Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

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Ministry of Agriculture and Forestry
Department of Planning and Finance
The World Bank – IDA

LAO AGRICULTURE COMPETITIVENESS PROJECT

LACP – P161473

Environment and Social Impact Assessment Report
For
Douangboutdy Irrigation Pump Scheme (100 ha)
Xaythany district, Vientiane Capital, Lao PDR

June 2021

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I. PROJECT DESCRIPTION

The Lao Agriculture Competitiveness Project (LACP) seeks to enhance the competitiveness and sustainability of Lao PDR's agriculture sector through technical and financial support to increase in agricultural productivity and Competitiveness in selected strategic value chains. The project would focus on: (i) the geographical areas with high agricultural development potentials; (ii) the farming systems with high potentials for Competitiveness (i.e. paddy, maize, vegetables); (iii) promotion of good agricultural practices and climate smart agricultural technologies and farming system diversification to enhance food and nutritional security; (iv) building capacity for farmers' organizations, agribusinesses, public and private service providers; and (v) building on and developing synergies with other government/donor programs. The Project Development Objective (PDO) is to increase competitiveness of selected value chains in the project areas. The Project has an estimated budget of USD 29.3 million, including government co-financing of USD 0.5 million, agribusinesses contributions of USD 5.6 million, and an IDA loan of USD 25.0 million. It will be implemented within five provinces (Khammouane, Bolykhamxay, Xayabury, Vientiane province, and Vientiane Capital). The Project implementation schedule is within 06 years (2018-2024). The LACP is comprised of three components:

Component A: Improved Agricultural Efficiency and Sustainability.

This component will support (a) the increased adoption of improved varieties and high-quality seeds, (b) the increased application of GAP, (c) the provision of critical productive infrastructure, and (d) the strengthening of public services delivery.

(A3) Providing Critical Infrastructure. The project will finance rehabilitation of selected public infrastructure (mainly irrigation schemes). The project will also support PAFOs and Department of Irrigation (DOI) of MAF to provide training in new irrigation models aiming at reducing operation costs and improving water productivity through establishment and strengthening of water user groups to effectively operate and maintain existing and the newly built infrastructure supported by the project.

Total target pump irrigation schemes in Vientiane Capital to be rehabilitated are 18 sub-projects, of which 6 pump schemes for Batch-1B shall be completed in the preparation stage of Feasibility Study and Engineering detailed design in beginning year 2021 and can be rehabilitated in the fight year 2021-2022. The remaining 12 pump irrigation subprojects (Batch-2) will be done in the following year in FY 2022-2023.

One of 6 pump irrigation schemes was proposed to rehabilitate for Batch-1B is Douangboutday irrigation pump scheme. It is located at Douangboutdy village, Xaythany district, Vientiane Capital. It is far from Vientiane capital centre about 29 km to Southern road no.13, after that at along rural road to Ban Dongbong and Nam Ngum River bank. The pump scheme is bordering the villages of Ban Dongbong in the Western, Nam Ngum River in the Eastern, the Northern and Forest in the West. The location of the headwork is at Northern 18^{o} 8' 21.80" N and for Eastern 102^{o} 43' 4.86" E See figure no.2 below.

Component B: Enhanced Agricultural Competitiveness.

This subcomponent will support activities to promote good agricultural practices (GAP), including the provision of: (a) technical assistance for the establishment of FPGs and

building their capacity to adopt GAP; (b) Matching Grants to selected FPGs to carry out Sub-projects that implement GAP; (c) technical and material assistance (i.e., small works, goods, equipment, training, etc.) to build the capacity of PAFOs, DAFOs, and relevant MAF technical departments to conduct training for FPGs on GAP and to carry out related extension and certification activities including soil analysis, organic fertilizer production, and organic farming; and (d) technical assistance to link FPGs with agribusinesses in marketing farm produce.

Component C: Project Management

The component will support (a) project management and (b) monitoring and evaluation (M&E).

1 ANALYSIS OF ALTERNATIVES

Improvement of irrigation systems is to improve the efficiency of rice production, improve and develop water user groups as future water user associations. Rice cultivation uses a large amount of water. Therefore, selected crop cultivation and techniques is alternative option to minimize water consumption during project implementation. The method includes sprinkler or drip irrigation crop cultivation.

