1	FJ-XLLD-CW-01-01 Construction of Water Conservancy Facilities and Farming Machine Access Roads in	· Open ditches: 3.92 km · Tractor roads: 8.26 km · Revetment: 320 m · Embankment: 3.581 km	Operation	· 100% completed	Mar. 2020	Fujian Minying Construction Development Co., Ltd	Fujian Shuicheng Construction Co., Ltd

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
	Paddy Land Base in Zhongxin Village and Zhongxi Village of Shizhong Township						
2	FJ-XLLD-CW-01-02	· Water tanks: 2 · Water ponds: 2 · Culverts: 4 · Open ditches: 31km · Tractor roads: 20.27km	Cancelled	· Not initiated	/	/	/
3	FJ-XLLD-CW-02	· Water tanks: 1 · Drainage ditches: 12.88km	Cancelled	· Not initiated	/	/	/
4	FJ-XLLD-CW-03	· Land levelling: 1209mu · Water ponds: 2 · Irrigation canals: 11.4km · Agricultural bridge: 1 · Hydraulic drops: 265 · Field roads: 12.4km · Tractor roads: 13.3km	Cancelled	· Not initiated	/	/	/
5	FJ-XLLD-CW-04	· Terrace rehabilitation: 1820mu · Water ponds: 18 · Piped irrigation: 1820mu · Tractor roads: 10km	Cancelled	· Not initiated	/	/	/
6	FJ-XLLD-CW-05	· Terrace rehabilitation: 1200mu · Water ponds: 4 · Piped irrigation: 1100mu · Sprinkling irrigation: 100mu	Cancelled	· Not initiated	/	/	/
7	FJ-XLLD-CW-06-01 (Zhongxin village, Shizhong Township)	· 3 agricultural bridges	Operation	· 100% completed	May 2020	Fujian Shiwei Construction Co., Ltd	Anhui Yuanxin Engineering Project Management Co., Ltd
8	FJ-XLLD-CW-06-02	· Embankment: 8.5km · Riverbank revetment: 3.74km · Drainage ditches: 1.37km	Cancelled	· Not initiated	/	/	/
Pucheng Subproject							
1	FJ-PC-CW-01	Field trunk road 6871m Side ditch 6793m	Ongoing construction	15%	April 2022	Fujian Water Conservancy and	JV of Fujian Runmin

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
		Culverts:24 Flood discharge ditch: 3427.95m Revetment: 2576.92m				Hydropower Engineering Bureau Co., Ltd.	Engineering Consulting Co., Ltd. and vertical and horizontal Mutual Construction Project Management Co., Ltd
2	FJ-PC-CW-02	Field trunk road 6018m Side ditch 3520m, Culverts:31 Revetment: 401.725m Barrages: 2	Ongoing construction	15%	April 2022	JV of China Sixth Metallurgical Construction Co., Ltd. and Fujian Hengyu Construction Co., Ltd.	JV of Fujian Runmin Engineering Consulting Co., Ltd. and vertical and horizontal Mutual Construction Project Management Co., Ltd
3	FJ-PC-CW-03	Field trunk road 2560m, Side ditch 935m, Culverts:11 Flood drainage ditch 1232.46m, The revetment is 3502.26m.	Ongoing construction	15%	April 2022	Fujian Water Conservancy and Hydropower Engineering Bureau Co., Ltd.	JV of Fujian Runmin Engineering Consulting Co., Ltd. and vertical and horizontal Mutual Construction Project Management Co., Ltd
4	FJ-PC-CW-04	to be determined	/	/	/	/	/
5	FJ-PC-CW-05	to be determined	/	/	/	/	/
6	FJ-PC-CW-06	to be determined	/	/	/	/	/
7	FJ-PC-CW-07	to be determined	/	/	/	/	/
Shouning Subproject							
1	FJ-SN-CW-01	· Drainage ditch: 1 · Tractor road: 24819m · Return platform: 5 · Passing lane: 79	Ongoing construction	30%	March 2022	Wenzhou Kaida Transport Engineering Co., Ltd	Fujian Gongbiao Construction Development Co., Ltd

No.	Contract No.	Construction Activities	Status	Implementation Description	Starting date	Name of contractor	Name of CSC
		· Drainage culvert pipe: 15					
2	FJ-SN-CW-02	· Field Road: 14600m · drainage ditch:1 · revetment:1 · culverts	Ongoing construction	10%	April 2022	Zhejiang Taishun County Transportation Engineering Co., Ltd.	Yunnan Shengmeng Engineering Consulting Co., Ltd.
3	FJ-SN-CW-03	· Field Road: 16,863m · Drainage ditch · revetment:1	Prepare for construction	· Construction not started	/	Zhejiang Taishun County Transportation Engineering Co., Ltd.	Jiangsu Anda Engineering Management Co., Ltd.
4	FJ-SN-CW-04	To be confirmed	Bidding	/	/	/	/
5	FJ-SN-CW-05	· Field Road: 27,390m · drainage ditch · revetment： 1	Prepare for construction	· Construction not started	/	/	Fujian Zhonglutianchen Construction Development Co., Ltd.
6	FJ-SN-CW-06	/	/	Not initiated	/	/	/
7	FJ-SN-CW-07	/	/	Not imitated	/	/	/
8	FJ-SN-CW-08	/	/	Not initiated	/	/	/
9	FJ-SN-CW-09	/	/	Not initiated	/	/	/

Source: PMO, 2022
CSC = construction supervision company, PIU = project implementation unit

III. SUMMARY OF THE PROJECT ENVIRONMENTAL MANAGEMENT PLAN

20. The project environmental management plan (EMP) is the primary reference document for the government and ADB for all environment-related mitigation, monitoring, reporting, and training activities for the project. Timely and effective implementation of the EMP is a key condition of the loan agreement between the government and ADB. The EMP was prepared as part of the initial environmental examination in 2016. The EMP is being implemented over 4.5 years, comprising 4 years of construction. The content of the EMP includes: institutional roles and responsibilities for EMP implementation; mitigation measures for environmental safeguard risks; environmental monitoring and reporting; training and capacity building; grievance redress mechanism (GRM); public consultation; cost estimates; and, other information e.g. terms of reference for key positions. The EMP is being revised to reflect changes of project scope.

21. **Project institutional arrangements (Section B of the EMP).** This section of the EMP describes the roles and responsibilities of relevant agencies for EMP implementation. For this project, the principal person responsible for EMP coordination is the PMO Environment Officer (Mr. Wu Xionghai, division director, PPMO), acting on behalf of the PMO. On-site implementation of the EMP is by the implementing agencies, contractors, and construction supervision companies (CSCs). Guidance and supervision to the PMO Environment Officer is given by the Loan Implementation Environment Consultant (LIEC) (Ms. Yuan Jingwei, from NAREE).

22. **Project readiness assessment (Section C of the EMP).** This is the first key step prior to the start of project civil works, to ensure that preparations for EMP implementation have been completed.

23. **Potential impacts and mitigation (Section D of the EMP)**. This section of the EMP summarizes the potential environmental impacts and mitigation measures for the different phases of the project: detailed design and pre-construction phase; construction phase; and operations phase. Table A1.2 in the EMP summarizes the environmental risks and mitigation measures, and agencies responsible for implementation and supervision of these measures. For this project, the key potential impacts and/or issues of concern are: soil erosion, ecological impacts, water balance, non-point source pollution and due diligence of existing facilities.

24. **Training (Section F of the EMP)**. This section of the EMP describes the training program for environmental safeguards, including the recipients and frequency of training.

25. **Grievance Redress Mechanism (Section G of the EMP)**. This section of the EMP identifies the mechanisms to receive and manage any public environmental and/or social issues which may arise due to the Project.

26. **Environmental monitoring program (Section E of the EMP)**. The program comprises three types of monitoring: (i) internal monitoring; (ii) external monitoring; and (iii) compliance monitoring Internal monitoring is assessment by the project implementation units (PIUs) and/or CSCs to ensure the contractors are implementing mitigation measures as described in their contractual arrangements and EMP. External monitoring is the measurement of specific environmental variables (e.g. air quality, dust levels, noise emissions) to ensure that the construction activities do not exceed the legal parameters and standards specified for the project. This is being conducted by a certified external monitoring agency. It has been agreed that each PIU will hire one external agency. Compliance monitoring is the overall assessment of whether all EMP measures are being complied with, and is conducted by the PMO Environment Officer,

supported by the LIEC. This monitoring does not involve quantitative measurement of environmental variables, but is based on visual inspection, site visits, and review of the progress reports for internal and external monitoring.

27. **Costs (Section H of the EMP)**. This section of the EMP describes the estimated costs for EMP implementation over 5 years. The cost estimates in the EMP include the costs for the mitigation measures, training, and monitoring.

28. **Reporting (Section E of the EMP)**. This section of the EMP describes the reporting requirements for the project, including the responsible agencies and reporting frequency.

IV. ENVIRONMENTAL MANAGEMENT DURING THE REPORTING PERIOD

29. This section summarizes the progress made to implement the project EMP during the current reporting period.

A. Institutional setup

30. **EA/PPMO environment officer**. Fujian Provincial Government is the executing agency (EA). The PPMO established by the provincial government have the overall accountability for the overall project and its subprojects for ensuring compliance with the PRC's laws and regulations as well as the provisions of ADB's Safeguard Policy Statement (2009). The PPMO is also responsible for replying to petitions and/or complaints from the affected people in the project area. Mr. Wu Xionghai (division director) has been designated as PPMO environment officer.

31. **IA/MPMOs/CPMOs environment officer**. As the implementing agencies, each municipal government will be accountable for ensuring the implementation of the environmental management plan and coordinating the environmental audit and monitoring of the subproject(s) in the respective district/county. The district/county governments (CPMOs) will be responsible for ensuring the implementation of the specific mitigation measures in cooperation with PIUs as prescribed in the EMP. Each MPMO and each CPMO has designated an environment officer (Figure 1).

32. **PIU environment person**. Each PIU will be responsible for (i) implementing the EMP and developing further implementation details; (ii) supervising their staff and contractors' implementation of mitigation measures during construction; (iii) implementing training programs for construction crews; (iv) incorporating environmental management, monitoring, and mitigation measures into construction and operation management plans; (v) developing and implementing internal regular environmental monitoring, including construction and operation; (vi) redressing public grievances; and (vii) reporting performance of the EMP to CPMOs. All PIUs have designated environment person. The designated environment persons of the PIUs are provided in Table 2.

Table 2 List of Designated Environment Persons of the PIUs

City	County/district	PIU name	Name of the person in charge	Contact
Nanping	Wuyishan	Wuyishan Zhuzi Ecological Agriculture Co., Ltd	Mao Xinjian	13950628851
	Guangze	Fujian Zhengyuan Ecological Food City Co., Ltd	Shi Bin	18650601582
	Pucheng	Pucheng County Farmland Development and Utilization Co., Ltd	Ye Huijuan	18706056780
Sanming	Datian	Golden Phoenix Agricultural Development Co., Ltd. of Datian County, Fujian Province	Yan Jianxue	13860523334
	Ninghua	Ninghua State-owned Ecological Forest Farm Co., Ltd	Nie Caikui	13806966008
Long Yan	Yongdian	Longyan Longyu Ecological Industry Development Co., Ltd	Qiu Zuxin	18760003956

	Xinluo	Longyan Greenland Ecological Agriculture Development Co., Ltd	Xie Yiqin	13860296685
Zhangzhou	Pinghe	Fujian Xinghe Investment and Development Group Co., Ltd	Lin Yijin	15260567712
Ningde	Fu'an	Fujian Nongken Tea Industry Co. Ltd	Yu Weijie	18805936876
	Jiaocheng	Fujian Green Silver Agriculture Co. Ltd	Jiao Huibin	18650588555
	Shouning	Shouning County State-owned Assets Investment Management Co. Ltd	Huang Fangxiang	18860178210

33. **Environment monitoring company.** It has been planned by the PPMO, CPMOs and PIUs that each PIU will contract one external environmental monitoring company (EMC) one month before civil work construction commencement. Till the end of June 30 2022, 8 PIUs have contracted EMCs who have obtained China Metrology Accreditation (CMA). Shouning and Pucheng will engage the EMCs in July 2022.

34. **LIEC.** The LIEC will ensure the compliance of construction and initial operation activities with the mitigation and management measures in the EMP and report to the ADB. Ms. Yuan Jingwei, environment specialist under the NAREE consulting team, is the new LIEC for this project since May 2021 to replace the previous LIEC from ESD. The IEE and EMP were updated by the LIEC from ESD to reflect the project change during midterm review, which were approved by ADB in January 2022.

35. **Environment person of construction supervision companies (CSCs).** Environment persons of CSCs will have the principal responsibility for observing contractor construction activities, and for ensuring that those activities are accomplished in compliance with the Project's environmental requirements, specifications, goals and objectives. They will ensure coordination at field level with representatives of government agencies in charge of EMP supervision as well as those in charge of control and monitoring activities. During this reporting period, corresponding CSCs environment persons have been appointed for all the work contracts that have entered construction stage and received training on EMP and ADB's safeguards requirements (Table 3).

Environment person of contractors. An environment person will be appointed by each Contractor to be responsible for the implementation of environmental mitigation measures and internal monitoring. During this reporting period, corresponding environment persons have been appointed for all the work contracts that have entered construction stage (Table 3).

36. For the completed project facilities, the environmental responsibilities of contactors and CSCs have been completed.

37. **COVID-19 prevention and control.** The above-mentioned environmental persons are also responsible for implementation of measures for COVID-19 prevention and control. Each contractor has prepared on-site health and safety plan including emergency response plan with institutional set up, responsibilities, resources and procedures.

Table 3 List of Designated Environment Persons of the Contractors and CSCs under Construction during this reporting period

No.	Contract Name	Organization	Name of organization	Environment person name	Contact
Datian Subproject					
1	FJ-DT-CW-02-01	Contractor	Fujian Province Fangxin Construction Group Co., Ltd	NA	NA
		CSC	NA	NA	NA
2	FJ-DT-CW-05-02	Contractor	Fujian Dongyu Construction Engineering Co., Ltd	Li Qilu	13559093311
		CSC	Fujian Huahong Engineering Management Co., Ltd	Lin Qingmin	NA
Pinghe Subproject					
1	FJ-PH-CW-05-02	Contractor	Zhongda (Fujian) Construction Service Co., Ltd	Li Liandeng	13358332618
		CSC	Fujian hengmaoyuan Engineering Management Co., Ltd	Chen Changzeng	15280060095
2	FJ-PH-CW-06	Contractor	Yuehong Construction and Development Co., Ltd associated with Fujian Rentao Construction Co., Ltd.	Lin Shihong	13906060558
		CSC	Zhangzhou Jinlou Construction Management Co., Ltd.	Xie Shuiyuan	13599672559
Fu'an Subproject					
1	FJ-FANK-CW-01-01	Contractor	Shanxi jiexingyuan Construction Engineering Co., Ltd	Hao Tianliang	0351-7282899
		CSC	Xiamen Harbour Consulting Manager Co., Ltd	Zhou Mingming	0593-6780066
Pucheng Subproject					
1	FJ-PC-CW-01	Contractor	Fujian Water Conservancy and Hydropower Engineering Bureau Co., Ltd.	Li Genyuan	13728965607
		CSC	JV of Fujian Runmin Engineering Consulting Co., Ltd. and vertical and horizontal Mutual Construction Project Management Co., Ltd	Wu Weilin	18706065823
2	FJ-PC-CW-02	Contractor	JV of China Sixth Metallurgical Construction Co., Ltd. and Fujian Hengyu Construction Co., Ltd.	Zhao Yibo	1576567657
		CSC	JV of Fujian Runmin Engineering Consulting Co., Ltd. and vertical and horizontal Mutual	Wu Weilin	18706065823

No.	Contract Name	Organization	Name of organization	Environment person name	Contact
			Construction Project Management Co., Ltd		
3	FJ-PC-CW-03	Contractor	Fujian Water Conservancy and Hydropower Engineering Bureau Co., Ltd.	Huang Jindi	13809598069
		CSC	JV of Fujian Runmin Engineering Consulting Co., Ltd. and vertical and horizontal Mutual Construction Project Management Co., Ltd	Yao Jihua	17359926133
Shouning Subproject					
1	FJ-SN-CW-02	Contractor	Wenzhou Kaida Transport Engineering Co., Ltd	Wang Zhenzhong	13959356588
		CSC	Fujian Gongbiao Construction Development Co., Ltd	He Yi	18950522319
2	FJ-SN-CW-03	Contractor	Zhejiang Taishun County Transportation Engineering Co., Ltd.	Lin Yunting	13738312558
		CSC	Yunnan Shengmeng Engineering Consulting Co., Ltd.	Guo Zongle	15306055507

Note: CSC = construction supervision company

38. **Contractual arrangement.** In accordance with requirements of the loan agreement and EMP, the environmental provisions have been clearly listed in the bidding documents and contracts.

39. General Contract Conditions of the bidding documents have clearly defined as: 1) the contractor shall be responsible for the safety of all activities on the site; 2) the contractor shall take all reasonable measures according to applicable environmental protection laws and regulations to protect the environment on and in vicinity of the site and avoid damages or nuisances to personnel or to property of the public and others resulting from pollution, noise or other causes arising as a consequence of the contractor's acts and/or operation.