II. ENVIRONMENTAL AND SOCIAL CONTEXT

2.1 ENVIRONMENTAL CONTEXT

Duangboutdy Pumping Irrigation Scheme is located in Duangboutdy village, Xaythany District, Vientiane Capital. This project is a pontoon pumping system which intake water from the NamNgum River. The irrigation scheme headwork consists of three (3) electrical motor pump units that has developed sine the year of 1996. The three electrical pump motors with a 75 KW were installed on a pontoon to supply water to the earthen canals. Since then, the project was operated and managed both season, wet and dry season by the Water User Group (WUG) and directed by the district agriculture and forestry office (DAFO).

The pontoon is moveable to water level rise and low dependent on the season. During the wet season, a water user group member has assigned to follow up and tight or loose a cable rope which fixed a pontoon.

The specification of Duangboudy Irrigation scheme is detailed in table 1.

Table 1 The specification of current pump system

No.	Item pump elements	Unit	Quantity /Specification
Mechanical part			
1	Pump (Size: 250-300-8-75)	unit	1
2	Capacity discharge (actual efficiency)	l/s	270
3	Pump effeciency	%	70
4	Brand and made		Kirloskar, India
5	Pontoon & Roofing	set	1

6	Flexible pipe, d= 250 mm x 8 m	peice	2
7	Penstock pipeline, d= 250 mm x 40 length (ml)	piece	2 x 40
Electrical part			
8	Motor x 75 kw	unit	1
9	Electric delta boxes	unit	1
10	Electricity cable x 50 m	piece	1
11	Electric Breaker	unit	1
12	Electric meter box	unit	1
13	Electric Transformer x 250 kv (Replacement Needed)	unit	1

- **Headwork**- pumps are damaged and need to be replaced (one of them cannot repair due to it is serious broken). Therefore, changing a electrical motor pump is required for improvement efficiency of the system.
- **The canal networks**-Main canal is reinforced concrete trapeziodal canal lining. It is good conditional and great using. Two remaining secondary canals are brick masonry with great maintenance by WUG.
- **Structures**- All convenyace canal structures to support the water management are good and functioning well, especially the farm inlet and division structure.

Figure 1. Sub-Project Layout and proposed rehabilitation

The Canal networks:

- One reinforced concrete trapezoidal main canal (L=80 m) with size b=0.80m, B=2.5m, h =1.2 m and inside slope (m) = 1. It has one division box only.

- Right secondary brick masonry canal (L= 750m) with size (0.60 x 0.60 x 0.10) m; It has 7 farm inlet structure and one tail structure.
- Left secondary brick masonry canal (L=1,900m) with size (0.80 x 0.80 x 0.10) m; It has 11 farm inlet structure and one tail structure.