40. Particular conditions of the contract requires that the contractor shall comply with (i) all environmental laws and regulations of the People's Republic of China; (ii) the Financial Institution's environmental safeguards; (iii) the measures and requirements set forth in the environmental impact assessment (EIA) and the environmental management plan (EMP) attached; and (iv) any corrective or preventative actions set out in safeguards monitoring reports that the Employer will prepare from time to time for monitoring the EIA and EMP implementation; (v) the Contractor shall allocate a budget for compliance with these measures, requirements and actions.

B. Implementation of the project mitigation measures

41. Implementation of the mitigation measures in the EMP is summarized in Table 4. This table is the same as Table A1.2 of the EMP but has 2 additional columns, to summarize the

implementation status and compliance for each listed mitigation measure within the reporting period.

Table 4. Project impacts, mitigation measures, and implementation status

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
Pre-construction				
1.1 Prerequisite steps and Detail Design Stage	Confirmation of slope land boundaries	Confirm that final slope land boundaries of subprojects avoid regrowth natural forest and shrubland as agreed in screening.	It has been confirmed that all subprojects slope land boundaries avoid regrowth natural forest and shrub land.	Complied
	Water extraction permission	Obtain a water use permit for water inputs from the local Water Resources Bureaus – providing all details required for that application to the WRB	The design institutes have provided all details required for the application to the WRBs.	Complied
1.2 Project environmental Support	Establish and implement environmental support positions	Contract a Loan Implementation Environmental Consultant (LIEC)	The LIEC of ESD has been in place since March 2018. The consulting service contract of ESD was expired in first half of 2020. There was a 10-month period between July 2020 and April 2021 when environmental support services were missing. This was corrected with the mobilization with the new LIEC in May 2021.	Complied.
		Contract Environmental Monitoring Stations in each county for external monitoring	8 PIUs have contracted monitoring company (EMC) for external monitoring. **Next steps:** Pucheng started construction in late June 2022 and Shouning started construction in March 2022. The PIUs of Pucheng and Shouning will engage EMCs in July 2022.	Being complied
		Appoint Environmental Officers at PPMO and CPMOs	Environmental officers have been appointed at PPMO, Municipal PMOs, and CPMOs in May 2018.	Complied
		Assign environment officers at each PIU	Each PIU has assigned environment officers in May 2018. Pucheng and Shouning appointed environment officers in June 2022.	Complied
1.3 Construction Preparation Stage	Update EMP	Update mitigation measures defined in this EMP based on the detailed design.	EMP was updated in November 2020. Covid-19 prevention and control measures are included in the updated EMP. The IEE, including EMP was further updated due the scope change during MTR and endorsed by ADB in Jan 2022.	Complied
	Construction plans and documents	• Prepare environment section in the terms of reference for construction bidders;	Environmental section was included in TOR for bidders and the first bidding documents has been reviewed and approved by the ADB.	Complied

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
		• Prepare environmental contract clauses for construction, using reference to EMP and monitoring table.	The EMP has been translated into Chinese and attached to each civil work contract. The EMP has been updated to cover the new subprojects of Pucheng and Shouning. The updated EMP has been translated into Chinese in January 2022 and attached to the civil work contracts.	Complied
	Establish and publicize GRM	• Identify GRM entry points and brief them on their role;	GRM has been established and entry points has been identified	Complied
		• Publicize GRM entry points, people and contacts at each PIU construction site, in local newspapers, websites and village committee and community premises before construction commences	8 PIUs have publicized GRM entry points, people and contacts at each construction site, and in village committee information boards. The three subprojects of Pucheng and two Shouning started in 2022 establish GRM and disclosed the entry points at construction sites (appendix 5).	Being complied
	Construction site planning	• Prepare Site Construction Plans including appropriate parts for each PIU from the project EMP, including an environmental health and safety plan	All contractors, including the new subprojects of Shouning and Pucheng prepared site construction plans.	Being complied
		• Nominate an Environmental, Health and Safety Officer (EHSO) in contractors' team	Each contractor nominated an Environmental, Health and Safety Officer.	Being complied
		• Develop site environmental health and safety plan.	Environmental health and safety plans are developed and submitted to the PIUs.	Being complied
	Environmental Training	• LIEC to provide training on implementation and supervision of environmental mitigation measures to contractors	LIEC provided training on supervision of environmental mitigation measures, GRM and new subproject selection criteria to environmental officers of PPMO, MPMOs, CPMOs and PIUs in training workshop conducted on 13 June 2019. Moreover, LIEC provided training on supervision of environmental mitigation measures implementation Ningde MPMO, Jiaocheng CPMO and Fu'an PIU during site visits meetings on 12 June 2019. LIEC also conducted environmental training focusing on project environmental management, the EMP implementation and new subproject selection criteria via various (almost	Being complied

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
			monthly) phone calls to the environment officers of various level PMOs staff and PIUs. Trainings on ADB environmental management requirements were provided to CPMOs and PIUs of Pucheng and Shouning by the LIEC from NAREE during the site visit meeting on May 2021. On job trainings were provided to the CSCs, contractors and PIUs of Wuyishan, Pinghe and Datian by the LIEC during the site visits on July 2021. Online environmental safeguards training was provided by the LIEC in June 2022 to the contractors, PIUs and CSCs.	
Construction				
2.1 Air Quality	Local air pollution from construction activities	• Material stockpiles and concrete mixing equipment will be equipped with dust shrouds.	In general, there is no significant air pollution issue. Commercial concrete is used. No concrete mixing activities on site during reporting period. Material stockpiles were covered.	Being complied
		• Earthworks to prepare site should be undertaken just before commencement of construction to avoid long term stockpiling.	Implemented according to CSC report	Being complied
		• Vehicles transporting potentially dust-producing materials will have proper fitting sides and tail boards and covered with protective canvasses;	Implemented according to CSC report. No transporting vehicles was observed during PPMO, MPMO, CPMO, and LIEC site visits as the excavation activities have been completed at the time of site visits.	Being complied
		• On-site movement of cement bags should not overload people or vehicles to minimize bag rupture and spillage;	Implemented according to CSC report. No cement bags movement was found during site visits by-site visits by LIEC in June 2022, which is similar to the observations from previous site visits.	Being complied
		• Unauthorized burning of waste plant material during land preparation shall be subject to penalties for the Contractor, and withholding of payment.	No waste burning was found during reporting period.	Being complied
	Construction noise	For villages within the noise impact distance from construction operations:	All of the current construction sites are more than 35 m away from residents area	Being complied

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
		• Erect temporary noise barriers between work site and residents where less than 35m apart.		
		• Daily construction schedules will be arranged to prohibit work in lunch break and at night.	Implemented according to CSC report and confirmed by the site visited conducted by the LIEC in June 2022.	Being complied
		• Villagers will be notified before construction activities which emit high noise levels are scheduled.	Implemented according to CSC report and confirmed by the site visited conducted by the LIEC in June 2022.	Being complied
		• The construction schedule will be arranged to avoid multiple large-scale and noise emitting machinery operating simultaneously.	Implemented according to CSC report and confirmed by the site visited conducted by the LIEC in June 2022.	Being complied
		• To avoid noise impacts on sensitive points along the main road from transport vehicles the construction unit will reduce the number of vehicles and traffic flow, set speed limits and prohibiting the use of the horn in villages.	Implemented according to CSC report and confirmed by the site visited conducted by the LIEC in June 2022.	Being complied
2.2 Soil stability	Erosion and siltation	• Implement erosion controls set out in Soil and Water Conservation Law of PRC.	Implemented according to CSC report and confirmed by the site visited conducted by the LIEC in June 2022.	Being complied
		• Terraces and soil tillage will be conducted along contours and keeping vegetation between contour terraces to prevent soil erosion.	Trees were kept during slope land rehabilitation to prevent soil erosion.	Being complied
		• For new terraces and crops, the time and degree of exposure to erosive forces must be minimized.	New terraces are constructed during dry season to prevent soil erosion	Being complied
		• Special scrutiny on erosion control will be directed to the following subprojects due to the large scale of earthworks planned: Youxi County Yangzhong Xinkaicheng Urban Construction Co., Ltd; Ninghua State-owned Ecological Forestry Co. Ltd; Longyu Ecological Industry Development Co., Ltd	Weekly inspection were conducted by Yongding CPMO, and daily inspection has been conducted by the CSC of Yongding subproject. Construction of Yongding subproject was finished in 2020.	Complied
2.3 Water quality	Pollution of surface water and groundwater	• Oil traps provided for service areas and parking areas, and oil-water separators are installed before the sedimentation tank for oil-containing wastewater;	Implemented according to CSC report. No wastewater was found during the site visited conducted by the LIEC in June 2022.	Being complied
		• All construction machinery repaired and washed at special repairing shops. No on-site machine repair and washing shall be allowed;	Implemented according to CSC report. No maintenance shop and wastewater were found during the site visited conducted by the LIEC in June 2022.	Being complied

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
		• Storage facilities for fuels, oil, and other hazardous materials within secured areas on impermeable surfaces, and provided with bunds and cleanup kits;	Implemented according to CSC report. Site visits conducted by the LIEC in June 2022 found no storage facilities for fuels, oil and other hazardous materials.	Being complied
		• The contractors' fuel suppliers to be properly licensed, follow proper protocol for transferring fuel, and are in compliance with Transportation, Loading and Unloading of Dangerous or Harmful Goods (JT 3145-88)	Implemented according to CSC report and confirmed by the site visited conducted by the LIEC in June 2022.	Being complied
	Embankments	To avoid impact to downstream reaches on flows and turbidity, impact mitigation for embankment construction along streams in valley floor cropping areas will: • schedule construction work for October to February,	No riverside works during this reporting period.	N/A
		• setback 20 m from the stream banks	No riverside works during this reporting period.	N/A
		• retain all trees currently existing along the banks	No riverside works during this reporting period.	N/A
		• retain "soft" earthen and vegetated foreshores plant the embankments with grass and shrubs.	No riverside works during this reporting period.	N/A
2.4 Biodiversity	Habitat protection	To protect the regrowth natural forests and shrublands not within the footprint of the subproject developments but on their borders from careless and unplanned construction activities: • Minimize the areal extent of construction activities being undertaken at any time.	No damage to natural forest was found.	Being complied
		• Ensure strictly assigned to work areas and access corridors as part of site planning and without occupying land randomly.	Implemented.	Being complied
		• Construction machinery and construction materials will not be placed in naturally vegetated areas.	Implemented. Site visits conducted by the LIEC in June 2022 found no construction machinery was placed in naturally vegetated areas.	Being complied
		• Ensure stockpiles do not overflow onto naturally vegetated areas.	Implemented. Site visits found no stockpile overflow onto naturally vegetated areas	Being complied
		• After the completion of the project, cleaning and greening work shall be carried out to restore any damage.	Not yet due	To be complied with

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
	Habitat enhancement	Shelterbelt forests of native species indigenous to the region will be developed to protect plantations on sloping land from winds and drying out.	Native species were selected.	Being complied
2.5 Physical cultural resources	Protection of heritage site	The Yongding Longyu subproject PIU will ensure that: • No vehicles hauling materials or equipment to and from the site will be allowed to pass through the World Heritage site core and buffer zone.	The PIU of Yongding subproject has developed transport route that avoid pass through the core and buffer zone of the World Heritage site. The transportation plan has been forwarded to the contractors.	Complied
		• Transport routes, confirming this prohibition will be included in the Yongding subproject Site Construction Plan	Transport route has been developed and pass-through core and buffer zone of World heritage site is prohibited.	Complied
		• Damage to any trees or shrubs on the ridgetop, which provides a backdrop to the World Heritage site will be strictly prohibited.	Implemented, no earth work on the ridge top.	Being complied
	Protection of chance finds	• Chance find procedures in line with PRC government procedures will be established for undiscovered underground cultural or historic sites that might be identified during project implementation.	Chance find procedures have been established. No undiscovered underground cultural or historic sites were found during this reporting period.	Being complied
2.6 Construction waste	Solid waste generated by construction activities and from workers' camps	• Provide waste collection and storage containers at locations away from surface water or sensitive receivers.	Waste collection and storage containers are provided	Being complied
		• Arrange with municipal waste collection services for regular collection of waste.	Implemented. Waste from construction sites are regularly collected	Being complied
		• Properly remove and dispose residual materials, and wastes. Paving or vegetating shall be done as soon as the materials are removed to stabilize the soil.	Implemented.	Being complied
2.7 Health and safety	Community safety	• Plan construction activities so as to minimize disturbances to residents, utilities and services.	Implemented	Being complied
		• Implement safety measures around the construction sites to protect the public, including warning signs to alert the public to potential safety hazards, and barriers to prevent public access to construction sites.	Implemented	Being complied
		• Negotiate haulage truck and machinery movements with village committees to ensure that village activities (market days etc.) and	Implemented	Being complied

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
		residential roads are minimally impacted by construction traffic.		
	Construction worker safety	• Take all reasonable steps to protect any person on the site from health and safety risks;	Implemented	Being complied
		• Make the construction site a safe and healthy workplace;	Implemented	Being complied
		• Make machineries and equipment areas safe;	Implemented	Being complied
		• Provide adequate training or instruction for occupational health and safety;	Implemented	Being complied
		• Provide all workers with personal protection equipment;	Implemented.	Being complied
		• Implement adequate supervision of safe work systems;	Implemented	Being complied
		• Provide means of access to and egress from the site without risk to health and safety.	Implemented	Being complied
		• The contractors' performance and activities for occupational health and safety shall be incorporated in their monthly progress reports;	Implemented.	Being complied
		• All activities will comply with the Labor Law of the PRC, the Labor Contract Law of the PRC, and the Special Rules on the Labor Protection of Female Employees.	Implemented	Being complied
Operation				
3.1 Water	Impact on surface water quality from agricultural chemicals	• Minimize use of chemical fertilizer through soil testing and crop management. Maximize use of organic fertilizers and straw mulches.	It is planned to start from second half of 2022.	To be complied with
		• Reduce chemical pesticide use by: selection of seedlings with disease and insect resistance, introduction of nursery stock quarantine, cultivation measures to improve plant resistance to disease and insect pests including removal of diseased plants, pest capture on a population scale using light traps and sticky traps at high density at crops' insect-prone periods.	It is planned to start from second half of 2022.	To be complied with
3.2 Soil stability	Erosion and siltation	• On the steeper slopes, slope-reversed terraces (higher elevation at the outside of the terrace than on the inside) will be	It is planned to start from second half of 2022.	To be complied with

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
		equipped with bamboo-joint ditches on the lower edge inside the terrace to harvest runoff and collect eroded soil materials.		
		• At the lower elevation part of the tea gardens, interception dam and rainwater harvest ponds will be maintained to store this rainwater for irrigation and to store sediments eroded from the tea gardens. • On the more gentle slopes erosion will be prevented by planting on the contour with protective ridges.	It is planned to start from second half of 2022.	To be complied with
		• As with the terraces, grassed waterways are used to channel runoff water into collector structures (ponds or concrete tanks).	It is planned to start from second half of 2022.	To be complied with
		• During crop management, PIUs will implement erosion controls set out in *Soil and Water Conservation Law of PRC.*	It is planned to start from second half of 2022.	To be complied with
3.3 Waste	Unplanned or unsound disposal of agricultural wastes	• All biomass waste from cultivation, pruning and weeding will be reused on site either for composting or mulch. No waste will be burnt.	It is planned to start from second half of 2022.	To be complied with
		• Residue of agricultural plastic film left in the soil will be minimized by (i) film mulching practices which optimize the timing of mulching and timely removal of film to shorten the mulching period; (iii) use of biodegradable polymer agricultural plastic film; (iv) where film is not degradable, promotion of agricultural plastic film recovery and recycling.	It is planned to start from second half of 2022.	To be complied with
	Fertilizer and pesticide packaging	• Packaging for fertilizers will be recycled by farmer households, or subproject enterprises	It is planned to start from second half of 2022.	To be complied with
		• For pesticide packaging, the following measures will be implemented: - Training will be conducted for farmers involved in the subprojects, on chemical packaging handling and recycling; - For pesticide packaging and containers, the PIUs will record all the utilization of pesticide,	It is planned to start from second half of 2022.	To be complied with

Item	Impact/Issue	Mitigation measure prescribed in EMP	Implementation status, issues identified and corrective actions	In compliance?
		and require staff and farmers to return the empty packages to the PIU. - The PIU will ensure segregation of the pesticide waste at the subproject site from all other waste and will ensure that it is managed/disposed of by the county authorities with other toxic and hazardous waste that they collect.		
3.4 Health and safety	Health and safety of operating staff	• Operating staff to be protected from workplace hazards:	It is planned to start from second half of 2022.	To be complied with
		• In the operations phase of the project, staff engaged in the running of the facility including agricultural activities and irrigation systems will be issued with personal protective gear appropriate to the task.	It is planned to start from second half of 2022.	To be complied with
		• All electrical connections in the subprojects will be completed and periodically checked by qualified electricians.	It is planned to start from second half of 2022.	To be complied with
		• The openings of all water storage tanks at ground level will be fenced and gated to prevent accidents.	It is planned to start from second half of 2022.	To be complied with
		• The PIUs and contractors will apply strict health and safety protocols for staff in the handling, application and clean-up of agricultural chemicals. These protocols will be in full compliance with the PRC's Regulations on Safe Management of Hazardous Chemicals (Decree 591)	It is planned to start from second half of 2022.	To be complied with

ADB = Asian Development Bank; EIA = Environmental Impact Assessment; EPB = Environment Protection Bureau; PIU = Participating Implementing Unit; DI = Design Institute; O and M = operation and maintenance; CPMO = county project management office; PPMO = provincial project management office; PRC = People's Republic of China; WRB = water resources bureau.

42. **Conclusions and next steps**. Only Datian, Pinghe, Fu'an, Shouning and Pucheng have construction activities in this reporting period. The LIEC visited the construction sites of those subproject counties in June 27 to 1 July 2022 and the mitigation measures are being implemented and the project is in compliance with the EMP requirements. The LIEC will conduct next site inspection in November 2022.

C. Implementation of the project monitoring program

43. The following environment safeguard monitoring was conducted in the reporting period: internal monitoring, external monitoring, and compliance monitoring. Summary data of external

monitoring are presented in Table 4. Raw data are in Appendix 2. A summary of the monitoring activities is presented here.

44. **Internal monitoring.** The LIEC have provided training to conduct internal environmental monitoring and preparation of related reports in 2018, 2019 and 2022. (i) Regular site inspections have been performed by PIUs' Environment Officers with assistance of CSCs on a weekly basis. The internal monitoring results have been prepared by the CSCs and submitted to PIU for review on a monthly basis since November 2017. (ii) Random site inspections performed by PPMO, MPMOs and CPMOs.

45. **External monitoring.** It has been planned by the PPMO and PIUs that each PIU will contract one external environmental monitoring company (EMC) one month before civil work construction commencement. Till the end of 30 June 2022, 8 subprojects in Datian, Yongding, Jiaocheng, Wuyishan, Fu'an, Xinluo, Pinghe and Ninghua initiated civil work construction and 8 PIUs have contracted EMCs (See Table 5). The remaining 2 PIUs (Pucheng and Shouning) will contract EMCs in July 2022.

Table 5: Recruitment status of EMCs

No.	Subproject	Recruitment Date	EMC name
1	Datian	May 2019	Fujian Sanming Houde Test Technology Co., Ltd
2	Wuyishan	Feb 2019	Fujian Zhongke Test Technology Co., Ltd
3	Yongding	Oct 2019	Fujian Zhongkai Test Technology Co., Ltd
4	Jiaocheng	Oct 2017	Fujian Zhongke Test Technology Co., Ltd
5	Fu'an	Oct 2019	Fujian Zhongke Test Technology Co., Ltd
6	Pinghe	Oct 2019	Fujian Keyi Test Technology Co., Ltd
7	Ninghua	May 2019	Fujian Sanming Houde Test Technology Co., Ltd
8	Xinluo	Jan 2020	Fujian Huafei Test Technology Co., Ltd

46. Of the 8 subproject that started civil work construction, baseline monitoring for 7 subprojects (except Yongding) were carried out one month before construction. The monitoring results showed air quality and noise level meets the relevant standard, water quality in most of the creeks is good except the No.1 creek in Pinghe is high in petroleum, the East creek and West creek in Ninghua is high in SS, and the Shizhong creek in Xinluo is high in COD. Baseline monitoring for the Pucheng and Shouning was conducted during the preparation of addendum IEE and showed compliance with relevant standards.

47. During this reporting period, the external monitoring activities are summarized in Table 6 and detail monitoring results are presented in Appendix 2. As the civil works of Fu'an subproject (FJ-FANK-CW-01) in a tea garden, where is far from the village, there is no sensitive receptors within 500 m at least, no monitoring was conducted during this reporting period for Fu'an. Pucheng and Shouning have not engaged EMC yet, no monitoring activities were conducted for Pucheng and Shouning during this reporting period. Monitoring results showed that air quality and noise levels at nearby villages met with the Ambient Air Quality Standard (GB3095-2012) and Ambient Acoustic Environment Standard (GB3096-2008). Water quality of all creeks monitored met with the surface water quality standard (GB3838-2002).

Table 6. Summary of External Monitoring Activities and Results during reporting period

County	Phase	Variable	Location	Indicator	Frequency	Monitoring compliant with EMP program? Y/N	Results meet the required standards? Y/N	Corrective actions
Datian	Construction	Water	1 creek Keshan village	pH, SS, COD, Petroleum	Once	Yes	Yes	No
		Air	Keshan and Pinshan villages	TSP, PM10	Twice	Yes	Yes	No
		Noise	Pinshang village	LAeq	Once	Yes	Yes	No
	Operation	Water	4 creeks Jizhong, Jingkou, Taoyuan Shanchuan	pH, SS, COD, BODs, TP, NH3-N	Not yet due	Not yet due	Not yet due	No
Pinghe	Construction	Water	Huashan creek	pH, SS, COD, Petroleum	Once	Yes	Yes	No
		Air	5 villages Xilin, Lianguang, Xinqiao, Chankeng, Dongkeng	TSP, PM10	Once	Yes	Yes	No
		Noise		Laeq	Once	Yes	Yes	No
Other counties	Construction are not started					Not yet due	Not yet due	No

BOD = biological oxygen demand; COD = chemical oxygen demand; TN = total nitrogen, SS = suspended solids. TP = total phosphorous, TSP = total suspended particles; NH_3-N = ammonium nitrate.

48. **Compliance monitoring.** During the reporting period, site compliance inspection was conducted by the LIEC to Pinghe, Datian, Fu'an, Shouning and Pucheng by the LIEC during 27 June 2022 to 1 July 2022 and confirmed the mitigation measures defined in the EMP were well implemented.

49. **Conclusions and next steps.** During this reporting period, (i) Internal monitoring was conducted regularly; (ii) external monitoring activities were carried out as scheduled and the monitoring results showed that the air quality and acoustic environment at all construction sites and nearby villages were within the relevant standards. The water quality of creeks near the construction sites satisfied with the surface water quality standard. **Next steps**: i) with completion of construction, external monitoring for operation needs to be conducted for the subprojects in Datian, Pinghe, Yongding, and Xinluo. 2) The PIUs of Pucheng and Shouning need to recruit EMCs in July 2022 and conducted the first monitoring for the five subprojects under construction in July 2022. 3) The LIEC is planned to conduct on-site compliance inspections to the subprojects with construction ongoing during November 2022.

D. Public consultations and grievance redress mechanism

50. Public consultation conducted includes EIA public opinion survey, socioeconomic and AP surveys, public consultation meeting, questionnaire survey and site visits organized by the PIUs, Design Institutes and EIA institutes during the project preparation period.

51. Meanwhile, the EMP contains a comprehensive public consultation program for the construction and operation phases, as shown in the table below. The public consultation program

includes public participation in: (i) monitoring impacts and mitigation measures during construction and operation, (ii) evaluating environmental benefits and social impacts, and (iii) interviewing the public after the project is completed. The PMO and PIU are responsible for public participation during project implementation. They are supported by the loan implementation environmental consultants.

52. During construction, information disclosure is achieved primarily through the bulletin boards erected at each construction site. The bulletin boards contain a description about the project, layout map, construction safety, labour standards, environmental and health standards, name of the contractor(s) and names and contact information of the on-site managers and company executives. Public complaints can also be lodged through the 24-hour hotlines of the municipal and county EEBs in the three project cities ("12369" – common number country-wide). The municipal and county EEB also have online complaints gateways in their webpages. Despite the construction bulletin boards, the PIUs also posted the project information and GRM entry points at the information board of nearby villages.

53. During reporting period, the contractors of Datian, Shouning, Pucheng, Pinghe, and Fu'an have kept close communication with people from local villages in the daily works, include consulting with the villagers on the construction time arrangement and traffic disruption during construction of tractor roads. The aim of these interviews was to seek their comments on the implemental of mitigation measures. The interviews provided residents within and near the project sites the opportunity to learn more about the project, including the schedule of works and activities in the coming months. The project GRM was again presented to stakeholders, including key contact details.

54. **Conclusions and Next Steps.** So far, the village committee, local governments, PIUs and CPMOs have not received any petitions and/or complaints. **Next Steps:** All PIUs and contractors continue to maintain the operation of GRM. The LIEC will conduct random interviews with the residents to confirm if there are any concerns/complaints from the community.

E. Training and capacity building

55. Between 2018-2022, a total of 15 training events were undertaken. Total of 372 participants from PPMO, MPMOs, CPMOs, PIUs, contractors and CSCs participated in the trainings. At the end of each training session, participants were given half hour to ask questions so that the trainers could clearly understand what should be done and how to follow-up. During this reporting period, on-job trainings were provided to the CPMOs, PIUs, contractors and CSCs by the LIEC during the site visits in July 2021. On-line environmental safeguards training was provided by the LIEC in 24 June 2022 and total of 33 participants from PPMO, CPMOs, PIUs, CSCs and contractors attended the training.

56. **Conclusion and next steps.** With the progress of subprojects, new contractors and CSCs will be contracted, training to the contractors and CSCs on implementation of environment measures and inspection will be held in the following reporting period.

V. Implementation of health and safety plan in response to COVID-19

57. As end of this reporting period, all counties in Fujian Province are low-risk areas. There was no local positive case in the project counties during this reporting period. Construction was not affected by the COVID-19.

VI. Costs of EMP implementation during the reporting period

58. An estimation of the total costs spent to implement the EMP is difficult, because (i) the costs are spread across the PMO, contractors, CSCs, LIEC, and external monitoring agencies; (ii) the costs for environmental management are usually included within the lump sum contract amounts between the PMO and contractors or other agencies. However, an estimate of total costs spent to date includes was made (Table 6).

Table 5. Cost for EMP Implementation (Unit: CNY X10^3)

Item	2017-2018	1st half 2019	2nd half 2019	1st half 2020	2nd half 2020	1st half 2021	2nd half 2021	1st half 2022	2nd half 2022	Cumulative Cost	EMP
GRM establishment	150	150	150	50	50	50	50	50		700	750
Construction site planning	100	10	150	50	100	40	40	60		550	208
Erosion control	600	33	4,227	15,000	626	1329	1200	700		23715	46,869
Protection of water quality	150	16	120	75	83	23	20	40		527	1,510
Forestry	-	1,979	1,714	3,911	4156	2863	2100	-		16723	71,250
Health and Safety	190	90	652	1,500	2460	1255	90	70		6307	7,450
Environmental monitoring	87	53	69	80	283	283	43	20		918	1,413
Training	60	10	50	10	0	10	0	0		140	120
Total	1,337	2,341	7,132	20,676	7,758	5,853	3543	940		49,580	129,570

59. Based on these estimates, the total amount spent to date for implementation of the EMP is approximately CNY 49.58 million. Due to the continuous rainy weather, there is not much progress of construction activities in this reporting period so that the EMP cost is less than previous year. The annual cost to date is smaller than the EMP estimated annual cost. This is mostly due to cancellation of several subprojects.

A. Compliance with loan and project assurances

60. The loan agreement and project agreement between the government and ADB includes 25 assurances (or “covenants”) for environmental safeguards and/or related to environmental issues (Appendix 1). These relate to the timely and effective implementation of the EMP, as well as project-specific assurances tailored to the current project. Compliance with these assurances is a condition of the loan and project agreements. For the current reporting period: (i) 15 of the assurances are being complied with; (ii) 10 are not yet applicable due to the early stage of project implementation.

B. Issues for Follow-Up Documented in the Previous Environment Monitoring Report and any Missions undertaken During the Current Reporting Period

61. No ADB mission in the previous environmental monitoring reporting period (January to June 2022).

Table 7: Corrective Actions to Address Environment Safeguard Issues Identified in the Previous Environment Monitoring Report

Issue	Actions required in the previous EMR	By When	By Whom	Actions taken
External monitoring frequency	Recruitment of monitoring agency	Two months before civil works	PIUs of Guangze, Pucheng and Shouning	PIUs of Pucheng and Shouning have initiated recruitment procedure and the EMCs will be engaged in July 2022.
GRM	Establish and publicize GRM entry points at nearby villages	Two months before civil works	PIUs of Guangze, Pucheng and Shouning	Pucheng and Shouning have established GRM for the five subprojects under construction.
Addendum IEE	Submit the addendum IEE to ADB	31 January 2022	PPMO	The addendum IEE was endorsed by ADB in Jan 2022.
Training	Training new contractors and supervision companies on implementation of environmental mitigation measures	June 2022	LIEC	Training was provided by the LIEC in 24 June 2022.
	Site inspection on implementation of EMP	June 2022	LIEC	Site inspections were conducted by the LIEC in 27 June to 1 July 2022.
	Training to PIUs of Guangze, Shouning and Pucheng subprojects and contractors newly mobilized on EMP implementation	June 2022	LIEC	Training was provided by the LIEC in 24 June 2022.

C. Reporting

62. The project reporting requirements for environmental safeguards are summarized in Table 7 and comprise: i) progress reports from contractors and CSCs to the PMO; (ii) progress reports on external monitoring from an environmental monitoring agency to the PMO; (iii) environmental monitoring reports (EMRs) from the PMO to ADB.

Table 8: Project reporting requirements for environmental safeguards

Reports		From	To	Frequency	Progress in this reporting period
Construction Phase					
Project progress	Project progress report	Contractors and CSCs	PIUs	Monthly	• Complied with. All CSCs submitted monthly reports to PIUs
External environmental monitoring	Environmental monitoring report	Qualified environmental monitoring stations	PIUs CPMOs Local EPBs	Quarterly (for air and noise) Semi-annual (for water)	• Datian: 1 for Q1 2022 • Pinghe: 1 for Q1, 1 for Q2 2022
Compliance monitoring	Environment progress and monitoring reports	PPMO, LIEC	ADB	Semi-annual	7th

Reports		From	To	Frequency	Progress in this reporting period
Acceptance report	Environmental acceptance report	Licensed acceptance institute	Local EPB, EPD	Once; within 3 months of completion of physical works	Not applicable according to the Interim Measures for Environmental Protection Acceptance of Completion of Construction Projects (2017).
Operational Phase					
Compliance monitoring	Compliance with EMP measures report (first year of operation)	LIEC	ADB	Quarterly	It is planned to start from second half of 2022.
External environmental monitoring	Environmental monitoring report (first year of operation)*	Qualified environmental monitoring stations	Local EPBs, CPMOs	Quarterly	It is planned to start from second half of 2022.
Progress report	Environmental progress report	PPMO	ADB	Semi-annual	It is planned to start from second half of 2022.

ADB = Asian Development Bank; EPD = Environmental Protection Department; EPB = Environment Protection Bureau; LIEC = Loan Implementation Environment consultant; CPMO = County Project Management Office; PIU = Project Implementation Unit; PPMO = Provincial Project Management Office

63. **Conclusions and next steps.** Monthly report from CSCs to PIUs submission complied with the EMP. For all subprojects under construction, external monitoring was conducted. Submission of the external monitoring reports complied with the EMP.

VII. LESSONS LEARNED

64. As the subprojects are located in various part of Fujian Province, the PIUs engaged local EMCs to conduct environmental monitoring. As it is the first time of the PIUs to implemented ADB project, the PIUs are unclear about the monitoring requirements although guidance was provided in the previous site visits conducted in 2021. The LIEC will keep close touch with the PIUs and EMCs to ensure the monitoring are arranged coincides with the construction schedule and are conducted within each reporting period per the monitoring program defined in the EMP. With the completion of some project facilities, the PIUs are required to take mitigation measures and monitoring for operation phase. The LIEC will provide trainings for EMP implementation requirements during operation for the PIUs, CPMOs and EMCs in the next reporting period. The PIUs shall engage EMC in a timely manner to ensure the impacts of project activities can be monitored.

VIII. NEXT STEPS

65. Based on the findings of this EMR, corrective actions and next steps are required for several issues (Table 9). The actions largely relate to external monitoring company (EMC) engagement and GRM establishment. Actions are planned for July to December 2022 and will be reported on in the next EMR.

Table 9: Environmental Issues and Corrective Actions

Issue/Subject	Action	By When	By Whom
External monitoring frequency	Recruitment of external monitoring agency and conduct monitoring coinciding construction activities per EMP schedule and conducted within the respective reporting periods.	First monitoring by July 2022 and then follow the monitoring frequency defined in the EMP.	PIUs of Pucheng and Shouning
Site inspection	Carry out field inspection to check the performance of EMP implementation	November 2022	LIEC
Operation monitoring	Organize environmental monitoring for the project facilities that have been in operation more than 1 year.	December 2022	EMCs, LIEC and PIUs
EMP implementation training	Provision of EMP implementation training to the new contractors and CSCs; Provision of training on EMP implementation requirements during operation phase for PIUs, EMC, and CPMOs.	November 2022 September 2022	LIEC LIEC

APPENDIX 1. COMPLIANCE WITH ENVIRONMENTAL ASSURANCES

66. This appendix lists the environmental safeguard assurances for the project and the status of compliance with these assurances during the reporting period.