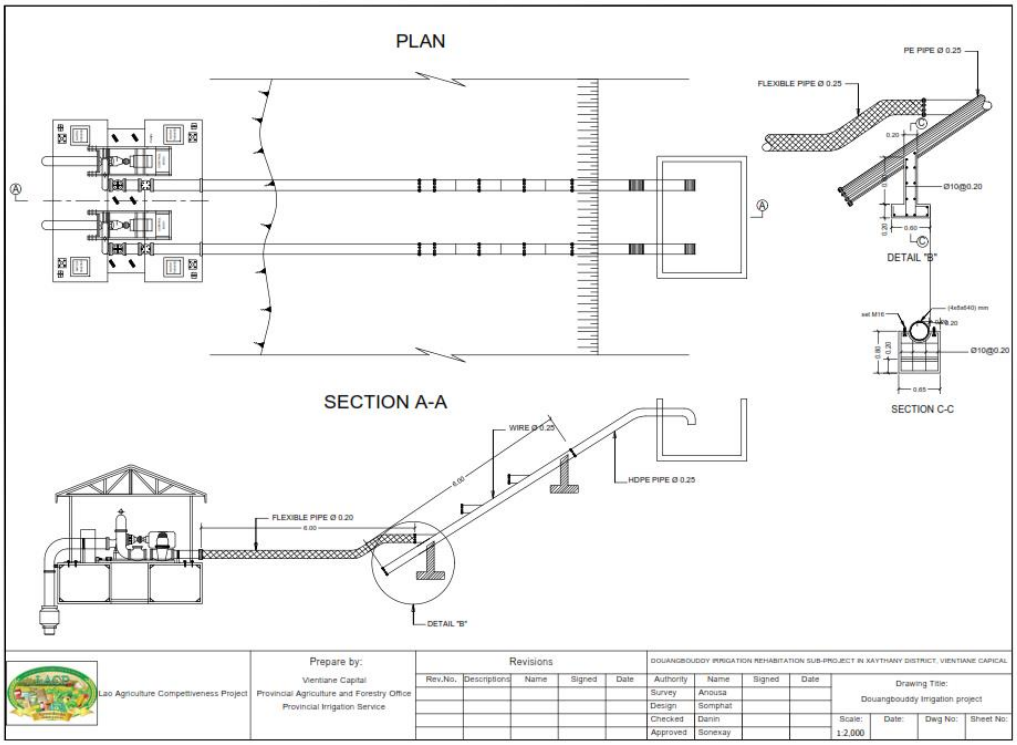

Figure 2. Proposed Pumping Unit Installation

Figure 3.Existing and Proposed Pumping Station

Figure 4. Existing Water Transmission Pipe

2.2 SOCIAL CONTEXT

The Douangboutdy irrigation Sub-project is a pump irrigation scheme. 142 households of which the project benefited households are 79 households. The benefited households accounted for about 56% of the total village's households. There are 463 people benefited from this project, of which women are 234 people.

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According to the village meeting minute, villagers in the project areas fully support the project implementation. Three main ethnic group are leaving in Douangboutdy village, mainly is Lao ethnic covered 118 hh while Hmong 10 hh, Kmu 14 hh. Buddhist religion is the common respected for all of villagers even are different groups of ethnic.

Most of the income comes from agricultural production and animal raising (cattles, buffalos, pigs and poultries). Rice production in both wet and dry season is the main sources of livelihood and income followed by vegetables and cassava production. There are primary schools, secondary schools in the project area.

Water resources are mainly rivers and groundwater for domestic utilization. Tap water is available for the provincial town while gravity fed systems are available for some villages, and wells and boreholes are main used in local communities.

Transportation by road and ferry cross the Nam Ngum river can access Dougbotdy village all year round to commute and transport their agricultural products to the market in the

district and provincial towns. Doungbotdy village has electricity grid and tele-communication network.

III. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

3.1 ENVIRONMENTAL IMPACT ASSESSMENT

Field visit was conducted after the feasibility study (FS) and Detail Design (DD) has been completed with scope and corridors of impacts are determined. During the site visit, consultation was conducted with the targeted village to be potentially affected with detailed design and information disseminated. The reassessment shows that the sub-project location does not near the protected areas or sensitive habitats or buffer zone. The sub-project does not potential to have impacts on any cultural resources (both physical and intangible) and to result in restrictions access to land and forest resources. According to the discussion with villagers, subproject locations are minor potential to have a risk of floods and droughts. Therefore, rehabilitation of the irrigation schemes will bring benefit to farmers not only rice cultivation but also vegetables and other cash crops.

However, Potential environmental impacts related to construction are minor and they can be mitigated by providing the environmental code of practice (ECOP) such as transportation of material to the construction site may sometimes generate dust and noise. Farmers will be temporarily disturbed and has insufficient water to supply for rice field due to the installation of new pump unit. Construction works and temporary camp with a number of workers of 10-15 people during construction period of two weeks may generate wastes such as bags and oil spillage will remain on the soil after completion of the project. These may lead to minor affect to the environment.

3.2 SOCIAL IMPACT ASSESSMENT

The main activity of Douangboutdy irrigation Sub-project is only Headwork pontoon pumps replacement. Therefore, no significant social impacts are envisaged but only potential risks and impacts associated with civil work to install the pontoon pump that the contractor needs to pay attention and Field Technical Inspection Team to supervise during construction phase. These are mainly related to environment, health and safety issues including occupational health and safety and community health and safety risks (safety at the construction sites with both hazardous, non-hazardous materials electric and power supply system and equipment in place where possible accidents may occur with local people especially children. Potential occupation or workplace health and safety issues are mainly related to road and work related accidents that may happen to contractor's mechanics during transportation and installation of the water pumps in the irrigation schemes.