Covenant	Reference	Status/Remarks
LOAN AGREEMENT		
Procurement of Goods, Works and Consulting Services Conditions for Contract Award The Borrower shall, through FPG, cause the Project Implementing Agencies not to award any Works contracts that involve environmental impacts until: (a) FPG has granted the final approval of the IEE; and (b) FPG or the relevant Project Implementing Agency has incorporated the relevant provisions from the EMP into the Works contract.	LA, Schedule 4, Para. 7	Being complied with. Environmental protection provisions from the EMP have been incorporated into all civil work contracts
Implementation Arrangements		
The Borrower shall, through FPG, ensure that before disbursement to such participating company, each project implementing agreement between a Project County and a participating company, acceptable to ADB, shall be executed and, inter alia, include the respective participating company's obligations set forth in the Project Agreement and the PAM and shall require such participating company to comply with the IEE, EMP, RP, if any applies to such participating company, GAP and SDAP. The Borrower shall, through FPG, cause the Project Counties to enforce the participating company's obligations under its respective project implementing agreement to ensure that the Project is implemented in accordance with the Loan Agreement, the Project Agreement and the PAM.	LA, Schedule 5, Para. 2 PA, Schedule, Para. 7	Being complied with.
The Borrower shall ensure that if, at any time, FPG proposes to replace or add a new enterprise as a participating company, FPG shall seek ADB's prior consent to such change and shall ensure that (i) any new proposed participating company meets the selection criteria applied for the selection of participating companies during the project preparation as set out in the Project Agreement and the PAM, (ii) all proposed subproject(s) go through ADB due diligence on technical, financial, and safeguard matters similar to the process undertaken under the project preparatory technical assistance, and (iii) each replacement or added participating company complies with all requirements applicable to participating companies set out in the Project Agreement and the PAM.	LA, Schedule 5, Para. 3	Being complied with Two new enterprises in Shouning County and Pucheng county are proposed to be newly added. The two companies met the selection criteria set out in the PA and the PAM. The addendum IEE, including EMP for the proposed change at MTR is being prepared.
PROJECT AGREEMENT		
Project County Selection Criteria FPG shall, and shall cause the Project Implementing Agencies to ensure that each selected Project county meets the following poverty criteria, as further detailed in the PAM: each county must be a key provincial-level poverty alleviation county and/or less developed county eligible for the central government's support for the	PA, Schedule, Para. 8	Being complied with Two new counties (Shouning County and Pucheng County) are selected: Both counties met with the selection criteria.

Covenant	Reference	Status/Remarks
middle and western provinces in the territory of the Borrower.		
In selecting each Project country, priority shall be given to: (a) key soil erosion-prone counties with demonstrable erosion problems; and/or (b) counties in modern agriculture demonstration zones complying with ADB's project design which follows the principles of (i) sustainable development of agricultural land for economic purposes, (ii) emphasis on environment, soil and water resource protection, and (iii) ensuring there is opportunity to participate in equitable benefit sharing from the project which promotes cooperation between farmer households, cooperatives and project enterprises.	PA, Schedule, Para. 9	Being complied with Shouning county is erosion-prone county and Pucheng county is in modern agriculture demonstration zones. Selection of project county met with the selection criteria.
Subproject Selection Criteria FPG shall, and shall cause the Project Implementing Agencies to ensure that each proposed subproject is selected based on the following criteria relating to site, activities and community's acceptance, as further detailed in the PAM: each subproject must not be located in ecologically sensitive areas, including protected areas (all types of national and provincial reserves, reservoirs, etc.), wetlands protected areas, water resources protection areas, documented sites for rare or threatened flora and fauna (including nationally protected species), and rare, threatened, or restricted-range habitats; (b) subproject activities on land with a slope of >25º must (i) not be used for crop production (even though the soil and water conservation law indicates that planting perennials in combination with adequate erosion control measures is allowed); (ii) only sites that have been used before shall be considered for rehabilitation with design of those sloping sites compliant to all relevant national and/or provincial regulations for soil and water protection, and construction to minimize soil erosion; and (iii) the Project shall not support subproject activities to convert existing natural forest to production land; (c) subproject activities shall include farmland preparation and its related infrastructure, and related green and sustainable production activities but shall exclude investment or activities for (i) processing, (ii) construction of new reservoirs with capacity over 100,000 m3 and/or dam wall height greater than 15m, or (iii) Works for training and/or testing centers. Road construction activities will be classified by use, size and road surface; (d) each subproject shall be favorable to villagers in sharing potential benefits, including supporting close cooperation among SOEs and PPEs and cooperatives/villagers, with an emphasis on land areas under various cooperative management arrangements between SOEs and PPEs and village cooperatives/villagers; I for any subproject involving "associated facilities" (as defined by ADB's SPS), those facilities shall have all	PA, Schedule, Para. 10	Being complied with The subproject selection criteria have been used during new subproject selection. Subprojects that failed to meet the criteria were dropped.

Covenant	Reference	Status/Remarks
relevant domestic environmental and/or social approvals already in place prior to commencement of the relevant subproject. Associated facilities are facilities that are not funded as part of the project (funding may be provided separately by the borrower/client or by third parties), and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project, e.g. processing facilities; and (f) each subproject must meet the financial and economic viability assessment requirements, including positive net present value or internal rate of return higher than the cost of capital.		
Subproject Technical Requirements FPG shall, and shall cause the Project Implementing Agencies to ensure that each selected subproject meets the following technical requirements for reduced soil erosion and sustainable farming systems to ensure sound subproject design and implementation, as further detailed in the PAM: all Project activities for the modification of land use, including preparation for either cropland or forest plantation, comply with all relevant national and/or provincial regulations for soil and water protection, and construction to minimize soil erosion. Land clearing must be conducted according to the Borrower's existing technical specifications of soil and water conservation for slope land. Building terraces and soil tillage have to be carried out along contours and keeping vegetation between contour terraces to prevent soil erosion; (b) in the choice of new crops or new farming systems, the protection of the soil must be ensured. For any new system or crop, the time and degree of exposure to erosive forces must be taken into consideration. This is critical for crops that develop slowly or form little canopy (such as onions) or farming/cultivation systems where soil has to be tilled intensively for seedbed preparation; recommendations of fertilizer application (rates) based on local soil and crop conditions must be followed to avoid non-point source pollution; subprojects involving transfer of contracted land must not include either land-lease arrangements against current laws and regulations concerning land or land-lease arrangements signed by village officials without knowledge and consent of village members. For transfer of un-contracted land, village representatives meeting records and signatures are required; and I participating PPEs and farmer cooperatives must be committed to adopting sound practices for soil and water management and conservation within their project designs.	PA, Schedule, Para. 11	Being complied with. The subproject technical requirements have been forwarded to the design institutes that responsible for FSR preparation for new subprojects in Shouning County and Pucheng County. The subproject design will follow the technical requirements.
New Subprojects During Project implementation, if any new subprojects are added, FPG shall, and shall cause the Project Implementing Agencies to ensure that the same	PA, Schedule, Para. 12	Being complied with

Covenant	Reference	Status/Remarks
selection criteria and technical requirements applicable to each subproject preparation shall be applied.		
Requirement of PPEs FPG shall, and shall cause the Project Implementing Agencies to ensure that each selected PPE is willing to invest in farmland reclamation, ecological construction with demonstration and technical piloting;	PA, Schedule, Para. 13	Being complied with.
Environment		
FPG shall, and shall cause the Project Implementing Agencies to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Borrower relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in the IEE, the EMP, and any corrective or preventative actions (i) set forth in a Safeguards Monitoring Report, or (ii) which are subsequently agreed between ADB and the FPG.	PA, Schedule, Para. 18	Being complied with.
Erosion Control. FPG shall, and shall cause the Project Implementing Agencies to ensure that the PIUs shall ensure that the design, construction and operation of subprojects will comply with technical specifications of soil and water conservation for sloping land set forth in Soil and Water Conservation Law of the Borrower (25 December 2010, as may be amended from time to time).	PA, Schedule, Para. 19	Being complied with.
Protection of Natural Vegetation. FPG shall, and shall cause the Project Implementing Agencies to ensure that (a) the PIUs shall not expand site operations beyond the boundaries agreed for the subprojects and will confirm that there will be no conversion of natural forest or natural shrublands to tea or tea-oil gardens; and (b) all subprojects involving stream embankments (including Wuyishan, Datian, Yongding and Xinluo subproject) will retain existing trees (if any) along both riverbanks.	PA, Schedule, Para. 20	Being complied with.
Pesticides. FPG shall, and shall cause the Project Implementing Agencies to ensure that no pesticides that are listed as “Extremely Hazardous” or “Highly Hazardous” by the World Health Organization are used in the Project, including the prohibition of three pesticides (omethoate, trizophos and dichlorvos) listed in the Fujian Department of Agriculture’s list of recommended pesticide applications.	PA, Schedule, Para. 21	Being complied with
Weed Control. FPG shall, and shall cause the Project Implementing Agencies to ensure that (a) if the use of fast-growing non-native species (e.g., grasses) is required for stabilizing bare construction surfaces, only sterilized seedlings (i.e., which cannot propagate) will be used; and (b) to reduce the risk of spreading weeds, pest animals, and/or soil-based organisms, the Project shall prohibit the use of any plant species classified in the PRC as weeds, as defined by the China National Invasive Plant Database (http://www.agripests.cn; 229 species) and by the Ministry of Environment Protection and Chinese Academy of Sciences (19 species).	PA, Schedule, Para. 22	Being complied with

Covenant	Reference	Status/Remarks
World Heritage Areas. FPG shall cause the Yongding subproject implementation agency and its PIU to ensure that no activities including truck haulage or machinery movements will pass through the Tulou World Heritage Site core and buffer protection zones, and that no trees on the skyline which forms a backdrop to the Tulou site will be damaged.	PA, Schedule, Para. 23	Being complied with
Water Source Protection Areas. FPG shall cause the Datian subproject implementation agency and its PIU to ensure that in the drinking water protection zone portion of the Datian subproject area, all tree planting and/or rehabilitation of construction sites using vegetation will only use native plant species to Datian County.	PA, Schedule, Para. 24	Being complied with
Human and Financial Resources to Implement Safeguards and Other Social Requirements		
FPG shall, and shall cause the Project Implementing Agencies to make available necessary budgetary and human resources to fully monitor and implement the EMP, RF, RP, GAP and SDAP for the Project.	PA, Schedule, Para. 28	Being complied with.
Safeguards-related Provisions in Bidding Documents and Works Contracts		
FPG shall, and shall cause the Project Implementing Agencies to, ensure that all bidding documents and contracts for Works contain provisions that require contractors to: comply with the measures relevant to the contractor set forth in the EMP, RF and the RP (to the extent they concern impacts on the respective affected people under ADB's Environmental Safeguards, the Involuntary Resettlement Safeguards and the Indigenous Peoples Safeguards during construction), and any corrective or preventative actions set forth in (i) a safeguards monitoring report, or (ii) subsequently agreed between ADB and the FPG; make available a budget for all such environmental and social measures; (c) provide the FPG and Project Implementing Agencies with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the project that were not considered in the IEE, the RF and the RPs; (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and I reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition as soon as possible and no later than the completion of construction.	PA, Schedule, Para. 29	Complied with. ADB-approved bidding documents for first NCB civil works package contain such provisions. Bidding documents for succeeding packages to be patterned after the ADB-approved first bidding documents.
Safeguards Monitoring and Reporting		
FPG shall, and shall cause the Project Implementing Agencies to do the following: submit safeguards monitoring reports to ADB (i) in respect of implementation of and compliance with ADB's Environmental Safeguards and the EMP, semi-	PA, Schedule, Para. 30	Being complied with. This is the sixth environmental monitoring report covering the periods

Covenant	Reference	Status/Remarks
annually during construction and the implementation of the project and the EMP, and thereafter semi-annually during operation until the issuance of ADB's project completion report unless a longer period is agreed in the EMP; (ii) in respect of implementation of and compliance with ADB's Involuntary Resettlement Safeguards and of the RF and the RP, semi-annually during the implementation of the Project, the RF and the RP until the issuance of ADB's project completion report unless a longer period is agreed in the RF and the RP; and disclose relevant information from such reports to the respective affected people under ADB's Environmental Safeguards and the Involuntary Resettlement Safeguards promptly upon submission; and (iii) in respect of the land use rights transfer contracts, semi-annually during implementation up until Project completion; if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the project that were not considered in the IEE, EMP, RF and RP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; (c) no later than the commencement of land acquisition and resettlement activities, engage an independent agency under a selection process and terms of reference acceptable to ADB, to monitor and evaluate the resettlement process, and facilitate the carrying out of any verification activities by such external experts, and forward semi-annual external resettlement monitoring and evaluation reports to ADB during resettlement implementation and annually for two years after the completion of resettlement implementations; and (d) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP, RF or RP promptly after becoming aware of the breach.		from July to December 2021.
Prohibited List of Investments		
FPG shall, and shall cause the Project Implementing Agencies to ensure that no proceeds of the ADB loan are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the SPS.	PA, Schedule, Para. 31	Being complied with.
Labor and Health		
FPG shall, and shall cause the Project Implementing Agencies to ensure that the core labor standards and Borrower's applicable laws and regulations are complied with during project implementation. FPG shall, and shall cause the Project Implementing Agencies (including PIUs) to include specific provision in the bidding documents and contracts financed by ADB under the Project requiring that the contractors, among other things: (a) comply with Borrower's applicable labor law and regulations and incorporate applicable workplace occupational safety norms; (b) do not use child labor; (c) do not discriminate workers in respect of employment and occupation; (d) do not use	PA, Schedule, Para. 32	Being complied with. Approved bidding documents for first NCB civil works package include such provisions.

Covenant	Reference	Status/Remarks
forced labor; I do not restrict workers from developing a legally permissible means of expressing their grievances and protecting their rights regarding working conditions and terms of employment; and (f) disseminate, or engage appropriate service providers to disseminate, information on the risks of communicable diseases, including HIV/AIDS, to the employees of contractors engaged under the Project and to members of the local communities surrounding the project area, particularly women.		
Grievance Redress Mechanism		
FPG shall ensure that a joint safeguards grievance redress mechanism acceptable to ADB is established in accordance with the provisions of the IEE, the EMP and the RP, at the PPMO, within the timeframes specified in the relevant IEE, EMP and RP, to consider safeguards complaints.	PA, Schedule, Para. 34	Being complied with. PPMO environmental officer is responsible for finalizing, establishing, and coordinating the GRM. The GRM has been established in December 2017 and is being implemented.
The grievance redress mechanism referred to in paragraph 34 shall function to (a) review and document eligible complaints of Project stakeholders; (b) proactively address grievances; (c) provide the complainants with notice of the chosen mechanism and/or action; and (d) prepare and make available to ADB upon request periodic reports to summarize (i) the number of complaints received and resolved; (ii) chosen actions; and (iii) final outcomes of the grievances and make these reports available to ADB upon request.	PA, Schedule, Para. 35	Being complied with. GRM was established during PPTA. GRM focal points have been publicized at each construction site and nearby village. No complaint received till now.
Public Awareness and Stakeholder Communication Strategy		
FPG shall, and shall cause the Project Implementing Agencies to undertake public awareness campaigns through information disclosure, education and consultation on the project and its benefits, including but not limited to information related to the EMP, RF, RP, SDAP and GAP.	PA, Schedule, Para. 39	Being complied with.
FPG shall, and shall cause the Project Implementing Agencies to ensure the stakeholder communication plan as provided in the PAM is implemented to ensure regular information disclosure and implementation progress and to establish an information sharing mechanism for the relevant Project stakeholders.	PA, Schedule, para. 40	Being complied with.

APPENDIX 2. MONITORING DATA

A. Monitoring Method

Monitoring method and detection limit for each parameter is shown in Table A2-1.

Table A2-1 Environmental quality detection methods

Parameters	Analysis Method	Standard	Detection limit
Surface water. Technical Specifications Requirements for Monitoring of Surface (HJ/T 91-2002)			
pH	Glass electrode method	GB 6920-86	/
SS	Gravimetric method	GB 11901-89	/
COD	dichromate method	HJ 828-2017	4 mg/L
BOD_5	dilution and seeding method	HJ 505-2009	0.5 mg/L
NH_3-N	Nessler's reagent spectrometry	HJ 535-2009	0.025 mg/L
TP	Ammonium Molybdate Spectrophotometry	GB 11893-89	0.01 mg/L
Petroleum	Infrared Spectrophotometry	HJ 637-2018	0.01 mg/L
Air. Technical specifications for ambient air quality monitoring (HJ194-2017)			
PM_{10}	Gravimetric method	HJ 618-2011	0.010 mg/m3
TSP	Gravimetric method	GB/T 15432-1995	0.001 mg/m3
Noise: Environmental quality standard for noise			
Noise	Noise meter	GB 3096-2008	/

B. Datian Subproject

1. External Monitoring Agency

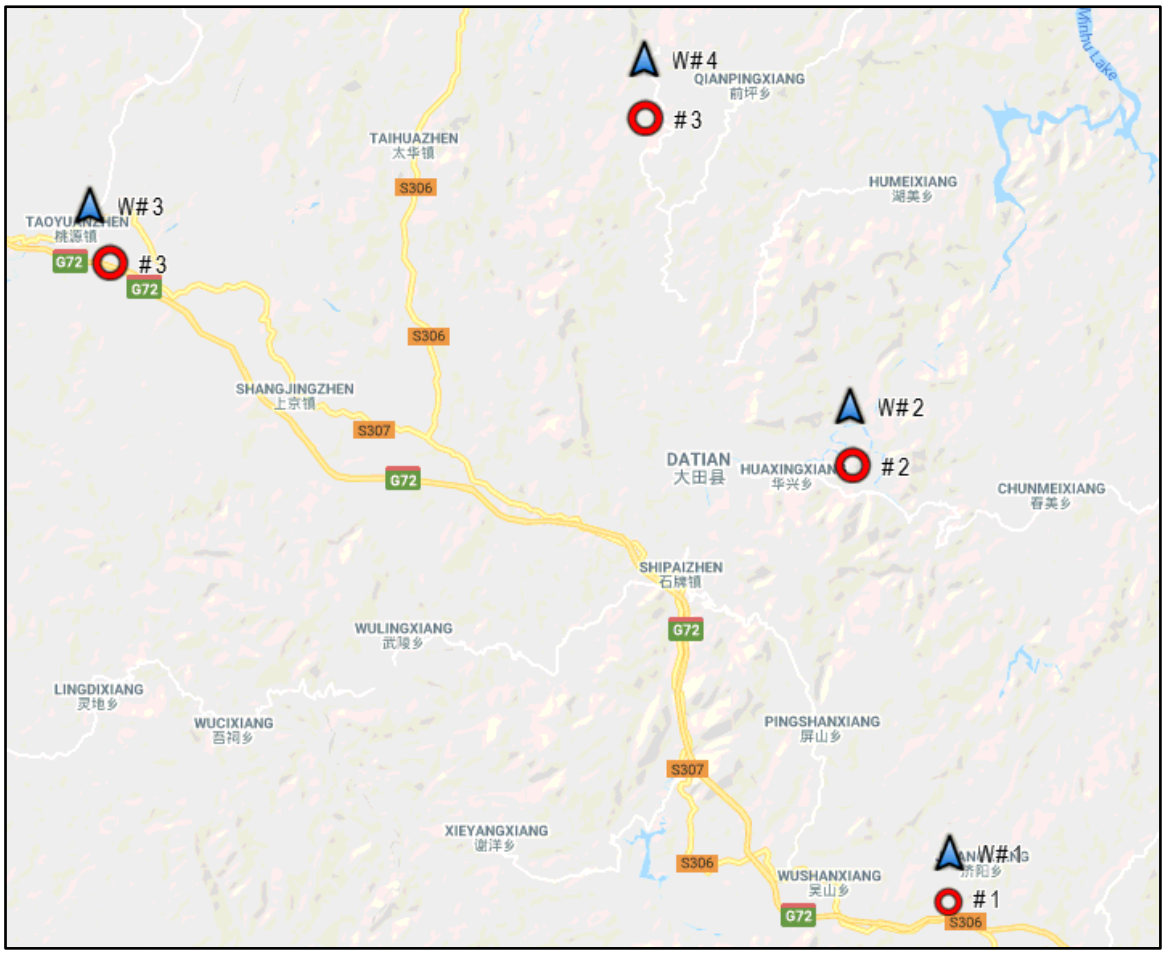
The environmental monitoring for Datian subproject was conducted by Fujian Sanming Houde Test Technology Co., Ltd which is a certificated environment monitoring company. Certification of the EMC is attached in Appendix 3.

2. Monitoring Location

The distribution of the monitoring locations for water, air, noise is shown in Table A2-2 and Figure A2-1.

Table A2-2 Monitoring locations of Datian Subproject

Item	Location	Longitude	Latitude
Surface water	#1 Jizhong village	117° 57'16.15''	25° 32'21.66''
	#2 Jingkou village	117° 54'41.22''	25° 42'44.70''
	#3 Taoyuan village	117° 35'05.63''	25° 47'32.74''
	#4 Shanchuan village	117° 49'26.66''	25° 50'35.15''
	#5 Keshan village	117.90957338°	25.56919211°
	#6Huping village	117.831148°	25.830859°
Air and Noise	#1 Jizhong village	117° 57'04.90'	25° 32'08.88'
	#2 Jingkou village	117° 54'41.24''	25° 42'43.08''
	#3 Taoyuan village	117° 35'05.10''	25° 47'32.88''
	#4 Shanchuan village	117° 49'18.30''	25° 50'40.49''
	#5 Chuanshi village	117.821741°	25.844531°
	#6 Keshan Village	117.91135746°	25.71189958°
	#7 Huping village	117.828450°	25.830461°
	#8 Jinshan village	117° 49'2.59''	25° 48'51.58''



Note: The blue triangle represents the surface water quality monitoring points; The red rings represent air quality and environmental monitoring sites.

Figure A2-1 Distribution map of the monitoring points of Datian subproject

3. Monitoring Frequency

Baseline monitoring. Baseline air quality, noise level and water quality was monitored for the Datian Subproject on 16-18 June 2019.

Monitoring conducted during previous reporting periods. Air quality and noise level was monitored on 15-17 May 2020 at Jizhong village, Taoyuan village and Chuanshi village. Water quality monitoring was not conducted. Air quality and noise level was monitored on at i) Jizhong village, Taoyuan village and Chuanshi village on 14 September 2020; ii) Jizhong village, Jingkou village and Keshan village on 16 November 2020; iii) Taoyuan village on 19 March 2021; and iv) Huping village on 25 June 2021. Water quality monitoring was conducted for i) Jingkou creek and Jizhong creek on 16 November 2020; ii) Taoyuan creek on 19 March 2021; and iii) Huping creek on 25 June 2021. Surface water quality monitoring for Jinkou creek was conducted in September 2021. Noise and air quality were monitored in September and December 2021 respectively.

Monitoring conducted during this reporting period. Surface water and air quality were monitored in Keshan Village in March 29, 2022; air and acoustic environment quality were monitored in Pinshan Village in June 14 2022.

Operation phase monitoring. Not yet due.

4. Monitoring results

a. Water quality

Water quality monitoring results is presented in Table A2-3. The results show that water quality in the monitored creeks can meet grade III of Environment Quality Standard for Surface Water (GB3838-2008).

Table A2-3 Water Quality monitoring results of Datian subproject (Unit: mg/L)

Date	Locations	Ph	COD	SS	Petroleum
Pre-construction baseline monitoring					
June 17, 2019	#1 Jizhong creek	6.9	8.89	21	<0.01
	#2 Jingkou creek	7.5	12	15	<0.01
	#3 Taoyuan creek	7.63	9.83	46	<0.01
	#4 Shanchuan creek	6.65	8.52	22	0.01
Monitoring during construction					
November 16, 2020	#1 Jizhong creek	7.72	18	12	<0.01
	#2 Jingkou creek	7.96	10	15	<0.01
	#3 Taoyuan creek	No construction activity near the creek.			
	#4 Shanchuan creek	No construction activity near the creek.			
	#5Keshan creek	7.89	8	10	<0.01
March 19, 2021	#3Taoyuan	8.19	12	13	<0.01
25 June, 2021	#6Huping	7.3	12	16	<0.01
September 29, 2021	#1 Jingkou creek	7.3	13	18	<0.01
March 29, 2022 (this reporting period)	Keshan village	7.6	10	15	4.21
Not conducted during reporting period					
Environment Quality Standard for Surface Water (GB3838-2002) Grade III		6-9	<=20	30	<=0.05

b. Air quality

Air quality monitoring results are presented in Table A2-4. The results show that air quality in all sites can meet Class II Ambient Air Quality Standard (GB3095-2012).

Table A2-4 Air Quality monitoring results of Datian subproject (Daily average: unit: μg/L)

Date	Location	TSP	PM10
Pre-construction baseline monitoring			
16-17 June 2019	#1 Jizhong	24	15
	#2 Jingkou	26	15
	#3 Taoyuan	19	11
	#4 Shanchuan	22	14
Monitoring during construction			
6-8 November 2019	#1 Jizhong	41	28
	#2 Jingkou	No construction near the site during reporting period	
	#3 Taoyuan	No construction near the site during reporting period	
	#4 Shanchuan	48	34
15-17 May 2020	#1 Jizhong	59	34
	#2 Jingkou	No construction near the site during reporting period	
	#3 Taoyuan	54	29
	#4 Shanchuan	56	32
14 September 2020	#1 Jizhong	55	33
	#3 Taoyuan	52	30
	#5 Chuanshi	58	36

16 November, 2020	#1 Jizhong	75	37
	#2 Jingkou	88	42
	#6 Keshan	82	40
19 March 2021	#3 Taoyuan	65	42
25 June 2021	#7 Huping	66	39
29 September 2021 (this reporting period)	#2 Jingkou	77	42
22 December 2021	#8 Jinshan village	65	37
March 29 2022(this reporting period)	Keshan village	72	39
June 14 2022 (this reporting period)	Pinshan village	47	35
Class II Ambient Air Quality Standard (GB3095-2012)		300	150

c. Noise

Noise monitoring results are presented in Table A2-5. The results show that noise level at boundaries of all construction sites meet with Emission Standard of Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008). Moreover, the noise levels at construction sites are similar to baseline noise levels.

Table A2-5 Noise monitoring results of Datian subproject (Unit: dB)

Date	Location	Day	Night
Pre-construction baseline monitoring			
16-17 June 2019	#1 Jizhong	54	40.3
	#2 Jingkou	54.6	39.4
	#3 Taoyuan	51.3	44.7
	#4 Shanchuan	52.3	36.8
Monitoring during construction			
14 September 2019	#1 Jizhong	50.2	44.5
	#2 Jingkou	No construction near the site during reporting period	
	#3 Taoyuan	No construction near the site during reporting period	
	#4 Shanchuan	50.0	43.9
15-17 May 2020	#1 Jizhong	43.5	42.5
	#2 Jingkou	No construction near the site during reporting period	
	#3 Taoyuan	45.3	44.2
	#4 Shanchuan	44.6	43.8
14 September 2020	#1 Jizhong	44.5	42.8
	#3 Taoyuan	45.7	43.1
	#Chuanshi	45.1	43.6
16 November, 2020	#1 Jizhong	49.8	45.7
	#2 Jingkou	50.8	46.6
	#6 Keshan	47.9	41.9
19 March, 2021	#3 Taoyuan	51.6	48.8
25 June, 2021	#7 Huping	52	45.7
29 September 2021	#2 Jingkou	53.8	48.2
22 December 2021	# Jinshan	46.2	44.7
June 14 2022 (this reporting period)	Pinshan village	49.6	47.4
Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008)		60	50

C. Wuyishan Subproject

1. External Monitoring Agency

The environmental monitoring for Wuyishan subproject was conducted by Fujian Zhongke Test Technology Co., Ltd which is a certificated environment monitoring company. Certification of the EMC is attached in Appendix 3.

2. Monitoring Location

The distribution of the monitoring locations for water, air, noise is shown in Table A2-6 and Figure A2-2.

Table A2-6 Monitoring Locations of Wuyishan Subproject

Item	Location	Longitude	Latitude
Surface water	#1 upstream of Wufu Creek	118°12′43.93″E	27°36′43.23″N
	#2 Down stream of Wuxi Creek	118°12′27.42″E	27°36′33.60″N
	#3 Wongdun Creek	118°12′02.95″E	27°37′31.70″N
	#4 Guting Creek	118°13′13.50″E	27°37′55.12″N
Air and noise	#1 Wongdun village	Not indicated in the monitoring report.	Not indicated in the monitoring report.
	#2 Xingxian village		
	#3 Wuyi village		
	#4 Wufu village		
	#5 Tianwei village		
	#6 Diancun village		

Figure A2-2 Map of Monitoring Sites of Wuyishan subproject

3. Monitoring Frequency

Baseline. Air quality, water quality and noise level baseline monitoring for Wuyishan subproject was conducted on 13- 14 March 2019.

Monitoring conducted during previous reporting periods. Air and noise were monitored quarterly on 10-11 January 2020 and 13-14 April 2020, water quality was monitored semi-annually on 13 April 2020, 4 times each day.

Monitoring conducted during this reporting period. None as construction completed.

Operation phase monitoring. Air, surface water and acoustic environment were monitored in November 2021.

4. Monitoring Results

a. Water Quality

Water quality monitoring results are presented in Table A2-7. The results show that water quality during construction can meet Grade III of Environment Quality Standard for Surface Water (GB3838—2002).

Table A2-7 Water Quality Monitoring Results of Wuyishan subproject (unit: mg/m^3 except pH)

Date	Location	Results						
		pH	COD	SS	Petro-leum	NH_3-N	BOD	TP
Pre-construction baseline monitoring								
13-14 Mar. 2019	#1 Upstream of Wufu creek	7.01-7.04	12-14	11-14	<0.01			
	#2 Down stream of Wufu creek	7.19-7.27	17-20	17-20	<0.01			
	#3 Wongdun creek	7.07-7.11	14-16	12-14	<0.01			
	#4 Guting creek	7.01-7.09	11-14	12-13	<0.01			
Monitoring during construction								
19 Nov. 2019	#1 Upstream of Wufu creek	7.15	13	14	<0.01			
	#2 Down stream of Wufu creek	7.28	16	17	<0.01			
13 April 2020	#1 Upstream of Wufu creek	7.01-7.06	12-14	11-13	<0.01	0.067-0.075	1.8-2.2	0.01
	#2 Down stream of Wufu creek	7.19-7.24	17-20	17-19	<0.01	0.128-0.139	2.1-2.7	0.02-0.03
	#3 Wongdun creek	7.09-7.11	14-16	11-14	<0.01	0.064-0.077	2.2-2.7	0.01
	#4 Guting creek	7.02-7.06	11-14	12-13	<0.01	0.098-0.116	1.8-2.7	0.01
Monitoring during operation								
22 Nov 2021	#1 Upstream of Wufu creek	7.16	13	14	<0.01			
	#2 Down stream of Wufu creek	7.27	16	16	<0.01			
Environment Quality Standard for Surface Water (GB3838-2002) Grade III		6-9	<=20	<=30	<=0.05	<=1.0	<=4.0	<=0.2

b. Air Quality

Air quality monitoring results are presented in Table A2-8. The results show that air quality during construction can meet Class II Ambient Air Quality Standard (GB3095-2012). The concentration of TSP and PM_{10} during construction is similar to that of the baseline.

Table A2-8 Air Quality Monitoring Results of Wuyishan subproject (Daily average, unit: μg/m³)

Date	Location	TSP	PM_{10}
Pre-construction baseline monitoring			
13-14 March 2019	#1 Wongdun village	74-79	40-43
	#2 Xingxian village	73-77	38-43
	#3 Wuyi village	78-81	41
	#4 Wufu village	75-84	37-42
	#5 Tianwei village	83-88	49-51
	#6 Diancun village	76-82	58-64
Monitoring during construction			
19-20 November 2019	#1 Wongdun village	74-80	42-44
	#2 Xingxian village	82-85	50-51
	#3 Wuyi village	77-84	43-48
	#4 Wufu village	73-87	38-39
	#5 Tianwei village	81-88	40-42
	#6 Diancun village	79	57-59
10-11 January 2020	#1 Wongdun village	72-76	41-42
	#2 Xingxian village	76-77	34-44
	#3 Wuyi village	76-79	41
	#4 Wufu village	75-81	36-42
	#5 Tianwei village	85	44-47
	#6 Diancun village	76-84	56-61
13-14 April 2020	#1 Wongdun village	74-78	41-42
	#2 Xingxian village	73-76	38-43
	#3 Wuyi village	78-81	41
	#4 Wufu village	75-84	36-42
	#5 Tianwei village	83-88	48-49
	#6 Diancun village	76-82	55-62
22-23 Nov 2021 (this reporting period)	#1 Wongdun village	73-78	40-43
	#2 Xingxian village	74-75	38-43
	#3 Wuyi village	78-80	41
	#4 Wufu village	75-83	37-42
	#5 Tianwei village	83-87	49-51
	#6 Diancun village	75-81	58-64
Class II Ambient Air Quality Standard (GB3095-2012)		300	150

c. Noise

Noise monitoring results are presented in Table A2-9. The results show that noise level at all construction sites meet Emission Standard of Environment Noise for Boundary of Construction Site (GB12523-2011). Moreover, the noise levels at construction sites are similar to baseline noise levels.