Risks associated with labour influx is expected to be insignificant ad manageable due to the small number of only 10 workers including mechanics are expected to work in the subproject site to install the irrigation pump and not expected to set up a camp and stay overnight in the village. Communicable diseases including COVID-19 outbreak will be prevented through applying the government measures and regulation in force. Risks of occupational safety (safety

at work) will be managed through provision of safety instruction, training and personal protective equipment.

During the operation phase (after the installation of the pump), dispute and conflicts over water use from the improved irrigation scheme may arise and increase particularly from those households unable to access and benefit from the project investment. There could also be potential risks of accidents that may happen to village committees and mechanics during operation, maintenance and basic repair of electric pumping system and to water users and local villagers if the electric power supply system is not properly installed and covered with fences, warning signs and instructions provided. Thus technical O&M manuals of Irrigation project need to be prepared and provided by Project Consultants for the village water users groups and committees who will be responsible for O&M and WUG management. . Training on the O&M manual will be provided for the WUG to operate and maintain the irrigation scheme properly, the mandates and rules of WUG need to be revised to meet the actual situation and needs. The capacity of WUG board members needs to be strengthened in the following topics (1) Operation and maintenance of the irrigation scheme: planning and implementing of cropping and water supply; (2) Management of the WUG/WUA: how to implement mandates, rules, WUG/WUA financial management, conflict management, general WUG/WUA management and so on; (2) Production techniques including the Pest Management

Positive social and economic impacts:

The result on Feasibility Study and Engineering Design of Douangboutdy irrigation pump scheme is shown that after the improvement of the pump station its related support elements, the irrigation water will be able to supply fully to 100 ha in Wet season and Dry Seasons, which increase from 60 ha or by 60 % of Dry Season cropping areas will be increased after rehabilitation work

The subproject outputs shown lowest investment (491 USD/ha), but will get higher benefit and easy technical improvement of pumping system.

The positive social and economic impact is Increased income hence improved socio-economic conditions of the people within the targeted areas.

IV. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN OR ECOP

ESCOP is prepared to be applied by the pump irrigation subproject. ESCOP incorporates site specific Environmental Code of Practice (ECOP), which is equivalent to site specific EMP and social management plan to address and mitigate the above described potential environmental and social impacts and issues anticipated during and after the civil work.

4.1 ENVIRONMENTAL CODE OF PRACTICE (ECOP)

To avoid and mitigate the potential environmental impacts related to each stage, mitigation measures in ESMF and ESCOP proposed in this report ANNEX 1 will be used; before installation of electricity pump, electricity must be switched off, limit working houses from

7:30 am-17:00pm to avoid noise from noise from transportation. To monitor and follow activities, district natural resources and environment office will participate in follow up and advise contractor to arrange camp (Existing pumping house is temporarily used during construction work, this house will be used only during a day. The proposed temporary workers stay is given in figure 3), dumping site, to avoid wastes generation and improper waste management. After completion of the project, wastes from construction and camp will be removed and properly scourged before hand over to concerned organization.

Figure 5 proposed temporary camp site

To facilitate transportation during construction, villagers and will be informed through village meeting and consultation for the project commencement and completion date before starting civil works. Existing canal embankment shall be used to facilitate vehicles accessing to the pump station (existing road to pumping station use as usual).

4.2 SOCIAL MANAGEMENT PLAN

i. **Disturb local transportation, dust and noise will be generated by transporting material:**

Mitigation:

(i) ensure all workers come to the village are registered and CO-VID 19 vaccinated ; (ii) the workers in dusty areas should be provided with requisite protective equipment such as dust masks and dust coats; (iii) the movement and speed of the construction machineries and vehicles should be controlled and managed; (iv) the removal of vegetation should be avoided and denuded surfaces should be re-vegetated; (v) noisy machinery should be fitted with proper silencers to minimise noise emissions; (vii) sprinkle water in construction yards, dusty roads and soil heaps to minimise dust; (viii) ensure the construction work takes the shortest time possible, in addition, the activities generating dust should be carried out in calm weather; (ix)

ensure the noise levels are kept at the minimum acceptable levels and the construction activities are confined to the working time limits.

ii. **Potential conflicts with community**

Mitigation: (i) ensure a well negotiated settlement plans with communities done prior to the project implementation; (ii) construction and agreement made on sensitive and protected habitats;

iii. **Potential conflicts among Water user:**

Mitigation: (iii) ensure inclusion of upstream residents into other economic activities of the project; (iv) where necessary, construct high-drums to supply upstream residents with water for micro-irrigation systems and domestic use.