Table A2-9 Noise monitoring results of Wuyishan subproject (unit: dB(A))

Date	Location	Daytime	Night time
Pre-construction baseline monitoring			
13-14 March 2019	#1 Wongdun village	53.8	42.8
	#2 Xingxian village	51.8	43.3
	#3 Wuyi village	53.7	42.1

Date	Location	Daytime	Night time
	#4 Wufu village	54.2	43.6
	#5 Tianwei village	53.9	44.1
	#6 Diancun village	51.3	42.3
Monitoring during construction			
19 November 2019	#1 Wongdun village	53.8	43.1
	#2 Xingxian village	52.4	42.9
	#3 Wuyi village	53.2	41.8
	#4 Wufu village	53.4	42.7
	#5 Tianwei village	53.1	43.8
	#6 Diancun village	52.0	42.2
10 January 2020	#1 Wongdun village	54.2	42.4
	#2 Xingxian village	51.5	42.1
	#3 Wuyi village	53.1	42.1
	#4 Wufu village	54.2	42.6
	#5 Tianwei village	51.9	45.1
	#6 Diancun village	51.7	42.9
13 April 2020	#1 Wongdun village	53.8	42.6
	#2 Xingxian village	50.4	42.8
	#3 Wuyi village	51.6	42.1
	#4 Wufu village	54.2	44.6
	#5 Tianwei village	51.9	45.1
	#6 Diancun village	52.3	43.5
22-23 Nov 2021 (this reporting period)	#1 Wongdun village	53.8	43.1
	#2 Xingxian village	51.9	43.1
	#3 Wuyi village	53.4	42.1
	#4 Wufu village	54.2	43.4
	#5 Tianwei village	53.2	44.5
	#6 Diancun village	51.4	42.4
Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008)		60	50

D. Yongding Subproject

1. External Monitoring Agency

The environmental monitoring for Yongding subproject was conducted by Fujian Zhongkai Test Technology Co., Ltd which is a certificated environment monitoring company. Certification of the EMC is attached in Appendix 3.

2. Monitoring Location

The distribution of the monitoring locations for water, air, noise is shown in Table A2-10 and Figure A2-3.

Table A2-10 List of Monitoring Locations of Yongding Subproject

Item	Location
Surface water	#1 Oil tea base
	#2 Oil tea base
	#3 Vegetable base
Air and noise	#1 Oil tea base
	#2 Oil tea base
	#3 Vegetable base
	#4 Farmland
	#5 Wuyin village

Figure A2-3 Monitoring location of Yongding subproject

3. Monitoring Frequency

Baseline monitoring. No baseline monitoring was conducted due to delay of EMC engagement.

Monitoring conducted during previous reporting periods. Air quality, water quality and noise monitoring for Yongding subproject was conducted on 4-5 November 2019.

Monitoring conducted during this reporting period. None as no construction activities in this reporting period.

Operation phase monitoring. Not yet due.

4. Monitoring results

a. Water quality

Domestic wastewater quality monitoring was conducted at 3 construction bases. Monitoring results is presented in Table A2-11. The monitoring results show that water quality can meet the grade III of Environment Quality Standard of Surface Water.

Table A2-11 Water Quality Monitoring Results of Yongding subproject (Unit: mg/m^3 except pH)

Location	pH	COD_{cr}	SS	Petroleum
Monitoring during construction				
1# Oil tea base	7.41	4	5	0.01L
2# Oil tea base	6.66	5	8	0.01L
3# Vegetable base	7.27	6	6	0.01L
Environment Quality Standard of Surface Water (GB3838—2002) Grade III	6-9	<=20	30	<=0.05

b. Air quality

Air quality monitoring results are presented in Table A2-12. Monitoring results show that air quality can meet Class II of Ambient Air Quality Standard (GB3095-2012).

Table A2-12 Air Quality Monitoring Results of Yongding subproject (Daily average, unit: μg/m^3)

Date	Location	TSP	PM_{10}
Monitoring during construction			
4-5 November 2019	#1 Oil tea base	117	40
	#2 Oil tea base	173	58
	#3 Vegetable base	115	45
	#4 Farmland	138	53
	#5 Wuyin village	97	37
Class II Ambient Air Quality Standard (GB3095-2012)		300	150

c. Noise

Nosie monitoring results are presented in Table A2-13.

Table A2-13 Noise monitoring results of Yongding subproject (unit: dB(A))

Date	Location	Daytime	Night time
Monitoring during construction			
4 November 2019	#1 Oil tea base	38.9	NA
	#2 Oil tea base	41.3	NA
	#3 Vegetable base	53.08	NA
	#4 Farmland	43.0	NA
	#5 Wuyin village	43.6	NA
Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008)		60	50

The results show that noise level at all construction sites meet Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008).

E. Jiaocheng Subproject

1. External Monitoring Agency

The environmental monitoring for Jiaocheng subproject was conducted by Fujian Zhongke Test Technology Co., Ltd which is a certificated environment monitoring company. Certification of the EMC is attached in Appendix 3.

2. Monitoring Location

The distribution of the monitoring locations is shown in Figure A2-4.

3. Monitoring Frequency

Baseline. There is no residential area near the Jiaocheng subproject site. Thus, no air and noise monitoring is needed. Baseline water quality was monitored for the subproject one month before construction on 20 November 2017.

Monitoring during construction. During construction period from end of 2017 to March 2019, water quality monitoring was conducted semi-annually.

Monitoring during operation. All civil work has been completed in March 2019 and the subproject entering operation stage since then. During this reporting period, on 18 September 2019, water quality monitoring was conducted during the first year of subproject operation at two sections of Huotong River, and on 7 January 2020, monitoring for the second year of subproject operation was completed.

Monitoring conducted during this reporting period. The subproject was completed, and no environmental monitoring is needed.

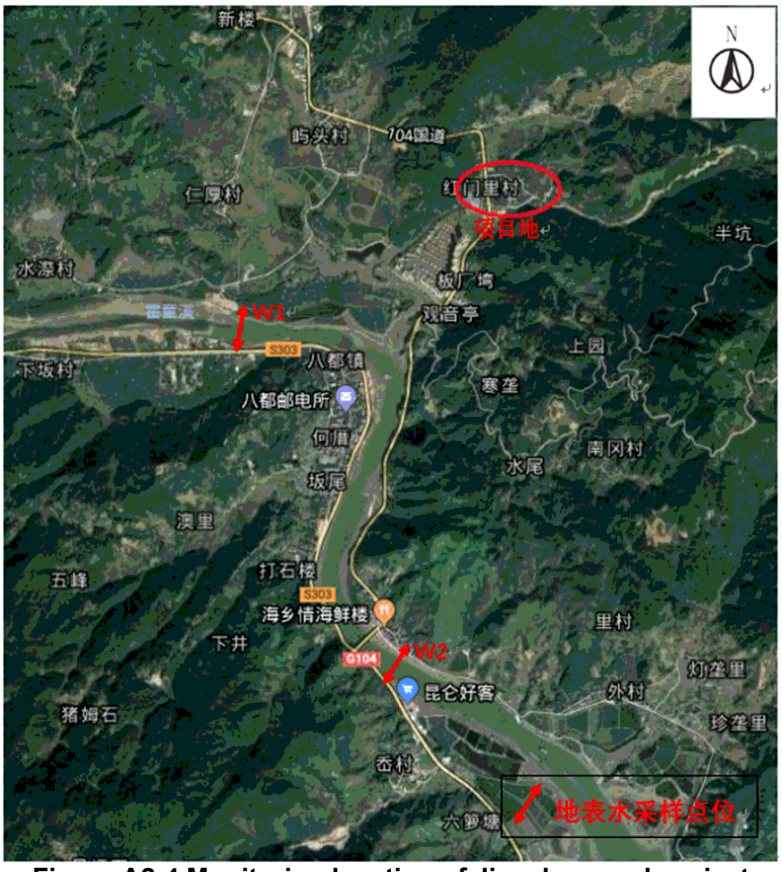


Figure A2-4 Monitoring location of Jiaocheng subproject

4. Monitoring Results

Monitoring results are presented in Table A2-14. Monitoring results showed that the water quality at monitoring section of Huotong River can meet the Grade III of Environment Quality Standard of Surface Water (GB3838-2002). The water quality during construction and during operation has no big difference comparing with the baseline water quality. Implementation of the subproject has no impact on the water quality.

Table A2-14 Water Quality Monitoring Results of Jiaocheng subproject (unit: mg/m3 except pH)

Monitoring date/time	Location/ River section	Monitoring results(mg/L, except pH			
		pH	COD	SS	Petroleum
Pre-construction baseline monitoring					
20 Nov 2017	Upstream of Huotong River	6.82	14	15	0.02
	Downstream of Huotong River	7.02	16	17	0.02
Water monitoring during construction					

Monitoring date/time	Location/ River section	Monitoring results(mg/L, except pH			
		pH	COD	SS	Petroleum
21 June 2018	Upstream of Huotong River	6.80	15	16	0.02
	Downstream of Huotong River	7.00	16	16	0.02
23 Nov 2018	Upstream of Huotong River	6.76	15	16	0.02
	Downstream of Huotong River	6.98	18	18	0.03
Water monitoring during operation					
18 September 2019	Upstream of Huotong River	6.18	14	13	0.03
	Downstream of Huotong River	6.95	16	15	0.04
7 Jan 2020	Upstream of Huotong River	6.92	17	16	0.03
	Downstream of Huotong River	6.85	15	14	0.02
Environment Quality Standard of Surface Water (GB3838—2002) Grade III		6-9	<=20	30	<=0.05

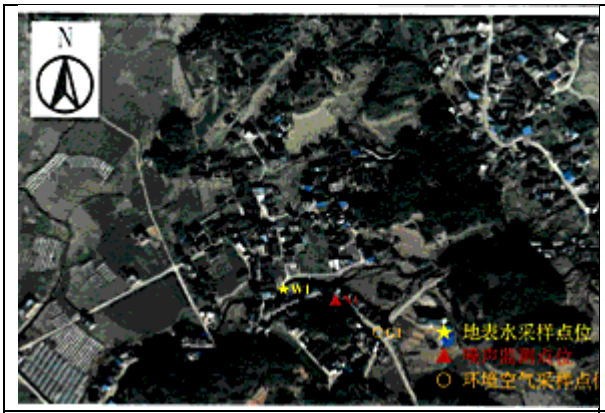
F. Fu'an Subproject

1. External Monitoring Agency

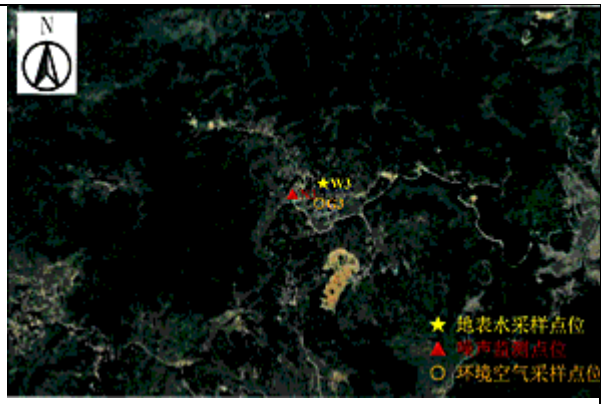
The environmental monitoring for Jiaocheng subproject was conducted by Fujian Zhongke Test Technology Co., Ltd which is a certificated environment monitoring company. Certification of the EMC is attached in Appendix 3.

2. Monitoring Location

The distribution of the monitoring locations is shown in Figure A2-5.



Xianling village



Wangjia village

Xikou village | Sampling photos

Figure A2-5 Monitoring locations of Fu'an subproject

3. Monitoring Frequency

Baseline monitoring. Baseline monitoring for air quality, noise level and water quality was monitored for the Fu'an Subproject on 25 November 2019.

Monitoring conducted during previous reporting periods. There is no construction during first quarter of this year due to COVID-19 impact. Air, noise and water were monitored on 20 June 2020. Air, acoustic environment and water quality were monitored at Xinling village, Xikou village and Wangjia village on 23 September 2020.

Monitoring conducted during this reporting period. None as no construction activities in this reporting period.

Monitoring during operation. Not yet due.

4. Monitoring Results

a. Water quality

Water quality monitoring results are presented in Table A2-15. The results show that water quality during construction can meet Grade III of Environment Quality Standard for Surface Water (GB3838-2002).

Table A2-15 Water Quality monitoring results of Fu'an subproject (Unit: mg/L)

Date	Locations	pH	COD	SS	Petroleum
Pre-construction baseline monitoring					
25 November 2019	#1 Xianling village	7.05	36	13	0.02
	#2 Xikou village	6.88	9	10	0.02
	#3 Wangjia village	7.12	13	16	0.03
Monitoring during construction					
20 June 2020	#1 Xianling village	7.09	18	14	0.02
	#2 Xikou village	7.16	9	8	0.02
	#3 Wangjia village	7.04	11	16	0.03
23 September 2020 (this reporting period)	#1 Xianling village	7.10	30	16	0.03
	#2 Xikou village	7.02	8	11	0.01
	#3 Wangjia village	7.20	10	19	0.04

Environment Quality Standard for Surface Water (GB3838—2002) Grade III	6-9	<=20	30	<=0.05

b. Air quality

Air quality monitoring results are presented in Table A2-16. The results show that air quality during construction can meet Class II Ambient Air Quality Standard (GB3095-2012).

Table A2-16 Air Quality Monitoring Results of Fu'an subproject (Daily average, unit: μg/m^3)

Date	Location	TSP	PM_{10}
Pre-construction baseline monitoring			
25 November 2019	#1 Xianling village	79	47
	#2 Xikou village	82	61
	#3 Wangjia village	73	56
Monitoring during construction			
20 June 2020	#1 Xianling village	70	41
	#2 Xikou village	74	50
	#3 Wangjia village	65	46
23 September 2020(this reporting period)	#1 Xianling village	68	47
	#2 Xikou village	75	53
	#3 Wangjia village	61	42
Class II Ambient Air Quality Standard (GB3095-2012)		300	150

c. Noise

Noise monitoring results are presented in Table A2-17. The results show that noise level at all sites meet Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008).

Table A2-17 Noise monitoring results of Fu'an subproject (Unit: dB)

Date	Location	Day	Night
Pre-construction baseline monitoring			
25 November 2019	#1 Xianling village	52.6	42.1
	#2 Xikou village	51.8	42.5
	#3 Wangjia village	53.1	41.3
Monitoring during construction			
20 June 2020	#1 Xianling village	52.9	43.4
	#2 Xikou village	51.7	44.1
	#3 Wangjia village	50.8	42.9
23 September 2020 (this reporting period)	#1 Xianling village	53.7	43.2
	#2 Xikou village	50.2	43.9
	#3 Wangjia village	51.8	42.5
Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008)		60	50

G. Pinghe Subproject

1. External Monitoring Agency

The environmental monitoring for Pinghe subproject was conducted by Fujian Keyi Test Technology Co., Ltd which is a certificated environment monitoring company. Certification of the EMC is attached in Appendix 3.

2. Monitoring Location

The distribution of the monitoring locations is shown in Table A2-18 and Figure A2-6.

Table A2-18 List of Monitoring Locations of Pinghe Subproject

Item	Location	Latitude	Longitude
Water	W1	24.278714ºN	117.328856ºE
	W2	24.281321ºN	117.343651ºE
Air and noise	#1 Lianguang village		
	#2 Dongdeng village		
	#3 Guizhu village		
	#4 Xinnan village		
	#5 Sankeng village		
	#6 Meishan village		

Figure A2-6 Monitoring locations of Pinghe Subproject

3. Monitoring Frequency

Baseline monitoring. Air quality, noise level and water quality was monitored for the Pinghe Subproject on 16 November 2019.

Monitoring during previous reporting periods. In the first quarter of 2020, due to the impact of COVID-19, there was no civil construction, so no environmental monitoring was carried out. In the second quarter of 2020, air quality (3 days), noise level (1day) and water quality (1day)

were monitored on 21-23 June 2020. Air, noise level and water quality were monitored in 14-15 August 2021.

Monitoring during this reporting period. Surface water quality, air quality and noise were monitored in 13-14 February 2022.

Monitoring during operation. Not yet due.

4. Monitoring Results

a. Water quality

Water quality monitoring results are presented in Table A2-19. The results show that baseline water quality before construction is high in petroleum. The pH value is lower than 6.0 which mean the water quality is acidic. Baseline water quality cannot meet Grade III of Environment Quality Standard for Surface Water (GB3838-2002).

During construction, water quality can meet Grade III of Environment Quality Standard for Surface Water (GB3838-2002).

Table A2-19 Water Quality monitoring results of Pinghe subproject (Unit: mg/L)

Date	Locations	pH	COD	SS	Petroleum	lmn
Pre-construction baseline monitoring						
16 November 2019	#1 W1	5.7	2.2	13	0.31	/
	#2 W2	5.82	1.7	28	0.02	/
Monitoring during construction						
21 June 2020	#1 W1	5.94	NA	15	0.04	2.0
	#2 W2	6.02	NA	24	0.03	1.5
19 December 2020	#1 W1	6.62	18	13	0.03	/
	#2 W2	7.12	14	14	0.04	/
30 January 2021	#1 W1	6.94	18	13	0.04	/
	#2 W2	7.19	10	14	0.03	/
15 May 2021	#1 W1	6.93	18	12	0.04	/
	#2 W2	7.07	15	14	0.04	/
14 August 2021	#1 W1	6.89	20	18	0.02	/
	#2 W2	6.92	14	15	0.03	/
13 Feb 2022 (this reporting period)	Huashan creek	6.9	29	14	0.01	/
Environment Quality Standard for Surface Water (GB3838—2002) Grade III		6-9	<=20	30	<=0.05	/

b. Air quality

Air quality monitoring results are presented in Table A2-20. The results show that baseline air quality can meet Class II Ambient Air Quality Standard (GB3095-2012).

Table A2-20 Air Quality Monitoring Results of Pinghe subproject (Daily average, unit: μg/m^3)

Date	Location	TSP	PM_{10}
Pre-construction baseline monitoring			
16-17 November 2019	#1 Lianguang village	86	71-72
	#2 Dongdeng village	84-85	72-74
	#3 Guizhu village	84-87	73-74
	#4 Xinnan village	85	72-72

Date	Location	TSP	PM_{10}
	#5 Sankeng village	84-86	71-73
	#6 Meishan village	84-86	71-73
Monitoring during construction			
21-23 June 2020	#1 Lianguang village	No construction	No construction
	#2 Dongdeng village	83-89	67-79
	#3 Guizhu village	85-91	72-78
	#4 Xinnan village	87-92	69-73
	#5 Sankeng village	No construction	No construction
	#6 Meishan village	No construction	No construction
17-18 October 2020	#2 Dongdeng village	77-78	33-34
	#3 Guizhu village	71-76	31-32
	#4 Xinnan village	72-76	29-33
19-20 December 2020	#2 Dongdeng village	78-79	34-35
	#3 Guizhu village	75-76	31-32
	#4 Xinnan village	75-77	32-33
	#5 Sankeng village	74-78	30-34
	#6 Meishan village	72-73	29-30
30-31 January 2021	#2 Dongdeng village	78-79	34-35
	#3 Guizhu village	75-76	31-33
	#4 Xinnan village	74-79	32-35
	#5 Sankeng village	75-79	30-35
	#6 Meishan village	73-74	29-34
15-16 May 2021	#2 Dongdeng village	77-78	33
	#3 Guizhu village	72-74	30
	#4 Xinnan village	73-78	30-33
	#5 Sankeng village	70-75	31-32
	#6 Meishan village	76-77	32-33
14-15 August 2021	#2 Dongdeng village	68-69	33
	#3 Guizhu village	70-71	35-36
	#4 Xinnan village	76-78	29-35
	#5 Sankeng village	68-75	30-35
	#6 Meishan village	73-75	35-36
Feb 13 2022 (this reporting period)	Xilin village	59	34
	Lianguang village	67	38
	Xinqiao village	63	31
	Chankeng village	66	32
	Dongkeng village	68	37
Class II Ambient Air Quality Standard (GB3095-2012)		300	150

c. Noise

Noise monitoring results are presented in Table A2-21.

Table A2-21 Noise monitoring results of Pinghe subproject (Unit: dB)

Date	Location	Day	Night
Pre-construction baseline monitoring			
16 November 2019	#1 Lianguang village	57	NA
	#2 Dongdeng village	57	
	#3 Guizhu village	57	
	#4 Xinnan village	58	
	#5 Sankeng village	58	
	#6 Meishan village	53	
Monitoring during construction			
21 June 2020	#1 Lianguang village	No construction	NA
	#2 Dongdeng village	56	
	#3 Guizhu village	56	
	#4 Xinnan village	57	

	#5 Sankeng village	No construction	
	#6 Meishan village	No construction	
17 October 2020	#2 Dongdeng village	58.3	
	#3 Guizhu village	56.8	
	#4 Xinnan village	59.4	
19 December 2020	#2 Dongdeng village	57.2	
	#3 Guizhu village	58.6	
	#4 Xinnan village	56.9	
	#5 Sankeng village	59.4	
	#6 Meishan village	55.9	
30 January 2021	#2 Dongdeng village	56.2	
	#3 Guizhu village	56.4	
	#4 Xinnan village	57.4	
	#5 Sankeng village	56.9	
	#6 Meishan village	55.8	
15 May 2021	#2 Dongdeng village	57.3	
	#3 Guizhu village	55.8	
	#4 Xinnan village	56.4	
	#5 Sankeng village	58.1	
	#6 Meishan village	57.9	
14 August 2021	#2 Dongdeng village	58.6	
	#3 Guizhu village	56.4	
	#4 Xinnan village	57.3	
	#5 Sankeng village	56.8	
	#6 Meishan village	58.5	
Feb 13 2022 (this reporting period)	Xilin village	55	/
	Lianguang village	55	/
	Xinqiao village	57	/
	Chankeng village	55	/
	Dongkeng village	54	/
Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008)		60	50

The results show that noise level at all sites meet Emission Standard of Environment Noise for Boundary of Construction Site (GB12523-2011).

H. Ninghua Subproject

1. External Monitoring Agency

The environmental monitoring for Ninghua subproject was conducted by Sanming Houde Test Technology Co., Ltd which is a certificated environment monitoring company. Certification of the EMC is attached in Appendix 3.

2. Monitoring Location

The distribution of the monitoring locations is shown in Table A2-22.

Table A2-22 List of Monitoring Locations of Ninghua Subproject

Item	Location	Latitude	Longitude
Water	East creek	26º20’11.39”N	116º43’30.32”E
	West creek	26º15’35.84”N	116º36’12.25”E
Air and noise	#1 Wuceng village	26º17’47.48”N	116º35’19.42”E
	#2 Lianshe village	26º20’09.85”N	116º43’39.07”E

3. Monitoring Frequency

Baseline monitoring. Air quality, noise level and water quality was monitored for the Ninghua Subproject on 24 July 2019.

Monitoring during construction. In the first quarter of 2020, due to the impact of COVID-19, there was no civil construction, so no environmental monitoring was carried out. In the second quarter of 2020, air quality (2 days), noise level and water quality were monitored on 19-20 May 2020.

Monitoring conducted during this reporting period. None as no construction activities in this reporting period.

Operation phase monitoring. Air, water and acoustic environment quality were monitored in July 28, 2021. No monitoring is needed in this reporting period.

4. Monitoring Results

a. Water quality

Water quality monitoring results are presented in Table A2-23. The results show that baseline SS concentration is high in East creek and West creek. Baseline water quality cannot meet Grade III of Environment Quality Standard for Surface Water (GB3838—2002).

During construction, SS concentration in West creek is high which exceed the limit defined in Grade III of Environment Quality Standard for Surface Water (GB3838—2002).

Table A2-23 Water Quality monitoring results of Ninghua subproject (Unit: mg/L)

Date	Locations	pH	COD	SS	Petroleum
Pre-construction baseline monitoring					
24 July 2019	#1 East creek	7.19	7.94	38	0.04
	#2 West creek	7.02	8.58	33	0.04
Monitoring during construction					
19-20 May 2020	#1 East creek	7.04	17	24	0.03
	#2 West creek	7.14	20	40	0.03
Monitoring during operation					
28 July 2021	#1 East creek	7.4	15	11	<0.01
	#2 West creek	7.3	12	12	<0.01
Not construction initiated during reporting period					
Environment Quality Standard for Surface Water (GB3838—2002) Grade III		6-9	<=20	30	<=0.05

b. Air quality

Baseline air quality was conducted at two environment sensitive locations near proposed construction sites. Air quality monitoring results are presented in Table A2-24. The results show that baseline air quality is very good and can meet Class II Ambient Air Quality Standard (GB3095-2012).

During reporting period, air quality can meet Class II Ambient Air Quality Standard (GB3095-2012).

Table A2-24 Air Quality Monitoring Results of Ninghua subproject (Daily average, unit: μg/m^3)

Date	Location	TSP	PM_{10}
Pre-construction baseline monitoring			

Date	Location	TSP	PM_{10}
24 July 2019	#1 Wuceng village	23	17
	#2 Lianshe village	28	22
Monitoring during construction			
19-20 May 2020	#1 Wuceng village	74-79	44-47
	#2 Lianshe village	77-86	38-52
Monitoring during operation			
28 July 2021	#1 Wuceng village	98	43
	#2 Lianshe village	93	41
Class II Ambient Air Quality Standard (GB3095-2012)		300	150

c. Noise

Noise monitoring results are presented in Table A2-25. The results show that noise level at all sites meet Emission Standard of Environment Noise for Boundary of Construction Site (GB12523-2011).

Table A2-25 Noise monitoring results of Ninghua subproject (Unit: dB)

Date	Location	Day	Night
Pre-construction baseline monitoring			
24 July 2019	#1 Wuceng village	42	39
	#2 Lianshe village	52	50
Monitoring during construction			
19 May 2020	#1 Wuceng village	44	43
	#2 Lianshe village	50	47
Monitoring during operation			
28 July 2021	#1 Wuceng village	49.3	46.0
	#2 Lianshe village	43.8	42.5
Class 2 of Ambient Acoustic Environment Standard (GB 3096-2008)		60	50

I. Xinluo Subproject

1. External Monitoring Agency

The environmental monitoring for Xinluo subproject was conducted by Fujian Huafei Test Technology Co., Ltd which is a certificated environment monitoring company.

2. Monitoring Location

The distribution of the monitoring locations is shown in Table A2-26 and Figure A2-7.

Table A2-26 List of Monitoring Locations of Xinluo Subproject

Item	Location
Water	Shizhong creek
Air	#1 Zhongxi village
	#2 Zhongxin village
Noise	N1 North boundary
	N2 East boundary
	N3 South boundary
	N4 West boundary

Figure A2-7 Monitoring locations of Xinluo Subproject

3. Monitoring Frequency

Baseline monitoring. Air quality, noise level and water quality was monitored for the Xinluo Subproject on 20 February 2020.

Monitoring during previous reporting periods. In the first quarter of 2020, due to the impact of COVID-19, there was no civil construction, so no environmental monitoring was carried out. In the second quarter of 2020, air quality, noise level and water quality were monitored on 23-27 May 2020. Water quality of Shizhong creek was monitored on 10 September 2020. Noise and air quality were monitored at Zhongxi village and Zhongxin village on September and November 2020 respectively.

Monitoring conducted during this reporting period. None as no construction activities in this reporting period.

Operation phase monitoring. Not yet due.

4. Monitoring Results

a. Water quality

Water quality monitoring results are presented in Table A2-27. The results show that baseline COD concentration in Shizhong creek is high that cannot meet Grade III of Environment Quality Standard for Surface Water (GB3838—2002).

During construction, COD concentration in Shizhong creek is high which exceeds the limit defined in Grade III of Environment Quality Standard for Surface Water (GB3838—2002). This is mainly because the baseline COD concentration is high. The monitoring results on September 2020 showed all monitored indicators complied with the requirements of Grade III of GB 3838-2002).

Table A2-27 Water Quality monitoring results of Xinluo subproject (Unit: mg/L)

Date	Locations	pH	COD	SS	Petroleum
Pre-construction baseline monitoring					
20 Feb 2020	Shizhong creek	6.67	30	20	0.01
Monitoring during construction					
24 May 2020	Shizhong creek	6.73	30	20	0.01
10 Sep 2020 (this reporting period)	Shizhong creek	7.05	4L	5	0.01
Environment Quality Standard for Surface Water (GB3838-2002) Grade III		6-9	<=20	30	<=0.05

b. Air quality

Air quality monitoring results are presented in Table A2-28. The results show that baseline air quality can meet Class II Ambient Air Quality Standard (GB3095-2012).

During reporting period, air quality can meet Class II Ambient Air Quality Standard (GB3095-2012).

Table A2-28 Air Quality Monitoring Results of Xinluo subproject (Daily average, unit: μg/m3)

Date	Location	TSP	PM_{10}
Pre-construction baseline monitoring			
20 Feb 2020	#1 Zhongxi village	53	38
	#2 Zhongxin village	51	30
Monitoring during construction			
10-11 Sep 2020 (this reporting period)	#1 Zhongxi village	65-69	20-22
	#2 Zhongxin village	32-38	41-47
29-30 Nov 2020(this reporting period)	#1 Zhongxi village	40-45	21-24
	#2 Zhongxin village	51-55	31-38
Class II Ambient Air Quality Standard (GB3095-2012)		300	150

c. Noise

Noise monitoring results are presented in Table A2-29. The results show that noise level at all sites meet Emission Standard of Environment Noise for Boundary of Construction Site (GB12523-2011).

Table A2-29 Noise monitoring results of Xinluo subproject (Unit: dB)

Date	Location	Day	Night
Pre-construction baseline monitoring			
20 Feb 2020	#1 North boundary	68	
	#2 East boundary	67	
	#3 South boundary	66	
	#4 West boundary	66	
Monitoring during construction			
23 May 2020	#1 North boundary	67	
	#2 East boundary	68	
	#3 South boundary	67	
	#4 West boundary	65	
10 Sep 2020	#1 North boundary	64.7	
	#2 East boundary	65.6	
	#3 South boundary	62.8	
	#4 West boundary	66.2	
29 Nov 2020	#1 North boundary	61.7	
	#2 East boundary	60.1	
	#3 South boundary	59.8	
	#4 West boundary	60.3	
Environment noise standard for boundary of construction site (GB 12523-2011)		70	55

APPENDIX 3. EMC CERTIFICATES

检验检测机构
资质认定证书
副本

证书编号：181312050007

名称：福建三明厚德检测技术有限公司

地址：福建省三明市三元区长安路21号4幢四层1号

经审查，你机构已具备国家有关法律、行政法规规定的基本条件和能力，现予批准，可以向社会出具具有证明作用的数据和结果，特发此证。资质认定包括检验检测机构计量认证。
检验检测能力及授权签字人见证书附表。
你机构对外出具检验检测报告或证书的法律责任由福建三明厚德检测技术有限公司承担。

许可使用标志
181312050007

发证日期：2018年1月11日
有效日期：2024年1月10日
发证机关：福建省质量技术监督局

本证书由国家认证认可监督管理委员会监制，在中华人民共和国境内有效。

Certification of Datian Subproject EMC - Fujian Sanming Houde Environmental Test Technology Co. Ltd

检验检测机构
资质认定证书

证书编号：171320340047

名称：福建中[illegible]

地址：福州市仓[illegible]建新镇金山工业区金华路6号3#第五层501～502

经审查，你机构已具备国家有关法律、行政法规规定的基本条件和能力，现予批准，可以向社会出具具有证明作用的数据和结果，特发此证。资质认定包括检验检测机构计量认证。
检验检测能力及授权签字人见证书附表。

许可使用标志

发证日期：2017年3月16日
有效期至：2023年3月14日
发证机关：福建省质量技术监督局

本证书由国家认证认可监督管理委员会监制，在中华人民共和国境内有效。

Certification of Yongding Subproject EMC - Fujian Zhongkai Environmental Test Technology Co. Ltd

检验检测机构
资质认定证书

证书编号151312052004

名称：厦门科仪检测技术有限公司

地址：厦门火炬高新区（翔安）产业区翔星路88号台湾科技企业育成中心W803D室

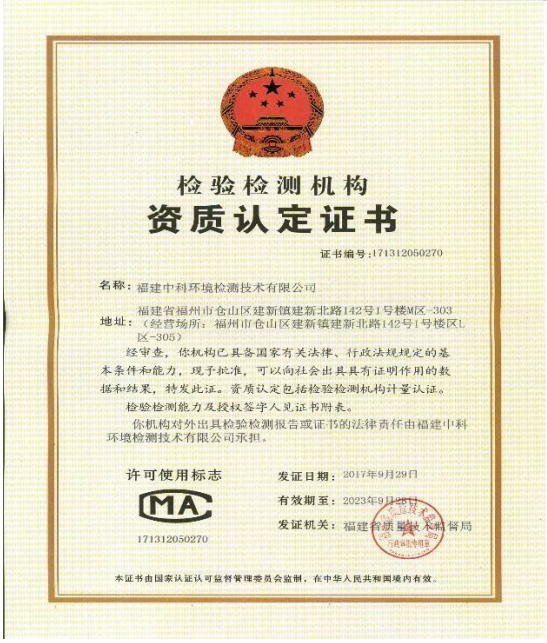
经审查，你机构已具备国家有关法律、行政法规规定的基本条件和能力，现予批准，可以向社会出具具有证明作用的数据和结果，特发此证。资质认定包括检验检测机构计量认证。
检验检测能力及授权签字人见证书附表。
你机构对外出具检验检测报告或证书的法律责任由厦门科仪检测技术有限公司承担。

许可使用标志
151312052004

发证日期：2017年8月14日
有效期至：2021年12月3日
发证机关：福建省质量技术监督局

本证书由国家认证认可监督管理委员会监制，在中华人民共和国境内有效。

Certification of EMC for Pinghe subprojects – Xiamen KeyiTest Technology Co. Ltd



检验检测机构
资质认定证书

证书编号：171312050270

名称：福建中科环境检测技术有限公司

地址：福建省福州市仓山区建新镇建新北路142号1号楼M区-303（经营场所：福州市仓山区建新镇建新北路142号1号楼区L区-305）

经审查，你机构已具备国家有关法律、行政法规规定的基本条件和能力，现予批准，可以向社会出具具有证明作用的数据和结果，特发此证。资质认定包括检验检测机构计量认证。
检验检测能力及授权签字人见证书附表。
你机构对外出具检验检测报告或证书的法律责任由福建中科环境检测技术有限公司承担。

许可使用标志
171312050270

发证日期：2017年9月29日
有效期至：2023年9月28日
发证机关：福建省质量技术监督局

本证书由国家认证认可监督管理委员会监制，在中华人民共和国境内有效。

Certification of EMC for Jiaocheng, Wuyishan and Fu'an subprojects - Fujian Zhongke Environmental Test Technology Co. Ltd