iv. **Pollution of Rivers and Wetlands:**

Mitigation: (i) ensure adequate and regular checks on the equipment in use to ensure they are well maintained and in good working condition to prevent leaking oils and fuels; (ii) refuelling should be done in safe locations where there is no likelihood of spillages;

V. GRIEVANCE REDRESS MECHANISM (GRM)

Social and environmental related grievances either from directly or indirectly affected people, (including affected people from ethnic groups) will be resolved through the Grievance Redress Institution/Mechanism (GRI/M). However, complainant retains the right to bypass this procedure and as such can direct their grievance directly to the PAFOs or the Provincial Assembly, as provided by law in Lao PDR. At each level within the GRI/M process, discussions and outcomes of logdged complaints will be documented and recorded in a grievance logbook. The status of the grievances submitted and grievance resolution will be reported to PAFOs in monthly reports. In order to effectively and quickly resolve grievances of PAP, the following process will can be followed:

Stage 1: if PAP and PAH are not satisfied with the resettlement plan or its implementation, PAP and PAH can issue a verbal or written complaint to the Village Mediation Unit or Committee (VMU/C). If it is a verbal complaint, the village should deal with this complaint and document it in a written record. The VMU/C should resolve the complaint or grievance within two weeks or calendar 15 days.

Stage 2: if PAP and PAH are not satisfied with the result in Step 1, PAP and PAH can file an appeal with the District Office of Justice (DOJ) via DAFOs after PAP and PAH receives the decision made in Step 1. The DOJ should make a decision within two weeks or 15 calendar days

Stage 3: if PAP and PAH are not satisfied with the result of Step 2, PAP and PAH can file an appeal with the Provincial Assembly (PA) via PAFO for administrative arbitration after receiving the decision made by the DOJ. The administrative arbitration organization should make the arbitrated decision within 20 calendar days; and

Stage 4: if PAP and PAH are still unsatisfied with the arbitrated decision made by the administrative arbitration organization, after receiving the arbitrated decision, PAP and PAH can file a lawsuit in a civil court according to the relevant laws and regulations in Lao PDR.

VI. CONSULTATION AND INFORMATION DISCLOSURE

Consultation with the local communities and farmers/water user groups was conducted in Duangboudy village on 3 June, 2021. 34 people from 67 households participated in the consultation meeting. This draft ESAR was distributed to the community 7 days before the consultation. Main outcomes of the consultation are provided below:

- To avoid low quality of irrigation infrastructure system installation, LACP project will establish Field Technical Inspection Team and give them technical supervision guide. During construction phase, the technical O&M manuals of Irrigation project need to be prepared and provided by Project Consultants, who will be responsible for O&M and WUG development.

  To avoid incorrectly calculation of celling cost of scheme when will process procurement works. The PIS/LACP consultant should review and edit by marketing unit rate on consideration of specific location, kind of materials where is required to bring within price on project cost estimation.

The relevant feedback such as required soon to replace pump; if possible, it should happen before raining season was conveyed and discussed with the NPC and CTA for their consideration and incorporation into the subproject design and implementation arrangement. The minutes of consultation is provided in Annex:

The final ESAR will be disclosed onto the MAF's website and hard copy will be available in POFO and DAFO prior to the subproject implementation.

VII. IMPLMENETATION, MONITORING AND REPORTING ARRANGEMENT

The implementation of the environment and social safeguard is followed by the project implementation arrangement. The project implementing agencies include MAF, MOIC, and the five project provinces. LACP is jpining implementing by MAF and MOIC; MAF is the central agency responsible for coordination with concerning stakeholders and overall project implementation. MAF is core of implementing project activities and focusing on component A, C and coordinate with component, working with farmer and production group, upgrading on-farm infrastructure, farmer's production facilities and farm equipment. Technical department involved include DOPF, DOA, DOI and DTEAP.

MOIC is part of the project responsible implementing their respective activities under component B (Enhancing agricultural competitiveness) such as establishing productive partnerships between Abs and FOs and Matching grants for agribusiness (Abs) and farmer groups (FGs) to leverage investments in on-farm infrastructure, post-harvest machines, drying facilities, storages, cool rooms, packaging facilities.