Cover page of external monitoring reports

APPENDIX 4 SAMPLE OF CSC ENVIRONMENTAL MONITORING REPORT

(Translation version)

1. **Basic information**

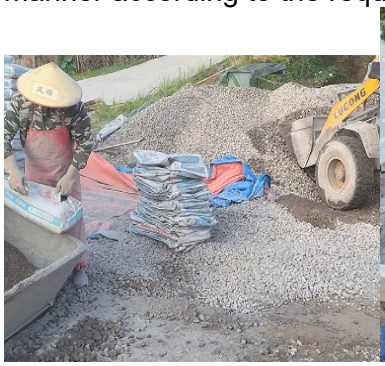
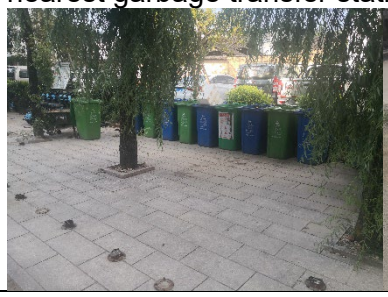
Project name (contract package number)	**Shouning Sub-Project of Xixi Town (FJ-SN-CW-01)**
Report preparation date	August 1 2022
CSC Name	Fujian Gongbiao Construction and Development Co. LTD
Environmental personnel of CSC Contact	Guo Zongle 15306055507
Contractor Name	Wenzhou Kaida Traffic Engineering Co., Ltd
Environmental personnel of contractor Contact	Lin Yun boat 13738312558
Prepared by	Guo Zongle
Mobilization date	March 2022
Estimated date of completion	Dec 31, 2022

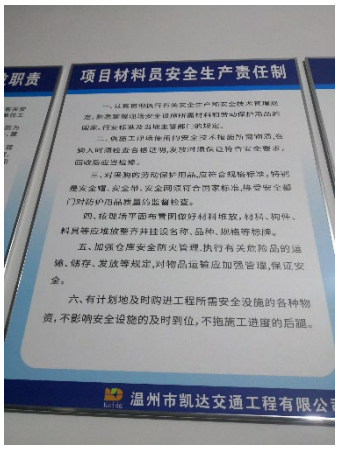
2. **Works completed in this reporting period**

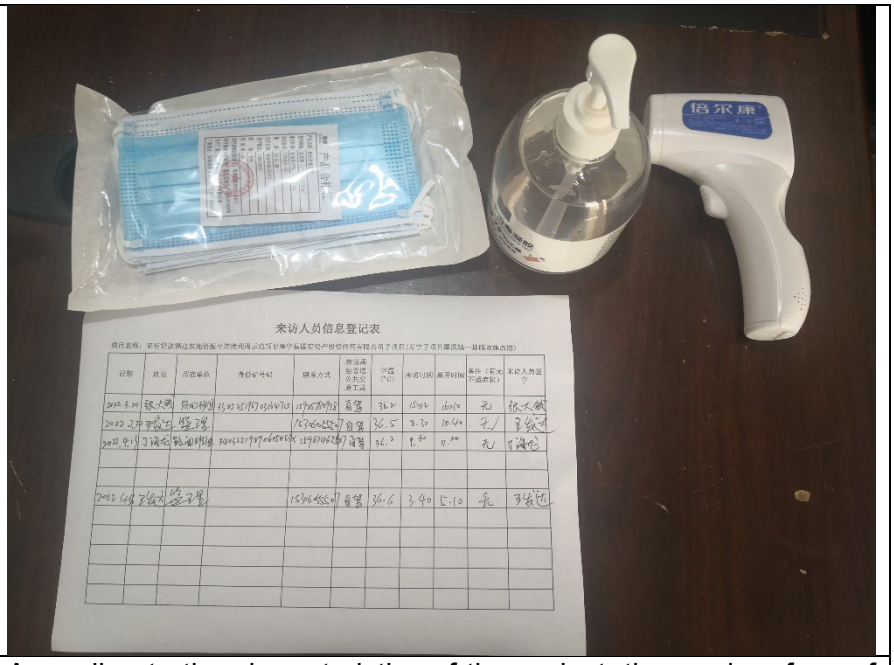
Complete tractor roads 24438 m.

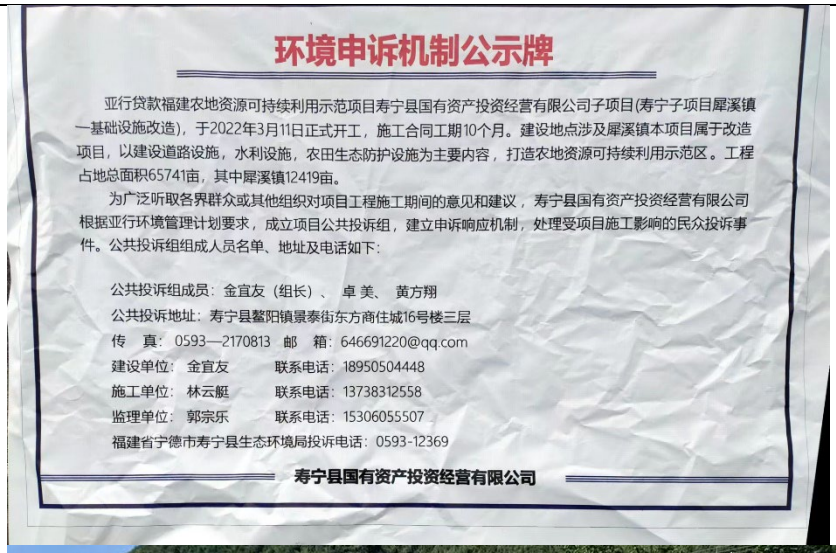
3. **Implementation of environmental mitigation Measures in this reporting period**

Environmental, health and safety management	Description (with photos)
Air pollution prevention Construction site surrounding file, protection, sprinkler, fog gun machine, car wash, green net coverage, transportation vehicle cover, etc.	· Sprinkling water dust, to avoid dust; · the vehicle is equipped with baffle, cover with tarpaulin; · cement and other dust prone materials in temporary storage must take windproof cover measures.  Sprinkler  Tarpaulin cover

Noise	The construction machinery strictly controls the night operation, controls its operation time during the day, avoids the lunch break; To produce noise, vibration of mechanical equipment in strict accordance with the operating procedures, strengthen maintenance, strictly prohibited noise exceeding the standard; Mixing stations must be set up away from residential areas.
Construction of sewage	Sewage and oily wastewater generated during construction shall be treated by sewage treatment tanks and transported to designated locations for discharge to prevent pollution of water sources.
Municipal sewage	Mainly for the canteen sewage, set up sewage trap, after pretreatment, unified collection and drainage of urban sewage network centralized treatment, in order to prevent pollution of water. It is strictly prohibited to discharge directly into the river.
Construction waste	After the completion of the site, the waste of the construction site, such as cement bags, should be collected and processed in a timely manner according to the requirements.   Cement bags should be piled up in a centralized manner and shipped and cleaned in time
Garbage	Household garbage shall be cleaned up and transported regularly, and the construction household garbage shall be transported to the nearest garbage transfer station near the engineering area.  
Soil conservation measures	No construction during rainy days
Occupational health and safety of construction workers	Establish safety responsibility system; Carry out safety education and training regularly; Special operations with a certificate on duty; Do a good job of safety protection and warning; Ensure the safety of construction electricity; Ensure the safety of construction machinery and tools operation; Fire control management.

	  Safety cordon fire management   Wear safety helmet, gloves and other PPEs and establish construction safety responsibility system
Community safety: warning signs, enclosures, etc.	 
COVID-19 prevention	1. Set up an organizational structure for epidemic prevention and control; 2. Implementation of epidemic prevention and control measures: carrying out health screening, setting up emergency isolation areas, medical assistance and response, implementing regional management, management of people going out, strengthening labor management, ensuring the adequacy of various materials, etc. 3. Do a good job in epidemic emergency response and treatment.

	
Temporary traffic management	According to the characteristics of the project, the road surface of the machine-ploughed road shall be constructed in full width. When each machine-ploughed road is ready for construction, the local village committee shall inform the villagers that the machine-ploughed road at the construction site shall be prohibited from passing.
Information disclosure: Construction site information five cards one map, environmental appeal mechanism billboard, various environmental protection and production safety system, etc.	 GRM disclosure

	  Dust control billboard
Construction site entrance management	 According to the characteristics of the project, the road entrance is closed when the construction machine tills the road, and non-construction personnel are forbidden to enter.

4. **Environmental, health and safety training activities organized during this report**

period

Training time	Participants of training	Photo
May 9, 2022	9	
June 25, 2022	6	

5. **Environmental and social complaints**

When Complaints are received	None
Content of complaint (e.g. traffic congestion, noise, dust)	None
Solutions	/
Whether residents are satisfied with the solution	/
Whether follow-up measures are needed	/

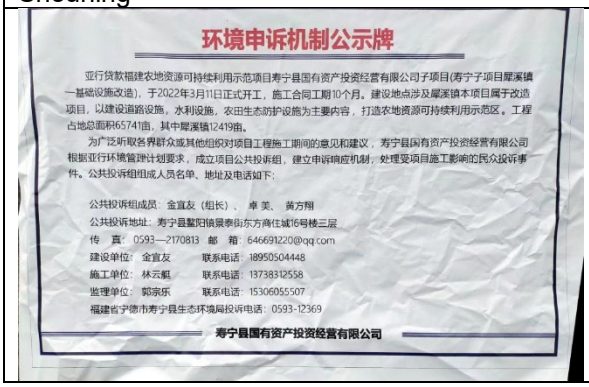
6. Have you received any punishment from environmental protection authorities during this reporting period? If yes, please explain the reasons for the punishment and corrective measures.

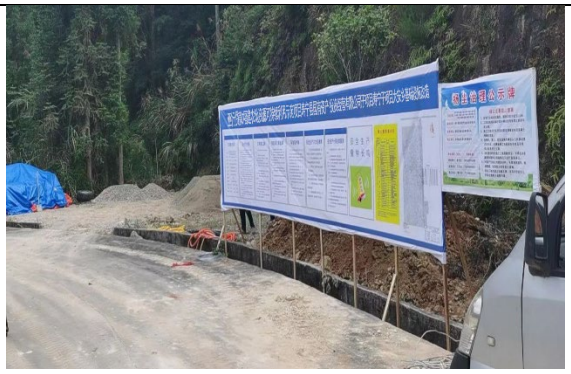
No.

APPENDIX 5 GRM DISCLOSURE

Pucheng

Shouning





APPENDIX 6. TRAINING MATERIALS

Chinese version

亚行贷款福建农地资源可持续利用示范项目

环境管理培训

2022年6月24日
袁婧雅
18500153462
yuanjw05@126.com

培训内容

- 1. 环境管理要求
- 2. 环境监测和报告
- 3. 关键性绩效指标监测评价

1. 环境管理要求

- 贷款协定和项目协议

（1）《环境管理计划》中的要求纳入到土建合同中；

（2）子项目设计

- 子项目不得位于生态敏感区；
- 在坡度大于 25° 的土地上的子项目活动必须 (i) 不得用于作物生产；(ii) 本项目不支持将现有天然林转化为生产用地的任何子项目活动。
- 子项目活动不能含有 (i) 生产纺工、(ii) 建造容量超过 10万方立方米的新水库和/或坝墙高度大于15m的水坝，或 (iii) 培训和检测中心。道路建设活动视用途，大小和路面而定；

（3）农药

不使用被世界卫生组织列为"极度危险"或"高度危险"的农药

1. 环境管理要求

贷款协定和项目协议：

（4）监测报告

在建设和实施项目和环境管理计划期间每半年一次，之后在运营期间每半年一次，直至发布亚行的项目完工报告。

1. 环境管理要求

- 环境管理计划

2. 环境监测和报告

外部监测

2. 环境监测和报告

- 内部监测
- -施工期
- -运行期

农药使用：请查使用的所有农药，包括：病/虫害、产品名称、使用率和时间等

2. 环境监测和报告

序号	合同编号	工程内容	工程阶段	实际实施进度	开工日期/预计开工日期	完工日期/预计完工日期	承包商名字	承包商环境负责人姓名电话	监理公司	监理公司环境负责人姓名和电话	备注
1	FJPH-CW-01-01 (项目地点)	机耕路 6.84km	招标	机耕路	2021年12月						
2	FJPH-CW-01-02 (项目地点)	生产路 21.10km 排水沟 28.84km 蓄水池 8 药池 208 喷灌 4075mu 喷灌改造 5960mu	[illegible]	生产路 0 排水沟 0 蓄水池 0 药池 0 喷灌 0 喷灌改造 0							
3	FJPH-CW-02-(…县)	蓄水池 19座 药池 300座 机耕路 3.523km 作业道 68.794km 排水沟 15.810km 滴灌 [illegible]亩 喷灌 889.20亩	已完成	机耕路 3.523km 作业道 64.633km 排水沟 1.410km 蓄水池 5座 滴灌 340亩 喷灌改造 [illegible]亩	2020年12月18日	2021年12月1日	中达（福建）[illegible]有限公司	[illegible]	[illegible]	[illegible]	

2. 环境监测和报告

1. 注明拍摄日期、地点
2. 施工现场信息五牌一图、环境申诉机制公示牌、各种环保和生产安全制度等。
3. 水保措施：竹节沟、头戴帽腰系带脚穿鞋、保留梯田之间的植被、防止土壤侵蚀按等高线分阶段施工等
4. 堤岸防护时树木保护等证据
5. 施工现场围档、防护、洒水、雾炮机、洗车台、绿网覆盖、运输车辆封盖等
6. 施工废水和施工工人生活污水的处理
7. 施工现场垃圾箱设置
8. 周围居民安全：警示牌等
9. 施工工人安全：工人提供个人防护设备、医疗箱、遮阳棚等、饮用水安全、住宿安全、体检、消防培训等。
10. 各级项目办现场环境督导照片
11. 各种培训活动、公众咨询签到表拍照

2. 环境监

3. 关键性绩效指标监测

项目成果:

- 灌溉用水效率从40%（2016年）提高到65%。
- 土壤有机质含量从小于1% （2016年）增加到2%
- 杀虫剂使用量减少5%（2016年基线值100%）

English version

ADB Loan Fujian Agricultural Land Resources Sustainable Utilization Demonstration Project

Environmental Management Training

June 24 ,
Yuan Jingwei
18500153462
yuanjw05@126.com

training content

- 1. Environmental management requirements
- 2. Environmental monitoring and reporting
- 3. Monitoring and evaluation of key performance indicators

1. Environmental management requirements

- Loan Agreements and Project Agreements

(1) The requirements in the " Environmental Management Plan " are incorporated into the civil construction contract;

(2) Subproject design

- Subprojects shall not be located in ecologically sensitive areas;
- any subproject activities that convert existing natural forests to production land .
- Subproject activities cannot involve (i) production and processing, (ii) construction of new reservoirs with a capacity exceeding 100,000 cubic meters and/or dams with a wall height greater than 15m , or (iii) training and testing centers . Road construction activities vary by use, size and surface ;

(3) Pesticides

Does not use pesticides classified by the World Health Organization as "extremely hazardous" or "highly hazardous"

1. Environmental management requirements

Loan Agreement and Project Agreement:

(4) Monitoring report

Semi-annually during construction and implementation of the project and environmental management plan, and thereafter during operation, until ADB's project completion report is issued .

1. Environmental management requirements

- Environmental Management Plan

2. Environmental monitoring and reporting

External monitoring

2. Environmental monitoring and reporting

- Internal monitoring
  - Construction period
  - Runtime

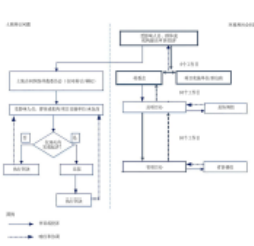
Pesticide use: Inventory all pesticides used, including: disease / pest, product name, usage rate and time , etc.

2. Environmental monitoring and reporting

2. Environmental monitoring and reporting

1. Indicate the date and location of the shooting
2. Five cards and one map for construction site information, public notices for the environmental appeal mechanism, various environmental protection and production safety systems, etc.
3. Soil and water conservation measures: Bamboo ditch, wearing hats, waistbands, and shoes, retaining vegetation between terraces, preventing soil erosion, and constructing in stages according to contour lines, etc.
4. Evidence such as tree protection during embankment protection
5. Construction site fencing, protection, sprinkler, fog cannon, car wash, green net coverage, transportation vehicle cover, etc.
6. Treatment of construction wastewater and construction workers' domestic sewage
7. Construction site trash can set up
8. Safety of surrounding residents: warning signs, etc.
9. Safety of construction workers: workers are provided with personal protective equipment, medical boxes, awnings, etc., drinking water safety, accommodation safety, physical examination, firefighting training, etc.
10. Photos of on-site environmental supervision of project offices at all levels

2. Environmental monitoring and reporting



3. Monitoring of key performance indicators

project outcome:

- Irrigation water efficiency increased from 40% (2016) to 65% .
- Soil organic matter content increased from less than 1% (2016) to 2%
- 5% reduction in pesticide use (100% 2016 baseline)