DAFO is taken a lead responsible role at district level to supervise E&S consultant and PMU to conduct screening process, review and endorse sub-project proposal, monitor compliance of sub-project proposal implementation.

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E&S Consultant- E&S consultant will work closely with PMU to provide support to farmers and project proponents to prepare sub-project proposal, conduct E&S screening and prepare appropriate safeguard instrument. E&S consultant will also supervise and monitor the implementation of the ECOP.

VIII. CONCLUSION AND RECOMMENDATIONS

The minor of the potential social and environmental impacts associated with the proposed subproject are expected to be insignificant, mostly temporary, site specific and manageable during both construction and operation phases. The construction impacts can mostly be minimized through the ESCOP, which combines ECOP (equivalent to site specific EMP and Social Management Plan as well as mitigation measure proposed in this report, which should form part of the construction contractor contract. Key provisions of ESCOP will be include in bidding documents and contract to be complied with by the contractor and supervised by the field inspection engineer and E&S consultants to minimize and address such impacts anticipated from the subproject implementation.

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ANNEXES

Annex.1 Environmental and Social Code of Practice

Potential Negative Impacts	**Mitigating Measures**
Pre-Construction Stage	
Safety Hazards to workers and risk of accidents during installation and operation of electric pumping system to workers and local people, and effects of temporary worker populations in the area	The contractor shall conduct the following: • Allocation of responsibility for site safety to the Contractor's site supervisors and staff, who will ensure that all reasonable safety measures, such as use of safety clothing and equipment and placing of adequate visible hazard warnings and instruction signs. • Prepare and apply O&M manual of the electric pump and provide training on the O&M for the WUGs and committees, and local villages .Electricity control box must be checked before installation a new set • All safety gear must be prepared and provided to workers during working in pontoon
Impacts from Construction	
Community Health and safety Issues and Risks Effects of temporary worker populations	• Community Health and Safety measures provided in the World Bank Guideline on Environment, Health and Safety (EHS) to be applied by contractor and its workers. • Installation of suitable toilets such as pit latrines and grey water drainage facilities such as soakage pits. • Arrangements for collection of solid waste, • assignment of responsibility for worker and local peoples' welfare, health and safety to a senior member of the Contractor's staff. • Employ local people as workers during construction as many as possible. • Establish a Grievance Redress Mechanism (GRM) based on the existing structure (village mediation committee, district and provincial office of Justice or courts and DAFO/PAFO). Brief information on GRM with the contact detail of responsible persons (site engineer, safeguard focal staff from DAFO and PAFO) and their phone numbers.

Potential Negative Impacts	Mitigating Measures
Gender-Based Violence (GBV), Violence Against Children (VAC) and Sexual Exploitation and Abuse (SEA)	• Apply relevant requirements of the World Bank's Good Practice Note on Addressing Sexual Exploitation and Abuse and Sexual Harassment (SEA/SH) in Investment Project Financing Involving Major Civil Works (2nd Edition, February, 2020) • Community engagement/ consultations; • Include GBV sensitive approaches in GRM; • Define GBV requirements in bid documents, including the requirement for a Code of Conduct (CoC). See Annex 1; • Address how GBV-related costs will be paid in the contract; • Ensure CoCs signed and understood by the work contractor and his workers; • During works, separate facilities for women & men, GBV-free zone signage as required.
COVID-19 outbreak	• Observe the applicable national and WHO regulations and guidelines and the WBG COVID-19 Advisory note on Contingency Planning for Existing Operations dated March 16, 2020 and WBG Safeguard Interim Note on COVID-19 Considerations in Construction/Civil Works Projects, April, 2020 • Please refer to Annex 2: COVID-19 Rapid Assessment Form and Annex 3: Template of Contingency Plan for Response to COVID-19
Impacts from Operation	
Effects of intensified agricultural production	• instruction in purchase and use of pesticides, • promotion of the informed use of mineral fertilizers, • promotion of the concept of integrated pest management, and • emphatic discouragement of the use of persistent pesticides and introduce IPM instead.
Extraction of water during the dry season	• Monitoring of river flows and extraction levels, ensuring that an adequate riparian flow is maintained.
Leaching of nutrients	• Promotion of sustainable irrigated agriculture and soil management methods